Impact Audits Conducted by DGs of FAOs

for Audit Year 2023-24

Department of the
Auditor-General of Pakistan
Islamabad

Message from Auditor-General of Pakistan

Impact Audits are aimed at determining impact of initiative or programmes undertaken by the government. Impact Audit focuses on determining the outcome results attributable to an initiative, defined as a new program or recent change to an existing program. It answers cause and effect questions about the outcome results attributable to an initiative. It determines to what extent results of an initiative are attributable to the initiative by separating other contributing factors or variables, and what is the adequacy of the results. In this regard techniques like difference-in-differences methods, regression analyses etc. are used. Unlike traditional performance audit, Impact Audit does not have criteria. With regard to condition there are two sub-elements: condition with and condition without. Condition with represents level of performance achieved with the initiative, and condition without represents the level of performance that would have occurred in the absence of initiative. The difference between "condition with" and "condition without" is impact of intervention.

The Department of Auditor-General of Pakistan (DAGP) is the foremost Department among its fraternity to pan Impact Audit during audit year 2023-24. A purpose specific training was planned and imparted by senior officers of the department in the Performance Audit Wing at Lahore. The Audits have been executed by the Field Audit offices (FAOs) of the department of Auditor-General of Pakistan. The Impact Audit Chapters have been incorporated in the different Audit Reports approved by the Auditor-General and submitted to the President of Pakistan/Governor of the respective provinces laying before the National Assembly and Provincial Assemblies, as the case may be.

Being a member of International Organization of Supreme Audit Institutions (INTOSAI) community, we are sharing the compilation of Impact Audits to encourage the idea of knowledge sharing and inclusiveness among our peer SAIs. I sincerely hope that this endeavor of SAI Pakistan will evolve into a meaningful and effective practice among SAIs to achieve the common goal of public service delivery in a transparent manner.

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Impact Audit

Impact Audit of 'Motorbike Ambulance Service (MAS) Initiative in Rawalpindi District'

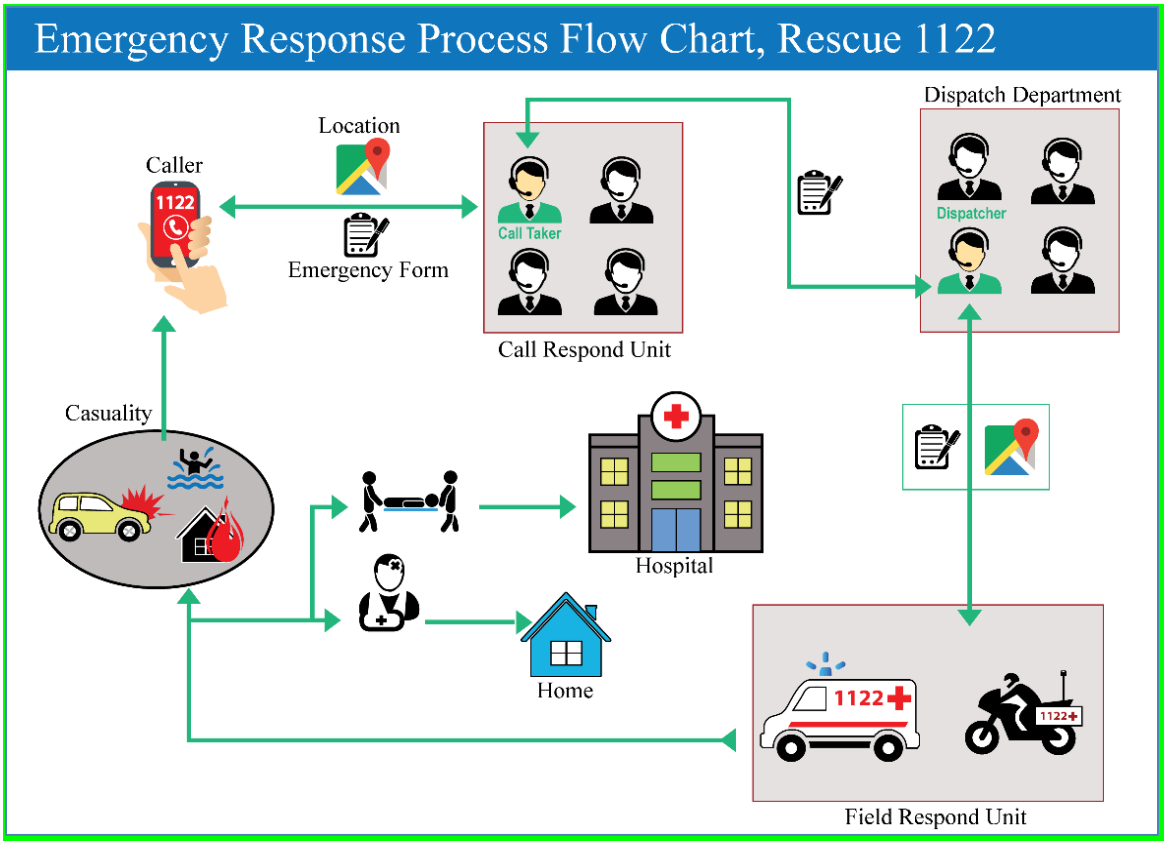
1. Introduction:

Impact audits are aimed at determining impact of initiatives or programs. Specifically, impact audit focuses on determining the outcome results attributable to an initiative, defined as a new program or recent change to an existing program. It answers cause and effect questions about the outcome results auditable to an initiative by separating other contributing factors or variables, and what is the adequacy of the results. The Directorate General Audit (Climate Change and Environment) had planned the impact audit of Motorbike Ambulance Service (MAS) initiative in Rawalpindi District in the Audit Plan 2023-24 of the Field Audit office (FAO).

Background

Prior to 2004, Pakistan did not have an organized Emergency Rescue System. Given the dire need for a professional and responsive emergency response system, Rescue 1122 was launched in the District of Lahore, Punjab in 2004. Subsequently the Service was extended to all districts and tehsils of Punjab Province. Over the past few years, it has achieved an average response time of seven minutes to the emergency call, comparable to that of developed nations. After the success of the Lahore Pilot Project launched in 2004, Rescue 1122 started expanding to the remaining Districts of Punjab and other provinces of Pakistan. Till 2017, the rescue service was provided through the conventional ambulance service and as per the data of the department, Punjab Emergency

Service Department (Rescue 1122) had rescued over 12 million victims of accidents and disasters by providing timely response and professional emergency services[1]. The Emergency Response Flow Chart of Rescue 1122 is as under:



Over the time, traffic congestion and number of traffic accidents in major cities of Punjab necessitated the Service to review the best practices being followed by other major cities of the World to improve the emergency response in narrow streets and congested areas as timely response to emergencies so as to significantly improve survival rate amongst injured and medical patients. This led to introduction of new initiative in shape of launching the Motorbike Ambulance Service (MAS) in 2017.

Role of the Project

Motorbike Ambulance Service (MAS) is an innovative and effective way to provide emergency medical care to the patients in need. In areas where traffic

[1] Website "https://www.rescue.gov.pk/", accessed on 26.05.2023.

congestion is a major problem or in situations where traditional ambulances cannot access, motorbike ambulances are a great solution. They are small, agile, and can easily navigate through congested areas and reach the destination quickly. In addition to their practicality and efficiency, motorbike ambulance services are also cost-effective. They are less expensive to operate and maintain as compared to traditional ambulances, which is cost effective for organizations with limited budget and resources. Following socio-economic benefits of the Motorbike Ambulance Service were conceived at the time of introduction of the initiative:

a) Reduction of average emergency response time.
b) Saving of resources in shape of saved use of conventional Ambulances.
c) Increased survival rate of victims due to swift response and timely access to narrow streets/ congested areas
d) Equipped to allow onsite Emergency Management
e) Robustness, versatility and simple maintenance

2. Overview of the Initiative:

The MAS (Phase-I) was initiated in 2017 in Punjab from non-development component of budget through SNE (Statement of New Expenditure). The phase-II of the initiative was executed in August 2020 through a PC-I titled "Motorbike Ambulance Service for Remaining 27 Districts of Punjab". During Phase-I, the Motorbike Ambulance Service (MAS) was started in all nine Divisional Headquarters of Punjab.

The deliverable of the project included to provide swift response to emergencies, ensure optimal utilization of resources in case of minor emergencies and to create a sense of safety amongst the citizen.

MAS was conceived with the following main objectives:

i) Provide swift response to accidents and emergencies and reduce response time during the peak rush hours and in narrow streets and congested areas.

ii) Ensure optimal utilization of resources in case of handling of minor emergencies by conventional ambulances.

iii) Create a sense of safety amongst citizens by ensuring swift and timely response in case of medical emergencies.

3. Scope & Methodology

Scope

The scope of the impact audit assignment extended to examining the impact of MAS initiative in Rawalpindi district (District Emergency Office, Rawalpindi). The impact audit covered the period one year before the initiative i.e. 2017 and period after the initiative i.e. 2019 to determine the impact of the intervention.

Impact audit focused on examining MAS in the following ways:

i) Analyzing reduction in response time upon introduction of initiative and consequent impact on service delivery.

ii) Analyzing the economy achieved in provision of emergency services after the initiative.

iii) Assessing the rate of increase/decrease in number of emergencies dealt after introduction of MAS.

iv) Analyzing the impact on service delivery and safety resulting from MAS initiative by citizen feedback through structured questionnaires.

Methodology

The data was gathered by applying procedures like inquiries from the management, document review, analysis of monitoring reports, collection, interpretation and analysis of primary and secondary data. In order to verify and quantify the impact of MAS initiative following methodology was adopted to see it with condition and without condition.

Sr. No.	Aspect	Without Condition	With Condition
1.	Reduction in response time and consequent impact on service delivery.	Response time of 7 to 9 minutes before the initiative i.e. prior to	Reduction in response time after the initiative i.e.

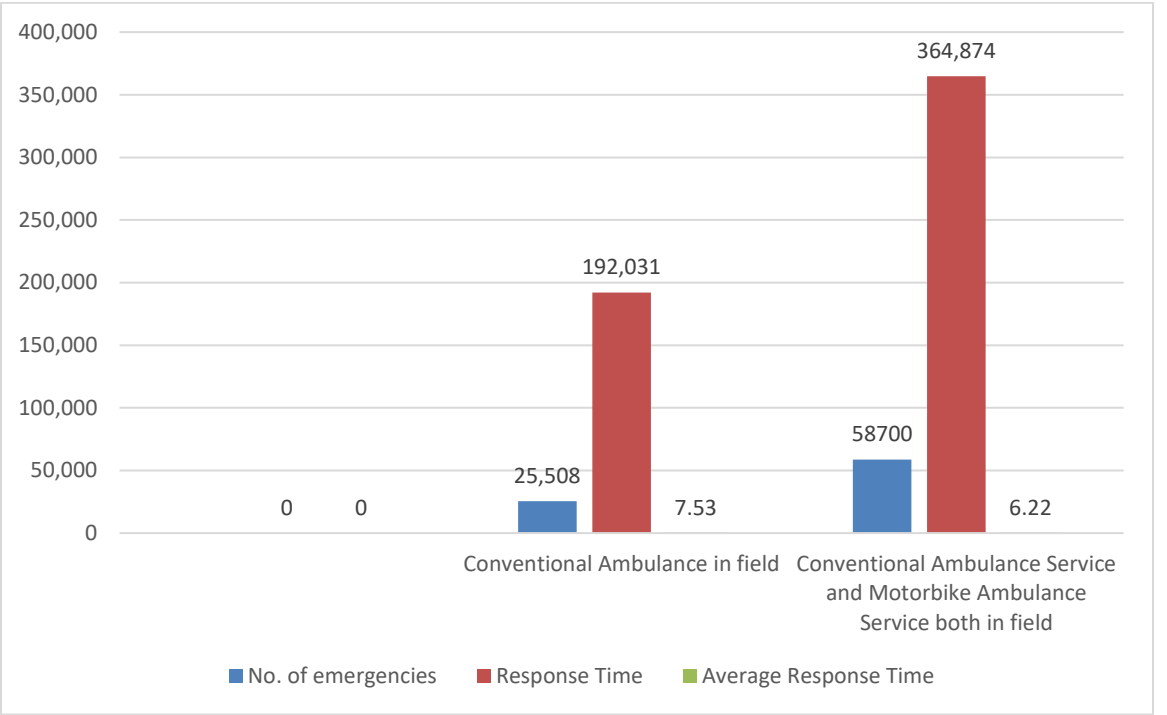
Sr. No.	Aspect	Without Condition	With Condition
		2017.	2019.
2.	Economy achieved in provision of emergency services after the initiative.	Average running cost of ambulance before initiative year i.e. 2017.	Average running cost of MAS after initiative year i.e. 2019.
3.	Expansion in scope/nature of emergency services after MAS.	Scope/nature of emergencies dealt one year before initiative year i.e. 2017.	Scope/nature of emergencies dealt one year after initiative year i.e. 2019.
4.	Overall impact on service delivery and safety resulting from MAS initiative.		Feedback of citizens about service delivery and safety (Year 2022).

4. Findings

4.1 Reduction in response time and consequent impact on service delivery:

Year	Condition	Ambulance Type	No. of emergencies (entries)	Response Time (in minutes)	Average Response Time (in minutes)
2017	Motorbike Ambulance Service not in place	Conventional Ambulance in field	25,508	192,031	7.53
2019	Motorbike Ambulance Service in place	Conventional Ambulance Service and Motorbike Ambulance Service both in field	27,864 + 30,836 = 58,700	364,874	6.22
Average response time of Conventional Ambulance Service during year 2019 was 7.40 (206,206 / 27,864)					
Average response time of Motorbike Ambulance Service during year 2019 was 5.15 (158,668 / 30,836)					

The graphical representation of data is as under:

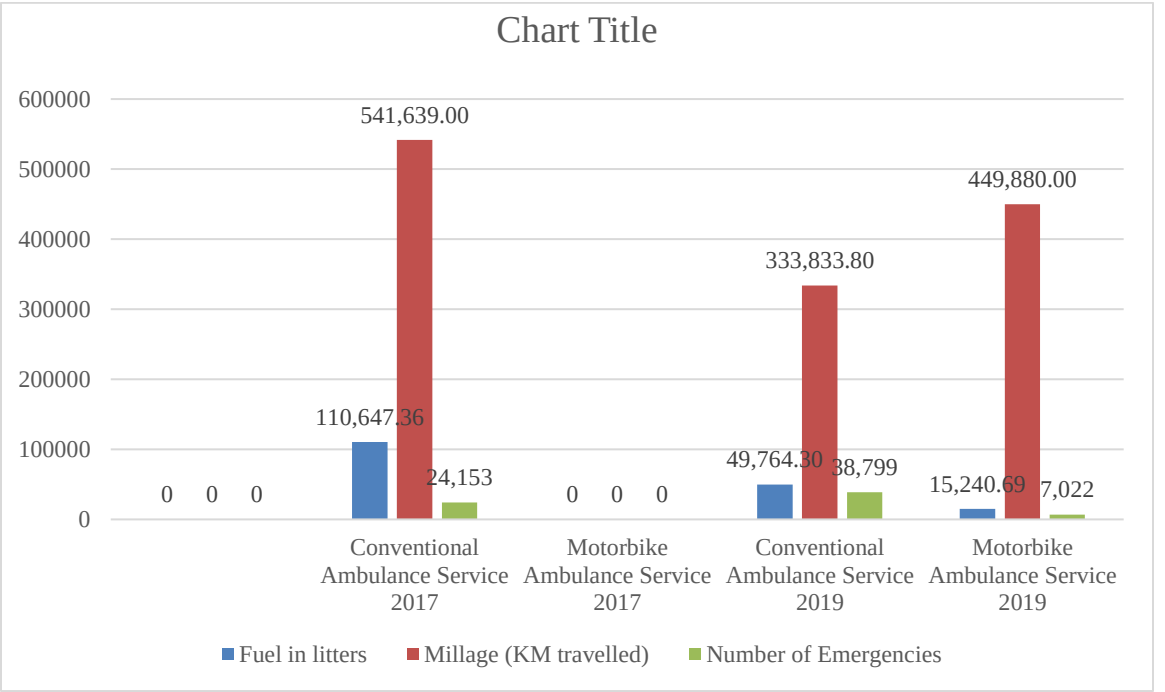


- **Condition with:** Tests / analysis showed 6.22 average response time in year 2019 after the introduction of the initiative.
- **Condition without:** Response time of Conventional Ambulance Services was 7.53 during 2017 i.e. before the initiative.
- **Impact:** The average response time was reduced in year 2019 by 1.31 minutes after the introduction of Motorbike Ambulance Service. Moreover, average response time of Conventional Ambulance Services during year 2019 was 7.40 minutes, while average response time of Motorbike Ambulance Services during year 2019 was 5.15 minutes.

4.2 Economy achieved in provision of emergency services after the initiative:

Service	Year	Fuel consumed (liters)	Millage (KMs)	Number of Emergencies
Conventional Ambulance Service	2017	110,647	541,639	24,153
Motorbike Ambulance Service	2017			Not in place
Total		**110,647**	**541,639**	**24,153**
Conventional Ambulance Service	2019	49,764	333,834	38,799
Motorbike Ambulance Service	2019	15,241	449,880	7,022
Total		**65,005**	**783,714**	**45,821**
Reduction in fuel consumption in 2019 as compared to 2017		45,642 liters (110,647-65,005)		
Increase in millage (KM travelled) in 2019 as compared to 2017		242,075 KMs (783,714-541,639)		
Increase in number of emergencies dealt in 2019 as compared to 2017		21,668 emergencies (45,821-24,153)		
Share of Motorbike Ambulance Service	2019	23% (15,241/65,005)	57% (449,880/783,714)	15% (7,022/45,821)
Share of Conventional Ambulance Service	2019	77% (49,764/65,005)	43% (333,834/783,714)	85% (38,799/45,821)

Graphical representation of the data is as under:



- **Condition with:** Tests / analysis showed that 65,005 liters of fuel was consumed, 783,714 KM travelled and 45,821 number of emergencies were dealt in year 2019 after the introduction of the initiative.
- **Condition without:** During year 2017, conventional ambulances consumed 110,647 liters of fuel and travelled 541,639 KM. Further in year 2017 conventional ambulances dealt 24,153 number of emergencies.
- **Impact:** Results showed that with introduction of Motorbike Ambulance Service in year 2019, Rescue Emergency Service 1122 Rawalpindi, not only achieved economy in fuel but also registered significant improvement in efficiency and effectiveness as compared to base year i.e. 2017 as under:

  i. 41% less fuel was consumed
  ii. 45% more millage covered / travelled.
  iii. 89.71% increase in number of emergencies dealt in provision of emergency services.

4.3 Expansion in scope/nature of emergency services after Motorbike Ambulance Service:

Service	Year	Nature of Emergencies											
		Bomb Blast / Explosion	Building Collapses	Crime	Cylinder Blast / Explosion	Drowning	Fall from Height	Fire	Train Accident	Medical	Misc.	RTA	Total
Conventional Ambulance Service	2017	16	6	760	1	16	-	898	-	12,085	1,855	8,516	**24,153**
Motorbike Ambulance Service	2017	-	-	-	-	-	-	-	-	-	-	-	-
Conventional Ambulance Service	2019	25	19	1,093	-	31	1,446	1,206	-	20,829	2,292	11,858	**38,799**
Motorbike Ambulance Service	2019	-	-	100	1	1	248	15	-	2,571	252	3,834	**7,022**

- **Condition with:** Nature / category of emergencies dealt after introducing Motorbike Ambulance Service remained the same.
- **Condition without:** During the year 2017, 11 categories of emergencies were being dealt by Rescue 1122 Rawalpindi.
- **Impact:** No impact. Scope / nature of emergency services before and after introduction of Motorbike Ambulance Service remained same

4.4 Overall impact on service delivery and safety resulting from Motorbike Ambulance Service initiative:

A survey was conducted in order to get the feedback of citizens about service delivery and sense of safety achieved after the introduction of the initiative. For this purpose, a survey questionnaire was designed to get the feedback of citizens who had met an emergency in the year 2022 which was

dealt by Motorbike Ambulance Service. A systematic sample of 200 entries (every 45th entry) of emergencies was selected from the data of 9,026 entries compiled by DEO 1122 Rawalpindi. The beneficiaries of the Service were interviewed telephonically for getting the feedback. Details are as under:

Total calls made	Calls not received	Call received but was dropped	Calls received but recipient was not victim	Calls 'not responding'	Calls received & answered
200	72	20	21	37	50

The following questions were asked from the 50 beneficiaries who had received the calls and answered the questions.

Questions	Q.1		Q.2	Q.3	Q.4	Q.5		Q.6		Q.7		
	Was call received by Rescue 1122 promptly and understood your problem or not?		What was the approx. response time of Motorbike Ambulance?	Was emergency kit available in the Motorbike Ambulance?	Was your emergency / problem resolved/ addressed?	Has the service quality and safety of Rescue 1122 increased after the introduction of Motorbike Ambulance Service?		Were you satisfied with Motorbike Ambulance Emergency Rescue Service?		If satisfied, please rate the service		
										Very satisfied	satisfied	Partially satisfied
	Yes	No	Average response time of all responses combined was 5.06 minutes	Yes	Yes	Yes	No	Yes	No	-	-	-
Responses	48	2		50	50	49	1	49	1	32	12	6
Response %	96 %	4 %	-	100 %	100 %	98 %	2 %	98 %	2 %	64%	24 %	12%

The results of the survey indicate that out of selected sample population, the Motorbike Ambulance Service had resolved/addressed 100 % emergencies with a 98% satisfaction towards quality of service and safety aspects. Moreover, the average response time for attending the emergencies was 5.06 minutes per emergency. The results also indicate that 64% of beneficiaries were 'very satisfied' with the service, while 24 % were 'satisfied'.

5. Conclusion

The introduction of the Motorbike Ambulance Service initiative in 2019 in Rawalpindi District aimed to provide a swift and timely response to emergencies,

surpassing the performance of the conventional ambulance service. This initiative resulted into reduction of the average emergency response time by 1.31 minutes during the year 2019 as compared to 2017 as analyzed by the audit team from the data provided by Rescue 1122.

The analysis of the data also revealed that in 2019 the Motorbike Ambulance Service shared only 15% of the total emergencies in Rawalpindi District, which appears to be on a lower side given the anticipated advantages associated with the initiatives. However, the initiative demonstrated significant accomplishments in terms of economizing fuel consumption and enhancing efficiency in mileage (kilometers traveled) compared to the baseline year of 2017 when the initiative was not in place. Furthermore, the survey carried out by the audit team showed that the initiative successfully installed a sense of safety among the general population and contributed to the overall outreach of the Service. Nonetheless, there is a need to establish a data quality assurance mechanism to ensure the internal consistency and completeness of recorded data, as data accuracy is crucial for accurately monitoring and evaluating the effectiveness of the initiative in future years for reforming the Service and introducing new dimensions for better service delivery.

DGA DS (North)

Impact Audit of Water Distribution Network for Rawalpindi and Chaklala Cantonment Boards based on Khanpur Dam Water Source Phase-II

4.1 Introduction

Impact Audit gauges outcomes attributable to an initiative, program or project. It focuses on ultimate outcomes or wider impact as envisaged through the project. This audit has been conducted as a new initiative as per the direction of the Auditor-General of Pakistan for ushering in a new era of audit which focuses on analyzing the real time benefit of a government initiative for the people.

4.2 Background

Citizens of Islamabad and Rawalpindi up to the 1980s were being provided with potable water from Rawal Dam, Simly Dam, tube wells & self-bored arrangement in houses. Due to increase in population, decrease in rainfall and depleting underground water level in the area, acute water shortage was faced during late 1980s and early 1990s. In order to solve the issue, Government decided to provide potable water to inhabitants of twin cities from Khan Pur Dam (22,300 MG storage capacity). Federal Government under the CDA, through Japan International Cooperation Agency (JICA) launched a mega project costing Rs. 6,828.000 million, which comprises water from Khan Pur Dam to Sangjani Raw Water Reservoir (61 MGD capacity with workable capacity of 51 MGD), construction of treatment plant at Sangjani and laying bulk supply pipelines upto Tomar Reservoir near Kashmir Highway / Golra More. The project was completed by late 1999. CDA, RDA & RCB had to lay down their own distribution network as per following portion decided by ECNEC.

CDA	17.0 MGD (33%)
RDA	14.4 MGD (28.2%)
RCB	19.6 MGD (38.2%)

In order to cope with the shortage of water in RCB & Chaklala area (including Defence Services Establishments), Federal Government decided to provide relevant portion of 19.6 MGD water to the inhabitants by sourcing the Project out of PSDP valuing Rs. 1,570.500 million in three phases. Phase-I (2001) and Phase-II (2002-2007) have been executed by HQ Engineers of a Corps as deposit work while Phase-III is being executed by RCB which is still under progress.

4.3 Role of Project

The prime role of the project is to provide adequate access to clean drinking water to the residents of Rawalpindi and Chaklala Cantonments. After completion of the project, almost 400,000 people of Cantonments will get access to clean drinking water in line with the social sector development policies of the Federal Government, aimed at improving the access to clean drinking water.

At present, the residents of these areas are fed by the tube wells, which dry up during summers. Water supply from Khanpur Dam source will ensure continued water fed by gravity and thus saving huge amount spent on electric energy to run the tube wells.

4.4 Overview

Phase-I:

CDWP sanctioned Rs. 180.000 million for Phase-I, entailing the installation of a 4.75 km-long, 1200 mm pipeline to convey Khanpur water to Westridge Rawalpindi Cantonment reservoirs, including connections to reservoirs on Valley Road, Seham, and Rommi Road. Completed in July, 2001.

Table-1

1.	**Approved Cost**	Rs. 180.000 million
2.	**Start date**	February, 2001
3.	**Completion**	July, 2001, completed within the time limit

	date	
4.	**Components**	➢ Trunk Line 48" 4.75 KM ➢ Underground Water Tanks 20,000 cap with 03 Nos ➢ pumping facility
5.	**Saving**	Rs. 10.000 million
6.	**Areas Served**	North West of Cantonment: Westridge-I, II & III. Lanes 1 to 7 along Peshawar Road, Allahabad, Aliabad, Naseerabad and Qasimabad
7.	**Status**	Operational

Source: (PC-I of the Project)

Phase-II:

Approved by Executive Committee of the National Economic Council (ECNEC) at a cost of Rs.510.000 million, Phase-II focused on enhancing water infrastructure in Rawalpindi Cantonment. It involved the construction of additional storage at Misrial, creation of a water pipeline "loop" throughout the cantonment, rehabilitation of existing systems, and the connection of water from Rawal Lake to the loop.

Table-2

1.	**Approved Cost**	Rs. 510.000 million
2.	**Start date**	March, 2002
3.	**Completion date (PC-I)**	31.02.2004
4.	**Completion date (Actual)**	31.10.2007
5.	**Savings**	Rs. 13.585 million
6.	**Components**	• 8" to 48" Lines - 35 KM • Underground Water Tanks 1.5 MG cap-01 No • Overhead Reservoir 0.2 MG cap-02 Nos
7.	**Areas Served**	South East & South West of Cantonment: RCB Area: Dhok Syedan, Kamalabad Road, Asteroid Misrial Road, Allama Iqbal Colony, Tench Bhatta, CCB Area: Mughalabad and Chamanabad Tahli Mohri, Dheri Hassanabad, Lalazar, Tulsa Road, Sher Zaman Colony

		and Aslam Shaheed Road
8.	**Status**	Operational

Source: (PC-I of the Project)

Phase-III:

Phase-III addressed water scarcity in areas like Gowal Mandi, Marir Hassan, Dhoke Charagh Din, Jhanda Chichi, Chaklala Scheme-II, Ghazi Abad Colony, Chak Madad, and Nothia. These regions were heavily reliant on tube wells, prone to yield depletion during drought conditions, received provision for Khanpur water, ensuring a more reliable water supply.

Table-3

1.	**Estimated Cost**	Original
		Rs. 699.500 million
2.	**Start date**	October, 2010
3.	**Completion date**	October, 2012 (As per initial approved PC-I)
4.	**Completion date**	24.08.2019 (As per revised approved PC-I)
5.	**Completion date**	Physical project has been completed
6.	**Components (as per revised PC-I)**	• Overhead Water Tanks - 07 Nos • Combo Tank - 01 No • Underground Water Tanks - 03 Nos • Mild Steel pipe lines - 14.742 KM • Polythlene pipe lines - 7.80 KM • Water Meter - 4,802 Nos • Flow Meter - 01 No • Const of RCC Nullah (300 Feet) - 01 No
7.	**Areas Served**	Marrir Hassan, Jhanda Chichi, Dhoke Chiraghdin, Chaklala Scheme-III, Gawalmandi , Saddar area, Dhoke Kashmirian
8.	**Progress**	Physical Progress = 100%, Financial Progress = 98%

Source: (PC-I of the Project)

4.5 Project benefits and analysis:

The income from the project as compared to the cost of the project is negligible as RCB provides water to its residents on subsidized rates. As a result, a total of 400,000 people of Rawalpindi / Chaklala Cantonments will get clean drinking water, which will fulfill one of the most important basic needs and will contribute towards a healthy living.

As per approved PC-1, the executing agency has indicated projected population vs daily demand. Following table illustrates year-wise growth in population vs demand.

4.6 Projected Population and total average daily demand

Table-4

Population				Water Demand at 30 GPCD
Year	**RCB (Growth rate 3.5%)**	**Army Personnel**	**Total**	**In Million Gallons Per Day**
2016	1,166,152	200,000	1,366,152	40.98
2017	1,206,967	200,000	1,406,967	42.20
2018	1,249,211	200,000	1,449,211	43.47
2019	1,292,933	200,000	1,492,933	44.78
2020	1,338,186	200,000	1,538,186	46.14
2021	1,385,022	200,000	1,585,022	47.55
2022	1,433,498	200,000	1,633,498	49.00
2023	1,483,671	200,000	1,683,671	50.51
2024	1,535,599	200,000	1,735,599	52.06
2025	1,589,345	200,000	1,789,345	53.68

Source: (PC-I of the Project)

4.7 Source and water availability Million Gallon Daily (MGD) during next 5, 10, 20 years

Table-5

Year	Tube Well Supply	Rawal Lake	KD Water	Total
2016	2.00	0.03	9.00	**11.03**

2016-20	1.90 (@5% depletion in water table per five years	0.03	19.482	**21.412**
2021-30	1.80 (@10% depletion in water table per five years	0.03	19.482	**21.312**
2031-50	1.60 (@10% depletion in water table per five years	0.03	19.482	**21.312**

Source: (Reports of Cantonment Boards)

4.8 SWOT analysis of the project

The Strength, Weakness, Opportunity and Threat analysis (SWOT) of the project has been carried out and it has been concluded as under:

Table-6

Internal	**STRENGTH:** • Government's VISION 2025 brings focus on social development • The project is financed at a 90:10 ratio between the Federal Government and the Rawalpindi & Chaklala Cantonment Boards • Major improvement in infrastructure of the area • Provision of potable water to the population of the area	**WEAKNESS:** • Ill-planned phases • Non-provision of secondary Treatment Plant • Massive population growth and unplanned urbanization • Inadequate and late release of funds • Operation & Maintenance issues
External	**OPPORTUNITY** • Catalyst for the greater socio-economic uplift of the area • Accelerate the economic activities • Employment generation • Better standard of living & quality of life • Better quality of services • Economic growth in every sector • Promote development of allied facilities and services in the private sector	**THREAT** • Late or low precipitation • Non-replacement of rusted and ruptured pipes • Non-provision of adequate recurring budget for operations & maintenance • Long term sustainability of the facility • Non-billing/non-deposit of utility bills by the consumers • Absence of proper allied infrastructural framework • Water theft

4.9 Scope and Methodology

a. Scope

The scope of the Impact Audit was to gauge the causal relationship between project activities and wider impact of the project on the residents of both Cantonments Boards. Model showing logical follow up of input, activities, output, outcomes and impact is mentioned below:

Table-7

Inputs	Activities	Output	Outcomes	Impact
• Project Funds • PC-I guidelines • Injection of resources Rs.880.500 million • Acquisition of land measuring 7.22 Kanal • Hiring of skilled and unskilled labor • Procurement of material	• Surveys • Data collection • Awareness & publicity • Coordination with other agencies • Procurement / tendering • Execution of works	• A total of 7 overhead (OH) water tanks • A total of 3 underground (UG) water tanks • Combined UG / OH water tank of 0.5 MG -01 No • Mild Steel Pipeline network 14,742 meters • Polyethylene pipelines network 7,800 meter • Water meters 4,803 • Flow meter – 01	• Provision of water reservoirs and distributio n network for various water starved areas of RCB/CCB	• Living standards improvement • Increased income and revenues • Filtration plants • Improved health and wellbeing

The scope of the audit focuses on the last column i.e. Impact. The analysis focuses on authorities, inhabitants (residents and commercial) and tourists. The audit focuses on condition with and condition without, for both Treatment Group and Control Group.

b. Methodology

Audit methodology includes data collection, determining audit objectives and criteria, analyzing available records, interviewing target group, stakeholders and residents.

Impact Indicators

Table-8

Economic Indicators		Social Indicators	
Direct Indicators	**Proxy Indicators**	**Direct Indicators**	**Proxy Indicators**
➢ Supply of water ➢ Construction of overhead and underground water tanks	➢ Provision of basic facilities ➢ Water quantity supplied ➢ Increase In water connections ➢ Water tanks underground and overhead ➢ Potable water supply ➢ Gravity supply ➢ Regular supply of water ➢ Increase in timing of supply of water ➢ Sustainability	➢ Social impact due to water Supply ➢ Social Equity ➢ Environmental impact ➢ Water quality ➢ Improved public health ➢ Infrastructure reliability ➢ Community perception ➢ Resilience to climate change	➢ Improvement in health of public ➢ Property value increase ➢ Monthly expenditure decrease ➢ Business growth ➢ Increase in storage of water

a) Unit of Analysis:

Beneficiaries (residents, traders, doctors) were taken as unit of analysis as scheme was planned and implemented with respect to beneficiaries. In this regard, it was decided that beneficiaries will be interviewed at random basis and area will be physically inspected to observe the project improvements.

b) Estimation of Sample Size:

Four types of survey were conducted to assess the impact of water distribution project on residents of RCB & CCB. A total of 200 surveys were conducted.

c) Random Selection of Beneficiaries:

Though beneficiaries were taken as the unit of analysis for selection of sample, all the beneficiaries could not be covered. Therefore,

in order to get data from beneficiaries, certain locations were visited for collection of data.

4.10 Data Analysis and Findings

4.10.1 General Impact:

General impact includes visible changes / physical improvements, enhanced access to clean water, promoting public health and fostering economic development in communities.

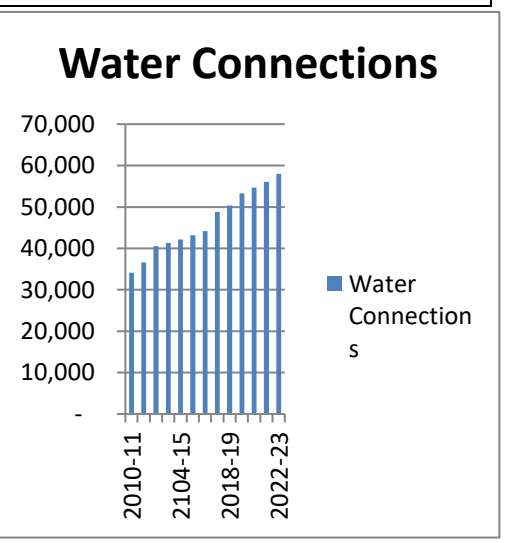
(b) Water Connections:

After completion of water distribution network RCB & CCB based on Khanpur Dam source (Phase-l, ll, lll), the water connections to the residents of both Cantonments have increased.

Table-9

Sr No	Financial Year	Water Connections
1	2010-11	34,146
2	2011-12	36,604
3	2012-13	40,571
4	2013-14	41,328
5	2104-15	42,166
6	2015-16	43,135
7	2016-17	44,171
8	2017-18	48,792
9	2018-19	50,323
10	2019-20	53,271
11	2020-21	54,687
12	2021-22	56,094
13	2022-23	57,995

Source: (Reports of Cantonment Boards)

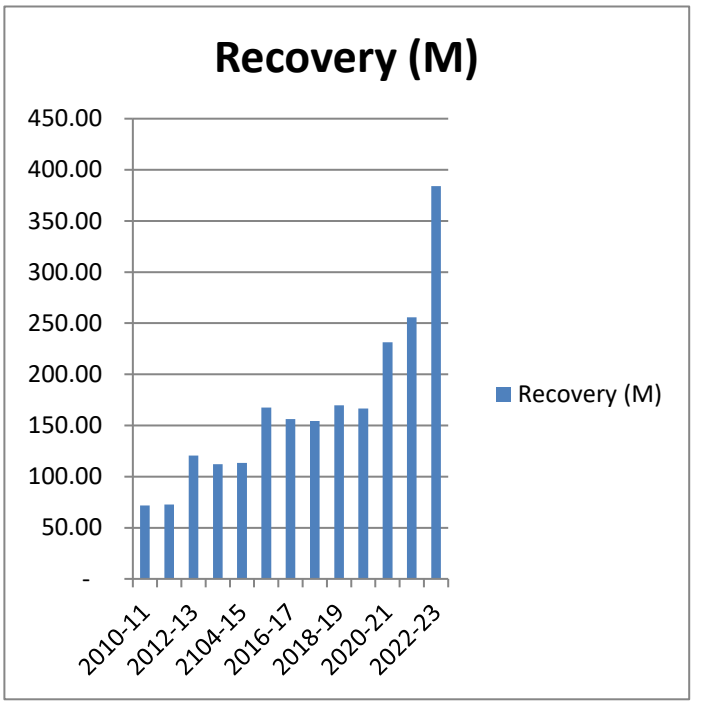


Revenue:

Revenue from different heads relating to the project was gathered from the authority. As per data, the revenue of the authority increased every year. The latest position is as under:

Table-10

Sr No	Financial Year	Recovery Rs. million
1.	2010-11	71.76
2.	2011-12	72.82
3.	2012-13	120.50
4.	2013-14	112.12
5.	2104-15	113.45
6.	2015-16	167.38
7.	2016-17	156.37
8.	2017-18	154.28
9.	2018-19	169.79
10.	2019-20	166.60
11.	2020-21	231.49
12.	2021-22	255.76
13.	2022-23	383.98



Source: (Reports of Cantonment Boards)

d) Capacity Increase:

Overall Capacity in Million Gallon Daily (MGD)

Table-11

Cantonment	Phase-l	Phase-ll	Phase-lll	%
Rawalpindi	N/A	16	50	68%
Chaklala	N/A	4.12	25	84%

Source: (Reports of Cantonment Boards)

Storage Capacity

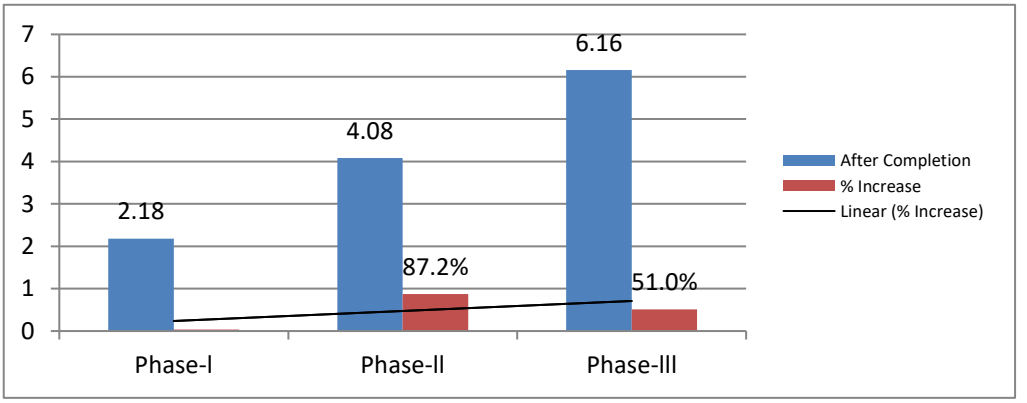
Table-12

Description	Before	After Completion	Addition	% Increase
Phase-l	2.1	2.18	0.08	3.8%

Phase-ll	2.18	4.08	1.9	87.2%
Phase-lll	4.08	6.16	2.08	51.0%

Source: (Reports of Cantonment Boards)

Storage capacity (MGD):



Source: (Reports of CBs)

4.10.2 Project Impact:

Effectiveness

It was originally planned that daily water supply volume would be distributed at a ratio of one-third to Islamabad, two-third to Rawalpindi respectively. The current daily water supply volume falls below targets set at the planning phase, target was provision of 19.6 MGD but currently it is receiving just 11 MGD. This poor performance is linked to reduced water volume at the Khanpur dam due to drought, which has made the supply of purified water production difficult at the forecasted rate for the Khanpur filtration plant. Furthermore, extension of water pipes in the areas of Rawalpindi serviced by RCB and CCB was delayed. In addition, due to delayed rainfall, discussions are being held between RCB and WASA to determine how water will be distributed.

Daily water supplying hours vary by region. In Islamabad, water is available for approximately 1-2 hours. In RCB and WASA-controlled areas, water is available for a minimum of 32-45 minutes and four hours respectively. Current daily water volume stands at just 40% of values

determined at the project planning stage, the reason for the problem being the drought-induced water shortage at Khanpur Dam, (a situation which is also prevalent at Simly Dam). Given that secure water source is so crucial to the success of the project, it is clear that certain factors were not given sufficient consideration at the planning phase, i.e. estimates of the amount of water that could be drawn from Khanpur Dam and geographical conditions for the construction of reservoir that would ensure reliable water sources, among others.

As for the quality of water supplied, according to the water quality department of the CDA, water is distributed to end users only after testing at each purification and distribution facility based on government standards. Furthermore, in response to poor water quality due to rain and waste water entering the pipes through the distal ends due to damage caused by deterioration, the CDA conducts daily random sampling of water quality at the distal ends and proceeds with repairs where necessary. The frequency of testing and repairs is, however, far from sufficient. According to the CDA, most people utilize mineral water or boiled water for drinking, using the water supplied by the waterworks systems for washing, cooking, and the other such activities.

Impact on Society

To assess the impact of the project on society, a questionnaire survey was shared with local residents, being the major beneficiaries of the project. The survey was carried out in the residential areas of Rawalpindi under the jurisdiction of the RCB & CCB. Based on advice offered by the RCB, the area selected for the survey was one that had been supplied with water from wells and jointly owned water tanks prior to receiving water supply from the project. In the absence of resident registries and other materials critical to the sampling process, the survey was carried out with the goal of a sample of 200 residents. As for the actual process, a number of researchers paid random visits to homes in the designated areas and conducted interviews with the residents over a specified period (10 days), attaining a total of 190 completed questionnaires. The purpose was to investigate any changes in water

supply before and after project-assisted water supply was instituted, as well as any changes in the daily lives of the residents. The average age of those surveyed was 38-60 years. Water was available for an average of 30-60 minutes per day at the time of the survey, indicating that the minimum timeframe set by the RCB was being met.

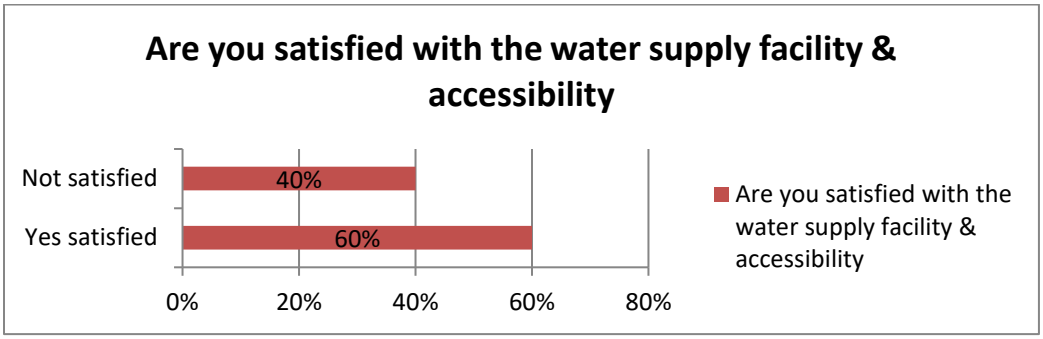
The survey found that the water was used for washing, bathing, and drinking/cooking in that order; most drinking water needs were met by purchased mineral water or from filtration plants. As for changes in water supply and pressure, 60% and 74% of respondents respectively noted that water volume and pressure was not according to plan. The questionnaire indicated that residents were paying a monthly average of Rs.200 to Rs.1000 more than they had paid previously. Most respondents (60%) reported, however, that overall they were happy with the water service provided.

The questionnaire also inquired about changes in daily habits, i.e. the frequency with which respondents washed hands, washed dishes, bathed, washed clothes, and cleaned. Most residents answered that no changes had occurred. No changes were reported in the instance of outbreak of waterborne diseases such as gastrointestinal disorders and parasites. However, the short period of time, during which the water was actually available limited the ability of the residents to obtain safe water from the project. Similarly, a limited water supply makes it difficult to form an opinion on the quality of water.

Based on the results described above, including the fact that residents were happy with the results of the project. It was evaluated as having had a socially positive and beneficial impact. However, since the average time of water supply remains at 30-60 minutes, the same period as prior to project implementation, there have been many calls for water utility rates to be lowered. Also, without increasing the time of water supply, there can be no expectation for changes in daily habits or for decreased instance of waterborne disease. In light of these factors, important issues for future consideration include a more balanced utility fee system and making water available for longer periods of time.

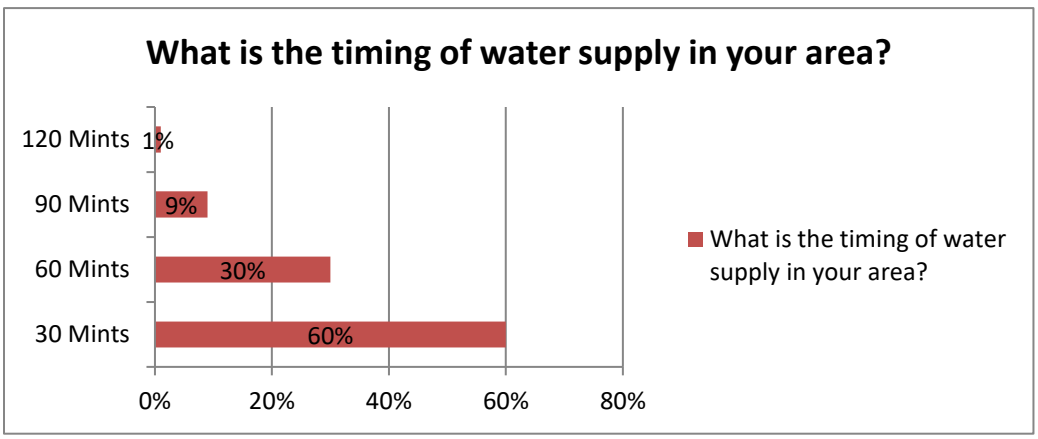
- **Water Accessibility**

Are you satisfied with the water supply facility & accessibility?



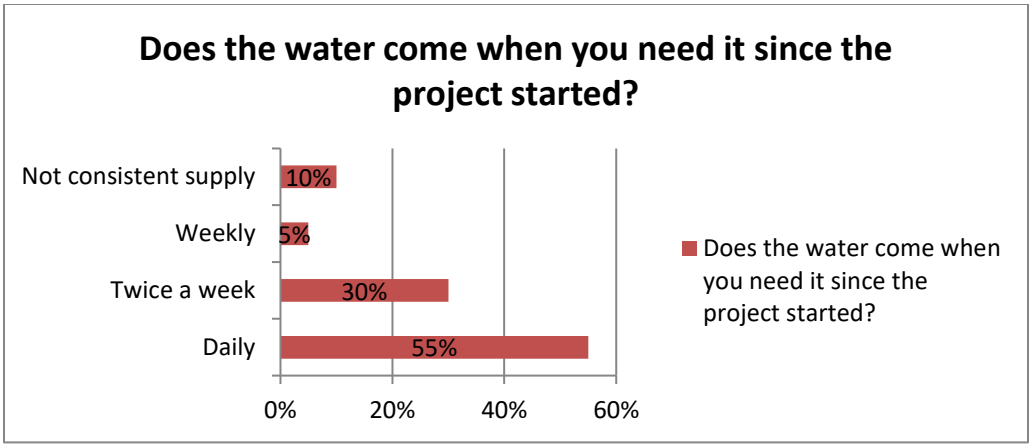
Source: (Survey by Audit)

- **Water timing**



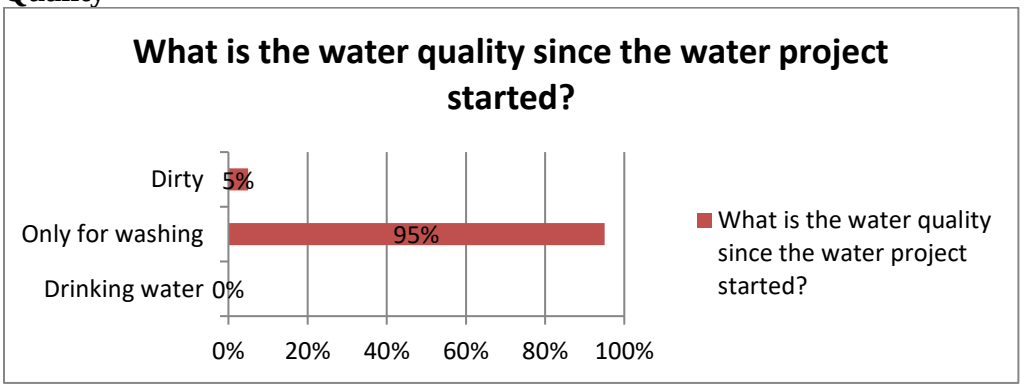
Source: (Survey by Audit)

- **Reliability of Supply**



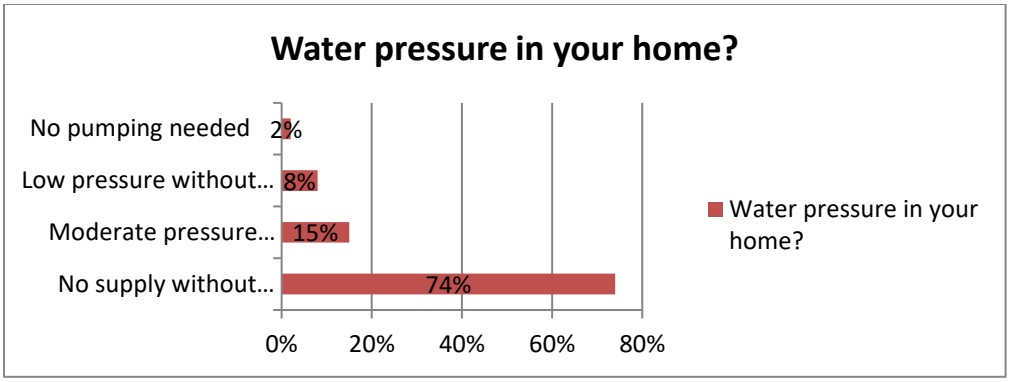
Source: (Survey by Audit)

Water Quality



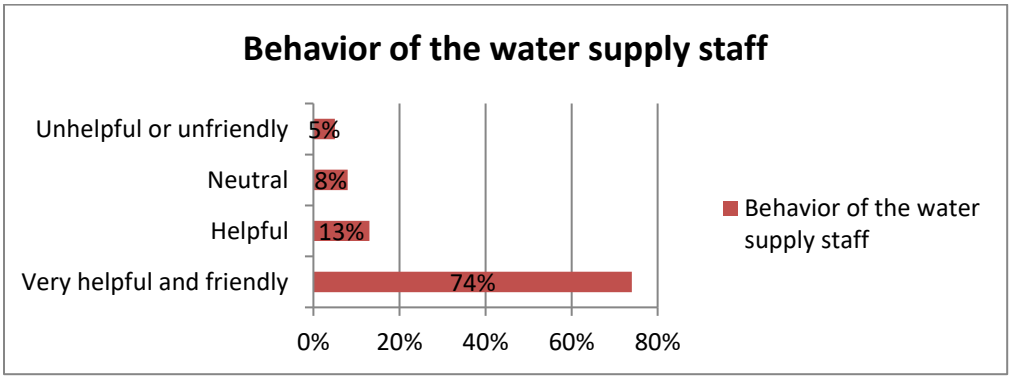
Source: (Survey by Audit)

- **Water Pressure:**



Source: (Survey by Audit)

- **Rate the behavior of the water supply staff**



Source: (Survey by Audit)

4.10.3 Economic Impact

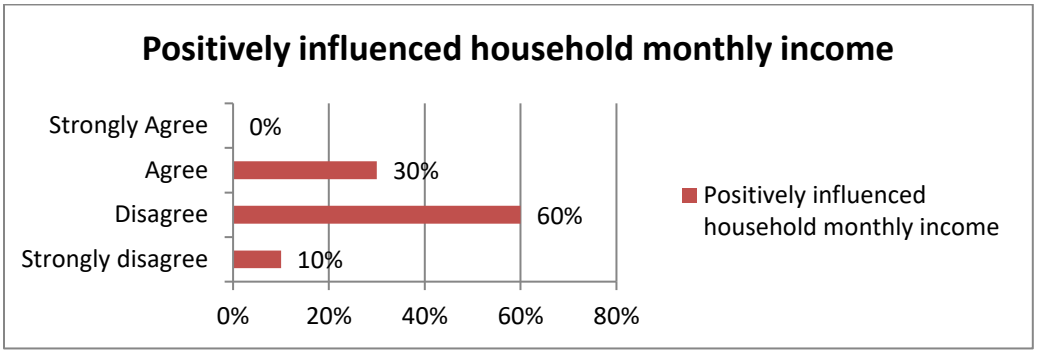
Water projects can have significant economic impact on society, both at the local and national level. The effects can be diverse and can influence various aspects of the economy. Here are some of the key economic impacts of water projects on society (sample questionnaire at Annexures-I).

- **Infrastructure Development:**

Water projects often involve the construction of infrastructure such as dams, pipelines, and water treatment facilities. This contributes to economic growth by creating jobs and stimulating demand for construction materials.

- **Income Generation and Growth:**

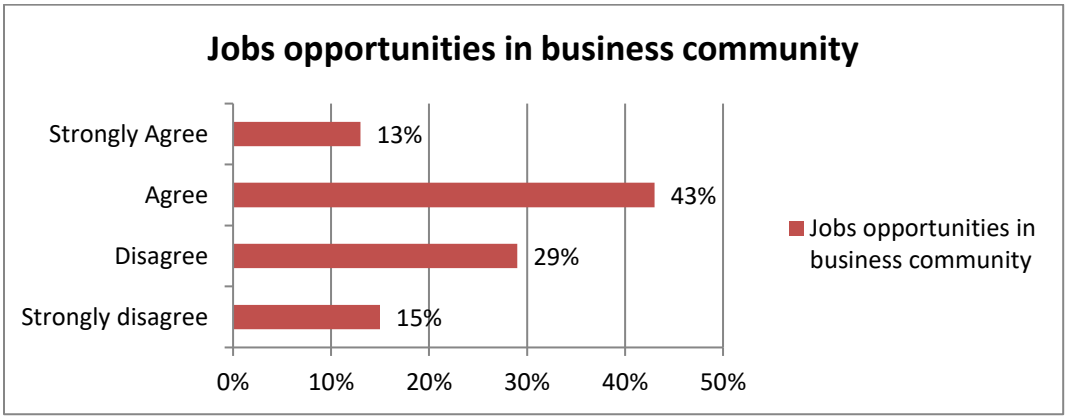
Improved water access can lead to income generation opportunities for communities. For example, access to water for irrigation can enable communities to engage in small-scale vegetable gardening and other income-generating activities.



Source: (Survey by Audit)

- **Employment Opportunities:**

The implementation and maintenance of water projects creates employment opportunities. This includes jobs related to project planning, construction, operation, and maintenance of water infrastructure.



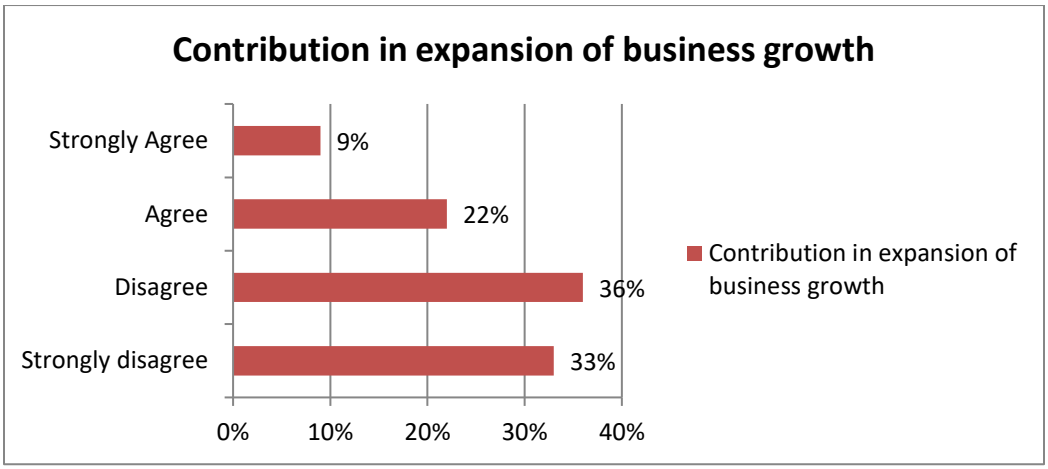
Source: (Survey by Audit)

- **Urban Development**

Reliable water supply is crucial for urban development. Water projects that provide sufficient water for households and businesses contribute to the growth of urban areas, attracting businesses and residents.

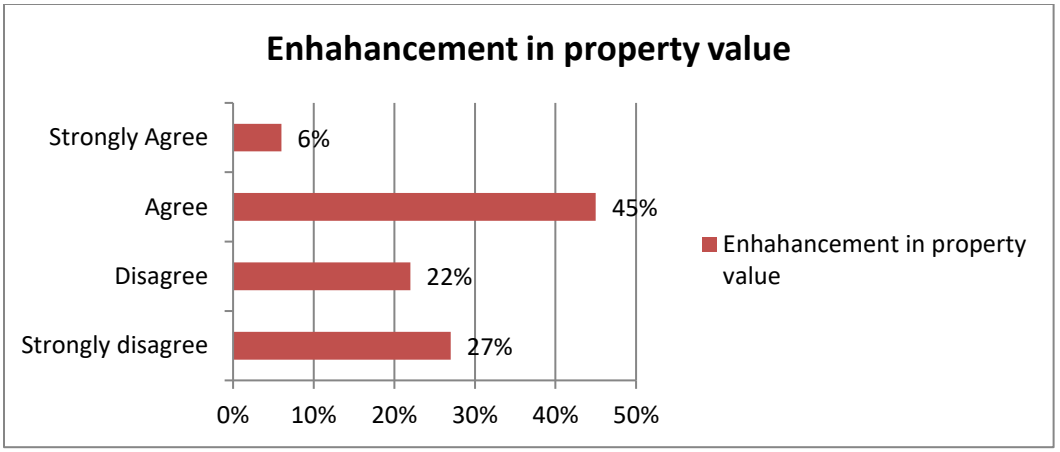
- **Business and industrial Growth**

Adequate water supply is essential for industrial processes and business growth in a society. Water projects that ensure a reliable water source for industries can foster industrial growth and attract investments. This, in turn, can lead to the creation of more jobs and increased economic activity.



Source: (Survey by Audit)

- **Increase in property valuation**



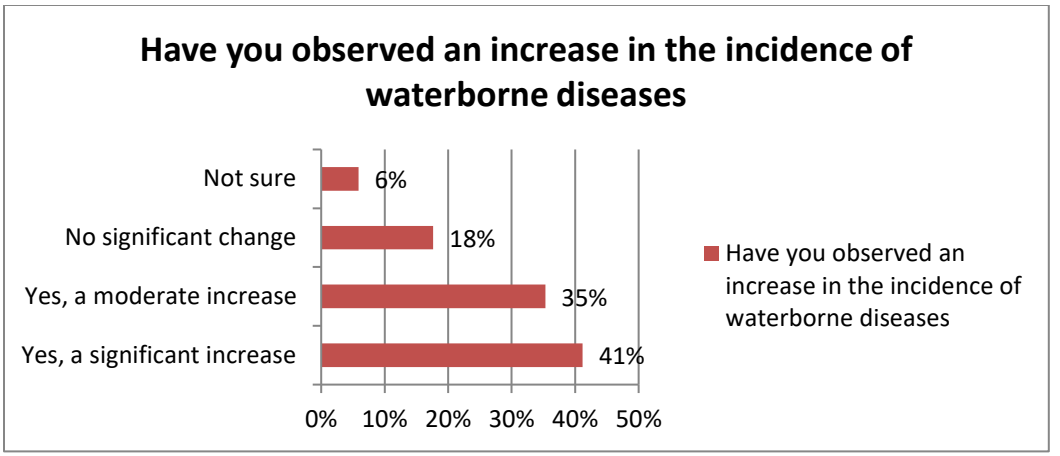
Source: (Survey by Audit)

4.10.4 Impact on the Health

In assessing the impact of a water distribution project on health, it is crucial to analyze both direct and indirect effects. The availability of clean and accessible water can lead to improved hygiene practices, reducing waterborne diseases and promoting overall health. Additionally, enhanced water supply may positively influence nutrition and sanitation, further contributing to community well-being. Monitoring indicators such as reduced instances of waterborne illnesses, improved child health, and enhanced community health awareness can provide valuable insights into the project's impact. It is essential to collaborate with health professionals, gather community feedback, and employ statistical data to comprehensively evaluate the positive health outcomes resulting from the water distribution initiative. For this study, total 25 surveys were conducted from doctors, health professionals and residents.

- **Disease Incidence**

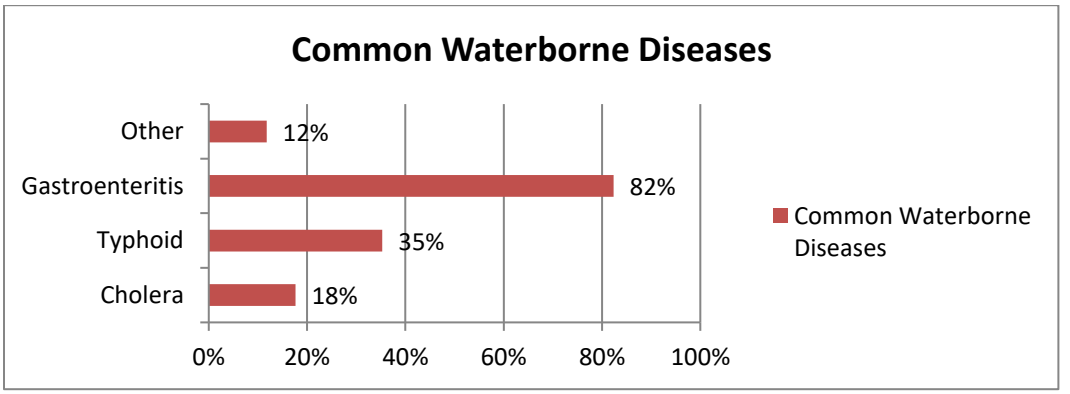
The survey focused on the observation of the health professionals and others regarding increase in the incidence of waterborne diseases, such as cholera, typhoid, or gastroenteritis, during their practice.



Source: (Survey by Audit)

- **Common Waterborne Diseases**

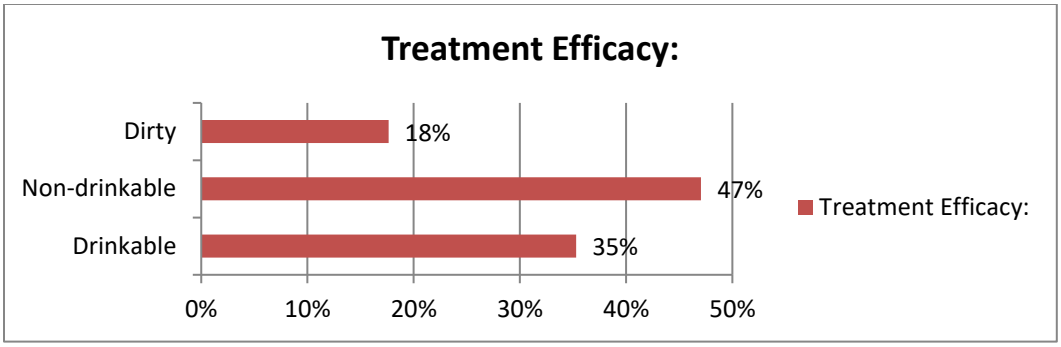
The survey focused on the observation of the health professionals and others regarding waterborne diseases most frequently diagnosed in patients from this community.



Source: (Survey by Audit)

- **Treatment Efficacy**

The survey focused on the observation of the health professionals and others regarding the quality of water in jurisdiction of Cantonment Board area.



Source: (Survey by Audit)

4.10.5 Impact on the Environment

According to the executing agency, no particular negative impact stemming from the project has been reported as of the present, though there were delays related to land acquisition and administrative procedures that required more time than anticipated in the original plan, which led to a longer implementation period.

4.10.6 Sustainability

- Non-achievement of targeted revenue provided in PC-I

Year	Total Income Forecasted as per PC-I	Actual Revenue as Per Cantt: Board Record	Achieved Goal %age
2007-08	224.49	41.19	18.32
2008-09	246.93	43.28	17.52
2009-10	271.63	53.53	19.71
2010-11	298.74	71.76	24.02
2011-12	328.49	72.83	22.17
2012-13	361	109.51	30.34
2013-14	397.1	112.12	28.25
2014-15	397.1	113.45	28.57
2015-16	397.1	167.38	42.15
2016-17	167.38	156.37	93.42
Total	**3089.96**	**941.42**	**30.47**

Source: (Annex-F to PC-I of Phase-II &III)

- Non-consideration of minimum water storage capacity of Khanpur Dam source resulting into less discharge of water in Left Canal Bank (LCB) affecting the per day requirement of CDA/RCB.

4.11 Issues and Observations

The major issues and observations pertaining to the execution of the project are summarized as under:

i. Executing agency has not yet submitted PC-IV and PC-V of Phase-I & II.
ii. The executing agency has furnished data of availability of water from WAPDA (as Khanpur dam operations and maintenance is under the administrative control of WAPDA). The data clearly depicts the depletion of water reservoir level against the reservoir's maximum level and also demonstrates the decreased runoff water.
iii. The delays in the execution of the project has mainly resulted due to poor planning. This was further compounded by inadequate and late release of funds to the project.
iv. The executing agency has focused on the storage of water by incorporating the component of overhead and underground water tanks instead of extension/renovation of distribution system.
v. Project consultancy (design & supervision) was awarded to a single consultant. However, the contractual timelines have already expired and the consultant is still working.
vi. It has also been observed that the quality of civil work is not monitored properly and no such record is being maintained.
vii. The residents of the tail-end of the network are often forced to water bore due to unreliable water supply. However, no data of boring was maintained by the authorities.
viii. Proper handing/taking of phase-I & II was not provided by the Cantonment. The record of the assets was not reconciled.
ix. Infrastructure was developed but still unused especially in Chaklala Cantonment Board.
x. Main lines were connected with the Khanpur supply lines but still further distribution facility in many areas has not been provided in CCB/RCB.

xi. Water supply meters installed at houses in some areas costing approximately Rs.35.000 million are not yet functional.

xii. Recovery is far less as compared to taxable houses and many illegal consumers are misusing water supply in both Cantonment Boards.

xiii. Proper replacement system to change the filters at filtration plants is not in place. During the study, no record was produced in both areas.

xiv. Utility bills of MES, SCO & CCB are pending, affecting the overall sustainability of the project.

xv. A reconciliation exercise between CDA and RCB has never been carried out. Resultantly, liabilities to be paid by RCB to CDA are still pending.

4.12 Recommendations/Way Forward

Following are the recommendations / way forward for smooth completion of the project:

1. Sponsoring Ministry (Ministry of Defence) should submit PC-IV and PC-V of the Phase-I & II to ascertain the benefit to the residents.
2. Sponsoring Ministry should start work on the preparation of the PC-IV of Phase-III immediately and submit it to the Planning Division.
3. In order to avoid audit objections, the management should immediately grant an Extension of Time (EoT) in the contractual agreement for civil work as well as for consultancy work.
4. Since project's main objective is to provide clean drinking water to the inhabitants of RCB and CCB, therefore, management should make all its efforts for the speedy execution of the project.
5. The Executing agency should make a proper plan to charge the domestic and commercial water tariff, for better sustainability of the facilities.
6. The Executing agency should devise a water supply management system with online booking of water meters, complaint lodging system and increasing the tariff as per covered area for sustainable operation of the facilities.
7. Pending liabilities must be cleared as early as possible with CDA.
8. Utility bills pending with MES, SCO and CCB may be recovered at the earliest.

4.13 Conclusion

It is difficult to assess the impact of the project, as the water supply is much below the target due to various reasons given above. At present, its output is less than 40% of the projected capacity. The main reason is that system of distribution of water through pipelines is not yet fully laid. Due to the absence of a fully functional distribution system, the level of optimum use of the dam water is still not achieved. These problems were not perceived at the time of the design of the project, and emerged after the completion of the project.

Since this project supplies water for drinking and other purposes, its purification process should be fully functional. However, as reported in the evaluation report, the frequency of its testing and repair is far from sufficient. Thus, its ability to positively impact public health in its coverage area remains compromised. It seems unlikely that large number of people, who have very low buying capacity, can use bottled water from the market. They use water for drinking, either by boiling it, or otherwise.

The provision of potable water through this dam has provided an important facility to the population of RCB/CCB. However, the people's lives have not changed significantly after the project. This is probably due to lack of effective social campaign on how to use water economically. The effective distribution of water from Khanpur Dam has the potential to bring about positive transformation in public health, economy, and community well-being. Continued efforts to manage water resources sustainably and addressing emerging challenges will be essential in ensuring a sustainable and prosperous future for the society.

DGA DS (South)

Impact Audit of Development of Fair and Uniform House Tax Parameters and their Implementation on Self-Occupied Residential Properties in Four CBs

1.1 Introduction

Impact Audit focuses on outcomes attributable to an initiative, program or project. It highlights ultimate outcomes or wider impact as envisaged through the project. This audit has been conducted as a new initiative as per the direction of the Auditor-General of Pakistan for ushering in a new era of audit which analyzes the real time benefit of a government initiative for the people.

Property tax stands as a pivotal revenue stream for Cantonment Boards (CBs) in Pakistan and it constitutes their significant financial component. The collective contribution from cantonment residents amounts to Rs. 9.00 billion, representing over 35% of the total tax revenue collected by CBs across diverse categories. This fiscal reliance on house tax underscores its critical role in sustaining the operational vitality of CBs. The substantial revenue from cantonment residents bolsters Boards' ability to finance essential services, infrastructure development, and community-oriented projects.

As a linchpin in the economic architecture of CBs, house tax fosters financial resilience, enabling the Boards to meet evolving challenges and invest in the well-being and progress of cantonment communities. This taxation mechanism not only reflects the fiscal robustness of CBs but also underscores the cooperative fiscal relationship between the Boards and the residents.

1.2 Background

A study had been conducted by the Headquarter Military Lands and Cantonments Department in the year 2022-23 in the light of various audit paras raised by Directorates General of Audit Defence Services (North & South) regarding anomalies in the assessment of House Tax.

The study found a huge variation and arbitrary discrimination in taxation on similar properties in the same vicinities in almost all CBs, which needed intervention and correction. The state of affairs was against justice, fair play, transparency, and uniformity to earn respect and goodwill of the cantonment residents.

The issue was also thoroughly discussed in the Directors' Conference of ML&C Department on 01.04.2022. Accordingly, ML&C department formulated the new policy i.e. 'Development of fair and uniform House Tax parameters and its implementation on all self-occupied residential properties in CBs'. The policy was introduced on 23.08.2022. The main objective behind the new policy was to apply uniform taxation on the residents of CBs. According to the new uniform taxation policy, ARV shall be fixed on the formula i.e. Annual Rental Value = Latest DC Rates + fixed cost of construction/20 along with a fixed percentage of rebate on ARV. Before the introduction and implementation of the new uniform taxation policy, ARV was fixed as per following method i.e. Cost of Land + Construction Cost (at that time) / 20 = ARV x a certain % of House Tax or Conservancy Tax as decided with the discretion of the Cantonment Boards. As a practice, the parameters for the calculation of ARV as well as House Tax were revised after every 2-3 years @ 10%, 15%, 20% or 30% as the case may be with the approval of the respective Boards. According to Para-8 of the Annexure of letter No.40/2/Budget/ML&C/79 dated 05.01.2001 issued by Ministry of Defence (ML&C Department) regarding guidelines for determination of fair annual value of buildings for levy of tax, the rates fixed for any category of a building would be reduced by 10% for each 10 years.

1.3 Role of Project

The intended role of the new policy was exhibition of justice, fair play, transparency and uniformity by the CBs in order to earn respect and goodwill of the cantonment residents. This was to be achieved through implementation of uniform taxation on the residential units in the jurisdiction of various Cantonment Boards. Prior to the introduction of

the policy, the residents of the CBs paid uneven house tax on similar properties in the same areas.

1.4 Overview

As per the new policy, CB Clifton is supposed to charge house tax equal to 12.5% and offer rebate of 60%. CBs Hyderabad and Quetta, to charge house tax equal to 6% and offer rebate of 60% and CB Karachi to charge tax equal to 5% and allow rebate of 67% on respective ARVs.

According to Para (iii) of CBR No.3.2 dated 26.09.2022 of Cantonment Board Clifton, the basic concept for the revision of assessments/ARVs was to reassess the under-assessed taxable units and not to burden already fairly assessed units. However, uniform tax policy has been applied on all the self-occupied houses/flats, which is unjustified. Consequently, the total tax after uniform taxation on self-occupied residential units has almost doubled as compared with the tax collection before the uniform taxation. This has resulted in increased tax burden on the public. Besides this, in the new taxation policy, no depreciation in cost of structure has been allowed on properties constructed in the last five years, which is unfair & unjustified as the houses constructed five years ago had lower cost of land and cost of construction as compared with the current market price. Though provision for the rebate has been given in the new policy, but this is not fairly justified and cannot offset the impact of increase in cost of construction during the last five and more years. The ratio of rebate and inflation is totally disproportionate. Furthermore, the cost of construction may also vary on quality of construction like best, standard and sub-standard/poor. Furthermore, other reduction/depreciation slab on cost of structure was allowed like 5%, 7.5%, 10% etc., which was unjustified.

1.5 Scope and Methodology

a. Scope

The scope of the Impact Audit was to assess the impact of the new taxation vis-à-vis development of fair and uniform house tax parameters

and its implementation on all self-occupied residential properties in the jurisdiction of 04 Cantonment Boards i.e. Karachi, Clifton, Hyderabad & Quetta. In addition to this, another objective of the new taxation policy was that the civic bodies such as Cantonment Boards must exhibit justice, fairplay, transparency and uniformity to earn respect and goodwill of the cantonment residents. Therefore, the Impact Audit also assessed the attainment of the same.

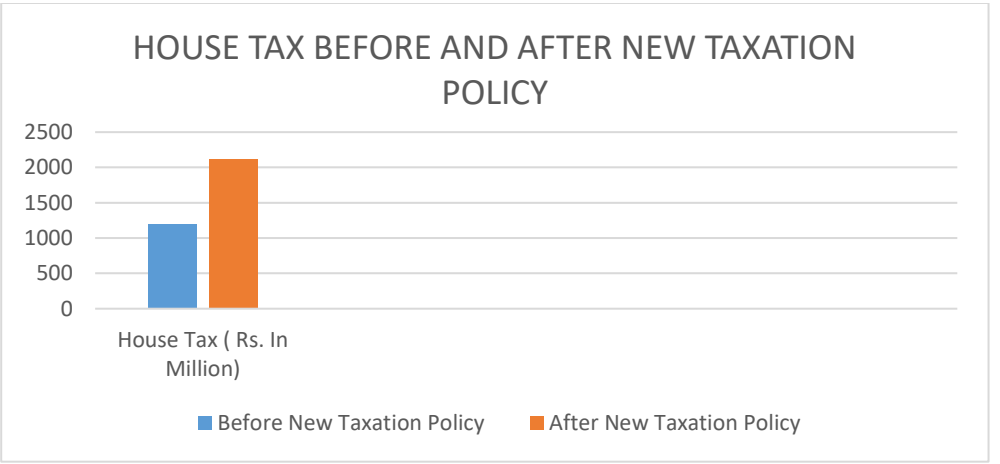
b. Methodology

The audit compared and analyzed the data pertaining to property valuation, tax calculation and tax assessment before and after the implementation of the policy. In addition, observation and analysis of the public complaints and court cases besides, oral discussion with the management/general public visiting the respective Cantonment Boards were made to find out the impact of the intervention. In order to make a comparative analysis of the statistical data relating to cost of land and cost of construction, research was made through internet and some data was obtained from official website of Pakistan Bureau of Statistics (https://www.pbs.gov.pk/).

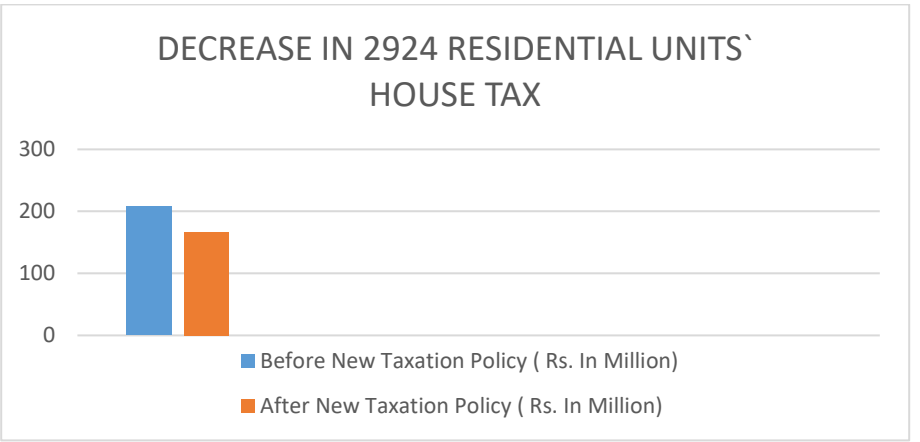
1.6 Findings:

1.6.1 Cantonment Board Clifton:

In Cantonment Board Clifton, there were total of 45,623 units, out of which there was increase of tax on 42,699 units whereas, 2,924 units showed decline in tax after the implementation of the new policy. 42,699 units` Annual Rental Value (ARV) stood at Rs.15,633 million, but before the policy implementation the ARV was Rs.9,563 million resulting in an increase of Rs.7,734 million. Likewise, the House Tax at the rate of 12.5% stood at Rs.2,121 million, but before the implementation of the uniform policy it was Rs.1,196 million, resulting in an increase of Rs. 925.00 million in House Tax collection, as shown below:

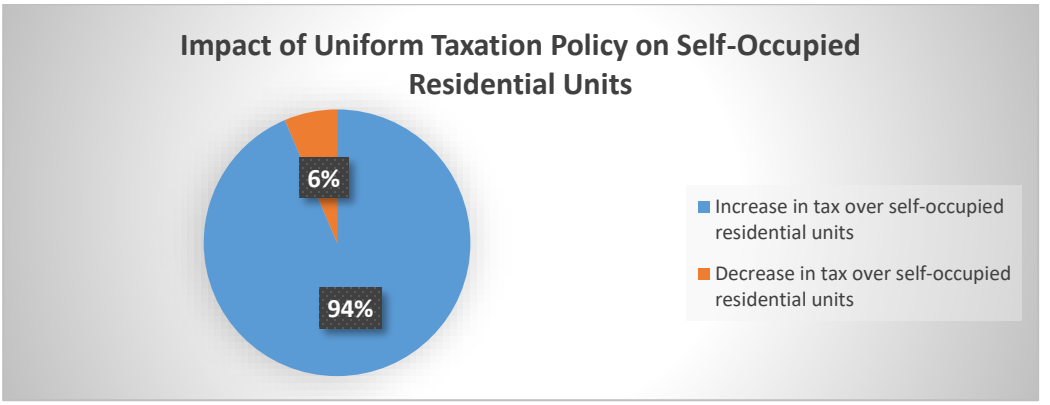


On the contrary, Rs.1,332 million ARV was calculated against the 2,924 units, which showed decline in the tax after the implementation of the uniform tax policy that remained at Rs.166.500 million, but before the policy the same was Rs.208.000 million, registering a decrease of Rs.41.500 million as shown below:



During the impact audit of Cantonment Board Clifton for the year 2022-23, it was observed that CBC revised assessment of all self-occupied residential properties on the basis of new uniform taxation policy without analyzing and separating the under-assessed units. Resultantly, the volume of tax on 94% residential units was increased. The assessment should have been made against the under-assessed

taxable units and not the already fairly assessed units, but 'one size fit for all' approach was applied. As a result, rather than getting relief by virtue of new taxation policy, tax volume increased against the residents of the Clifton Cantonment Board as shown below:



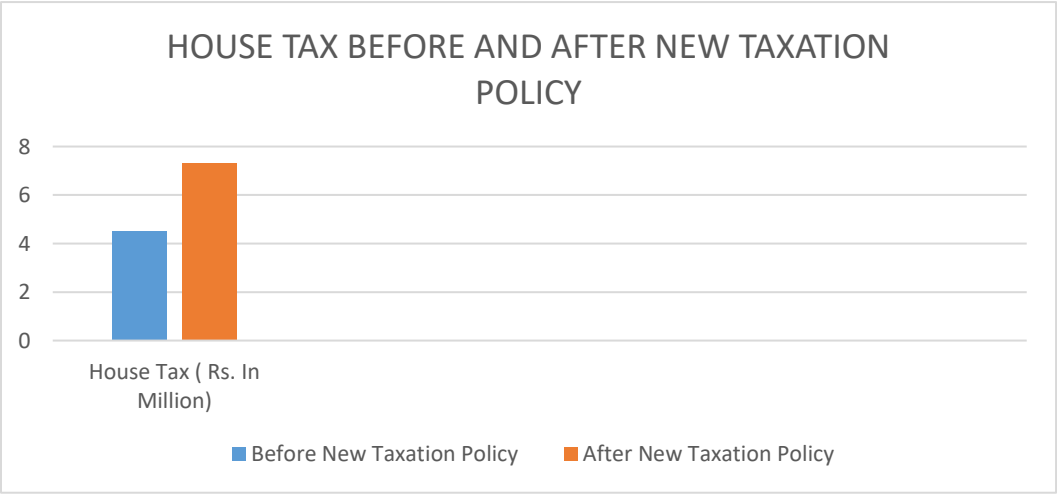
The audit observed that the new method used for obtaining Annual Rental Value for calculation of House tax has doubled the tax vis-à-vis before the uniform tax policy. This can be understood from the increase of Rs. 925 million in House Tax i.e. before the policy it was Rs.1,196 million and after implementation, the same stood at Rs.2,121 million on all the self-occupied units. Further, no depreciation in cost of structure was allowed on properties constructed in the last five years, which is unfair and unjustified as the houses constructed during 2017 had low cost of land and construction, which cannot be compared with the current market price even after rebate. Further, the cost of construction may also vary on quality of construction like the best, standard and ordinary. The latest cost of land after rebate is not equal to previous cost of land. Similarly, cost of construction @ Rs.2500/sq ft is not equal to previous years cost of construction. Further, according to para (iii) of CBR No.3.2 dated 26-09-22, basic concept for the revision of assessment/ARV was to reassess the under-assessed taxable units and not to increase tax against the already fairly assessed units, but uniform tax policy was applied on all the self-occupied houses/flats, which was unjustified.

It was observed from CBR No.3.2 proceeding (vi) dated 26.09.2022 that the CBC partially and unfairly implemented uniform taxation policy, resulting in increased tax burden on the residents of the apartments besides, non-uniformity in the implementation of the uniform taxation policy.

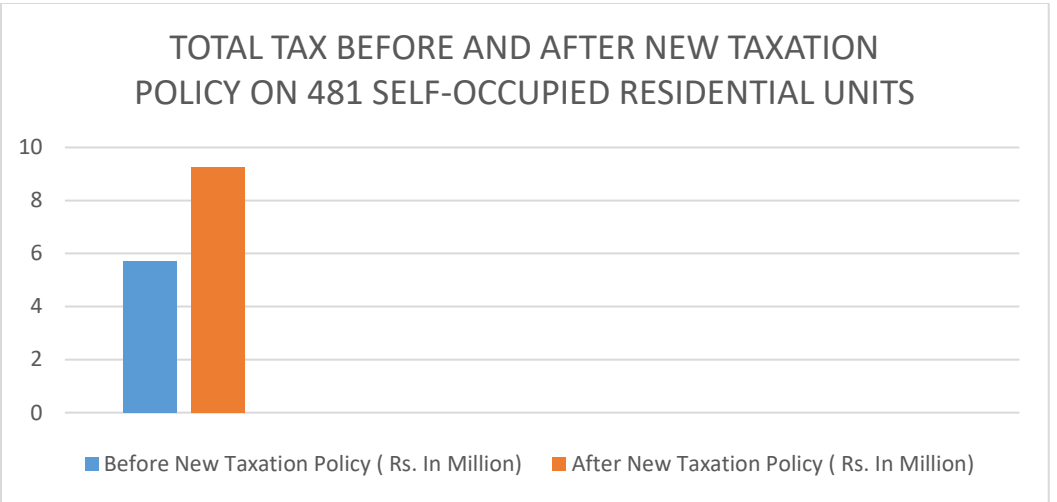
The formula used for calculation of depreciation of cost of structure is also unjustified, unfair and against the spirit of the policy objectives.

1.6.2 Karachi Cantonment Board

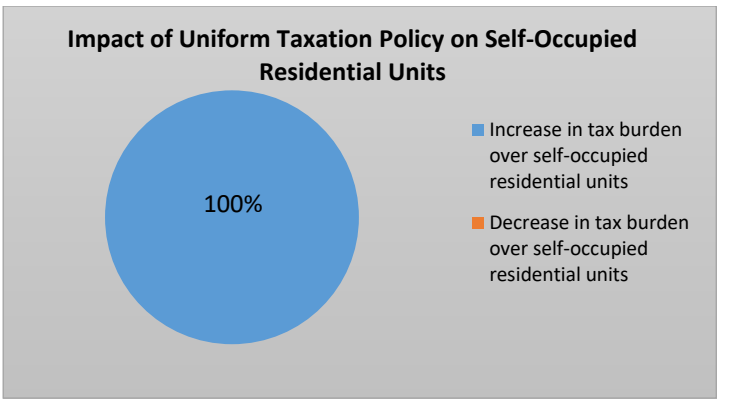
In Karachi Cantonment, the policy was implemented on 481 self-occupied flats of Askari-II & III only. The Annual Rental Value (ARV) of the said units after the implementation of the uniform taxation stood at Rs.48.647 million with an increase of Rs.18.558 million. The House Tax after implementation of the new taxation policy stood at Rs.7.297 million, resulting in an increase of Rs.2.783 million as under:



In Karachi Cantonment, the Annual Rental Value (ARV) of 481 self-occupied residential units was Rs.30.089 million and house Tax at the rate of 15% of ARV was Rs.4.513 million as shown under:



Audit observed that the new method used for obtaining Annual Rental Value ARV i.e., 25% depreciation on flats constructed more than 30 years back was unjustified. The new taxation policy was implemented on 481 self-occupied flats of Askari-II & III only. During the audit, it was observed that after implementation of uniform house taxation policy, the amount/burden of taxation increased on all the said units. Hence, 100% residents of the self-occupied units suffered from increase in taxation burden as a result of uniform taxation policy.



During the analysis, it was observed that the Annual Rental Value (ARV) of the above mentioned units before implementation of Uniform House Taxation Policy was Rs.30.089 million whereas, after the implementation of the policy, the same stood at Rs.48.647 million.

Hence, the ARV increased by Rs. 18.558 million. Accordingly, the house Tax at the rate of 15% of ARV was Rs. 4.513 million before uniform taxation and after implementation it stood at Rs.7.297 million, as a result there was an increase of Rs.2.783 million house tax. In the policy, the rate of House Tax was 5% whereas, actually the residents were charged 15%, which is unjustified.

1.6.3 Cantonment Board Quetta

In Cantonment Board Quetta, no documentary evidence was available about the implementation of the new taxation policy. However, the house tax remained unchanged throughout the years.

During the audit of Cantonment Board Quetta for the Financial Year 2022-23, it was observed that the Board approved specific guidelines in CBR No. 5.6 dated 09.09.2022 and CBR No. 7.3 dated 31.10.2022 for implementation of the uniform tax policy. These guidelines were intended to address taxation issues within the cantonment area and ensure fair and equitable taxation for all the residents. However, the Board passed a resolution to consider and approve these guidelines therefore, a request was also made by HQ ML&C (Headquarters Military Lands and Cantonments) to reduce the house tax rate from 6% to 5% on the proposed ARV.

Audit observed that the property tax assessed on the final ARV was Rs.48.136 million, which remained consistently unchanged throughout the years. No exemption/rebate was granted over the course of three years. The 5% tax charged on Proposed ARV with no rebate and no depreciation resulted in net increase in tax amount by Rs.41.656 million and at 6% as recommended in the new policy, the same would result in an increase of Rs.59.614 million, which is unjust, unfair and against objectives of the policy.

During the analysis, it was noted that the proposed Annual Rental Value (ARV) for the years 2020-21 to 2022-23 remained constant at Rs.1,795.855 million, which indicates that there were no changes in the proposed ARV over this time frame. The final Annual Rental Value

(ARV) approved by the CBR for the same years stood at Rs.320.909 million. This further confirms that there were no adjustments to the approved ARV during this period.

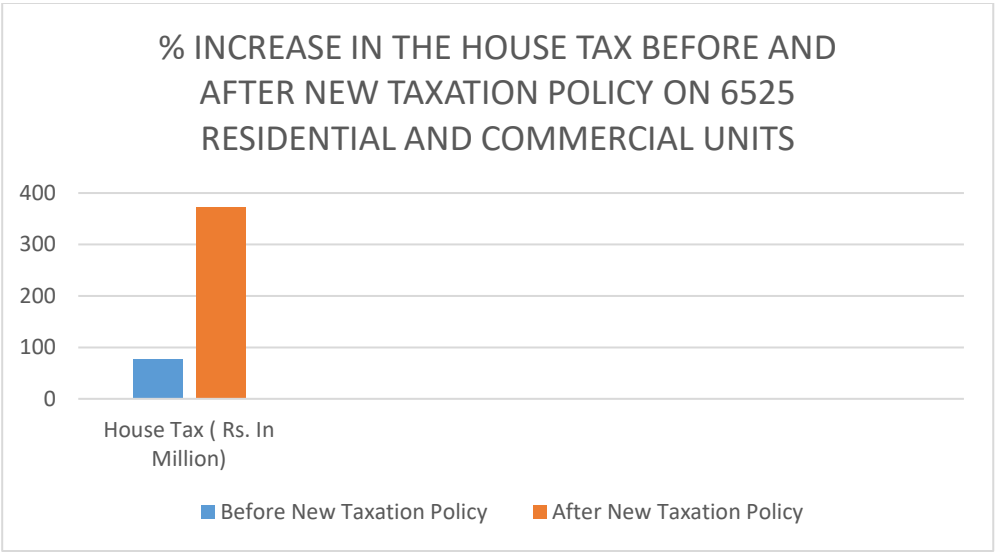
1.6.4 Cantonment Board Hyderabad

In Cantonment Board Hyderabad, the new policy was partially implemented. The assessment of 6526 units after partial implementation resulted in increased value of the House Tax from Rs.76.020 million to Rs.371.615 million i.e. 388.38% increase.

The Cantonment Board Hyderabad approved the implementation of Uniform House Tax policy. The residential as well as commercial (self-occupied/ rented) i.e. 6,526 units were assessed whereas, the policy was devised for self-occupied houses only. The separate data regarding commercial and residential units was neither maintained by the management nor provided to audit.

The new policy was partially implemented. The data pointed that 15% house tax was calculated at the ARV based on basis of both FBR and DC rates 2021 and cost of construction @ Rs.2500/sq ft. The data pertaining to the last year had no details of DC rates, which were applied from time to time for calculation of the ARV. However, tax @ 15% was calculated and was available on the record. A rebate of 73% was allowed on ARV.

The assessment of 6,526 units after partial implementation of new taxation policy increased the value of House Tax from Rs.76.020 million to Rs.371.615 million, resulting in an increase of 388.38%. This reveals that the implementation of new taxation policy increased tax burden on the residents of the Cantonment Boards as shown below:



1.7 Conclusion

In conclusion, house tax a major revenue source for Cantonment Boards (CBs), had become a focal point for scrutiny due to significant disparities in assessment practices across different regions. The audit, conducted in the aftermath of implementation of new uniform house tax policy shed light on the multifaceted impact of the policy across several key areas, providing valuable insights into its effectiveness, challenges, and potential areas for improvement.

The findings revealed that there was a substantial increase in the tax burden on self-occupied residential units in certain instances, contradicting the anticipated relief for property owners. In the case of Cantonment Board Clifton, for example, the policy's implementation resulted in a notable rise in the total tax on self-occupied residential units, primarily due to the doubling of the Annual Rental Value (ARV) after the uniform taxation policy came into effect. The discrepancies and inconsistencies in applying the policy, particularly with regard to depreciation, rebate ratios, and the overall calculation of ARV, raised pertinent questions about the fairness and effectiveness of the policy in achieving its stated objectives.

Furthermore, in Cantonment Board Karachi, the policy was applied to only 481 units of self-occupied flats, showcasing a limited scope of implementation. Similarly, in Cantonment Board Quetta, the lack of documentary evidence and the unchanged property tax on the final ARV over the years raised concerns about the thoroughness of policy implementation.

An additional layer of complexity emerged in the evaluation of the impact on Cantonment Board Hyderabad, where the policy was partially implemented. The discrepancy between the percentage increase in tax and the corresponding increase in recovery highlighted potential shortcomings in the policy's impact on the tax-paying capacity and willingness of the general public.

The new policy became burdensome for the residents of the CBs. Instead of earning goodwill of public, it invited public complaints and constitutional petitions against CBs in the court of law. As Cantonment Boards play a pivotal role in generating revenue for local governance, it becomes imperative to revisit and refine the new taxation policy. Future revisions should prioritize a more comprehensive and elaborate approach, taking into account the varied nature of properties, ensuring transparency in the application of depreciation, and carefully evaluating rebate ratios. Moreover, the policy should be fine-tuned to avoid disproportionately burdening the public, ultimately fostering goodwill and respect within the cantonment communities.

DGA (Railways)

Impact Audit of PSDP Project for up-gradation/renovation of Major Railway Stations

4.1 Introduction

Pakistan Railways witnessed increase in passenger traffic during 2014-15 as a result of focused business promotion policy of the Government. A considerable increase in passenger volume and corresponding revenue earnings was recorded as 5.70 million and 40% respectively in 2014-15 as compared to previous financial year 2013-14. The increasing demand of public for Railway as preferred mode of transportation necessitated substantial improvement in the existing infrastructure of railway stations which lacked basic passenger amenities and were built to cater very thin number of passengers as compared to present strength.[2]

4.1.1 Background

It was decided in a meeting on Railway affairs chaired by the Prime Minister of Pakistan on 3rd April, 2014 that four major Railway stations at each provincial capital city including Quetta, Karachi, Lahore and Peshawar should be up-graded/renovated as model stations. Later on followed by CDWP meeting held on March 31, 2015, it was discussed to upgrade/renovate five major railway stations as pilot project and take up other major stations after successful completion of the said project. Subsequently, in another meeting of the CDWP dated April 16, 2015, PR proposed up-gradation/renovation of 23 Railway stations, however, the proposal was not acceded to by the Planning Commission of Pakistan and finally, PC-I for up-gradation/renovation of 11 major Railway stations, was approved by the CDWP. As per original PC-I, the project was planned to be commenced in July 2015 and completed by September 2016. However, after revision of PC-I, it was actually commenced in June 2016 and completed in June 2021 with cost and scope of work quite different than what was envisioned in original PC-I. The project completion report (PC-IV) was drawn on 31.05.2021.

4.1.2 Role of the project

The basic role of this project was up-gradation/renovation of major railway stations infrastructure for improved passenger amenities and

[2] PC-I, Up-gradation/renovation of major railway stations

development of these stations as commercial hubs of the cities to generate revenue and shorten the span of payback period of the project. The Project had two components of infrastructure development; up-gradation and renovation, which differed in scope in a way that up-gradation involved complete demolition and re-building of structure while renovation involved provision of missing facilities in already existing station buildings and beautification. Project scope was defined on the basis of condition survey conducted by professional consultant firms and included details of missing facilities like lack of availability of clean drinking water, inadequate shelter for passengers, absence of waiting lounges, shorter than needed platform lengths, absence and poor condition of toilets, absence of ramps for disable and elderly passengers, improper lightening arrangements, mal-functional sewerage systems, non-existent/ dysfunctional public address system, absence of dedicated electric transformers and power back-up arrangements, poor security arrangements without CCTV cameras, non-installation of firefighting and alarm systems and shabby condition of circulating areas leading to railway stations. The project role was limited to provide these missing amenities and develop railway stations included therein as commercial hubs while preserving the heritage and architecture of the area.

4.2 Overview

The major objectives of the project were as under:

1. Substantial increase in station traffic and ridership
2. Revenue generation through commercial development of station buildings to achieve operational sustainability
3. Provision of improved and modern day facilities/amenities to passengers, general public and employees
4. Construction of resilient structures with a service period of over 50 years

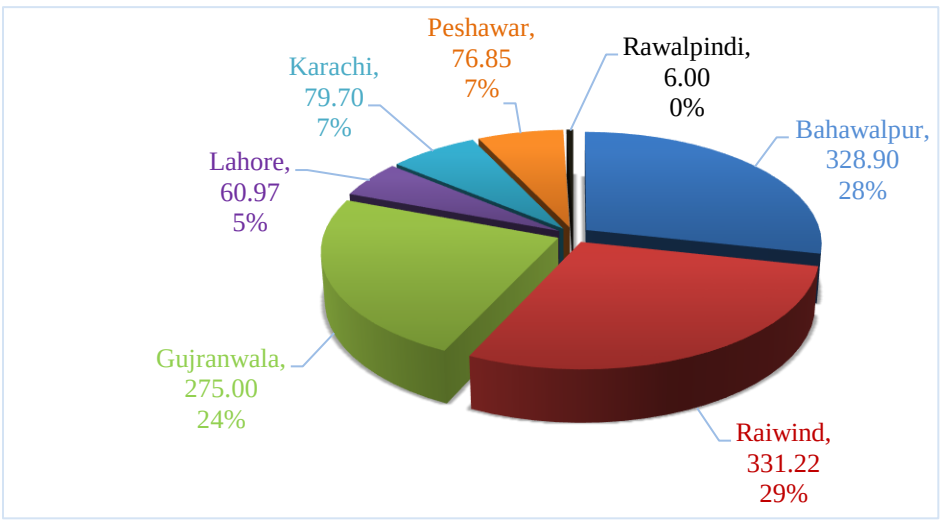
The project involved up-gradation/renovation of eleven railway stations with a total cost of Rs 1,158.74 million. It was intended to provide state of the art passenger amenities including fully furnished ladies & gents waiting lounges with attached toilets and washrooms, high level new passenger platforms with extended length, new platform shelters, lavatories and toilets for workers and employees, provision of clean drinking water for passengers & employees,

construction of ramps for easy and unhindered access of the station and platform for the disabled and physically challenged people. The project also included structural developments like installation of new transformers for efficient electric supply and provision of back-up in case of power failure, provision for public address system and installation of CCTV cameras for security surveillance, provision of fire alarm and firefighting system to ensure safety of people and property, construction of new and additional passenger foot-over bridges, new equipment rooms, electric control rooms, generator rooms and Train Dispatch (TD) offices, laying of new water supply and sewerage system including storm water drainage and disposal pumping stations, where required. The intervention also included development and improvement of circulating area, road/pavements, car/vehicles/motorcycles taxi parking lots and proper lighting arrangements for station buildings, platforms, and immediate surrounding areas etc. Following stations were planned to be undertaken in the project:

1. Bahawalpur	2. Raiwind	3. Gujranwala City	4. Gujranwala Main
5. Karachi Cantt.	6. Peshawar	7. Hyderabad	8. Sukkur (Rohri)
9. Lahore	10. Rawalpindi	11. Quetta	

Budget allocations were made only for seven railway stations instead of eleven; following pie chart depicts allocation of budget to various railway stations as well as percentage share in project.

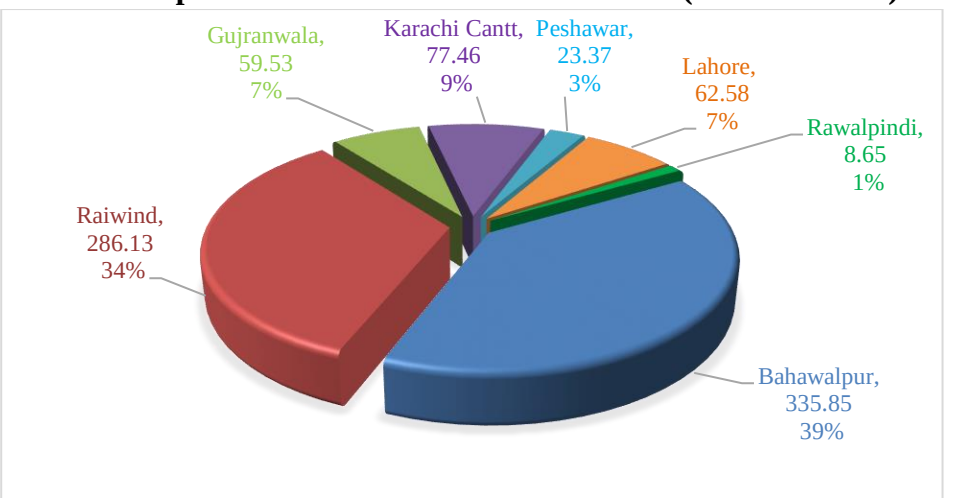
Budget allocation of seven stations (Rs 1,159 million)



Source: PC-I, Up-Gradation/Renovation of major railway stations

As per revised scope, the project envisaged development of three upgraded and modern station buildings at Bahawalpur, Raiwind and Gujranwala with an effective service period of over 50 years which took major share (80%) in budget allocation. The nature of amenities to be provided to the passengers remained unchanged in upgraded station as compared to renovated ones, however, huge difference of expenditure relates to reconstruction of entire station buildings and development of commercial centers containing Shops, Banks, Cinemas, restaurants, and Joy lands etc. Rationale behind manifold budget allocation was the expectation that these stations would generate parallel stream of revenue through commercial activities which will make these station buildings operationally self-sustaining and economically viable. While endeavoring for sustainability, it was also decided that railway land surrounding station building will also be commercially exploited to generate additional revenues and will be a beautifying addition to the city structures. The commercial activities thus initiated will be a source of employment generation for local inhabitants of the city and will add to general well-being of the populace. Thus, it was a multi-stranded model of passenger facilitation, revenue generation, employment creation, beautification, and economic sustainability.

Actual expenditure incurred on seven stations (Rs 853 million)



Source: PC-IV, Up-Gradation/Renovation of major railway stations

4.3 Scope & Methodology

a. Scope

After going through various changes, finally upgradation/ renovation of seven stations were allocated with budget. Of these seven, two stations; Bahawalpur and Raiwind were reconstructed with seventy-three per cent (73%) of the actual project cost, scope of Gujranwala main station was reduced to twenty-one (21%) of the original budget allocation, remaining four stations were allocated with meager budgets even though passenger volume at these four stations was far more than Bahawalpur and Raiwind stations. It is pertinent to mention here that both Bahawalpur and Raiwind were not included in original proposal presented to and approved by Prime Minister of Pakistan.

b. Methodology

The Impact Audit was conducted as per Audit Guidelines of Supreme Audit Institution (SAI) Pakistan. Materiality was given due consideration in audit planning and execution, as Bahawalpur and Raiwind stations consumed more than two thirds of the total budget, focus of audit assignment remained concentrated on these two stations while allocating due share of time and resources to remaining stations included in the project. Another aspect was the scope of intervention, the two stations had undergone complete treatment and while others received partial one, which made the two stations better subjects for excluding related variables affecting the causation. Audit used difference-in-differences approach for gauging the impact of intervention, treatment group (up-graded stations) were compared with control group (stations receiving no intervention) based on vital variables of geographical proximity and passenger volume. Time-series approach was used to draw intra-station comparisons based on passenger volumes in periods of time prior and post to treatment while providing for a reasonable grace period (two years) for intervention to have tangible effects. The impact of intervention was also gauged comprehensively by obtaining input from end users (passengers), surveys were conducted to collect information about status of amenities at treatment group stations and comparisons were made with registered passenger complaints to assess credibility of survey results.

4.4 Findings

4.4.1 Impact on revenue earnings with up-gradation/renovation

Prominent increase in station traffic and ridership was an envisaged objective of the project associated with the construction of upgraded station

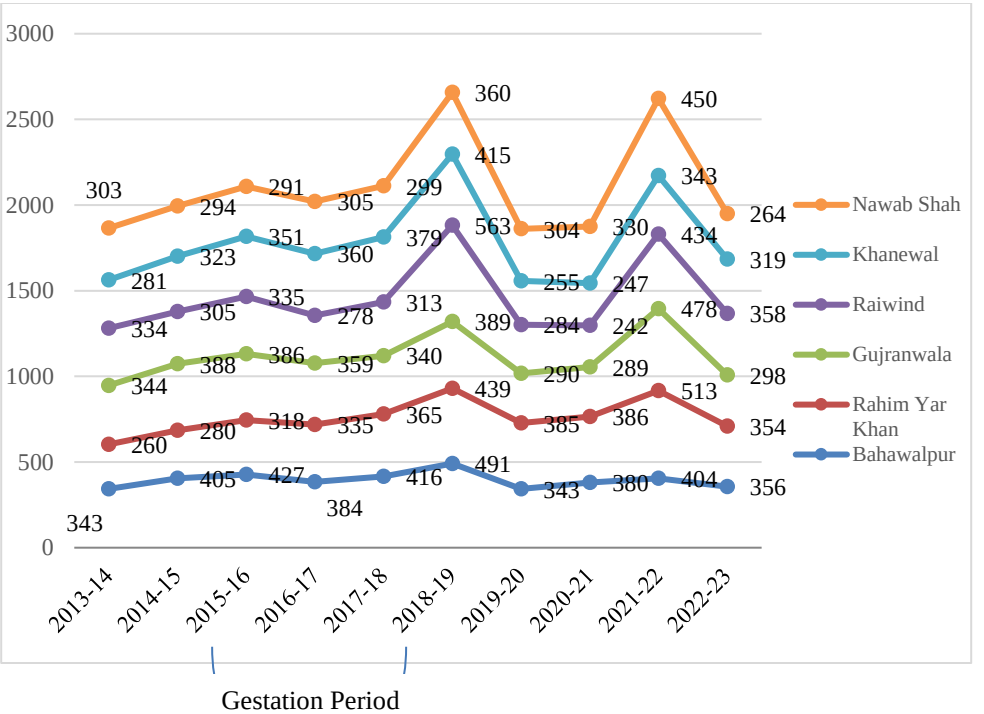
buildings and provision of modern day amenities to passengers and general public. Railway stations Bahawalpur and Raiwind were upgraded with substantial cost of Rs 621.98 million which was 73% of the total project cost while other five stations were renovated to add passenger amenities to their existing structures. Audit has categorized stations into three categories; those with complete up-gradation, ones with renovation and last are those which have neither been up-graded nor renovated. The comparative analysis was made on the basis of increasing/decreasing passenger numbers as a measure of station performance. Following hypothesis was developed from available data.

Yo: passenger volumes at railway stations without any treatment
Y1: passenger volumes at railway stations under the project
Six stations were compared on the basis of following parameters:

- Geographical proximity i.e. mainline stations existing on similar geographical regions
- Passenger volume matching
- Number of trains passing through the stations

Bahawalpur and Raiwind having been upgraded, Gujranwala (main) was renovated (Treatment group) and, Rahim Yar Khan, Khanewal and Nawabshah were neither up-graded nor renovated (control group). Passenger data for last ten years was obtained to draw difference-in-differences analysis and develop time series of individual station passenger traffic **(Annexure-47)**.

Trend of passengers' volume at stations (2013-14 to 2022-23)

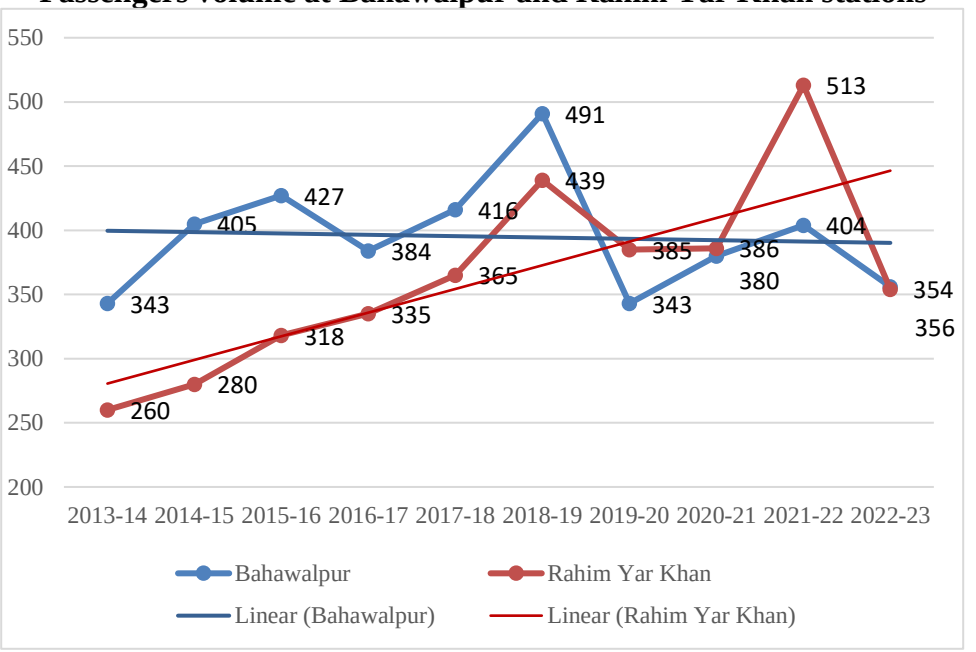


The comparative analysis clearly depicts that trend of rise and fall in passenger volumes has no distinctive anomalies when it comes to up-graded and renovated stations vis-a-viz stations receiving no treatment. The project commenced in June, 2016 and was completed in June, 2021, interestingly, gestation period (without existence of station buildings) depicts better passenger traffic than post completion period which is a clear indication that up-gradation and renovation has little or no impact on passenger revenues.

Comparison between treatment group and control group

The cumulative comparative analysis was further subdivided mutual analysis of stations paired on the basis of similar geographic conditions and passenger traffic which enabled audit to use more sophisticated statistical tools and add clarity to already shown prima facie similar trends.

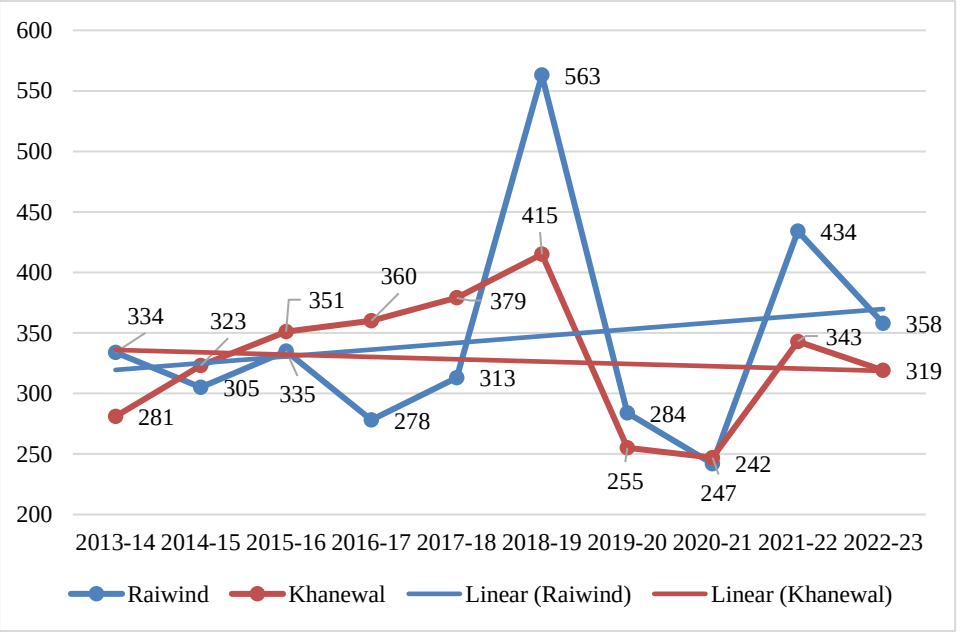
Passengers volume at Bahawalpur and Rahim Yar Khan stations



Source: Reports on station wise passenger traffic from PR (2013-14 to 2022-23)

The decline in slope of blue line (Bahawalpur) and incline of brown line (RY Khan) are measures of variance and standard deviation from mean passenger traffic over last ten years. The graph clearly establishes that R.Y.Khan although receiving no treatment, attracted more passengers both in pre and post periods of project gestation, while number of trains stopping at both stations remained approximately constant during the period. The comeback after Covid also seems to be way more robust in case of Rahim Yar Khan than Bahawalpur which lingered around averages throughout the period despite capital investment of Rs 335 million for up-gradation.

Passengers volume at Raiwind and Khanewal stations

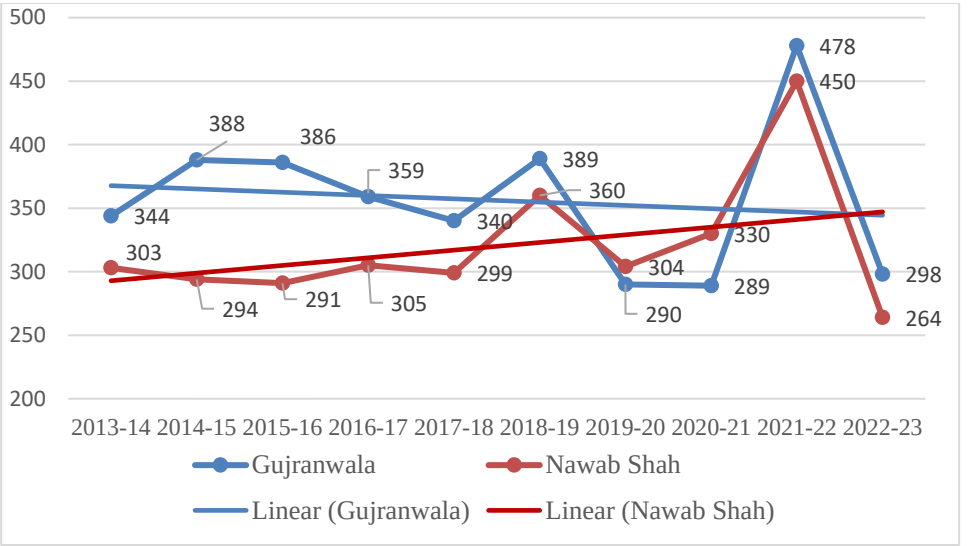


Source: Reports on station wise passenger traffic from PR (2013-14 to 2022-23)

Similarly, Khanewal and Raiwind were compared with each other and intra-station time series analysis was also conducted for Raiwind station as it received full scale treatment of up-gradation. Highest boom in passenger volumes at Raiwind station was observed from 2017-18 to 2018-19 which coincides with gestation period of the project as well. The subsequent decline in slope from 2019-20 to 2020-21 was illustration of COVID period. It is pertinent to mention here that old station building of Raiwind station was not demolished and remained operational during gestation period of the project.

The time series analysis leads one to question the utility of expenditure on construction of new station building. Interestingly, the old station building was still in use for all purpose while newly constructed one was not fully operational even after four years of completion. In comparison to Khanewal station, Raiwind fared better in post COVID period but the point of initiation for this change was year 2016-17 where an anomalous upward surge changed the averages for whole period. The utilization of old station building and upward surge during gestation period culminate into conclusion that up-gradation has little to do with increases in revenues/ number of passengers.

Passengers volume at Gujranwala and Nawab Shah stations



Source: Reports on station wise passenger traffic from PR (2013-14 to 2022-23)

Nawab Shah and Gujranwala (main) were compared for a period of ten years for passenger traffic because both had similar volume of passengers and one is located in central Punjab and other in central Sindh. The trend shows a continuous incline in Nawab Shah and decline in Gujranwala (main) with later performing better during pre-project phase and sliding down more during COVID period than former. There is an over-all decline in slope of Gujranwala station while a competing incline in Nawab Shah's passenger volumes which clearly depicts that the intervention had no to negative impact on passenger volumes.

The stations were selected for renovation and up-gradation on the basis of condition survey conducted by M/s NESPAK. Audit is of the view that condition survey could not fairly provide justification for discrimination in selecting stations either for renovation or up-gradation. Resultantly, the railway stations having greater passenger volumes were ignored and those having comparatively low ridership were selected for rehabilitation/renovation. Therefore, the intervention had little or no impact in generating additional revenues and making stations operationally self-sustaining as per objectives defined in PC-1 of the project.

4.4.2 Impact on operational self-sustainability through commercial exploitation

Another important objective of the project was to develop railway stations as commercial hubs to generate a second stream of revenue enabling these stations to bear their own operation cost and become operationally self-

sustaining. To realize this objective, shops, restaurants and other commercial centers were to constructed and opened at up-graded railway stations for passengers and general public of the area. Seventeen (17) shops and one (01) restaurant were constructed at Bahawalpur Railway station and put to auction after completion of the project but majority of shops could not be leased out unfortunately. The reason behind lack of response from potential lessees was a design failure as shop doors were opened towards platforms. People interested in renting these shops submitted application to the divisional management to allow them to open doors towards the city as no train stopped at Bahawalpur Railway station for more than two minutes and therefore possibility of doing business was very rare. Although, a sum of Rs 54.00 million was paid to the consultant but designs presented to and accepted by the management had very low practical consideration for making railway stations as commercial centers, hence operationally self-sustaining. The applications of potential lessees are still pending for decision with the management. The management could only lease out five shops in 2023 on meager rental charges. The project not only failed to achieve its stated targets in making stations operationally self-sustaining but also incurred a sunk cost of Rs 72.00 million along with loss of potential earning of Rs 2.35 million in lieu of rents. Only one restaurant has been leased out so far with the condition that the lessee has privilege to place pedestrian vendors on the platform while the restaurant, located in station basement, is itself practically out of operation.

4.4.3 Impact of passenger amenities at Railway stations under the project

One of the prime objectives of the project was to provide missing amenities for passengers and employees at up-graded and renovated railway stations. The details of amenities to be provided have been mentioned in overview of this report. Audit observed that the project was closed with reduced scope of work and reduction involved losing on main objectives of the project.

i) Performance of amenities

a) Clean drinking water is the basic necessity and has been stated as first and foremost objective of the project but the same has not been provided at railway station Raiwind. The management incurred an expenditure of Rs 0.78 million against allocation of Rs 3.50 million for two filtration plants at Raiwind railway station. There was no arrangement for clean drinking water in waiting lounge of Gujranwala station and sitting arrangements comprise of very shabby cemented benches which are quite uncomfortable for passengers.

b) Second important component of passenger amenities as stated in PC-1 was provision of fully furnished waiting rooms with attached lavatories/washrooms. It is pertinent to mention here that Raiwind railway station

has no waiting lounge at all. A room designated as waiting hall has been occupied by a restaurant with poor sitting arrangements and kept in untidy condition. Bahawalpur station has waiting lounge without any attached washrooms and furniture capacity for a few passengers only, while the objective in PC-1 was provision of fully furnished waiting lounges for ladies and gents.

ii) Missing amenities

a) The project aimed at provision of ramps for easy and unhindered access to elderly and disabled passengers, no such facility was provided between the two platforms at Bahawalpur railway station. The disabled and elderly cannot ascend the stairs and thus have to be carried to other platform. The pedestrian foot over bridge to cross railway lines to other platform was lying in pieces at Raiwind railway station and passengers had to jump over railway lines to reach the second platform which was not only a physical struggle but also a risk to life and limb of crossing passengers.

b) Another aspect of unfinished scope was non-provision of security cameras; a sum of Rs 5.50 million was allocated to provision of CCTV cameras for upgraded railway station but the same have not been installed so far which renders the station premises vulnerable to crimes against person and property.

c) A component of scope reduction was non-installation of firefighting equipment. The absence of fire alarms and firefighting equipment increases the vulnerability of passengers and properties in the event of breaking out of fire. Audit is of the opinion that security related arrangements have received least consideration in the project although they received much importance at planning stage.

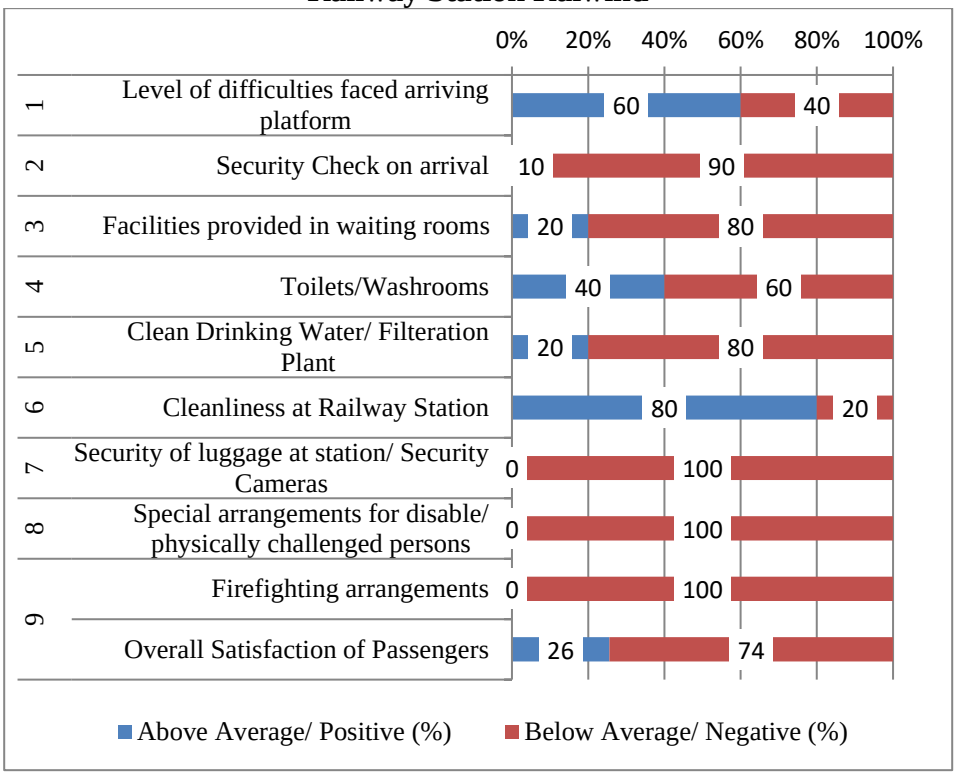
d) Another component of scope reduction of the project was development and improvement of circulating areas which has been left untouched without incurring any expenditure.

4.4.3.1 Beneficiary survey

Pakistan Railways' passengers, employees and general public were beneficiaries of this project. Audit conducted surveys to ascertain end user opinions on availability and accessibility of passenger amenities in renovated and upgraded railway stations. The survey results were then compared with complaints launched by passengers and general public on Pakistan citizen portal to rule out any leading conclusions emanating from possibly loaded questions. Audit framed a survey form containing nine questions mainly concerning with availability and accessibility of passenger amenities and security arrangements at

three stations namely Bahawalpur, Raiwind and Gujranwala (main). A random sample of 100 passengers was selected and responses against quality of amenities ranged from unsatisfactory to fully satisfactory and in case of availability of amenities, a simple response of yes and 'no' was recorded. Pakistan railways employees were not included in this survey as Audit apprehended biased opinions by virtue of their official positions. Following charts and tabular data represent the results of beneficiary surveys at each of three railway stations **(Annexure-48)**.

Railway Station Raiwind



Source: Passengers response through questionnaires

It is obvious from that the results of beneficiary survey that passengers were unsatisfied with security arrangements for property and person in the absence of firefighting arrangements and CCTV cameras. A hundred per cent negative response was also given on availability of special arrangements for elderly and disabled persons. All these facilities were part of the original scope of work which was later on left unfinished even at up-graded railway stations. Three other amenities which received sixty to ninety per cent below average rating were condition of toilets, facilities provided in waiting lounge and clean drinking water.

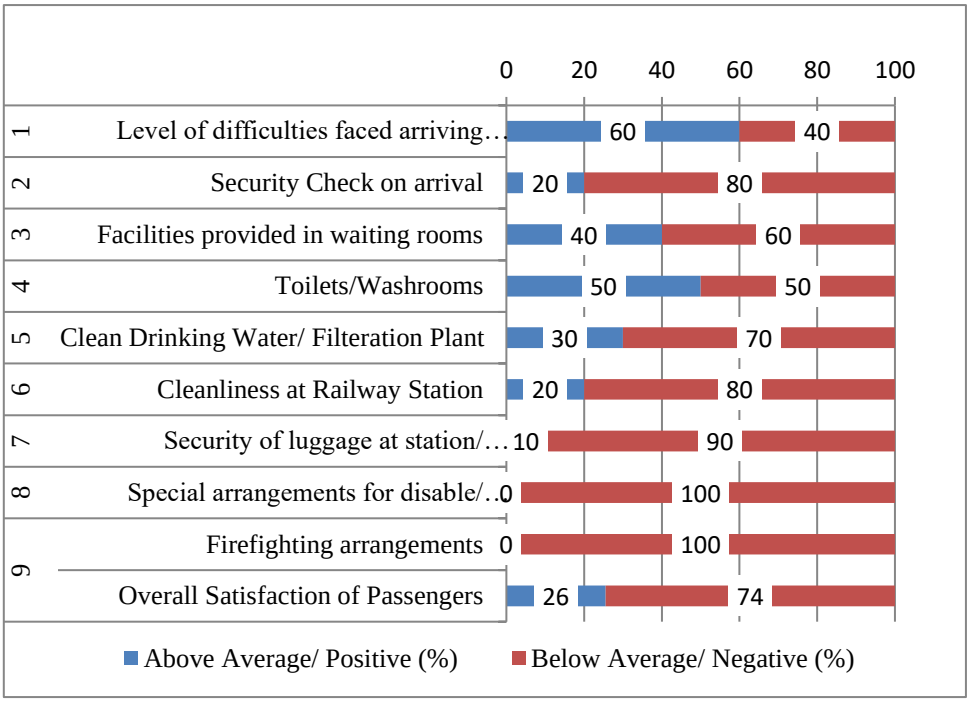
Railway Station Bahawalpur

SN	Variables	Above Average/ Positive (%)	Below Average/ Negative (%)
1	Level of difficulties faced arriving platform	80	20
2	Security Check on arrival	20	80
3	Facilities provided in waiting rooms	60	40
4	Toilets/Washrooms	70	30
5	Clean Drinking Water/ Filtration Plant	80	20
6	Cleanliness at Railway Station	90	10
7	Security of luggage at station/ Security Cameras	40	60
8	Special arrangements for disable/ physically challenged persons	40	60
9	Firefighting arrangements	10	90
	Overall Satisfaction of Passengers	54	46

Source: Passengers response through questionnaires

All three arrangements related to security of person and property received below average responses from 60% to 90% of the respondents as was the case with Raiwind Railway Station. Response against special arrangements for disabled, elderly and physically challenged passengers was also negative from 60% of the passengers. Comparatively, amenities like clean drinking water, washrooms, facilities provided in waiting rooms and cleanliness were responded to with positivity in case of Bahawalpur Railway station.

Gujranwala Railway Station

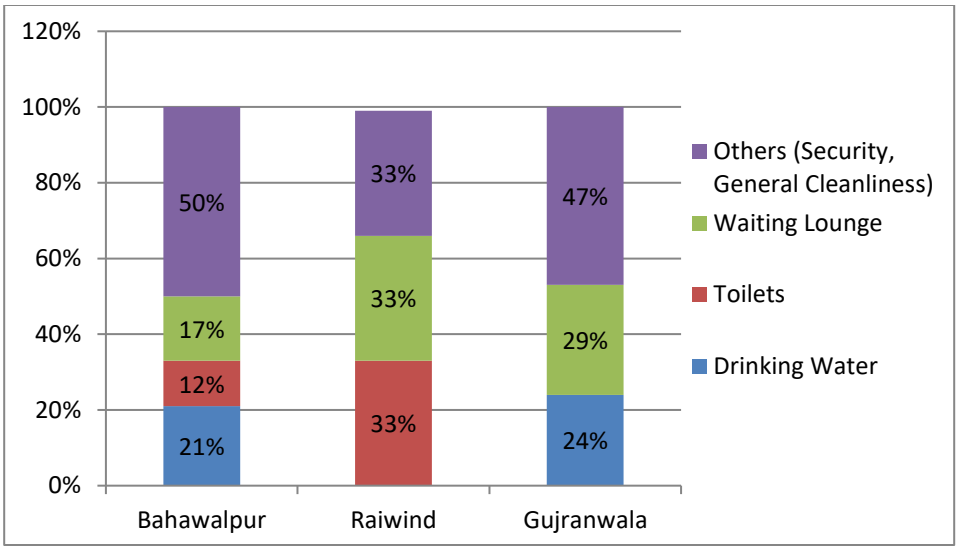


Source: Passengers response through questionnaires

In Gujranwala Railway Station amenities like toilets and washrooms and difficulties faced in arriving at the station received neutral responses from the passengers. All other arrangements regarding security, cleanliness and clean drinking water received negative responses ranging from 60% to 90% below average. Particularly, special arrangements for disabled/elderly/ physically challenged passengers and firefighting arrangements received 100% negative responses from passengers for Gujranwala Railway Station.

Beneficiary survey results were further authenticated by categorizing passenger complaints into similar categories as was the scope of survey questions. The results of segregated complaints data have been depicted in the following chart.

Passenger complaints category wise (Treatment Group)



Source: Complaints on Pakistan Citizen's Portal

Complaints data contains same issues highlighted by passengers, through an entirely different portal, as have been ascertained by Audit through beneficiary surveys and portray a picture of unsatisfactory passenger amenities, provision of which was one of the main objectives of the project.

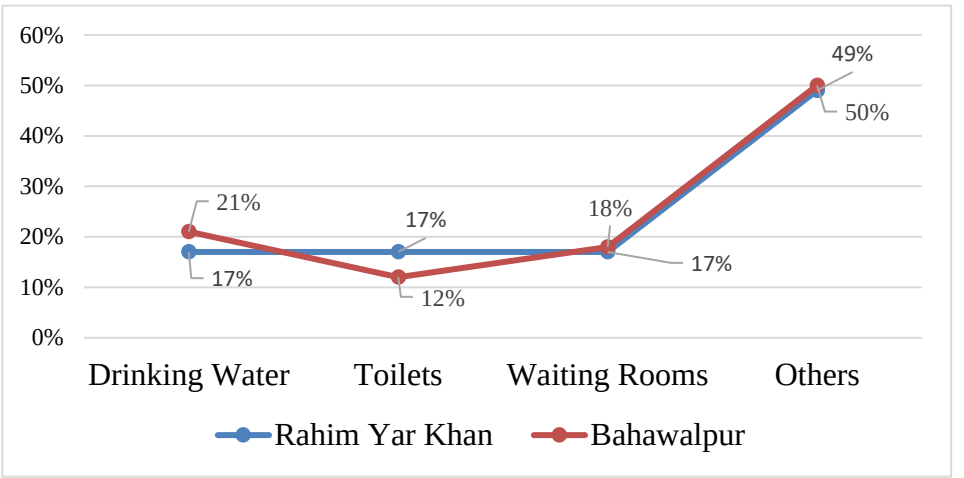
The complaints data relating to three stations of control group (without intervention) was also assessed from the citizens' portal which depicted following results:

Passenger complaints category wise (Control Group)

Station	Drinking Water	Toilets	Waiting Rooms	Others
Rahim Yar Khan	17%	17%	17%	49%
Khanewal	21%	21%	25%	33%
Nawab Shah	No registered complaint found on the portal			

Category wise percentage of complaints pertaining to Rahim Yar Khan and Khanewal (control group) lodged at citizens' portal clearly shows convergence of percentages in identical areas of treatment group. However, the control group had a limitation with regard to Nawab Shah Railway Station where no complaint was lodged on the portal. It doesn't mean that there was no complaint but it could be low literacy rate in that region which may have restricted the beneficiaries from using citizens' portal.

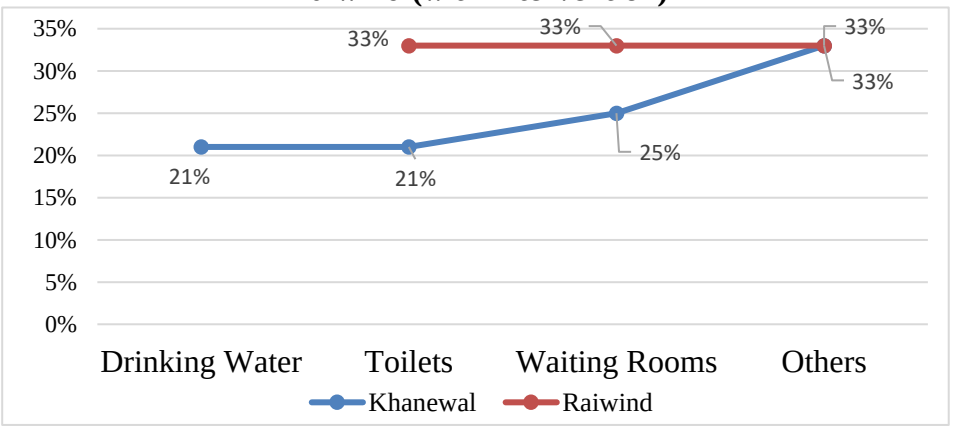
Passenger complaints convergence Rahim Yar Khan (without intervention) vs Bahawalpur (with intervention)



Source: Complaints on Pakistan Citizen's Portal

A comparison of complaints at Khanewal and Gujranwala is also made below:

Passenger complaints convergence Khanewal (without intervention) vs Raiwind (with intervention)



Source: Complaints on Pakistan Citizen's Portal

The convergence of percentages for identical areas of public complaints at Control Group and Treatment Group revealed minimum to no positive impact of the intervention with regard to provision of passenger amenities especially at Bahawalpur.

4.4.4 Structural sustainability of upgraded buildings:

The project was aimed at passenger facilitation, revenue generation, operational self-sustenance and structural longevity covering at least 50 years of active service period. Audit examined structural designs of upgraded stations to assess whether the achievement of project objectives had been supported by station architecture in providing ease of access for utilization of available

amenities to all types of passengers including women, elderly and disabled ones. Audit inspected newly constructed buildings to observe any weaknesses in structures.

4.4.4.1 Railway Station, Bahawalpur

Railway Station Bahawalpur was up-graded in 2019 by dismantling of old station building with total cost of Rs 335.85 million. The architectural design of new station building (43,560 Sft) was in the image of Noor Mahal Palace, Bahawalpur. Audit observed that the station design had following discrepancies with respect to ease of access to amenities by passengers and general public:

a) All offices of responsible staff including Station Master, Assistant Station Master, and security staff were accommodated at 1st floor instead of ground floor as per conventional design of all other railway station; hence it was made difficult for passengers to access them.

b) Waiting rooms were also built at 1st floor of station building with no attached toilets and air-conditioning facility, therefore, most of the passengers were not utilizing those waiting rooms.

c) Restaurant was designed in the basement which was found out of operation due to lack direct access from the platform and waiting rooms.

d) Lavatories and toilets for public and employees were built at basement and 1st floor. Employees and workers especially female booking staff had to face difficulty using toilets during rush hours.

e) Parcel & Luggage office was not designed at Bahawalpur Station. It was observed that booking of parcels & luggage was being managed at ground floor in a room allocated for a shop having no direct access to the Platform.

f) Only one Retiring Room was built in such an oversized Railway station building which was also found vacant and in untidy condition. There was no ventilation or air conditioning facility. Resultantly, retiring room was not in a condition to be offered to visiting passengers for staying inside station building.

g) The doors of the shops were opened towards platforms instead of city area, although, no train stopped for more than two minutes at the station.

In view of the above-mentioned findings, Audit ascertained that Bahawalpur Station building was not designed in the best public interest. Accessibility and facilitation to passengers had not been largely considered at the design stage. Therefore, most of the rooms in the station building were found out of use indicating wastage of valuable resources and planning failure.

4.4.2 Railway Station, Raiwind

A new building of Railway Station, Raiwind measuring 29,869 Sft was constructed in 2019 under the project, at a cost of Rs 286.13 million on an empty piece of Railway land in front of old station building. However, the old station building was found operative till the date of audit i.e. September 2023. Audit observed that the new Railway Station building had given way to visible horizontal and vertical cracks in walls at both superior and inferior sides of many rooms. Pictorial evidence of cracks is shown in (**Annexure-49)**. Audit ascertained that the new building of Railway station, Raiwind, was constructed with substandard civil works with inadequate soil compaction.

Resultantly, the building started sinking at many places. It hampered achievement of the project objective of 50 years structure sustainability and the buildings may be in need of special repairs sooner than avowedly claimed.

Management Response

The Impact Audit Report was discussed in detail in the DAC meeting held on 09.01.2024. The Chair expressed that this study/report on this important perspective of spending public finance could be useful for management. The analysis approach adopted by the new concept of Impact Audit is viable and doable.

5. Conclusion

Comparative analysis between control group stations and treatment group stations led audit team to conclude that the trend of rate of change in annual passenger traffic at treatment group stations was no different than control groups. Standard deviation from mean passenger traffic over ten years was, in fact, statistically tilted in favor of control group in 66 per cent of the tested sample. Raiwind, however, performed slightly better than Khanewal in comparative analysis of difference-in-differences but the upward slope (incline) in passenger traffic was set in same trend prior to the commencement of project and no significant steepness was witnessed in post project phase. While using time series approach, Audit witnessed an exceptional anomaly of considerably higher than average passenger traffic at all stations during gestation period of the project which implies that passengers and revenues earnings actually increased when

there was no station building in operation at all. The steepest rising trend in ridership without presence of any operational station building and associated amenities clearly indicate that the project objectives have no significant relationship with increased revenues and ridership. Time series analysis was also conducted to draw intra stations comparisons between pre and post project periods of upgraded and renovated stations which revealed that there was a decreasing trend starting from 2013 and culminating to 2023 except for Raiwind station where old building is still in use. The beneficiary survey and physical inspection revealed that provision of important amenities, particularly with respect to security of person and property, were not made by reducing the scope of project or parking funds elsewhere. The quality of amenities provided was not up to the mark as envisioned in PC-1. Basic amenities like clean drinking water, attached washrooms and foot-over bridges were not provided at one or other stations under the project. Beneficiary survey also revealed that ease of access to passenger amenities was denied by virtue of architectural design which did not take into consideration the practical necessities of the station. To realize the objective of making up-graded stations operationally self-sustaining by developing stations as commercial hubs, shops and restaurant were constructed at Bahawalpur station but commercial activities could not be started because of design failure. The endeavor towards self-sustenance culminated into sunk costs and erosion of potential revenues. Audit therefore concludes that the project had little or no significant impact on increasing volume of ridership, making stations operationally self-sustaining and provision and access of passenger amenities, development of circulating area and generation of employment for general population. Up-graded stations are aesthetically comforting in view, the only objective which has been fully achieved by the project.

Audit recommends pragmatic planning in allocation of resources while keeping in view the concept of value for money as Pakistan railways is already suffering from losses. Need assessment may include input from end beneficiaries to make it more comprehensive and realistic. Audit observed that reduction in scope of project and faulty design obliterated intended benefits from available passenger facilities. This audit recommends strengthening of internal controls to bar scope changes after approval of PC-I and segregation of scope components which may be fundamentally connected to project's main objectives and declaring such components beyond reduction. Quality of civil works may be ensured to achieve forecasted life spans of buildings. Responsibility may be fixed for delayed decision making in putting resources to profitable usage as is the case with Bahawalpur shops. Comparative analysis of various projects having realistic payback periods, Internal rates of return and financial predictions may be made under the governing principle of greatest good of greatest numbers

rather than presenting individual project proposals without any competitors to the approving authorities.

DGA Water Resources

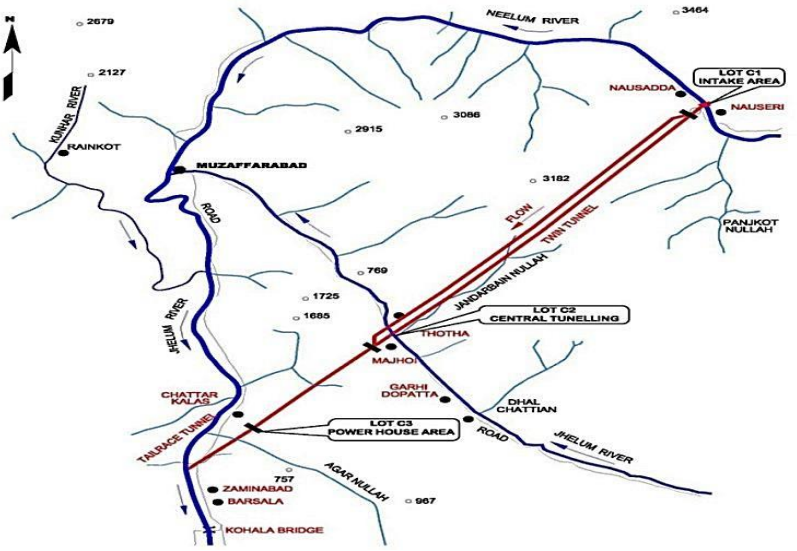
1. Impact Audit of Neelum Jhelum Hydropower Project, Muzaffarabad

2.1 Introduction

Impact audit is evidence based unique auditing approach employed to evaluate attributed outcomes of an initiative. Accordingly, impact audit of NJHPP was selected to determine impact of the project on power system of the country with respect to its share in total installed capacity, share in total electricity generation, change in electricity generation mix of the country and its impact on environment.

2.1.1 Background of the Project

NJHPP is located in District Muzaffarabad, the State of Azad Jammu and Kashmir (AJK). NJHPP is a run of river power project having an installed generation capacity of 969 MW. The project envisaged diversion of Neelum River's water through tunnels at Nauseri about 41 KM upstream of Muzaffarabad and out-falling in Jhelum River at Chatter Kalas in Muzaffarabad.



2.1.2 Role of the Project

The installed electricity generation capacity of the country was becoming insufficient to support the overall national growth of the country with the increase in demand of electricity. More reliance on short term measures i.e.

thermal power projects resulted in expensive electricity as compared to cheaper and cleaner hydel energy. Expensive thermal power generation also adversely contributed in the environmental issues due to release of excessive Carbon Dioxide (CO_2) in the atmosphere. Therefore, an initiative was taken by the GoP to install a hydropower project with an annual average generation of 5,150 Gigawatt hours (GWh) of cheaper and cleaner environmental friendly energy. Another major reason of this initiative was to establish Pakistan's rights on the Neelum River under the IWT-1960. More importantly, being an environment friendly project, it was aimed to reap additional revenue amounting to US$ 12.533 million annually through sale of carbon credits under Clean Development Mechanism (CDM).

2.2 Overview

The original PC-I of the project was approved by ECNEC on December 31, 1989 at a total cost of Rs.15,253 million. Later on, subsequent to three intermediary revisions of PC-I, fourth revised PC-I of NJHPP was approved by ECNEC on May 22, 2018 at a total cost of Rs.506,808 million.

The project was executed by WAPDA under the supervisory control of MoWR. In order to run the affairs of the project, a separate Company i.e. NJHPC headed by an independent CEO/Managing Director was established on November 18, 2004. The construction activities of the project started in January, 2008 with planned completion period of eight years. However, the project could only be substantially completed in 2018 and started its commercial operation w.e.f July 04, 2018 in July, 2018.

2.3 Scope and Methodology

a. Scope

The NJHPP was commissioned in 2018, therefore, data was analyzed for a period of five years i.e. from FY 2017-18 to FY 2021-22 for ascertaining the level of performance achieved with respect to 'condition with' and 'condition without' the initiative.

The main objectives of the NJHPP were to:

- Achieve power generation capacity of 969 MW.
- Generate annual average energy of 5,150 GWh units.
- Establish water rights on Neelum River for Pakistan.
- Reap benefits of CDM.

b. Methodology

Information was collected and analyzed to determine the impact of the

NJHPP through comparison of targets and achievements, percentage calculations, trend analysis and scrutiny of monitoring reports.

i. Annual installed capacity data was obtained to compare it with the installed capacity of WAPDA and the country, before and after commissioning of the project to calculate its impact in terms of percentage share of the project in enhancing the installed capacity of WAPDA and country respectively.

ii. Impact audit focused on calculating the impact of the project on overall energy generation of WAPDA and country before and after commissioning of the project up to the FY 2021-22.

iii. The impact of energy generation of the project on revenues of WAPDA was also analyzed.

iv. Data relating to generation mix of installed capacity with regards to hydel and thermal power was also obtained to ascertain impact of the project on generation mix of the country.

v. Impact of project on the environment was analyzed by calculating the reduction in release of CO_2 as compared to generation of same amount of energy through thermal power. Further, impact of the project on environment of local area was also analyzed.

vi. Impact on water rights with regards to Kishenganga case on the annual generation of the project was also determined.

2.4 Findings

2.4.1 Impact of NJHPP on installed capacity of WAPDA

During impact audit of NJHPP, it was observed that installed capacity of WAPDA increased by 969 MW after commissioning of powerhouse of NJHPP on July 04, 2018 as tabulated below:

Description	As on June 30, 2018 (without NJHPP)	As on July 04, 2018 (with NJHPP)	Increase in installed capacity of WAPDA after commissioning of NJHPP	
	(MW)	(MW)	(MW)	%age
Installed Capacity of Hydel Power Plants of WAPDA	7,372	8,341	969	13.14%

Impact: The impact of NJHPP on installed capacity of WAPDA was 13.14%.

2.4.2 Impact of NJHPP on installed capacity of the country

During impact audit of NJHPP, it was observed that powerhouse having installed capacity of 969 MW was

commissioned on July 04, 2018. The installed capacity of country before its commissioning i.e. up to June, 2018 was 35,007 MW. After commissioning of powerhouse of NJHPP, total installed capacity of the county during 2018-19 increased up to 38,440 MW which included installed capacity of NJHPP i.e. 969 MW. The impact of the NJHPP on National installed capacity was 2.52 % during the FY 2018-19.

Financial Year	Total installed capacity of the country	Share of NJHPP in total installed capacity of the country	
July to June	MW	MW	% age
2017-18	35,007	-	-
2018-19	38,440	969	2.52%
2019-20	38,703	969	2.50%
2020-21	37,466	969	2.59%
2021-22	40,783	969	2.38%
Average (2018-19 to 2021-22)		**969**	**2.50%**

Impact: Average impact of NJHPP on the total installed capacity of the country was 2.50%.

2.4.3 Impact of NJHPP on energy generation of WAPDA

During impact audit of NJHPP, it was observed that 27,431 GWh energy units were generated by WAPDA during the FY 2017-18. After commissioning of powerhouse of NJHPP, the project generated 3,960 GWh units during FY 2018-19, resultantly, total energy generation of WAPDA increased to 31,146 GWh units wherein share of NJHPP was 12.71%. The data showing the impact of NJHPP on total energy generation of WAPDA for five financial years is tabulated below:

Financial Year	Total energy generation of WAPDA including NJHPP	Share of NJHPP in total energy generation of WAPDA	
July to June	GWh	GWh	%age
2017-18	27,431	269	1.00%
2018-19	31,146	3,960	12.71%
2019-20	37,431	4,842	12.94%
2020-21	37,144	4,789	12.89%
2021-22	33,449	4,307	12.88%
Average (2018-19 to 2021-22)			**12.85%**

Impact: An overall impact of the project on total energy generation of WAPDA was 12.85%.

2.4.4 Impact of NJHPP on total energy generation of the country

During impact audit of NJHPP, it was observed that total energy generation of the country during the FY 2017-18 was 133,833 GWh units. After commissioning of powerhouse of NJHPP, total energy generation of the country increased to 136,059 GWh units during FY 2018-19 including generation of 3,960 GWh units by NJHPP. The relevant data is tabulated below:

Financial Year	Total energy generation of the country	Share of NJHPP in total energy generation of the country	
July – June	**GWh**	**GWh**	**%age**
2017-18	133,833	*269	**0.20%**
2018-19	136,059	3,960	**2.91%**
2019-20	134,753	4,842	**3.59%**
2020-21	144,099	4,789	**3.32%**
2021-22	153,822	4,307	**2.80%**
Average (2018-19 to 2021-22)			**3.16**%

* Test run generation

Impact: The overall impact of the project on total energy generation of the country was 3.16% with an average annual energy generation of 4,500 GWh units.

2.4.5 Increase in revenue of WAPDA

During impact audit of NJHPP, it was observed that annual revenue of WAPDA for the FY 2017-18 was Rs.59,317 million. After commissioning of the project, revenue of WAPDA was increased to Rs.93,941 million in the FY 2018-19 including revenue of Rs.27,797 million earned from NJHPP. The data showing impact of NJHPP on total revenue of WAPDA for five financial years is tabulated below:

(Rs. in million)

Entity	2017-18		2018-19		2019-20		2020-21		2021-22	
	Share in Total		Share in Total		Share in Total		Share in Total		Share in Total	
	Amount	%age	Amount	%age	Amount	%age	Amount	%age	Amount	%age
WAPDA Excluding NJHPP	59,317	100	66,144	70	62,764	58	66,770	60	98,711	69

NJHPP	-	0	27,797	30	45,262	42	44,826	40	43,619	31
TOTAL	**59,317**	**100**	**93,941**	**100**	**108,026**	**100**	**111,595**	**100**	**142,330**	**100**

Impact: An overall impact of NJHPP on the revenue of WAPDA during 2018-19 to 2021-22 was 35.75%.

2.4.6 Impact of NJHPP on the energy generation mix

During impact audit of NJHPP, it was observed that before commissioning of the Project, Hydel to Thermal energy generation mix ratio of the country was 24.43:75.56 (Hydel:Thermal) during the FY 2017-18. Upon commissioning of the project in July, 2018, Hydel to Thermal generation mix ratio improved to 27.50:72.50 (Hydel:Thermal). During the FY 2018-19, energy generation mix ratio improved by 3.07% wherein impact due to commissioning of NJHPP was 1.45%.

Rival Factors:

During the FY 2018-19, two units of T4HPP with installed generation capacity of 940 MW with a share of 1.40% and GGHPS with installed generation Capacity of 108 MW with a share of 0.16% were also commissioned. Similarly, other Hydel Independent Power Producers **(IPPs) of 40 MW were commissioned during the same year having a share of 0.06%.**

Name of powerhouse	Increase in installed capacity of the country during 2018-19		Proportionate increase in energy mix of the country
	MW	%age	%age
NJHPP	969	47.15%	1.45%
T4HPP	940	45.74%	1.40%
GGHPS	106	5.16%	0.16%
Hydel IPPs	40	1.95%	0.06%
Total Increase	**2,055**	**100.00%**	**3.07%**

2.4.7 Generation of clean energy by the project avoiding release of 9.61 million tons of Carbon Dioxide in the atmosphere

During impact audit of NJHPP, it was observed from 4th revised PC-I of the project that after completion, the project was supposed to avoid annual release of 2.5 million tons of CO_2 in the atmosphere on energy generation of 5,150 GWh units. Since commissioning, the project could not achieve its intended annual energy generation of 5,150 GWh units. However, it contributed to a sizable positive impact on the environment by avoiding release of 9.61 million tons of CO_2 in the environment due to generation of clean energy during 2018-22.

Calendar Year	Actual Generation	Targeted Generation as per PC-I	Avoided Emission of CO_2	Loss of Revenue @ US$ 5/Ton
Jan.-Dec.	**GWh**	**GWh**	**million Tons**	**US$ in million**

2018	1,531	2,405	1.60	8.00
2019	4,526	5,150	2.20	11.00
2020	4,941	5,150	2.40	12.00
2021	4,521	5,150	2.20	11.00
2022	2,476	5,150	1.21	6.05
TOTAL	**17,995**	**23,005**	**9.61**	**48.05**

Carbon credits @ US$ 5 per ton of CO_2 emissions were to be claimed by the management from United Nations Framework Convention on Climate Change. As per PC-I, the project would earn CDM revenues of US$ 12.53 million per annum but no efforts were made by the management to avail CDM benefits and the project could not earn the envisaged revenue of US$ 48.05 million against generation of this clean energy under CDM income during 2018-22.

As an impact of non-claiming of the carbon credits, Pakistan's rating on Environment Performance Index (EPI) could not improve internationally and Pakistan stood at 176/180 position in EPI, 2022.

2.4.8 Reduction in annual generation and serious environmental issues due to improper environmental studies at planning stage

During impact audit of NJHPP, it was observed that due to diversion of water of Neelum River through NJHPP, the river flow fell below the intake area up to Muzaffarabad city. This situation created adverse effects on environment in terms of deterioration of river water quality because of less flow and reduction in water supply for Muzaffarabad city. The situation unleashed serious environmental and social issues downstream. It's worth mentioning here that Environmental Impact Assessment report prepared by WAPDA and later on conditionally approved by the Environmental Protection Agency of AJK on January 22, 2011 was deficient as it had not taken into account the social & environmental impact regarding aquatic ecology and dilution of routine urban contaminations, etc. Due to such deficiencies, the minimum environmental flow (water flow) of 9 cumec was found to be deficient when executed on trial basis by NJHPP. Thus, environmental studies at planning stage caused serious environmental issues in Muzaffarabad.

Later on, to address the environmental challenges, minimum flow was increased from 9 cumecs to 20 cumecs which resulted in reduction of water supply to NJHPP causing annual reduction in generation of 335 million kWh units (approximately). This situation had arisen due to lack of due diligence at

the time of project planning stage leading to serious environmental issues for Muzaffarabad.

2.4.9 Impact on generation of NJHPP on account of water rights of Neelum River

During impact audit of NJHPP, it came to notice that Pakistan's Cabinet Committee on Wuller Barrage and Storage Project took a decision on February 08, 1988 in the light of provisions of IWT-1960 that Pakistan should seriously consider construction of all feasible projects on tributaries of River Jhelum for agricultural use and/or hydro electrical use in order to take lead in the region. Accordingly, PC-I of NJHPP was approved in 1989, however, owing to several reasons, work on the project could not start till 2002. Due to this inordinate delay in execution of the project, Pakistan's water rights on Neelum River were reduced to E-flow of 09 cumecs (Kishenganga case). Detail of its impact on generation is tabulated below:

Particulars	Energy in GWh
Annual generation as per PC-I of NJHPP	5,150
Annual generation after Kishenganga case	4,663
Impact of Kishenganga case	**487**

Impact: The financial impact of water rights after Kishenganga case was Rs.4,440.660 million @ Rs.9.1184 per KWh

2.5 Conclusion

The project achieved installed capacity of 969 MW on its commissioning which led to an increase of 13.14% in installed capacity of WAPDA i.e. from 7,372 MW to 8,341 MW, whereas, average impact of this initiative on installed capacity of the country was 2.50%. Further, overall impact of NJHPP on generation of WAPDA was 12.85%. However, the project could not achieve total annual estimated generation of 5,150 GWh units due to deficient environmental studies carried out at planning stage and revised water rights after Kishenganga case. The impact of project on energy generation of Pakistan was an increase of 3.16% with an annual average generation of 4,500 GWh units, whereas, revenue of WAPDA increased by 35%. At the same time**, the impact of project in improving the generation mix was 1.45%.** The project avoided release of 9.61 million tons of CO_2 in the environment on generation of clean energy since its commissioning in 2018. Unfortunately, the project could not earn the envisaged revenue of US$ 48.05 million against generation of this clean energy under CDM and due to non-claiming of the carbon credits, EPI rating of Pakistan could not improve till 2022.

DGA (F&I)

2. IMPACT AUDIT: INITIATIVES TAKEN FOR BETTER SERVICE DELIVERY IN EXCISE & TAXATION DEPARTMENT ISLAMABAD

Introduction

Background

Pakistan's vision 2025 gives special emphasis on knowledge intensive activities that contribute to advancement in technical and digital innovation. Through digital economy, GOP wants to ensure economic prosperity, citizen facilitation and empowerment. In wake of this vision, Excise and Taxation Department, also known as Islamabad Excise, as a part of Islamabad Capital Territory Administration, has also prioritized multiple initiatives to enhance confidence building measures for taxpayers, harnessing tax culture and facilitating general public.

The Excise and Taxation Department serves as a pivotal government agency which is responsible for the administration and collection of various taxes, duties, and excise fee on activities within its jurisdiction in the federal capital territory. Apart from registration of motor vehicles, its primary mandate is to ensure the fair and efficient collection of revenues that contribute to the development of the region and the provision of essential public services.

The Department has multidimensional functions that encompass gathering of both direct and indirect taxes. It oversees the collection of Road Tax, Income Tax (Adjustable), Professional Tax, Advance Tax and Capital Value Tax, Bed Tax, etc. which are direct taxes levied on individuals and businesses based on their earnings. Additionally, the department administers indirect taxes such as the federal excise duty, which is levied on specific goods and services, contributing to the national revenue pool.

Overview of Digital Initiatives

To enhance operational efficiency and to facilitate ease of compliance, the Excise and Taxation Department has embraced technological advancements. It has introduced several online platforms and digital services that enable taxpayers to book online appointments, make payments, and access relevant information

through user-friendly interfaces. This modernization can potentially simplify the tax/fee payment process. It can also promote transparency and reduce administrative burdens. Some of the initiatives taken by the department are as under:

i. Online payment collection system
ii. Introduction of bio-metric verification system
iii. Introduction of online appointment system
iv. Door to door registration

i.

The following are the overall objectives of these digital initiatives:

i. To facilitate the taxpayers and enhance Govt. revenue receipts and recovery
ii. To bring evolution in tax management system and promote tax culture
iii. To ease out mechanism of vehicle registration through digital platforms
iv. To authenticate the process of vehicle transfer through biometric

In order to analyze the impact of these initiatives on public facilitation, improvement in revenue and service delivery, in comparison with manual services before such interventions, DGA (FG) has performed Impact Audit by employing different data analysis and audit techniques.

Audit Scope

The scope of this Audit is to evaluate the impact of introduction of digital services including the systems of online payment, biometric verification, online appointment and door to door registration services of Excise and Taxation Department Islamabad on revenue collection, ease of accessing services and improvement in vehicle registration and transfer processes.

Audit Objectives:

i. To evaluate the effectiveness and efficiency of digital services in terms of tax collection, vehicle registration and biometric verification etc.
ii. Provide recommendations for improvement and enhancement.

Audit methodology

The audit methodology involved a structured approach using time-series analysis. It encompasses a comprehensive review of pre-computerization processes to establish a baseline for comparison. Quantitative and qualitative data on relevant performance indicators were used. Data was collected on indicators of improvement in revenue generation, ease of accessing services and improvement in vehicle registration and transfer processes. Analysis was made employing statistical techniques to measure changes in performance metrics. A qualitative survey was also conducted on a random sample to assess the awareness and effectiveness of new digital systems.

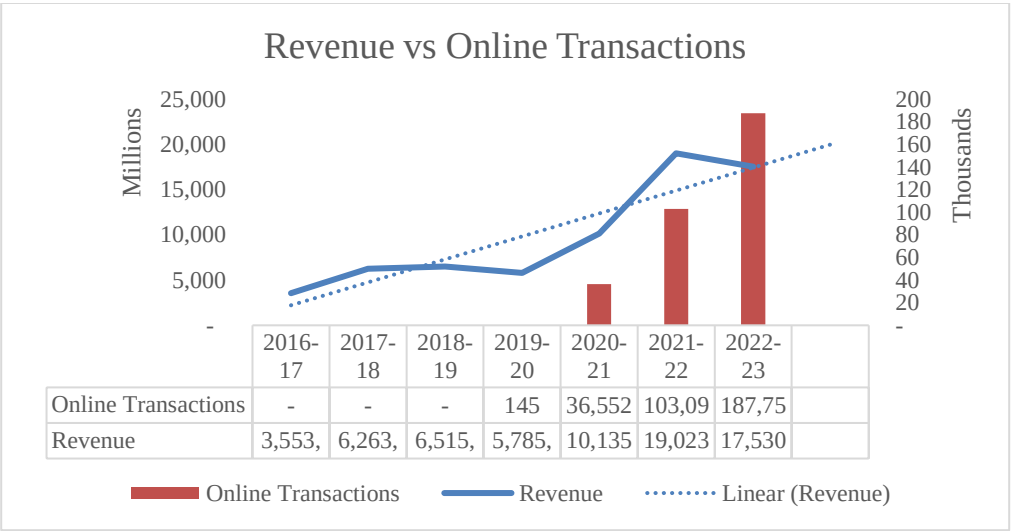
IMPACT AUDIT FINDINGS

Excise & Taxation Department Islamabad had taken following digital and citizen friendly initiatives in larger public interest. Audit evaluated the impact of each of these digital initiatives for improved service delivery and revenue generation. There was no rival cause involved for comparison as these initiatives were taken as a replacement of manual operations. However, percentage increases were calculated with regard to base year data, where applicable.

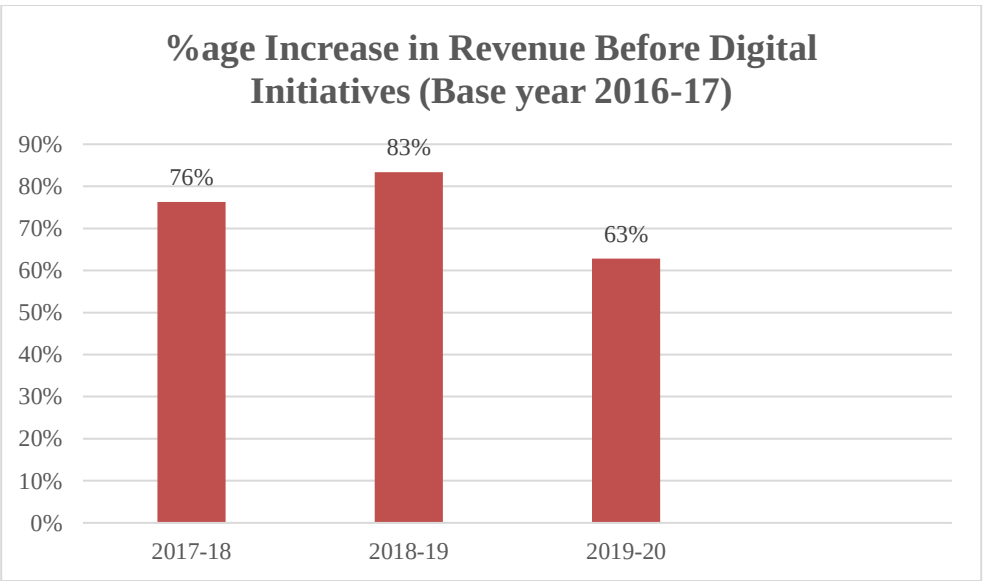
Online Payment Collection System

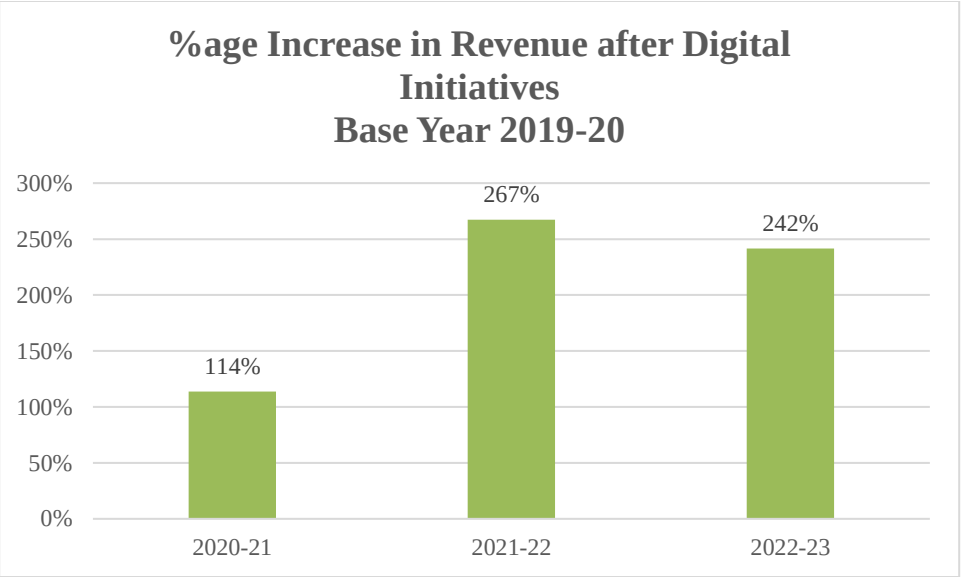
Through the online payment system implemented by the department on 01.06.2020, the general public can pay the Road Tax / Token Tax and registration fee/transfer of ownership fee through a software application namely "CITY ISLAMABAD". The application generates a unique Payment Slip ID which provides option to pay the fees/taxes either by e-Sahulat Center of NADRA across the country or through 1-link service. The above said service has enabled the vehicle owners to pay registration fee/transfer of ownership and Road Tax/Token Tax of their respective vehicles in a more facilitated manner. The initiative helps them to avoid the past practice of standing in long queues for payment. The trend of online transactions for vehicle registration is as under:

S. No.	Financial Year	No. of online Transactions
1.	2019-20	145
2.	2020-21	36,552
3.	2021-22	103,098
4.	2022-23	187,754



The above graph shows that the number of online transactions has been consistently growing, as more citizens have preferred to use online payment facility over the years. The same is further substantiated from the fact that due to the introduction of online payment system, the revenue generated by Excise and Taxation Department, Islamabad has increased from Rs. 6.515 billion during 2018-19 to Rs. 17.530 billion in 2022-23. The charts below depict the yearly revenue growth percentage before the introduction of digital initiatives (with base year 2016-2017) and after the digital initiatives (with base year 2019-2020).





The charts show that the revenue growth has steeply increased after the introduction of digital initiatives by Excise and Taxation Department, Islamabad.

The increase in revenue was less steep in 2022-23 as compared to substantiated increase in revenue after online system introduced in 2019. It to mention that the revenue growth has slowed down a little during 2022-23 due to the fact that taxation rate of new registration in Islamabad is much higher than that in Rawalpindi.

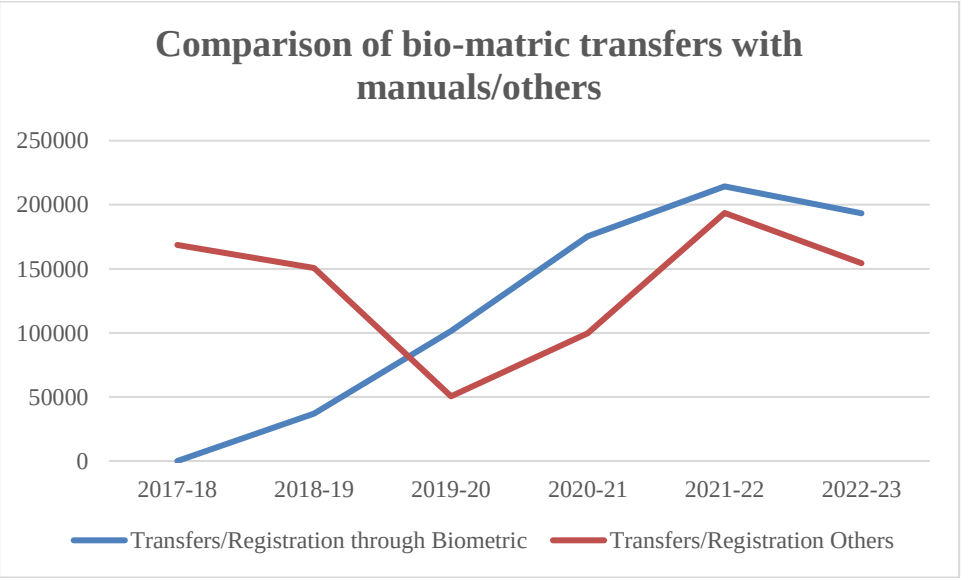
During a qualitative survey by Audit, it was noted that 76.4 percent of survey respondents were aware of digital services, though almost 98 percent considered it as a useful initiative by the Excise and Taxation Department Islamabad.

Introduction of Biometric Verification System

Before introduction of biometric verification system for registration / transfer of ownership of vehicles there were chances of ownership transfer fraudulently by presenting fake/fabricated transfer letter. Biometric verification provides for a unique authentication system with no chance of malpractice and connivance.

Since the start of initiative of Biometric Verification System on 01.03.2019, the chance of getting a vehicle transferred fraudulently or illegally must have considerably reduced owing to the inherent security feature of biometric verification system. It is even more robust in comparison with the

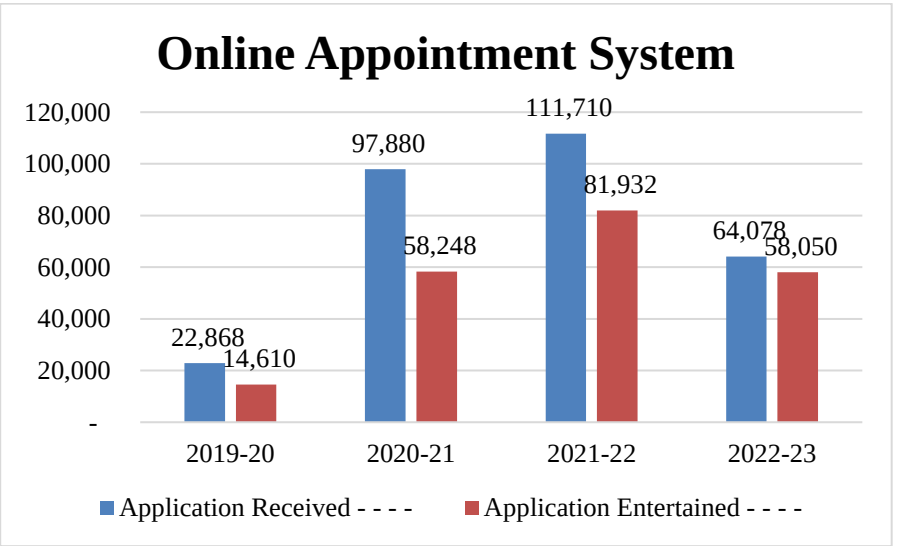
previous system of vehicle transfers through manual buyer/seller verification. The said system made the registration process transparent and ensured elimination of agent mafia involvement. Currently, the BVS facility is available at e-Sahulat centers of NADRA all over Pakistan. With the start of Biometric Verification, the number of vehicle transfers has increased two times because now the purchaser must have to transfer the vehicle in his name in certain period of time otherwise a penalty will be imposed on purchaser. In previous system, the purchaser needed only a transfer letter signed by the seller without any validity. Trend of bio-metric registration/transfer cases vs manual /other transfers (companies/government vehicles, engine change, duplicate book, etc.) is as under:



It is clear from above chart that the number of transfers through bio-metric was on increasing trend as vehicle transfer in case of individuals is mandatory to be routed through biometric verification. However, Audit noted that transfers / registrations of bank-leased, auctioned and imported vehicles are still lying outside bio-metric verification, which also showed upward trend and will remain potential cases of fraudulent transfers. The absence of fraudulent cases data in manual system possesses a limitation to Audit for analyzing the trend in fraudulent cases. During a qualitative survey by Audit, an overwhelming majority of respondents (98.3 percent) have considered it as an initiative that is an effective control against fraudulent practices.

Introduction of Online Appointment System

During Covid-19 pandemic, the department initiated an online appointment system for registration /transfer of vehicles w.e.f. 20.08.2019. After initial data entry the system generates an appointment number and also intimates the date and time for client to approach the office for registration / transfer of vehicle. A separate counter has also been designated at the premises for the said purpose. Due to the online appointment system, the general public has been facilitated for registration / transfer of their respective vehicles without standing in long queues at department. Detail of online application cases is as under:



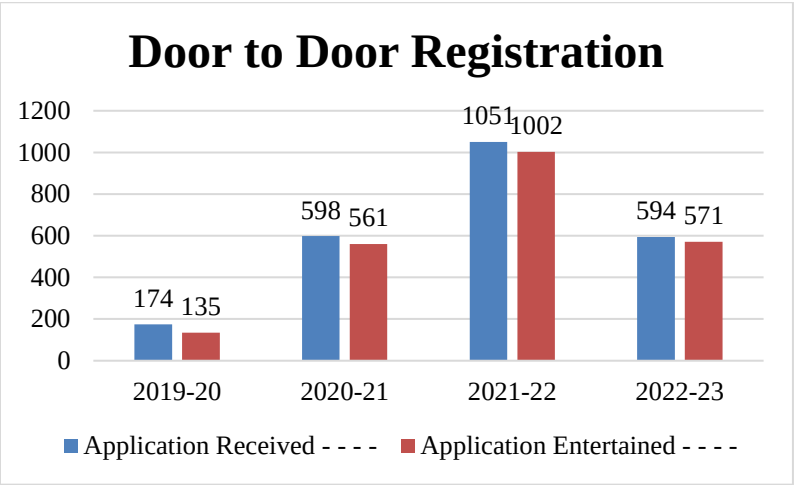
Audit noted that citizens have been increasingly utilizing the online appointment facility which indicates it as a citizen friendly initiative. However, Audit noted a decline in the use of online appointment application during 2023, which is a cause of concern, and the department should take measures to maintain this facility.

During the survey by Audit, 94.3 percent responses showed that people consider it a useful digital initiative but on the other side, only 52.8 percent were aware of this service.

Door To Door Registration

The Excise & Taxation Department, with collaboration of NADRA, started a Door to Door Registration of Vehicle w.e.f. 20.08.2019 for facilitation

of general public. Through this service, the applicants can contact with a call center and take appointment for the service. The staff of Excise & Taxation Department will then visit the applicants at their vicinity for completing due process at doorstep.



Audit noted that registration/transfer of vehicles at doorstep of citizens has shown an increasing trend with a little decline in 2022-23 Overall, the chart shows an upward trend but it is not a hugely popular service, probably because of increased fees involved. The decline in use of above service is a matter of concern for audit and the department should take measures to keep it intact. As per survey results, most of the respondents considered it as a useful initiative, a significant number (38.4 percent) was not even aware of this service.

Conclusion

Audit concludes that the digital initiatives taken by the department have shown positive impact on service delivery and thereby brought improvement in revenue generation. The impact is mainly attributable to the increased number of digital transaction over a period, facilitation of citizens by enhancing outreach of the service through door to door facility, saving time through online appointments and improvement in revenue generation. Biometrically authenticated transfers are inherently more secure, therefore, it is a strong step by the department to reduce fraudulent/bogus transfers of vehicles. Further, the online accessibility of digital service to the citizens has also reduced the role of agent mafia. The online initiative has also offered 24/7 accessibility of departmental facilities. On contrary, Audit also noted a decline in all the key

indicators during 2022-23 which needs to be explored for ensuring continuation of digital efforts for enhanced service delivery. Moreover, awareness among masses for using digital services needs to be enhanced.

Audit Recommendations

i. The continuation of digital initiatives is strongly recommended to ensure continuity of public facilitation and improvement in revenue generation.
ii. A mechanism should be devised to authenticate transfer of vehicles lying outside the system to avoid fraudulent transfer.
iii. Audit recommends that the Department should take measures to ensure that more residents become aware of the digital services to stay facilitated.
iv. Audit recommends ensuring the effectiveness and reliability of online tax collection systems. In this regard, IS Audit of the technology infrastructure including security protocols and data encryption methods are highly recommended to identify the potential vulnerabilities.
v. Continuous monitoring of transaction logs and system activities are recommended to help detect anomalies or irregularities which may result in fraudulent activities.
vi. Audit recommends investing in employees training programs to enhance the skills of tax administration personnel responsible for managing online tax collection systems. This includes staying abreast of the latest technological advancements and cyber security measures to effectively respond to evolving threats and risks posed to the system.

DGA Works Federal

CHAPTER 13
IMPACT AUDIT
DENGUE CONTROL PROGRAMME - CDA

The Impact Audit is aimed at determining impact of initiatives or programmes of an organization. It focuses on determining the output and outcome attributable to an initiative. The main purpose of the impact audit is to critically review the processes and outcomes to identify those risks which have hindered it from achieving its intended objectives. Impact Audit of dengue control programme of Directorate of Health Services (DHS), under Capital Development Authority (CDA)/ Metropolitan Corporation Islamabad (MCI) was conducted by Directorate General of Audit Works (Federal), Islamabad in December 2023.

1. Introduction:

Dengue is a vector-borne viral disease transmitted by mosquitos of the genus Aedes (Aedes aegypti & Aedes albopictus), which are widely distributed in subtropical and tropical areas of the world especially in urban and semi-urban areas. More than half of the world's population is at risk of dengue infection. Each year, an estimated 390 million dengue infection cases occur around the world of which 80% develop mild symptoms. Around 1% develop serious complications such as Dengue Hemorrhagic Fever (DHF) and Dengue Shock Syndrome (DSS), leading to about 22,000 deaths worldwide. Early identification and good clinical management can however, reduce the case fatality to less than 1%. [1]

[1] National Institute of Health (Centre for Disease Control), Ministry of National Health Services, Regulations and Coordination, Advisory No. F.1-22/Advisory/CDC/2023 dated 21.06.2023.

The first confirmed outbreak of dengue fever in Pakistan was reported in 1994, with sudden rise in cases and epidemic trend in Karachi in November 2005. Since 2010, Pakistan has been experiencing epidemic of dengue fever.

Dengue fever is now endemic to Pakistan, with seasonal peaks and with several outbreaks reported in 2010, 2017, 2019, 2020, 2021 and 2022. The dengue cases typically increase in September/October. The dengue cases were significantly higher in 2022 (between January and September) as compared to the same period during the last four years. WHO, in September 2022 reported 25,900 cases and 62 deaths thereof due to dengue virus.

2. Overview:

Dengue fever claims many lives, every year, highlighting the need for maximum awareness campaigns to save lives besides providing standard guidelines and capacity building for planning and implementing preventive and control measures. No medicine is available to treat dengue. To minimize the chances of disease, the main areas of focus are vector control, case management and community awareness. Responding to the challenge, Ministry of National Health collaborated with WHO in the year 2008 to develop long term plan for dengue prevention and control within the Malaria Control Programme. Since June 2011, the activities of the Federal Ministry of Health devolved to the provinces. National Institute of Health (Centre for Disease Control – A National Focal Point for International Health Regulations) issues advisories for the Prevention and Control of Dengue Fever to all Provincial Health Departments, Healthcare Regulatory Bodies/ Commissions, Departmental Health Institutions, Public/Private hospitals, Health Service organizations/Health Directorates, etc. The Dengue Control Programme contains following broader components with the objective to make institutionalized and sustainable arrangements to combat dengue:

(a) Public Health Actions:

i. Strengthening of disease surveillance – Timely detection of new cases, clusters and identification of hotspots to carryout case response activities

ii. Integrated Vector Management – continuous identification, destruction and monitoring of mosquito breeding sites, preventing mosquitos from egg-laying habitats by environmental management, disposing of solid waste properly, covering and cleaning of domestic water storage on a weekly basis, applying WHO recommended insecticides, as vector control measures

iii. Personal Protection – wearing long sleeved clothes, use of mosquito repellant, use of bed nets, use of mesh screens on windows

iv. Risk Communications & Community Engagement – arranging health awareness sessions to sensitize community, dissemination of brochures, raising awareness in community through use of print, electronic and social media, improving community participation and mobilization for mosquito control activities at community level

v. Monitoring & Evaluation – Active monitoring and surveillance of vectors to determine effectiveness of control interventions

(b) Laboratory diagnosis

(c) Treatment/Clinical Management – Early recognition and understanding of the clinical problems and rational approach to case management and a good clinical outcome, initiate clinical management of suspected case in high endemic areas without waiting for laboratory result

(d) Reporting – Preparation of a line-list for all the suspected cases with information (demographic, clinical, & risk factor), enter data in DHIS-2 and share with NIH

It is responsibility of the civic regulatory body and the local health authorities to control the spread of the dengue virus in its peak season. One of the key strategies is by prioritizing the strengthening of healthcare services, which serves as a cornerstone in the public sector.

The Directorate of Health Services was established in 1984 and it has been operating under the administrative control of the Metropolitan Corporation Islamabad (MCI). It has evolved into a network of 13 medical centers and 2 mobile units and delivers primary healthcare services to the residents of Islamabad within its municipal boundaries. However, financial arrangements are under Capital Development Authority (CDA). As per Schedule-II [Rule 3(3)] of Rules of Business, 1973 (amended up to 01.12.2021) CDA and MCI are under the administrative control of the Ministry of Interior (Interior Division).

The primary objectives of the Directorate of Health Services encompass the prevention of vector-borne diseases such as dengue and malaria through proactive measures, including larvicidal treatments, spraying initiatives, and fogging activities aimed at controlling disease vectors. Additionally, the Directorate strives to fulfill its mission by conducting educational outreach programs and awareness campaigns targeting the general public. By imparting knowledge and promoting preventive measures, the Directorate aims to empower the community to actively participate in disease prevention, fostering a healthier and more informed population.

The Impact audit had the following key objectives to:

i. Determine whether DHS is effectively carrying out all larvicidal programmes, spraying, and fogging operations to prevent the spread of vector-borne diseases (malaria, dengue, etc.).

ii. Determine if the Directorate adequately provides health education and awareness programmes to the general public for desired outcomes.

iii. Assess whether active and passive surveillance/ monitoring and periodic reporting of Dengue Control programme is carried out.

iv. Assess whether the capacity building of all primary healthcare workers/professionals is carried out through regular trainings.

v. Determine on the basis of Human Resource Data/ sanctioned and available strength whether DHS is delivering as per approved plans and schedules.

vi. Determine if the DHS has devised any strategy to ensure the timely availability of required quantities of Pesticides, Spraying machines, vehicles and allied equipment.

vii. Evaluate if the DHS is following WHO standards for managing in dengue control programme.

viii. Determine whether the DHS's resources are being used effectively to deliver desired results.

3. Scope and Methodology:

a. Scope:

The scope of the Impact Audit of dengue control programme under the Directorate of Health Services is as under:

- What was the approved plan of DHS for preventive measures, elimination of dengue virus growth and its larvae in urban areas of Islamabad as per mandate of DHS?
- Were any impact assessment studies carried out?
- Whether service delivery standards were followed by healthcare establishments on the subject matter
- What resources financial as well as human used during the dengue virus growth season to overcome this deadly virus? Particularly, door to door anti-dengue awareness campaign in the Federal Capital, and deployment of Entomologists in campaign during last five years (2019-2023)

b. Methodology:

Audit methodology included data collection, data analysis and evolution of the operations relating to anti-dengue control.

The data collection phase involved the systematic gathering of both qualitative and quantitative information. Various methods were employed, including a thorough review of relevant documentation related to the Directorate. Additionally, oral testimony was collected through discussions and meetings with staff/ workers at the Directorate and through a questionnaire, certain information was collected, and trend analysis was conducted.

Audit team obtained the information from the record of the Directorate and evaluated the entity's operations. Data was also collected through checklists, to evaluate the quality of service.

Finally, the collected data was analyzed and evaluated carefully against the predetermined audit objectives and criteria which were devised in line with the health interventions on the subject matter.

The absence of standardized benchmarks or impact standards for primary healthcare units operating in the Federal capital posed a considerable challenge in effectively measuring and comparing the Impact of the anti-dengue control programme. DHS had not developed a comprehensive operational framework containing clearly defined organizational objectives and impact indicators. This lack of a structured framework by the entity also posed challenges for Audit in precisely assessing the DHS's impact in relation to its established benchmarks. These limitations hindered the ability to conduct a comprehensive evaluation and make meaningful comparisons with the best practices on the subject matter. Consequently, it became challenging to ascertain the extent to which the anti-dengue control programme was effective.

4. Findings:

The audit findings are given in the following paragraphs:

4.1 Critical Review

The trends in Dengue cases in urban areas of Islamabad and measures adopted were evaluated which included expenditure incurred on Dengue control measures and the corresponding increase/decrease in the number of Dengue patients over a five-year period (2019-2023). The analysis aimed at providing insights into the effectiveness of control measures and their impact on both financial resources and public health outcomes.

The impact of Dengue control measures in Islamabad over the years is depicted in the following table:

Comparative Analysis of Dengue Cases

S. No	Year (Jan. to Dec)	Expenditure (Rs)	%Increase (Decrease) in Expenditure	Number of Dengue Cases	%Increase (Decrease) in Cases
1	2019	4,406,371	-	2,074	-
2	2020	6,575,291	49.22	15	(99.28)
3	2021	5,677,651	(13.65)	1,093	7186.67
4	2022	13,374,413	135.56	1,766	61.57
5	2023	13,711,577	2.52	880	(50.17)

Dengue Cases Overview:

The above table shows that the number of reported dengue cases varied throughout the period. There was a mix trend with a significant decrease of 99.28% in 2020. Subsequently, the cases rose to 1,093 in 2021 (7186.67%). The year 2022 witnessed an increase with a figure of 1,766 cases, followed by a notable decline to 880 cases in 2023 (50.17%).

Expenditure Overview:

The table reveals a significant increase in expenditure on dengue control measures over the years. In 2019, the expenditure stood at Rs 4.406 million and by 2023, it reached Rs 13.712 million, marking a substantial 211.7% increase. Notably, there was a drastic surge of 135.56% from 2021 to 2022, indicating a substantial financial commitment to dengue prevention.

4.2 Issues relating to Planning, Execution and Monitoring of Dengue Control Programme

Chapter 5 of WHO Guidelines for Dengue Diagnosis, Treatment, Prevention and Control 2009, describes that the prevention of and response to dengue and other arboviruses involve developing and implementing preparedness plans. Establishing a comprehensive preventive schedule for anti-dengue measures throughout the year is crucial to effectively combat the spread of the virus. Below is a general guideline that can be adapted to local conditions and the specific epidemiological characteristics of the region. It is important to note that the schedule may vary based on factors such as climate, mosquito activity, and historical patterns of dengue transmission.

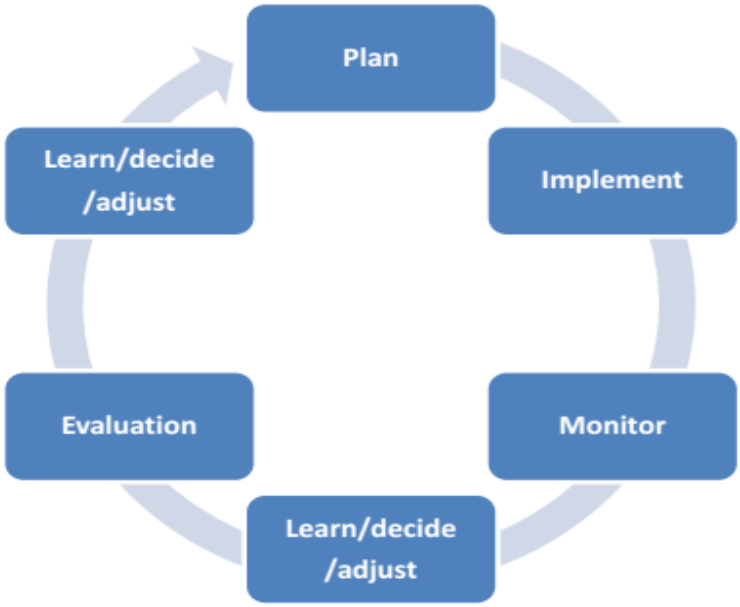
i. January - February: Preparing for the Dengue Season (Community Awareness Campaigns)
ii. March - April: Early Intervention and Vector Control Measures
iii. May - August: Dengue Season (Intensified Vector Control and community engagement)
iv. September - October: Post-Dengue Season Assessment (Epidemiological Surveillance, Community Feedback and Improvement)
v. November - December: Planning and Readiness for the Next Year (Review and Planning, Capacity Building)

This preventive schedule should be viewed as a flexible framework that can be adapted based on the local context and the evolving nature of dengue transmission. Regular monitoring, assessment, and community involvement are crucial components of a successful anti-dengue program. An effective Plan/schedule of a programme and user-friendly M&E system will be designed, installed and implemented for Dengue Control

Program at appropriate level. The major components of M&E system would be:

- Approved activity/schedule plan
- M&E framework to track progress of implementation
- Measureable and verifiable outcome and output indicators

Dengue Control Activity Cycle



Audit observed that the DHS neither installed and implemented nor designed an effective and user friendly monitoring and evaluation system. Further, Management failed to formulate the measureable and verifiable outcome and output indicators, as detailed below:

- No approved preventive schedule for the anti-dengue programme existed in the years preceding the current year (January to December).
- No effective system of monitoring & supervision at Sector level by Health Directorate Office Islamabad.
- Public Health Workers (PHWs) lacked training for indoor or outdoor teams supervision and counter checking
- Meetings on dengue control program along with the minutes to check dengue activities and issues

4.2.2 Non-promulgation of Dengue specific regulations

Para 3.3.2 of WHO Guidelines for Dengue Diagnosis, Treatment, Prevention and Control 2009, emphasize the process of advocacy through which groups of stakeholders can be influenced to gain support for and reduce barriers to specific initiatives or programme. Multiple strategies, often used simultaneously, are key to the success of any advocacy efforts. Strategies may include social mobilization, and administrative, legislative, regulatory, legal and media advocacy.

A number of legal issues are involved in Dengue Control Programme which requires in time legal actions for smooth functioning of the program. For this purpose Dengue specific regulations will be promulgated.

Audit observed that no regulations were promulgated. The Directorate of Health Services, CDA/MCI, Islamabad, did not advocate for the promulgation of anti-dengue regulations. Despite having a fully established legal directorate, the CDA neither enacted Dengue-specific regulations nor appointed law officers at various levels to fine and penalize violators.

4.2.3 Trainings

As per Para 2.2.5 of WHO Guidelines for Dengue Diagnosis, Treatment, Prevention and Control 2009, to ensure the presence of adequate staffing at all levels, the education and training of doctors, nurses, auxiliary healthcare workers and laboratory staff are priorities. Educational programmes that are customized for different levels of health care and that reflect local capacity should be supported and implemented widely.

Performance of staff is directly related to the technical capacity and skills of staff. For this purpose, following trainings may be included in this programme:

- Knowledge of vectors and transmission of disease for own care
- Develop capacities for effective recognition, clinical management and laboratory diagnosis of dengue
- Community activists and social mobilizers for community action
- Media & Communication personnel for better understanding of dengue prevention and control.

The record of the Director General Health Services, CDA/MCI, and Islamabad from 2018-19 to 2022-23 reveals that:

- there is lack of training of Officials & Teams regarding vector surveillance
- the Local Government was asked for training of staff but no schedule given yet
- the trainings of officers and staff to be conducted on urgent basis by Health Department Master Trainers.

4.2.4 Non Up-dation of Hot Spot Lists

As per Para 4 (a) of Advisory of NIH (Centre for Disease Control) states that identification of hotspots to carry out case response activities will strengthen disease surveillance against Dengue. According to the General Operating Procedures for the Prevention & Control of Dengue, there were defined hotspots, including godowns, areas with water ponding, hospitals, nurseries, factories, swimming pools, under-construction sites, tire storage areas, marriage halls, abandoned buildings, graveyards, hotels, service stations, garbage sites, mosques, workshops, parks, educational institutions, junkyards, dispensaries, and schools.

Audit noted that only the predefined hotspots outlined in the above criteria were considered, and these had not been updated. As a result, the audit concludes that numerous other hotspots were not included in the assessment. This oversight hinders the ability to comprehensively cover the highest level of the community, thereby impeding the maximum achievement of objectives and goals.

4.2.5 Non-Observing Environmental Management

As per Para 3.2.1 of WHO Guidelines for Dengue Diagnosis, Treatment, Prevention and Control 2009, environmental management seeks to change the environment in order to prevent or minimize vector propagation and human contact with the vector-pathogen by destroying, altering, removing or recycling non-essential containers that provide larval habitats. Such actions may be the mainstay of dengue vector control. Three types of environmental management are defined:

1. **Environmental modification**

Long-lasting physical transformations to reduce vector larval habitats, such as installation of a reliable covered water supply to communities, including household connections.

2. **Environmental manipulation**

   Temporary changes to vector habitats involving the management of "essential" containers, such as frequent emptying and cleaning by scrubbing of water-storage vessels, flower vases and desert room coolers; cleaning of gutters; sheltering stored tyres from rainfall; recycling or proper disposal of discarded containers and tyres; management or removal from the vicinity of homes of plants such as ornamental or wild bromeliads that collect water in the leaf axils.

3. **Changes to human habitation or behavior**

   Actions to reduce human–vector contact, such as installing mosquito screening on windows, doors and other entry points, and using mosquito nets while sleeping during daytime. The choice of approach may be effective, practicable and appropriate to local circumstances. Actual or potentially important container types that cannot be removed from the area may be dealt with in situation.

Audit observed that Environmental Management was not emphasized by the organization. Improvements in, and maintenance of, urban infrastructure and basic services contribute to the reduction in available larval habitats since large populations are often associated with poor water supply and inadequate sanitation and waste disposal services.

4.2.6 Thermal fogging instead of cold fogging - A cause of pollution and diseases

As per para Table 3.3 under Para 3.2.3 of WHO Guidelines for Dengue Diagnosis, Treatment, Prevention and Control 2009, the choice of insecticide formulation for space spraying in and around dwellings should be based on its immediate environmental impact and the compliance of the community. Only insecticide products with high flash points may be used for thermal fogging. Space spraying formulations are usually oil based, as the oil carrier inhibits evaporation of small fog droplets. Diesel fuel has been used as a carrier for thermal fogging agents, but it creates thick smoke, has a strong smell and creates oily deposits which may lead the community to reject its use.

The programme may be environmental friendly and having no adverse effect on environment rather due to Dengue programme interventions, the incidence of morbidity and mortality would be reduced as well as health hazards associated with this disease thus producing healthy nation. Reduction in incidence of Dengue disease would result in healthy clean and aseptic environment.

Audit discovered that in thermal fogging, High-Speed Diesel, among other substances, was utilized as detailed below:

S. No.	Financial Year	Diesel (For Fogging) Litre
1	2018-19	1,108
2	2019-20	5,092
3	2020-21	2,685
4	2021-22	8,303
5	2022-23	10,230
Total		**27,418**

According to medical experts, the direct inhalation of diesel fumes, combined with insecticides, has the potential to worsen conditions such as asthma or bronchitis, particularly among individuals with pre-existing respiratory ailments. Those most vulnerable to exacerbation include pregnant women, small children, and the elderly. Eye specialists also emphasized that diesel fumes can lead to irritation and itching on the skin and eyes. Prolonged exposure to such fumes could result in temporary swelling of the corneas. Therefore, cold fogging may be adopted to avoid pollution.

4.3.7 Non-conducting of research

As per Para 3.3.7 of WHO Guidelines for Dengue Diagnosis, Treatment, Prevention and Control 2009, operational research may be oriented to the priority needs of the programme in order to generate the evidence base for adaptation of strategies and interventions. This may include studies on ecology of the vector, the efficacy, effectiveness and cost effectiveness of the existing and promising new vector control methods, formative research on relevant cultural practices, and guidance for engaging communities in programme activities.

The following areas were not addressed by the organization:

a) Impact of awareness campaigns, b) Social / financial impact of Dengue, c) Control methodology, d) Environmental impact of insecticidal spraying, e) Knowledge, attitude and practices (KAP) regarding Dengue, f)Insecticide resistance, g) Disease dynamics, h) Vector dynamics, i) Agent dynamics, j) Any other aspect requiring research in Dengue.

Study of research articles revealed that fogging knocks down only the adult mosquito, and not the larvae that are the source of breeding. Larvicide measures, on the other hand, are recognized as an important

intervention to prevent large-scale spread of dengue. Targeting adult mosquitoes offers temporary control and that, too, in limited settings and under ideal conditions. For example, in the case of outdoor fogging the mist most often does not attain the required concentration and reach in order to be to be effective. Pre-conditions like wind speed and direction as well as air temperature influence the concentration. Indoor fogging, on the other hand, is a challenge due to reluctance of residents/owners in allowing fogging into their premise. Besides the limitation of resources, there are practical limitations in covering all houses/premises across the city. The frequency of fogging is another determinant. It is recommended to be repeated after 3-4 days which is far from the reality across the city.

It was noticed that the dengue control programme had been implemented from 2018-19 to 2022-23 by DHS, Islamabad. Although entomologists and laboratory facilities were operational, no evidence of recorded operational researches or conducted activities was found.

4.3.8 Pesticides were purchased without the Lab test Reports

As per para 3.2.5 WHO Guidelines for Dengue Diagnosis, Treatment, Prevention and Control 2009, insecticides resistance must be considered as a potentially serious threat to effective dengue vector control. WHOs kits for testing the susceptibility of adult and larval mosquitoes remain the standard method for determining susceptibility status of virus.

Pesticides are essential component for vector control to prevent the vector borne diseases like Dengue. Quantities of these chemicals have been calculated keeping in view the requirements of the districts given by the EDO office to the Director General Health Services Islamabad (DGHS). The WHO provided technical assistance in procurement of pesticides and case management.

Audit observed that that different kinds of pesticides about 12,626 liters were purchased during the years 2019-23 but no lab tests were conducted to check the quality of the pesticides for effective control:

S. No	Year	Qty Pesticides(Litre)
1	2019	704
2	2020	2,565
3	2021	1,563
4	2022	4,225
5	2023	3,569
Total		**12,626**

Conclusion:

Impact assessment of the dengue control programme revealed that there was a mix trend of reported cases during last five calendar years as under:

S. No	Year (Jan. to Dec)	Number of Dengue Cases	%Increase (Decrease) in Cases
1	2019	2,074	-
2	2020	15	(99.28)
3	2021	1,093	7186.67
4	2022	1,766	61.57
5	2023	880	(50.17)

Following are the main deficiencies in implementation of the programme:

i. Lack of preparedness

ii. Non-existence of regulations including environmental management in CDA in line with other Government organizations like Health Department Government of Punjab

iii. Non-updation of hot spot list

Recommendations:

The key issues that have hindered the Directorate's ability to effectively achieve its objectives and need to be addressed for the future improvement of its impact, are as follows:

i. Improved Planning

The DHS dengue control program should focus on developing robust planning strategies that align with their objectives and prioritize the healthcare needs of the population they serve. This will help in better resource allocation and effective service delivery.

ii.Standardized Operational Framework

Implementing a standardized operational framework will ensure consistency and efficiency in the service delivery.

iii. Systematic prevention works best

Instead of fogging, the focus may be on long-term preventive measures and creating awareness among people. The community has a very important role in play in controlling dengue by keeping private premises clean.

iv. Enhance Oversight Mechanism through regular monitoring

Establishing a proper oversight mechanism is crucial to ensure the delivery of quality healthcare services. Regular monitoring and evaluation may be conducted to identify areas of improvement and to ensure the provision of quality healthcare services.

v. Optimal Resource Utilization

The DHS should strive to optimize the utilization of available resources, including the healthcare workforce, medical equipment etc. Addressing the shortage of qualified healthcare workforce and ensuring the availability of essential pesticides supplies.

vi. Enhance Diagnostic Services of Laboratory

To ensure the optimal functionality of the lab and enhance diagnostic services, it is crucial to invest in the procurement of the latest equipment besides the recruitment of qualified personnel capable of performing laboratory functions.

DG (CA&E) North, Islamabad

Up-gradation of Berthing Facility for Boats at Gwadar Port Authority

1. Introduction:

Gwadar is a port city on the southwestern coast of the Pakistani province of Balochistan. The city is located on the shores of the Arabian Sea, opposite Oman. Strategically placed at the entrance of the Persian Gulf, Gwadar emerged as a key player in regional geopolitics and economic development. It has the potential to become a major trading hub connecting South Asia, the Middle East, and Central Asia. Gwadar forms the southern endpoint of the China-Pakistan Economic Corridor (CPEC), and its deep-sea port is a focal point of the project.

Gwadar miniport also known as Gwadar fish harbor is a smaller port facility adjacent to the main Gwadar Port. It was constructed by M/s. BESIX, a Belgian civil works company from 1988 to 1992, to enhance the local fisheries industry. While not as large or developed as the main Gwadar Port, the Miniport serves as a hub for the local fishing community, providing a central location for the fishermen to bring their catch for sale and distribution, as 85% of Gwadar's population relies on fisheries as their main source of income. It has facilities for handling fish and seafood, including storage and processing facilities. However, efficiency of the port was reduced due to non-up gradation of berthing facility since long. Thus, it was inevitable and imperative to invest in up gradation of the berthing facility to extend support to traders and fishermen. In this background, the Government initiated the up gradation of berthing facility for boats at Gwadar Port Authority (GPA) amounting to Rs.131.975 million. The up gradation of the miniport began in 2020.

The main objective of the project was to facilitate local fish industries by providing efficient berthing and auctioning facilities. The total land area of the harbor/mini port is 37 acres (excluding 8.0 acres of jetty area). The reinforced concrete jetty (416 meters long and 64.7 meters) is resting on 1,407 numbers of tubular steel piles driven up to 30-40 meters into the sea bed. The jetty is connected to the shore through 84-meter-long earthen embankment. The whole structure is seismic resistant. Impact Audit was undertaken to assess whether the project produced results that create impact to the masses.

2. Background:

Impact audit was started fro the audit year 2023-24, by office of the Auditor General of Pakistan. The aim was to evaluate the effects of initiatives or programs, focusing on identifying the outcomes directly linked to a new initiative, program, or recent change to an existing program, while isolating other contributing factors or variables. Impact audit reports will help stakeholders understand the net results of programs and initiatives more systematically. Timely action based on these reports can improve service delivery, financial management, and governance.

The up-gradation of three berths at Gwadar Harbor cum Miniport was aimed at providing safe berthing space to fishing boats and enhancing fish harbor efficiency to make it at par with the other ports of the world, thereby addressing the major grievances of the local fishermen. The project started on July 01, 2020, and was completed on June 30, 2021. During the year 2022-23, Gwadar Fish Harbor/Miniport generated an income of Rs.34.414 million from port operations, fish marketing and auctioning activities which was higher than the targeted income of Rs.17.945 million. The quantity of fish catch per boat increased by 5% to 10% per annum and fish catch increased to 4,622 tons in 2022 as compared to 1,889 tons in year 2021. The revenue from sale of fish also

increased to Rs.629.391 million in 2022 as compared to Rs. 330.555 million in 2021. This resulted in reduction of poverty through increased trade activities.

Objectives:

As per PC-1, the Financial, Socio-Economics &Sectoral objectives of the projects were;

Financial objectives

- Increase the income and enhance the livelihoods of poor fishermen households in Gwadar
- Provision of safe berthing space for fishing boats
- Offers safety to fishermen
- Provision of facilitates to make handling of fish catch safe
- Creation of business opportunities
- Safe berthing and uploading of fish catch 24/7
- Enhancement of commercial activities and income opportunities for local fishermen and Port Authorities.
- Delivery of improved handling & marketing facilities to the fishermen to increase their income
- Generation of employment opportunities and full operationalization of fish harbor

Socio-Economic objectives

- Social uplift of locals by creating employment opportunities
- Provision of better marketing facilities for the fish catch 24/7.
- Poverty alleviation through trade & commerce
- Socioeconomic integration of Gwadar to the rest of the country
- Growth in the export of fish and other seafood
- Make the port self-sufficient

Sectoral objectives

- To comply with International Maritime Organization (IMO) rules, which warrant the safety of life and property at sea
- To integrate the connectivity of Gwadar port with the other ports

3. Scope and Methodology

a. Scope:

The audit's focus was confined to the evaluation of impact of up-gradation of berthing facility for boats at Gwadar port which was launched at initial cost of Rs.128.050 million for 2020-21.

b. Methodology:

The methodology of impact audit consists of qualitative and quantitative approaches based on obtaining both primary and secondary data. Following techniques were used to gather the data;

- Understanding the audit entity
- Physical visit of the Gwadar port and mini fish harbor
- Questionnaires were served to the management and discussions were held with management and their responses were gathered.
- Interviews of fishermen were conducted and their responses were recorded.
- Apart from this, other secondary data sources like websites, PC-I & IV, tender files, correspondence files, financial statements and other miscellaneous resources were used.

4. Findings (Impact Analysis of the Project/ Actual Achievements)

The berthing up-gradation facility was based on its original design capacity which was planned and approved in 1988 – 1992. By restoring

the facilities to their original design capacity, the project intended to bring back the original optimal functioning state of the harbor. However, since then (1988-92), the population of Gwadar and the number of boats has increased. According to the Directorate of Fisheries Balochistan, there were 2,021 registered fishing vessels in 2014 in Gwadar which increased to 3,291 in 2022. The project facilitated in the connectivity of Gwadar port with other local and regional ports.

During the field visits following findings were observed on up-gradation:

4.1 The feasibility study of the up-gradation of berthing facility design was not conducted before start of the project. The matter was reported to the management in November, 2023. The management replied that the requirement of feasibility study was not mandatory for rehabilitation work. The reply was not tenable as with the feasibility study more berthing capacity could have been achieved.

4.2 The new rubber wooden fenders and vertical ladders were installed at existing floating pontoon to further improve the safety and protection of boats. However, capacity to accommodate the maximum number of vessels remained the same 05 boats (120 tons each) at one time, whereas the frequency of docking of boats at miniport increased over time and there was a long queue of boats waiting for their turn. This unnecessary time lag was negatively impacting the earning capacity of the fishermen as they had to wait for longer duration. The matter was reported to the management in November, 2023. The management replied that 100 boats per day were docking at the port. The reply of management was not tenable as only 05 boats could dock at one time.

4.3 The design capacity of fenders was not tolerant enough to handle the boats safely, further reducing the impact of the project on the

livelihood of the fishermen. During the visits, it was observed that the boats parked at the miniport were pressing hard against the rubber fenders. Due to this, many boats had suffered accidents and were broken while mooring. Fishermen tried to overcome this limitation by mounting tractor tires on their vessels. Simultaneously, truck tires were also mounted as additional buffers all over the berthing area for extra protection of the boats and to avoid friction/collision. The matter was reported to the management in November, 2023. The management replied that the rubber tires were mounted on boats for extra safety protection against the collision. The reply was not tenable as the mounted fenders should have been more strengthened.

4.4 The up-gradation included the replacement of 35 vertical stairs with fittings costing Rs. 5.950 million as against the budgeted amount of Rs.3.500 million. However, the new stairs were already started rusting due to a lack of proper maintenance and the low-quality substandard of the stairs. The matter was reported to the management in November, 2023 but no reply was received.

4.5 To ensure the quality and safety of fish catch proper storage facilities were essential. However, mini port did not have a proper cold storage facility due to this fish could not be stored for longer time. The matter was reported to the management in November, 2023 but no reply was received.

4.6 The project was awarded to M/s R.A.B Construction Company SMC- Private Ltd amounting to Rs.128.050 million. The company neither had a valid certificate from the Pakistan Engineering Council nor possessed relevant experience in similar nature of projects. It was also observed that management incurred excess

expenditure against the approved PC-I cost under the various head of accounts as detailed below:

				Rs in million
S.No.	**Description**	**Approved PC-I cost**	**Actual expenditure**	**Excess cost**
1	Wood fenders	9.100	13.650	4.550
2	Vertical stairs/ ladder with fitting	3.500	5.950	2.450
3	Replacement of fenders of existing floating pontoon	3.500	9.000	5.500
	Total	16.100	28.600	12.500

4.7 It was also observed that the management un-authorizedly utilized an amount of Rs. 2.996 million from the head of miscellaneous charges of Rs.3.925 million for rehabilitation of workshop, office stationery and other items which were not included in the project or approved in PC-I. The matter was reported to the management in November, 2023 but no reply was received.

4.8 Objectives of the up-gradation of berthing facility for Boats

Objectives	**Description**	**Audit Findings**
a. Financial objectives	1. Growth in the income and enhancement in livelihoods of poor fishermen households in Gwadar	Before the project, the mini port was not capable to accommodate the vessels for berthing to its original designed capacity. After rehabilitation, business growth has resulted in enhancing the revenue of the port and livelihood of fishermen. As the revenue from fish catch almost doubled from Rs.330.555million to Rs.629.391million in 2022,

		which resulted in betterment of living condition of fishermen.
	2. Provision of safe berthing space to fishing boats	After rehabilitation the safe berthing space to fishing boats has improved however, still fishermen themselves managed the safety of their boats by mounting the giant tractor tires around the boats and at the port side to avoid accidents and breakage of ships.
	3. Offers safety to fishermen	With installation of new rubber mounted wooden fenders the safety of fishermen has improved due to less chance of accidents. It was also reported that no accident occurred in recent times.
	4. Provision of facilitates to make handling of fish catch safe	The berthing facility has a maximum capacity of providing anchorage to 05 boats at one time, so the fishermen have to wait in queue for longer time and there was no proper arrangements for storage of fish catch.
	5. Creation of business opportunities	With improved berthing facility up to 100 boats per day and the fish catch was transported to auction hall with more ease and certainty, which was

		subsequently transported to other ports and cities for exports and local consumption. So, it generated direct and indirect employment.
	6. Safe berthing and uploading of fish catch 24/7	The port remained operational for 24/7 hours and no major incident was reported since long.
	7. Enhancement of commercial activities and income opportunities of locals and for Port Authorities.	As earlier mentioned the Gwadar Fish harbour/miniport generated an income of Rs.34.414 million from port operations and fish marketing and auctioning activities against target of Rs.17.945 million after completion of project.
	8. Delivery of improved handling & marketing facilities to the fishermen to increase their income	It was observed that the auction hall remained operational for 24 hours. However, it lacked basic facilities of clean drinking water, washroom, cold storage etc. which needed to be improved.
	9. Generation of employment opportunities by fully operationalization of fish harbour	Though port income has increased, but the impact on fishermen remained limited due to poor law and order, absence of facilities like cold storage and other related infrastructure.

b. Socio-economic objectives	**Quantifiable and non-quantifiable factors**	
	1. Social uplift of locals by creating employment opportunities	Gwadar port has the potential to transform Pakistan's economy by creating jobs, attracting foreign investment and promoting trade. Even after almost a decade of initiating the development of Gwadar, only three berths of the port are operational, the volume of shipping to and from the port is negligible, and the people of Gwadar feel little change in their socio-economic conditions. Local communities occasionally protest over the provision of clean drinking water, and electricity. Preventing the incursion of Chinese trawlers in the territorial waters of the province and facilitating fishing. Progress on the Eastbay Expressway remained in a deadlock for months due to the concern of fishermen to build bridges that allow passage to their fishing vessels.
	2. Provision of better marketing facilities of fish catch 24/7.	The marketing facilities and auction hall were available for 24/7 and fish was also transported to up country. However, due to poor law and

		order conditions the fish catch was not marketed timely.
	3. Poverty alleviation through trade & commerce	As reported by the GPA the quantity of fish catch per boat increased by 5% to 10% per annum and fish catch increased to 4,622 ton in 2022 as compared to 1,889 ton in year 2021. The revenue from sale of fish also increased to Rs.629.391 million in 2022 as compared to Rs.330.555 million in 2021. This also impacted in reduction of poverty through increased trade activities.
	4. Socioeconomic integration of Gwadar with the rest of country	Most of the catch from Balochistan is sent by road to Karachi by Makran Highway to be exported to international market and some fish goes directly to Iran. The Gwadar port is also connected with Jiwani, Pasni, Ormara and Sonmiani in Balochistan. This helps in socio-economic integration of the port with the rest of the country. However, the poor law and order situation is major handicap.
	5. Growth in the export of	According to bureau of statistics

	fish and other seafood	Pakistan exported Fish and fish products of US dollars.500 million during 20203. Frozen flat fish, shrimps and prawns are mainly exported from Pakistan to rest of world. Though there has been substantial increase in fish catch at Gwadar port and exports from Karachi port but there is a serious problem of poaching in Balochistan's territorial sea with trawlers from China using banned gill nets etc. Moreover, Baloch fishermen have limited access to credit facility, ship repair workshops andother modern facilities especially presence of cold storage facility at mini port.
c. Sectoral objectives	1. To comply with international Maritime organization (IMO) rules, which warrants safety of life and property at sea	The IMO standards entail the safe management and operation of ships and for managing pollution prevention and safety of life at sea. The GPA management informed that every effort was made for compliance of the IMO rules. However, The Project was unable to offer safety of life and property to fishermen at sea and spillage of oil was also observed at the port due to smuggling of Iranian oil in unsafe containers at

		the port.
	2. To integrate the connectivity of Gwadar port with the other ports	The project facilitated in the connectivity of Gwadar port with other local and regional ports for exports of fish catch through Makran coastal Highway and to Iran.
d. Environmental objectives	1. No environmental harm	It was observed that there was no proper waste management system at the miniport. Apart from boats with fish catch the Audit team also observed boats with smuggled Iranian oil at the mini port. There were also instances of oil spill at the mini port which were harming the marine environment. The big trawlers on Balochistan coast with banned gill nets were also harming the aquatic life along the Balochistan coast.

5. Conclusion

The project of up-gradation of the berthing facility for boats was taken up to improve the working conditions of fishermen and to ensure the safety & protection of the fishermen operating at the Gwadar coast. However, the effectiveness of the project was not maximized as it did not offer enough safe space to most of the vessels at one time. Moreover, there

was dearth of basic facilities like cold storage, proper waste management system, workshop for repair and maintenance of boats, poor law and order were affecting overall performance of the port. Despite, all these issues the overall income and fish catch at the port has increased after the rehabilitation of berths which has positively impacted the lives of fishermen.

Recommendations

- Capacity of the miniport cum harbor needs to be enhanced ensuring safety of fishermen.
- The rubber and wooden fenders might be properly fixed as per the size of boats.
- Better marketing facilities and cold storage be provided on an emergency basis.
- Focus should be on the enhancement of the income of fishermen.
- Efforts should be taken to discourage the smuggling of Iranian oil affecting coastal environment.
- Provide adequate security for fishermen and traders with improved law and order situation.
- Procurement process needed to be fair and transparent.

DGA Federal Govt

2. IMPACT AUDIT: INITIATIVES TAKEN FOR BETTER SERVICE DELIVERY IN EXCISE & TAXATION DEPARTMENT ISLAMABAD

Introduction

Background

Pakistan's vision 2025 gives special emphasis on knowledge intensive activities that contribute to advancement in technical and digital innovation. Through digital economy, GOP wants to ensure economic prosperity, citizen facilitation and empowerment. In wake of this vision, Excise and Taxation Department, also known as Islamabad Excise, as a part of Islamabad Capital Territory Administration, has also prioritized multiple initiatives to enhance confidence building measures for taxpayers, harnessing tax culture and facilitating general public.

The Excise and Taxation Department serves as a pivotal government agency which is responsible for the administration and collection of various taxes, duties, and excise fee on activities within its jurisdiction in the federal capital territory. Apart from registration of motor vehicles, its primary mandate is to ensure the fair and efficient collection of revenues that contribute to the development of the region and the provision of essential public services.

The Department has multidimensional functions that encompass gathering of both direct and indirect taxes. It oversees the collection of Road Tax, Income Tax (Adjustable), Professional Tax, Advance Tax and Capital Value Tax, Bed Tax, etc. which are direct taxes levied on individuals and businesses based on their earnings. Additionally, the department administers indirect taxes such as the federal excise duty,

which is levied on specific goods and services, contributing to the national revenue pool.

Overview of Digital Initiatives

To enhance operational efficiency and to facilitate ease of compliance, the Excise and Taxation Department has embraced technological advancements. It has introduced several online platforms and digital services that enable taxpayers to book online appointments, make payments, and access relevant information through user-friendly interfaces. This modernization can potentially simplify the tax/fee payment process. It can also promote transparency and reduce administrative burdens. Some of the initiatives taken by the department are as under:

v. Online payment collection system
vi. Introduction of bio-metric verification system
vii. Introduction of online appointment system
viii. Door to door registration

ii.

The following are the overall objectives of these digital initiatives:

v. To facilitate the taxpayers and enhance Govt. revenue receipts and recovery
vi. To bring evolution in tax management system and promote tax culture
vii. To ease out mechanism of vehicle registration through digital platforms
viii. To authenticate the process of vehicle transfer through biometric

In order to analyze the impact of these initiatives on public facilitation, improvement in revenue and service delivery, in comparison with manual services before such interventions, DGA (FG) has performed

Impact Audit by employing different data analysis and audit techniques.

Audit Scope

The scope of this Audit is to evaluate the impact of introduction of digital services including the systems of online payment, biometric verification, online appointment and door to door registration services of Excise and Taxation Department Islamabad on revenue collection, ease of accessing services and improvement in vehicle registration and transfer processes.

Audit Objectives:

iii. To evaluate the effectiveness and efficiency of digital services in terms of tax collection, vehicle registration and biometric verification etc.

iv. Provide recommendations for improvement and enhancement.

Audit methodology

The audit methodology involved a structured approach using time-series analysis. It encompasses a comprehensive review of pre-computerization processes to establish a baseline for comparison. Quantitative and qualitative data on relevant performance indicators were used. Data was collected on indicators of improvement in revenue generation, ease of accessing services and improvement in vehicle registration and transfer processes. Analysis was made employing statistical techniques to measure changes in performance metrics. A qualitative survey was also conducted on a random sample to assess the awareness and effectiveness of new digital systems.

IMPACT AUDIT FINDINGS

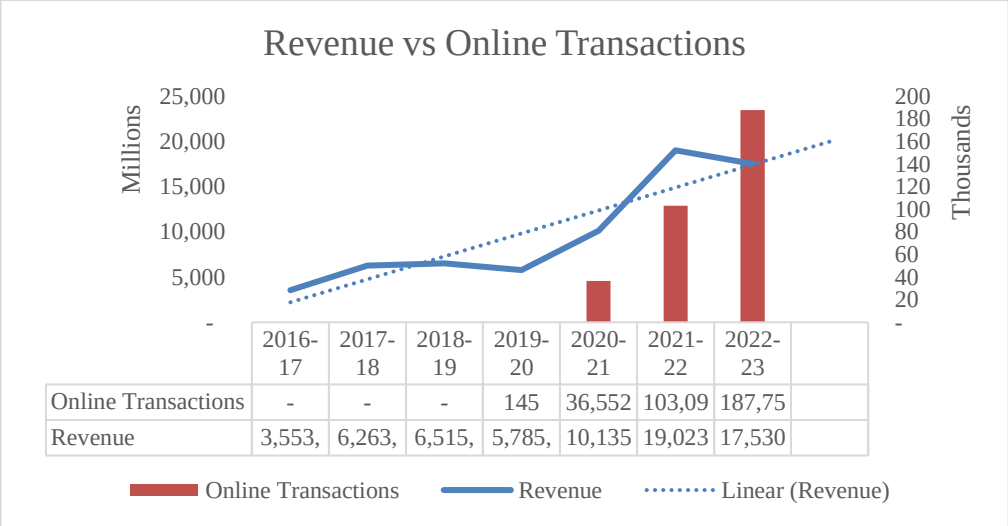
Excise & Taxation Department Islamabad had taken following

digital and citizen friendly initiatives in larger public interest. Audit evaluated the impact of each of these digital initiatives for improved service delivery and revenue generation. There was no rival cause involved for comparison as these initiatives were taken as a replacement of manual operations. However, percentage increases were calculated with regard to base year data, where applicable.

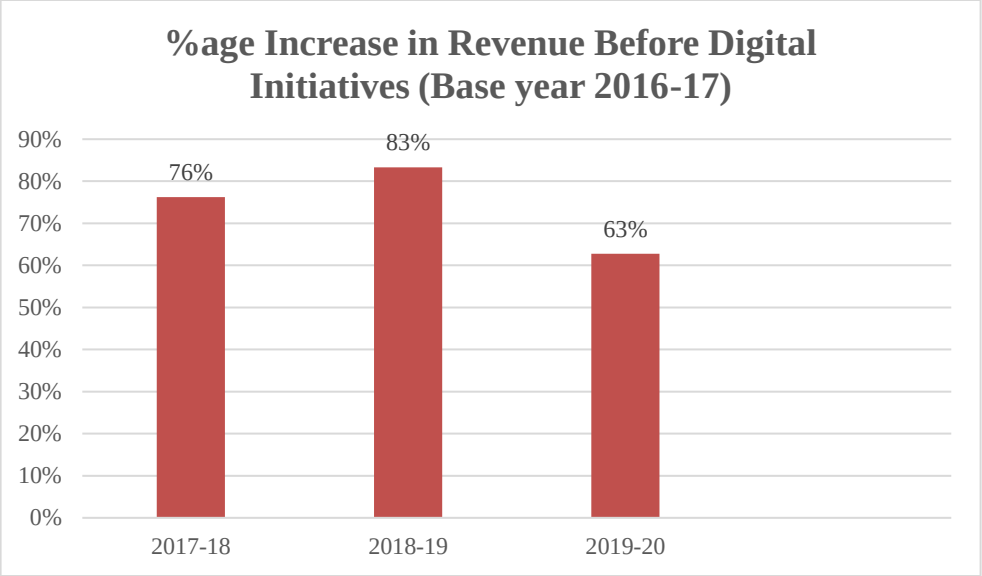
Online Payment Collection System

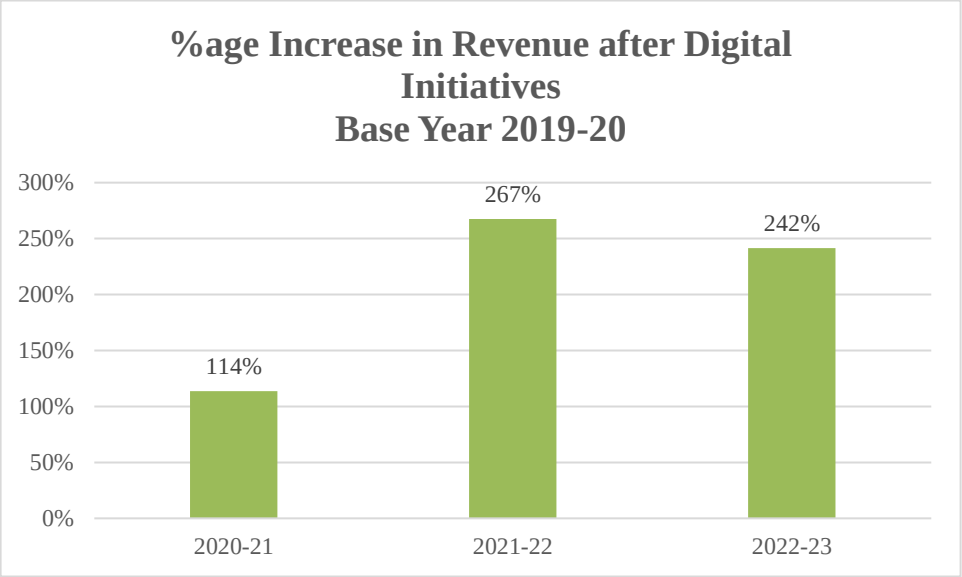
Through the online payment system implemented by the department on 01.06.2020, the general public can pay the Road Tax / Token Tax and registration fee/transfer of ownership fee through a software application namely "CITY ISLAMABAD". The application generates a unique Payment Slip ID which provides option to pay the fees/taxes either by e-Sahulat Center of NADRA across the country or through 1-link service. The above said service has enabled the vehicle owners to pay registration fee/transfer of ownership and Road Tax/Token Tax of their respective vehicles in a more facilitated manner. The initiative helps them to avoid the past practice of standing in long queues for payment. The trend of online transactions for vehicle registration is as under:

S. No.	Financial Year	No. of online Transactions
1.	2019-20	145
2.	2020-21	36,552
3.	2021-22	103,098
4.	2022-23	187,754



The above graph shows that the number of online transactions has been consistently growing, as more citizens have preferred to use online payment facility over the years. The same is further substantiated from the fact that due to the introduction of online payment system, the revenue generated by Excise and Taxation Department, Islamabad has increased from Rs. 6.515 billion during 2018-19 to Rs. 17.530 billion in 2022-23. The charts below depict the yearly revenue growth percentage before the introduction of digital initiatives (with base year 2016-2017) and after the digital initiatives (with base year 2019-2020).





The charts show that the revenue growth has steeply increased after the introduction of digital initiatives by Excise and Taxation Department, Islamabad.

The increase in revenue was less steep in 2022-23 as compared to substantiated increase in revenue after online system introduced in 2019. It to mention that the revenue growth has slowed down a little during 2022-23 due to the fact that taxation rate of new registration in Islamabad is much higher than that in Rawalpindi.

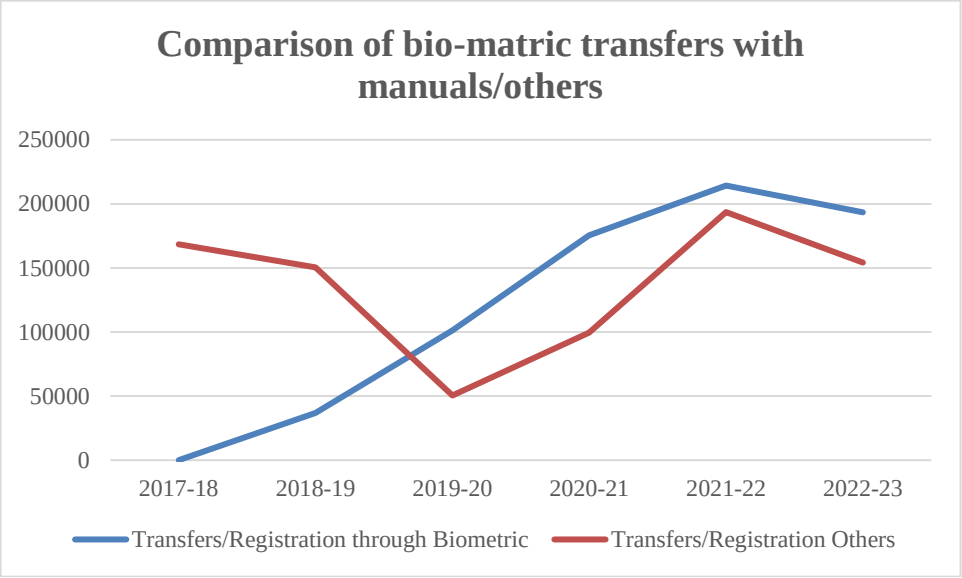
During a qualitative survey by Audit, it was noted that 76.4 percent of survey respondents were aware of digital services, though almost 98 percent considered it as a useful initiative by the Excise and Taxation Department Islamabad.

Introduction of Biometric Verification System

Before introduction of biometric verification system for registration / transfer of ownership of vehicles there were chances of ownership transfer fraudulently by presenting fake/fabricated transfer letter. Biometric verification provides for a unique authentication system with no chance of malpractice and connivance.

Since the start of initiative of Biometric Verification System on 01.03.2019, the chance of getting a vehicle transferred fraudulently or illegally must have considerably reduced owing to the inherent security feature of biometric verification system. It is even more robust in comparison with the previous system of vehicle transfers through manual buyer/seller verification. The said system made the registration process transparent and ensured elimination of agent mafia involvement. Currently, the BVS facility is available at e-Sahulat centers of NADRA all over Pakistan. With the start of Biometric Verification, the number of vehicle transfers has increased two times because now the purchaser must have to transfer the vehicle in his name in certain period of time otherwise a penalty will be imposed on purchaser. In previous system, the purchaser needed only a transfer letter signed by the seller without any validity. Trend of bio-metric registration/transfer cases vs manual /other transfers

(companies/government vehicles, engine change, duplicate book, etc.) is as under:

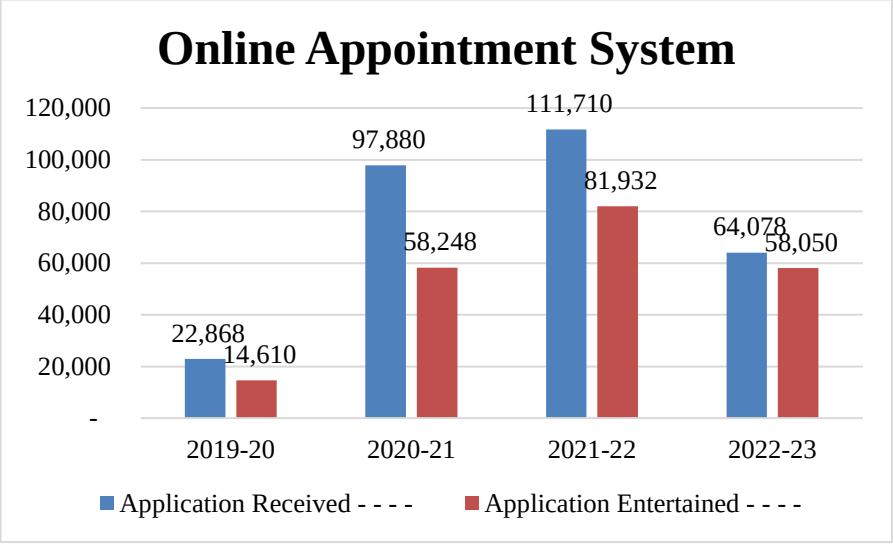


It is clear from above chart that the number of transfers through bio-metric was on increasing trend as vehicle transfer in case of individuals is mandatory to be routed through biometric verification. However, Audit noted that transfers / registrations of bank-leased, auctioned and imported vehicles are still lying outside bio-metric verification, which also showed upward trend and will remain potential cases of fraudulent transfers. The absence of fraudulent cases data in manual system possesses a limitation to Audit for analyzing the trend in fraudulent cases. During a qualitative survey by Audit, an overwhelming majority of respondents (98.3 percent) have considered it as an initiative that is an effective control against fraudulent practices.

Introduction of Online Appointment System

During Covid-19 pandemic, the department initiated an online

appointment system for registration /transfer of vehicles w.e.f. 20.08.2019. After initial data entry the system generates an appointment number and also intimates the date and time for client to approach the office for registration / transfer of vehicle. A separate counter has also been designated at the premises for the said purpose. Due to the online appointment system, the general public has been facilitated for registration / transfer of their respective vehicles without standing in long queues at department. Detail of online application cases is as under:

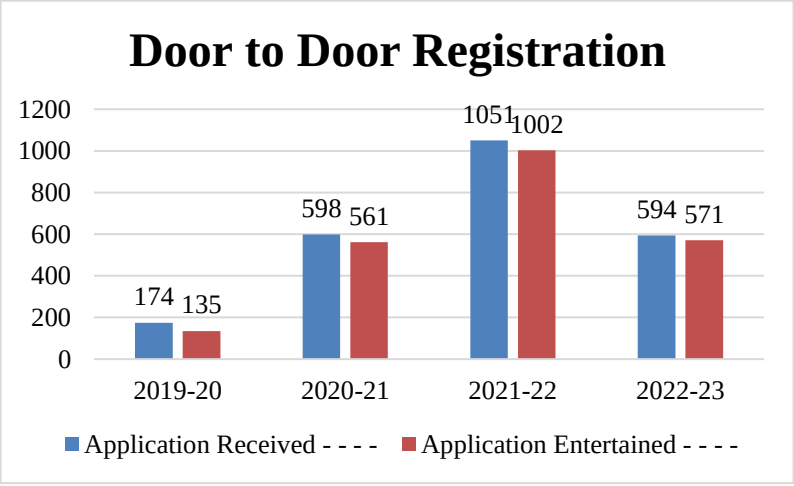


Audit noted that citizens have been increasingly utilizing the online appointment facility which indicates it as a citizen friendly initiative. However, Audit noted a decline in the use of online appointment application during 2023, which is a cause of concern, and the department should take measures to maintain this facility.

During the survey by Audit, 94.3 percent responses showed that people consider it a useful digital initiative but on the other side, only 52.8 percent were aware of this service.

Door To Door Registration

The Excise & Taxation Department, with collaboration of NADRA, started a Door to Door Registration of Vehicle w.e.f. 20.08.2019 for facilitation of general public. Through this service, the applicants can contact with a call center and take appointment for the service. The staff of Excise & Taxation Department will then visit the applicants at their vicinity for completing due process at doorstep.



Audit noted that registration/transfer of vehicles at doorstep of citizens has shown an increasing trend with a little decline in 2022-23 Overall, the chart shows an upward trend but it is not a hugely popular service, probably because of increased fees involved. The decline in use of above service is a matter of concern for audit and the department should take measures to keep it intact. As per survey results, most of the respondents considered it as a useful initiative, a significant number (38.4 percent) was not even aware of this service.

Conclusion

Audit concludes that the digital initiatives taken by the department

have shown positive impact on service delivery and thereby brought improvement in revenue generation. The impact is mainly attributable to the increased number of digital transaction over a period, facilitation of citizens by enhancing outreach of the service through door to door facility, saving time through online appointments and improvement in revenue generation. Biometrically authenticated transfers are inherently more secure, therefore, it is a strong step by the department to reduce fraudulent/bogus transfers of vehicles. Further, the online accessibility of digital service to the citizens has also reduced the role of agent mafia. The online initiative has also offered 24/7 accessibility of departmental facilities. On contrary, Audit also noted a decline in all the key indicators during 2022-23 which needs to be explored for ensuring continuation of digital efforts for enhanced service delivery. Moreover, awareness among masses for using digital services needs to be enhanced.

Audit Recommendations

vii. The continuation of digital initiatives is strongly recommended to ensure continuity of public facilitation and improvement in revenue generation.

viii. A mechanism should be devised to authenticate transfer of vehicles lying outside the system to avoid fraudulent transfer.

ix. Audit recommends that the Department should take measures to ensure that more residents become aware of the digital services to stay facilitated.

x. Audit recommends ensuring the effectiveness and reliability of online tax collection systems. In this regard, IS Audit of the technology infrastructure including security protocols and data encryption methods are highly recommended to identify the potential vulnerabilities.

xi. Continuous monitoring of transaction logs and system activities are

recommended to help detect anomalies or irregularities which may result in fraudulent activities.

xii. Audit recommends investing in employees training programs to enhance the skills of tax administration personnel responsible for managing online tax collection systems. This includes staying abreast of the latest technological advancements and cyber security measures to effectively respond to evolving threats and risks posed to the system.

DGA SSN

IMPACT AUDIT

2.1 6.1 Introduction

The Impact Audit holds paramount significance in evaluating the outcomes and effectiveness of government initiatives, particularly those directed towards societal development and inclusivity. The International Organization of Supreme Audit Institutions (INTOSAI) Development Initiative defines Impact Audit as the assessment of audit work's positive effects on people, the environment, and society at large. In the context of the Auditor General of Pakistan's scrutiny of government and public sector entities, the Impact Audit becomes instrumental in instilling public trust by scrutinizing the efficient utilization of state resources and the tangible effects of policy interventions on the well-being of the populace.

The Directorate General Audit Social Safety Nets, mandated with auditing government social safety programs, exemplifies the transformative potential of Impact Audits. By scrutinizing these programs, the audit process streamlined beneficiary selection procedures and payment mechanisms, addressing deficiencies within the system. As a case study, the establishment of Poly-Technical Institutes in Khyber Pakhtunkhwa by the Workers Welfare Board serves as a focal point for Impact Audit. These institutes, initiated in 2011-12, aimed to provide low-cost technical education to students from economically disadvantaged backgrounds, particularly those of labor class, and to cater to regions affected by terrorism.

Background

The Khyber Pakhtunkhwa, Workers Welfare Board has established Poly-Technical Institutes in the Province of Khyber Pakhtunkhwa in the

light of decision taken by the Governing Body of WWF, Islamabad in its 113th meeting held on 13-10-2011 to impart Technical Training for the Worker's Children. Qualified staff was engaged to raise the achievements of the institutes through proper practical trainings through latest equipment and counseling sessions and to provide 03-years Post Matric Diploma of Associate Engineer from Board of Technical Education, Khyber Pakhtunkhwa in the following discipline: -.

- Electrical
- Civil

The Poly Technic Institutes of Khyber Pakhtunkhwa Workers Welfare Board have been established in the year 2011-12 to impart low cost Technical Education to the students belonging to poor families particularly to the labor class. Having potential and scope in this field of study in the coming future, there was a dire need to have such facility to the poor and labor class so that they can support their families in practical life.

The Poly Tech Institute DI Khan has been established in 2011-12 with the aim to facilitate the children of workers, and poor students residing within or near the industrial zone of DI Khan as well as to those who have been migrated from FATA districts (South Waziristan) which were badly affected due to terrorism. The Poly Tech Institute Tank has been established in 2011-12 in the city of Tank with the aim to facilitate in the attainment of skilled education to the poor students on the same analogy of Poly Tech Institute established in DI Khan. Furthermore, the students of the local area did not have the facility to obtain technical education at lower cost at that time and had to travel to far districts for

skilled education. Targeted areas of service are Tank, Waziristan and Lakki Marwat.

The Poly Tech Institute Peshawar has been established in 2012 with the aim to facilitate the worker's children along with other poor children by imparting skilled education at low fee rate. Furthermore, during that time, the province of Khyber Pakhtunkhwa (especially the tribal areas near Peshawar like Khyber and Mohmand Agencies) was also badly affected by terrorism and the poor people were migrated to Peshawar. It is also established to facilitate those students who are unable to seek admission in other technical colleges where their fees are higher or far from their residence. The targeted areas of service were labor children of the industrial zones of Peshawar as well as other poor students who have been migrated from FATA region.

Since most of the students belong to poor class of the community, hence such three year post matric technical education (of Poly Technic Institutes) is considered the easiest and cheapest possible way to become a skilled professional instead of going for a six years' general education in becoming a professional in any other field.

Role of Project

The Poly Technical Institutes of DI Khan, Tank and Peshawar are duly affiliated with Khyber Pakhtunkhwa Board of Technical & Commerce Education Peshawar in the field of Diploma of Associate Engineers (DAE) 03 years in Electrical and Civil Technologies. These fields in Pakistan are considered as the base technologies and their technical expertise are required by many Organizations and Companies in different parts of the Country. The basic aim and role of project pertains on three objectives which are further discussed below:

Economical & Affordable Education

The Poly Technic Institutes of KP Workers Welfare Board are equipped with machines and lab equipment and possess well qualified faculty members. The fee as compared to other Government and Private Technical Colleges for such technologies is lower hence providing a relief to all general students. Whereas the labor's children are given special treatment by imparting technical education at a very negligible amount. A brief comparison of the Poly Tech Institutes of KP Workers Welfare Board and other Technical Institutes are given in this section.

S. No.	Particular	KP WWB Poly Tech Institutes	Other Technical Institutes (Govt./Pvt.)
1	Staff	Staff ranging from BPS 02 to BPS-17	Staff ranging from BPS-03 to BPS-21
		Including Principal in BPS-17	Having Principal/H.O.D / Prof. / Associate Prof. in higher scales.
		(low economic burden on exchequer)	
2	Student Fee	Labor Children fee is 1080/- per year	Fee same for all students.
		Non Labor Children fee is 6000/- per year	Morning shift in Govt. Tech. Institutes is 7500/- per year whereas in 2nd Shift is 16000/- per year
			Fee in private Institutions is higher
		Labor children are provided with stipend of free books, uniform and transport.	
3	Misc. Expenses	The running expenses of the Institutes are mostly fulfilled with fee generated from students as mentioned above from non-labor children	Separate fund is available for misc. expenses.

Secondly, another role of this project is to produce skilled human resource who can be well equipped with the technical knowledge. These students are trained to learn the contemporary technologies that could be applied locally and globally just to be a vital resource to the country. It will enable them to initiate their own business or to engage them in various entrepreneurial activities. This project will further help in value creation towards professional career and ultimately contribution towards the society.

Contribute Towards the Economic Welfare

As it is well known to us that economic welfare generation depends upon the value created in any of the society. This project mainly enables the children of working class to acquire technical education with modern techniques in order to contribute towards the economic welfare of the country. It will be the utmost effort and objective of our established institutes to engage their students in some technical job with the aim of contributing towards economic activity in the long run.

2.2 6.2 Overview of the Project

The project under review entails the establishment and impact evaluation of Poly-Technical Institutes in Dera Ismail Khan, Tank, and Peshawar by the Workers Welfare Board of Khyber Pakhtunkhwa. Affiliated with the Khyber Pakhtunkhwa Board of Technical & Commerce Education Peshawar, these institutes offer three-year post-matric technical education in Electrical and Civil Technologies. The project's fundamental goals encompass providing economical and affordable education, producing skilled human resources, and contributing to economic welfare by empowering the workforce through technical education.

The Workers Welfare Board, Khyber Pakhtunkhwa was established technical education programs with the core objective of

empowering the children of the workers through technical education thus enabling them to become self-reliant and adding value to the economy of the country.

As a result, the Governing Body of Workers Welfare Fund principally approved 03 Polytechnic Institutes in the following sequence:

- In the 113th meeting of the board, dated 13-10-2011, Polytechnic Institute at **District Dera Ismail Khan** was approved.
- In its 115th meeting of the board, dated 29-12-2011, Polytechnic Institute at **District Tank** was approved.
- In its 121st meeting of the board, dated 27-02-2013, Polytechnic Institute at **District Peshawar** was approved.
- In its 139th meeting dated 27-12-2017, on the recommendations of Special Committee dated 20-10-2017, Governing Body WWF Islamabad was granted ex-post facto approval of these institutes.

The WWB KP was directed to give priority to the workers and their families who have migrated from Waziristan and FATA due to terrorism by introducing local trades in the training courses.

Following courses are being offered in above three Polytechnic institutes:

- Diploma of Associate Engineers (DAE) in Electrical Technology (3 Years)
- Diploma of Associate Engineers (DAE) in Civil Technology (3 Years)

The impact audit that is being conducted will focus on the following deliverables that were set at the time of establishment of these institutes as well as on need basis over the times:

- Achieving institute wise targeted/estimated no. of student enrollment (entitled & non-entitled students) and pass out each year since establishment of these institutes.
- Focus to increase the number of pass out students serving in different sectors (Govt Sector, Private sector, Entrepreneurs etc) and contributing towards economy of the country.
- To provide low fee rate technical programs comparative to other institutes.
- To provide technical training with rigorous academic content and most relevant technical knowledge in order to make sure that those trainees passed the perquisite courses that meet the requirement of the particular course/training program.
- Allocation/appointment of professional staff at each Polytechnic Institute.
- Carrying out sensitization of citizens and other stakeholders on regular basis.
- Students selection system criteria for enrollments specifically designed for the children of workers.

Objectives of the Project/Program

The project's objectives are multi-faceted, aiming to provide affordable technical education to the children of workers, instill industry-specific knowledge and skills, and foster an innovation-driven learning environment. Furthermore, the project seeks to prepare a workforce of mid-career learners and employers through collaboration with key industries. Impact Audits will focus on achieving milestones such as targeted student enrollment, graduates' contributions to various sectors, low fee-rate maintenance, staff appointment, and citizens' sensitization. Simultaneously, the project seeks to produce skilled human resources equipped with contemporary technical knowledge. By creating a learning

environment that blends key concepts with practical application, the project aims to foster innovation and entrepreneurship among students. Additionally, the project strives to contribute to economic welfare by engaging students in technical jobs, ultimately enhancing economic activity. The collaboration with key industries and sectors ensures that the graduates are well-prepared for mid-career roles, aligning the project with the evolving needs of the workforce.

Major Milestones & Changes over Time

The inception of the project arose from the recognition of a dire need for affordable technical education for the children of workers, particularly in regions affected by terrorism. Established in 2011-12, the Poly-Technical Institutes in Dera Ismail Khan, Tank, and Peshawar were envisioned as beacons of opportunity for those who otherwise lacked access to such education. Major milestones achieved over time include exponential growth in student enrollment, minimal dropout rates, and increased employment opportunities for graduates. The institutes have successfully produced learned entrepreneurs, contributing not only to societal advancement but also to the broader economic landscape. As the demand for technical personnel from these institutes has increased, both locally and internationally, the project's enduring impact on workforce development and economic growth has become increasingly apparent.

Scope of the Project

The scope of the Poly-Technical Institutes project, initiated by the Workers Welfare Board of Khyber Pakhtunkhwa, is comprehensive and far-reaching. Geographically distributed across Dera Ismail Khan, Tank, and Peshawar, the project caters to the educational needs of the children of workers and economically disadvantaged individuals in these regions. The institutes offer three-year post-matric programs in Electrical and Civil Technologies, emphasizing affordability and accessibility. Affiliated with the Khyber Pakhtunkhwa Board of Technical & Commerce Education Peshawar, the project's scope extends beyond traditional education to empower students with industry-specific knowledge and practical skills. By targeting regions affected by terrorism, the project not only provides technical education but also serves as a catalyst for economic revitalization and social uplift.

Level of Performance Before & After the Initiative

Before the Initiative

Before the establishment of the Poly-Technical Institutes, the educational landscape for the children of workers in Dera Ismail Khan, Tank, and Peshawar faced significant challenges. Limited access to affordable technical education restricted the potential for economic mobility among this demographic. The workforce lacked skilled individuals, and the region struggled to keep pace with technological advancements. The dearth of technical expertise hindered economic growth and innovation.

After the Initiative

Following the initiation of the Poly-Technical Institutes project, a transformative shift in the level of performance is evident. The institutes have become instrumental in bridging the educational gap, providing

affordable and quality technical education to the targeted demographic. The performance metrics, including student enrollment, completion rates, and subsequent employment, have shown remarkable improvements. Graduates equipped with technical skills have entered the workforce, contributing to various sectors, from government agencies to private enterprises. The initiative has not only elevated the employability of individuals but has also positively impacted the economic landscape of the regions, fostering a skilled workforce ready to meet the demands of contemporary industries. The Poly-Technical Institutes project stands as a testament to the positive correlation between targeted educational initiatives and enhanced performance at both individual and societal levels.

2.3 6.3 Methodology

The methodology for conducting an Impact Audit on the Poly-Technical Institutes project involves a systematic approach to assess its effectiveness and outcomes. The audit process will employ a combination of qualitative and quantitative methods, ensuring a comprehensive understanding of the project's impact. However, due to time and resource constraints the choice of methodology will be discussed after an overview of the all the options:

Options for Methodology

Desk Review

- Objective: To comprehend the project's inception, goals, and key milestones.
- Activities: Reviewing project documents, reports, and historical data to understand the initial project conception, goals, and any modifications made over time.

Stakeholder Interviews

- Objective: To gather qualitative insights from key stakeholders involved in project conception, implementation, and beneficiaries.
- Activities: Conducting structured interviews with project managers, educators, students, and representatives from the Workers Welfare Board to obtain perspectives on the project's objectives, challenges, and outcomes.

Quantitative Data Analysis

- Objective: To quantitatively measure the project's impact on student enrollment, completion rates, and subsequent employment.
- Activities: Analyzing student enrollment data before and after the project initiation. Evaluating completion rates and academic performance metrics. Assessing employment rates and the sectors where graduates are contributing.

Comparative Analysis

- Objective: To compare the performance indicators of the Poly-Technical Institutes with other technical institutes in the region and other dimension of comparative analysis will be pre-and-post analysis. This analysis will require the endogenous, or autonomous growths be removed to get the actual impact.
- Activities: Conducting a comparative analysis of student fees, faculty composition, and other relevant factors with similar technical institutes in the vicinity.

Surveys & Questionnaires

- Objective: To gather feedback from students, faculty, and employers regarding the quality and relevance of education provided by the institutes.

- Activities: Designing and distributing surveys to collect data on satisfaction levels, perceived skill acquisition, and the institutes' contribution to the workforce.

Financial Analysis

- Objective: To assess the financial sustainability and resource allocation efficiency of the Poly-Technical Institutes.
- Activities: Scrutinizing budget allocations, expenditure patterns, and financial reports to understand the economic viability of the project.

Regression Analysis

- Objective: To identify correlations between various factors and the project's outcomes.
- Activities: Employing regression analysis to explore relationships between key variables such as enrollment rates, completion rates, and employment outcomes.

Documentation of Best Practices

- Objective: To identify and document successful practices that can serve as benchmarks for future projects.
- Activities: Compiling a set of best practices observed during the audit, highlighting strategies that contributed to the project's success.

This comprehensive methodology ensures a thorough examination of the Poly-Technical Institutes project, providing a holistic view of its impact and offering insights for future initiatives in the realm of technical education and workforce development.

Choice of Methodology

To ensure validity and reliability of the results, quantitative and regression analysis was done. These two analysis techniques were used because for the other options, as discussed above, time and additional resource was also required. Also, the designing and administration of interview and surveys, would have required time, financial resources and details on Principle Component Analysis (PCA). No base survey was available as such for this study, so designing the questionnaire was avoided. In addition to this, the inherent nature of qualitative nature of the other methodologies would have made things contestable. The methodology used for the impact audit were quantitative and regression analysis.

Model Specification

Since the impact audit pertains to the government expenditure and resource mobilization with reference to the project, therefore the model is simple and involves single equation model to analyze the impact. The self-explanatory model has clearly mentioned dependent, independent, mediating and moderating variables. Note that no control variables were put in model, yet, it is emphasized that use of control variables and any additional mediating or moderating variables would have improved the results.

Definition of Variables

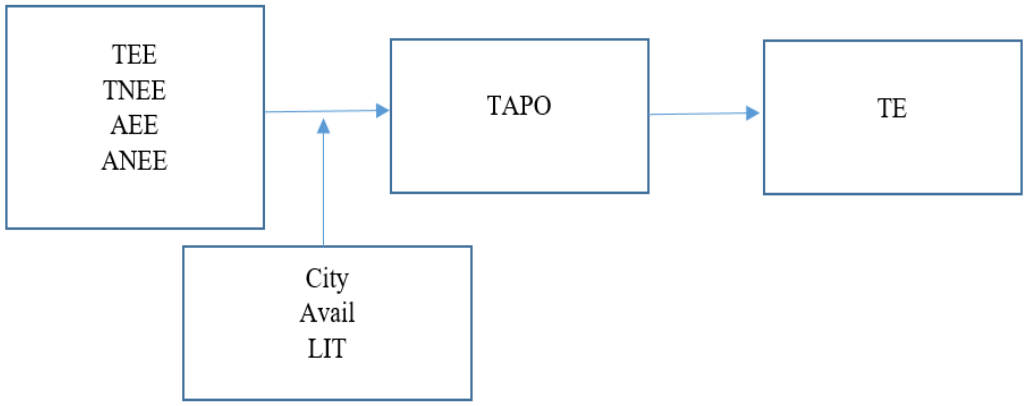
The data available is limited i.e. pertains to less than 10 years, therefore the results will need further confirmation with time. However, the model is subjected to Ordinary Least Square (OLS) regression analysis with following variables in the conceptual framework:

$$TE = TEE + TNEE + AEE + ANEE + TAPO + Year + LIT / Avail$$

(Note that in panel regression analysis, combined effect of TAPO and LIT, TAPO and Avail will be analyzed)

Sr. No.	Variable	Description	Nature of Variable
1.	TE	Total Employed	Dependent
2.	TEE	Total Entitled Persons Enrolled	Independent
3.	TNEE	Target Non-Entitled Persons Enrollment	Independent
4.	AEE	Actual Entitled Persons Enrollment	Independent
5.	ANEE	Actual Non-Entitled Persons Enrollment	Independent
6.	TAPO	Total Actual Pass Out	Mediating
7.	Avail	Availability of similar facility	Moderating Variable
8.	LIT	Literacy Rate Category	Moderating Variable

Conceptual Framework (Model)



Simulation Results in Brief

The data was subjected to analysis in EVIEWS environment. The simulation was performed on the data available, please refer to the annexure for the table which are being interpreted with following observations: The provided results showcase the coefficients and standard errors associated with a regression analysis involving various dependent and independent variables. The four independent variables investigated were TEE, AEE, ANEE, and TAPO. The moderating variables included Availability of other Institutes (Avail), Literacy (LIT), the combined effect of TAPO_LIT, and the combined effect of TAPO_AVAIL. The constant term is also included in the model, along with the number of observations (33) and the R-squared values indicating the goodness of fit for the models, which are 88.9% and 88.2% for the two sets of variables.

Examining the coefficients for the first set of variables, TNEE demonstrates a negative association with both TAPO and literacy combined (-0.216) and TAPO and availability combined (-0.167). This suggests that as these variables increase, there is a decrease in Target Entitled Enrolled. AEE and ANEE, representing Actual Entitled Enrolled and Actual Non Entitled Enrolled, exhibit positive coefficients (0.076 and 0.103, respectively) in the context of TAPO and literacy. These results imply an increase in both categories as TAPO and literacy increase. TAPO displays a significant positive effect in both cases (0.401 and 0.687), indicating a substantial increase in pass-outs with the combined effect of TAPO and literacy or availability.

- Analyzing the impact of Availability and Literacy Rate individually, Availability has a strong negative impact on all dependent variables, with coefficients ranging from -48.018 to -44.776. Conversely, Literacy Rate has positive coefficients (25.889 and 31.267) for both sets of variables, indicating a positive influence on the outcomes.

Analysis of the Model

The model being discussed here is a regression model designed to examine the relationships among various factors influencing the enrollment and employment outcomes in a given context. The model includes four key independent variables: TEE, TNEE, AEE, and ANEE. These variables represent different aspects of enrollment in educational programs. The mediating variable in the model is TAPO, which is expected to capture the overall outcomes of the educational process. The dependent variable is TE, representing the number of individuals who have successfully transitioned into employment.

Additionally, the model incorporates moderators, which are variables that can influence or modify the relationships between the main independent variables and the dependent variable. In this case, the moderators are City, Literacy Rate, and the Availability of Already Existing Educational Facility. These moderators are introduced to explore how regional differences, literacy levels, and the presence of educational facilities may interact with the main variables of interest and potentially influence the outcomes.

The coefficients associated with each variable provide insights into the strength and direction of their impact on the dependent variable. For instance, negative coefficients for TNEE in relation to TAPO and literacy, as well as TAPO and availability, suggest a decrease in Target Entitled Enrolled as these factors increase. Positive coefficients for AEE and ANEE in the context of TAPO and literacy indicate an increase in Actual Entitled Enrolled and Actual Non Entitled Enrolled with higher TAPO and literacy. The significant positive effects of TAPO with the combined effect of TAPO and literacy or availability imply an increase in TAPO, which in turn could influence Total Employed.

The inclusion of moderators adds complexity to the model by allowing for an exploration of how external factors, such as city characteristics, literacy rates, and the availability of educational facilities, may impact the relationships within the model. This comprehensive approach enables a more nuanced understanding of the dynamics influencing enrollment and employment outcomes, providing valuable insights for policymakers and practitioners in the education and employment sectors.

2.4 6.4 Findings

The presented results take on added significance when considering the context of three distinct cities, where two exhibit low literacy rates, and one boasts a high literacy rate. The inclusion of literacy rate as a variable in the model becomes particularly pertinent in understanding the dynamics of enrollment and employment outcomes across these diverse educational landscapes.

Finding 1: ***Requirement for educational access and awareness to other than entitled students***

In the context of the low-literacy-rate cities, the negative coefficients associated with TNEE in relation to TAPO and literacy, as well as TAPO and availability, suggest a potential decrease in Target Non Entitled Enrolled students as these factors increase. This could indicate challenges in enrollment for Non entitled individuals in cities with lower literacy rates, emphasizing the need for targeted interventions to improve educational access and awareness. On the positive side, the positive coefficients for AEE and ANEE in the context of TAPO and literacy suggest an increase in Actual Entitled Enrolled and Actual Non Entitled Enrolled with higher TAPO and literacy. This may imply that efforts to enhance literacy can positively impact actual enrollment figures in cities facing lower literacy rates.

Finding 2*: *General literacy should be improved in low literacy areas

Contrastingly, in the city with a high literacy rate, the positive coefficients associated with Literacy Rate in both sets of variables indicate a favorable impact on outcomes. This suggests that higher literacy rates contribute positively to enrollment and employment outcomes, aligning with the broader understanding that a well-educated population often leads to better socio-economic indicators. The positive coefficients for TAPO with the combined effect of TAPO and literacy or availability also indicate a substantial increase in TAPO in the high-literacy-rate city. This suggests that individuals in a city with higher literacy rates are more likely to successfully complete their education, potentially leading to higher employability rates.

The model's incorporation of moderators, such as Literacy and Availability of Already Existing Educational Facility, allows for a nuanced understanding of how regional characteristics and educational infrastructure interact with the main variables. Policymakers may find these insights valuable for tailoring interventions that address the specific needs and challenges faced by cities with varying literacy rates. Strategies to improve educational access, enhance literacy levels, and optimize existing educational facilities can be crafted with a city-specific focus, contributing to more effective and targeted policy implementation.

2.5 6.5 Comments by the Audit entity

The Khyber Pakhtunkhwa Workers Welfare Board is vigorously reviewing the operations of the Poly Technic Institutions working under the umbrella of its Directorate of Education in order to boost up the enrollment and pass out strength of the students of its targeted areas. In this regard the following measures are being in consideration and process;

i. The Poly Technic Institute Peshawar being located on Opposite to Toyota Khyber, Ring Road Peshawar with the initial concept of relatively lower rent and equidistant location from the Industrial Estate Hayatabad and Small Industries Kohat Road Peshawar is now being under consideration and process has been initiated to re-locate the Institution to suitable location with attractive structure and with-in or near the industrial zone with large number of workers population in order to attract maximum number of entitled students. The Principal of the Institution has also been directed to furnish suitable recommendations for shifting of the said Institution. Further to add, the existing workers children/students will also get relief in transportation from their homes to the Institute.

ii. The Poly Technic Institute Dera Ismail Khan being located at Nawab Morr Near PSO Pump Dera Ismail Khan, is also under consideration and process has been initiated to re-locate the Institution to a better structure and suitable location where the labor and poor class citizen of the city resides. In order to do so, the Principal of the Institution being local citizen of the area has been directed to furnish his recommendation for shifting of building to a suitable location where the factories and industries are located nearby in order to facilitate the workers and their children with the technical education facility to which they are entitled. Also, the new building nearby the workers concentration will definitely attract more entitled students and will also provide ease to the poor labor in transportation. Dera Ismail Khan is comparatively lower industrial zone as compared to Peshawar but the non-registered small factories with large number of labor (though non-entitled for WWBs as per official criteria) are present. Shifting of building nearby the small factories will attract the

workers children to seek admission at a low fee rate as prescribed by the WWB KP hence the enrollment and subsequently pass out students will enhance.

iii. The Poly Tech Institute Tank building has recently been changed to a new building which was formerly used for Gomal University Tank Campus which is much better than the previous building. The Poly Tech Institute Tank is playing vital role in providing technical education in the area as it is the only Technical Institute for the people of Tank. The Principal Poly Tech Institute Tank is also directed to enhance enrollment by running proper advertisements for enrollment at a very low cost. Large number of students in the month of November and December 2023 have also approached the Institution for seeking admission in the offered diploma courses.

iv. The Directorate of Education Workers Welfare Board has directed its Institutions especially Poly Technic Institutes to take active part in the on-going and up-coming projects offered by the Provincial and Federal Government. Recently the Chief Minister Khyber Pakhtunkhwa launched a special crash program namely Khushaal Khyber Pakhtunkhwa 2023-24 where it is aimed to provide the youth with the opportunity to seek admissions in technical and vocational institutions in order to enhance their learning skills along with creating opportunities of employment for at least half million workers within and outside Pakistan. Further to add this program will also provide positive projection of the Poly Technic Institutions of KP-WWB on media and will boost enrollment to further 1000 deserving students.

v. The Principals of these Institutions have been directed to make special arrangements to offer special crash courses like technical skills of wiring, welding, surveying, drafting, information

technology, report writing, foreign languages like English and Chinese to overcome language barrier of skilled workers seeking jobs in foreign countries. These courses are being offered, keeping in view of the technical capabilities of the existing staff. The advertisements and campaign for admissions are being carried out and luckily a large number of interested students and workers have expressed their desire to seek admission for the offered special courses which are scheduled to begin from 10th January 2024.

vi. The Directorate of Education WWB Peshawar is also taking further measures to link these Technical Institutions with the National & Vocational Technical Training Commission (NAVTTC), a Federal Organization who provides aid in the special skilled courses at the Educational Institutions, to enlist the Poly Technic Institutions for special programs to be offered in the year 2024. This will give further projection of these Institutions and will certainly help enhance the target of enrollment of students.

vii. Cumulatively currently 1861 students against 2060 sanctioned seats by Board of technical education (Regulatory Body) are enrolled in Diploma of Associate Engineering in Technical education WWB Khyber Pakhtunkhwa.

Almost 675 students are on jobs at various Govt/cooperate Sector and Abroad that is a distinct feature of Technical education which make able labour child for taking job right after Diploma of Associate Engineering.

2.6 6.6 Conclusions and Recommendations

To optimize actual pass-out numbers and maximize total employment, the focus should be on strategic initiatives in Peshawar, leveraging existing facilities and adapting programs to the literacy context

of each city. Ensuring facilities are available, tailoring educational content to local literacy levels, and encouraging higher enrollment are key recommendations. By understanding these aspects and employing targeted strategies, educational planners can enhance the likelihood of individuals successfully completing their programs and transitioning into the workforce. Based on three variables, vis. City, Literacy Rate and already availability of facilities following proposal are being made:

i. Tailoring educational programs to the literacy context of each city is essential. For cities with higher literacy rates, offering advanced or specialized courses can cater to the more educated population. In contrast, focusing on foundational education programs is crucial for cities with lower literacy rates to address basic educational needs. Initiatives to enhance literacy rates in cities with lower literacy levels should be prioritized. Collaborating with local communities, schools, and organizations can facilitate the implementation of awareness campaigns and literacy enhancement initiatives.

ii. Improving and expanding educational infrastructure in areas where facilities are not readily available (Avail = 0) is a primary recommendation. This involves constructing new educational institutions, providing necessary resources, and ensuring that communities have access to quality learning environments. Public-private partnerships can be explored as a strategy to supplement public efforts in providing educational facilities, leveraging the resources and expertise of private entities to enhance educational accessibility.

iii. For Peshawar (City 0), where higher mean values for TEE and TAPO were observed, implementing targeted educational and employment programs is recommended. Identifying and building on the factors contributing to success in Peshawar can help replicate

effective practices. In DI Khan (City 1) and Tank (City 2), assessing specific challenges and opportunities is crucial. Tailoring strategic interventions to address the unique characteristics of each city will create a conducive environment for education and employment.

Engaging with local communities to understand their specific needs and challenges related to education is a fundamental step. Community involvement enhances the relevance and effectiveness of educational programs, ensuring they align with the cultural and social dynamics of the population. Establishing a robust system for monitoring and evaluating the impact of educational initiatives is essential. Regular assessments can identify areas of improvement and ensure that programs evolve to meet the changing needs of the population. Implementing policies that promote inclusivity and equal access to education is crucial. Addressing barriers preventing certain groups, such as marginalized communities or gender-specific populations, from accessing educational opportunities fosters a more equitable educational landscape.

DGA IR&C North & South

IMPACT AUDIT OF FULLY AUTOMATED SALES TAX E-REFUND (FASTER) SYSTEM

1. Introduction

a. Background

Impact audit is aimed at determining impact of an initiative or program with a special focus on determining the outcome/results attributable to an initiative/new program while eliminating other contributing factors or variables. It is a conceptual evolution of performance audit and reports solely on the effectiveness aspect of an initiative. The decision making in public sector is increasingly becoming data-driven. Impact audit reports would help the stakeholders and decision-makers in the public sector to formulate, review and adjust these initiatives/programs besides serving as a template for future planning.

Taxpayers can claim input tax refunds under the Value Additional Tax (VAT) regime as per Section-10 and 66 of the Sales Tax Act, 1990. These refunds are claimed against taxes already paid on raw materials and purchases which are consumed during the manufacturing process. Therefore, proper functioning of VAT regime relies heavily on efficient and justified disbursement of refunds.

b. Role of technological intervention in refund payment of sales tax (FASTER)

The advent of information technology in the public as well as private sectors has fundamentally altered the outlook as well as operations of these organizations. Similarly, FBR adopted various technological interventions for facilitation of taxpayers over the years. These palpable

and impalpable interventions were aimed at creating a stakeholder friendly environment and strengthening FBR in collection of revenue and disbursement of refunds.

FBR's automation of Sales Tax refund started in 2002 through the introduction of STARR (Sales Tax Automated Refunds Repository) which is a semi-automated system that allows taxpayers to file refund claims online through Refund Claims Preparatory System (RCPS). The latest intervention for payment of refunds is Fully Automated Sales Tax e-Refund (FASTER) system. It was introduced for the disbursement of sales tax refunds to five specific export oriented sectors in 2019.

Previously, inputs of five export-oriented sectors were zero-rated (textiles, leather, carpets, sports and surgical goods). The subject zero-rating was abolished vide SRO 694(I)/2019 dated 29.06.2019. In order to address liquidity issues of exporters of these sectors, a new IT module known as Fully Automated Sales Tax e-Refund (FASTER) was developed and operationalized in 2019. The stated objectives of FASTER were to fully automate the refund process, decrease processing time, alleviate the credit crunch of exporters, decrease interaction of taxpayers with tax officials, and increase taxpayers' confidence in tax administration.

Both systems have been working in parallel for processing refund payment. The main difference between the two systems is that cases through FASTER are processed centrally for all stages i.e. from verification of claims up to authorization of payment at FBR HQ. On the other hand, processing and sanctioning of refund through STARR is dealt by the respective field formation. An overall view of workload of refund processing through FASTER vs STARR is given in the following table:

(Rs in million)

Financial Year	System	No. of claims	Amount

2019-20	FASTER	10,350	89,126
	STARR	10,660	49,248
2020-21	FASTER	3,413	35,663
	STARR	8,697	35,797
2021-22	FASTER	3,539	59,210
	STARR	4,003	31,063
2022-23	FASTER	32,397	50,277
	STARR	515	9,360

It can be seen from the above table that refunds through FASTER have increased in comparison to refunds through STARR, both in terms of number of claims as well as total claimed amount.

2. Overview

High-income countries pay VAT refunds equivalent to 30% of gross VAT collection as compared to an average ratio of only 11% for low income and lower middle-income countries. Delayed refund issuance distorts the production and manufacturing sectors by decreasing their liquidity and increasing the indebtedness of governments. Poorly functioning VAT refund mechanisms may have profound fiscal policy implications—from adverse effects on VAT design to broader macro fiscal challenges. These may include misrepresenting the fiscal deficit's size, less prudent spending, impairing treasury operations, accumulating expenditure arrears, and, at times, creating financing shocks[2]. This impact audit has been conducted to measure the impact of FASTER against the intended objectives of FBR beneath governance objectives of transparency, fairness and accountability.

[2] IMF Note 21/04 How to Manage Value-Added Tax Refunds, 2021

Transparency

Transparency of an intervention is ensured through clear and measurable objectives, openness of decision-making, and continuous reform. To measure the impact on transparency; reduction in processing times, easing of credit crunch, increase in exports, trust of taxpayers and decreased interaction with tax officials were analysed.

Fairness

Fairness of an intervention is ensured through equitable allocation of resources and removal of systematic barriers to access. Impact of FASTER in terms of fairness is analysed in terms of proportion of refunds paid to large vs small taxpayers.

Accountability

Public sector interventions have to strike a balance between accountability and efficiency. Increasing efficiency through automation of processes also poses a challenge to compliance and regulatory regimes in the absence of strong monitoring mechanisms. The impact on accountability has been examined through overall health of internal controls.

3. Scope and methodology

2.7 3.1. Scope

The stakeholders of this impact audit are the Federal Board of Revenue, taxpayers, and public at large. Cases processed through FASTER were treated as the "treatment group" and cases processed through STARR as the "control group". Both of these systems have been working in parallel since 2019. STARR processes all export-oriented sectors including some exports refund cases of five sectors assigned exclusively to FASTER. Since the audit was planned retrospectively and

that too without any control assessment designed into the intervention by the management, therefore, discretion was used in selection of control and treatment groups.

2.8 3.2. Methodology

Prospective impact audit and evaluations thereafter, are likely to produce credible results. However, FASTER started functioning in 2019; therefore, the impact Audit was planned retrospectively. The audit relied on primary data (all refund cases paid through FASTER and STARR) provided by FBR. The audit selected STARR as a control group due to identical functions and technological nature of operations. Resultantly, the validity of impact assessment is limited by following factors:

i) The threshold data provided by project management of FASTER is used. This includes data of refund payments before and after the intervention of FASTER.

ii) Measures of success and deliverables identified by FBR were used. These included processing time, time taken for credit in taxpayers' bank accounts, and effect on volume of exports.

A Sample was selected based on materiality of refund claims for the analysis of exports. A survey was conducted with Chambers of Commerce and Industries (CCI) Lahore and Karachi as well as individual taxpayers to gauge trust level. Data of exports reported by State Bank of Pakistan was used as a secondary source. Formal and informal discussions with the management were also conducted.

4. Findings

4.1. Impact on Transparency

4.1.1. Decreased processing time

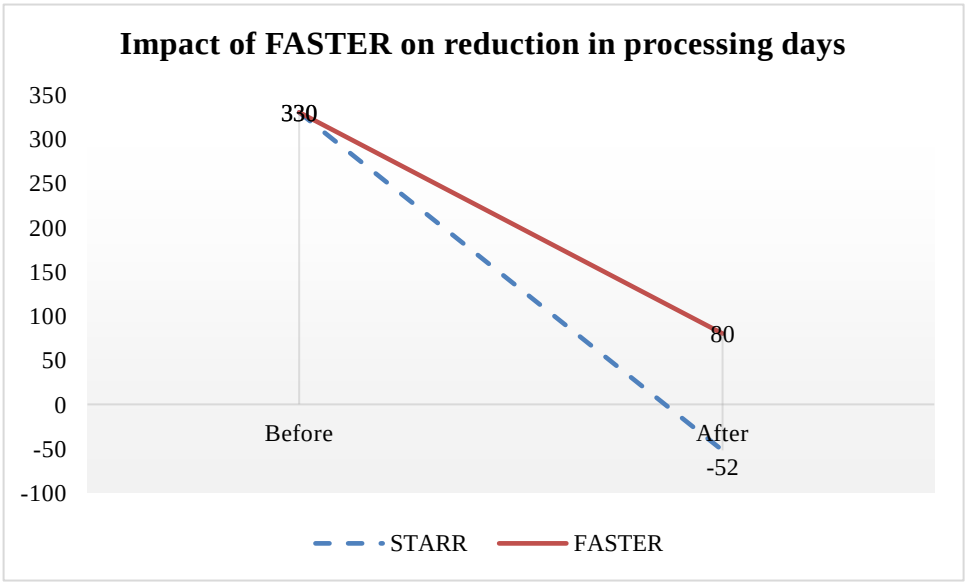
One of the deliverables of FASTER was reducing processing time of refund claims. The average processing days of FASTER versus STARR are tabulated as follows:

Year	Average payment days per case		%age improvement	
	FASTER	**STARR**	**FASTER**	**STARR**
2019-20	19	286	-	-
2020-21	16	753	16%	-163%
2021-22	8	724	50%	4%
2022-23	10	539	-25%	26%

As evident from the above table, FASTER took 8 to 19 days on average for processing while processing through STARR varied between 286 to 753 days for the period under consideration. Moreover, percentage improvement through FASTER was better as compared to STARR for all time periods except 2022-23. In 2019-20, the baseline average for STARR was 286 days which increased to 753 days in the successive year. Shift of

focus of management to FASTER from STARR compounded with scarcity of financial resources due to Disbursement Linked Indicator (DLI) of revenue collection targets agreed with IMF may explain this increase.

Impact of FASTER in terms of reduction in number of processing days (using Difference in Differences Approach) is presented in the following graph:



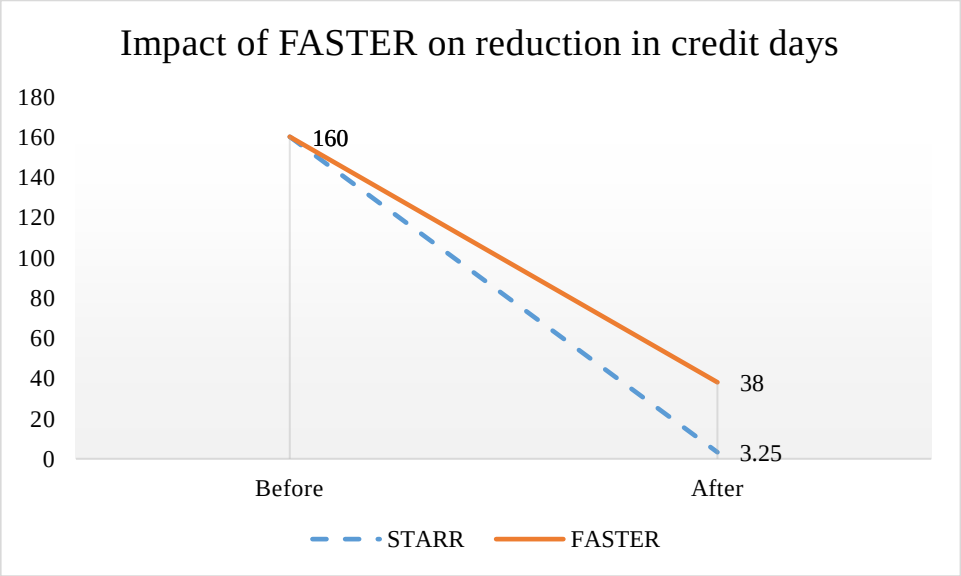
It is evident from above that there was a significant impact of 132 days on reduction in processing days in the treatment group (FASTER) as compared to the the control group (STARR).

4.1.2. Decreased credit days through FASTER

Post-processing delays are another hurdle faced by taxpayers while claiming input tax refunds. An analysis of time consumed by the system to credit refunds is as follows:

Year	Average credit days per case		%age improvement	
	FASTER	STARR	FASTER	STARR
2019-20	19	153	-	-
2020-21	14	169	26%	-10%
2021-22	9	164	36%	3%
2022-23	29	173	-222%	-5%

Average credit days ranged from 153 to 173 days in STARR, while cases processed through FASTER took 9-29 days. This shows a comparative improvement in time taken for credit through FASTER. Impact of FASTER on reduction in credit days (using Difference in Differences Approach) is presented below:



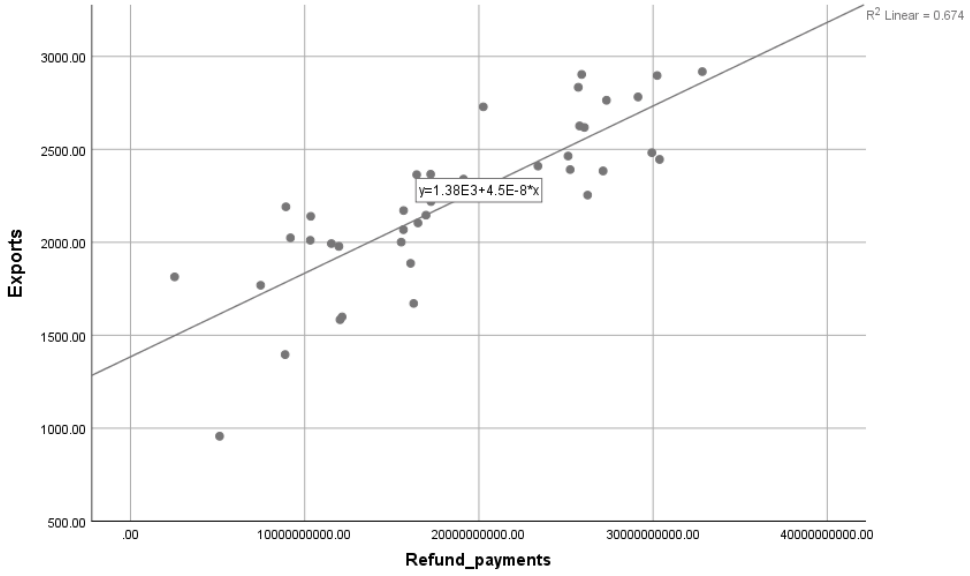
It is evident from above that there was a significant impact of 35 days in the treatment group (FASTER) as compared to the control group (STARR).

The management vide its letter dated 17th January 2024, replied that the credit days had been reduced to 48 hours and the same could be verified from SBP.

The Audit holds that calculation of average credit days is based on the difference in sanction date and cheque date as per data provided by the management. Afterwards, reliance has been made on statistical technique of Difference in Differences which calculates outcomes (reduction in processing days) instead of outputs (processing days). The method takes into account the effect of improvement in outcomes over a period of time due to the intervention as compared to the counterfactual which postulates absence of the intervention.

4.1.3. Regression analysis of refunds versus exports

One of the stated objectives of FASTER was to alleviate the credit crunch of exporters thereby increasing exports. Monthly data of refund payments processed through FASTER and monthly exports (reported by SBP) were used to construct the following scatterplot through Statistical Package for Social Sciences (SPSS) software:



Since there appeared to be a linearity as depicted in the above scatterplot a linear regression model was constructed to analyse the significance of correlation of refund payments with exports. The results of regression analysis are as follows:

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.821a	0.674	0.666	246.60993
a. Predictors: (Constant), Refund payments				

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	5024557.441	1	5024557.441	82.618	0.000b
	Residual	2432658.393	40	60816.460		
	Total	7457215.833	41			
a. Dependent Variable: Exports						
b. Predictors: (Constant), Refund payments						

Coefficients						
Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	1384.227	100.140		13.823	.000
	Refund payments	4.497	0.000	0.821	9.089	.000
a. Dependent Variable: Exports						

The above calculation shows that, with a confidence interval of 95%, there is a statistically significant correlation between refund payments and overall exports. Moreover, 67.4% of the variation in exports can be explained through the variation in refund payments. The constant has a t-value of 13.823, and the associated p-value is very low (0.000). This implies that the intercept term is statistically significant, therefore, the estimated value of the dependent variable when all predictor variables are zero (the intercept) is significantly different from zero.

In spite of the above, other variables which might have had a significant bearing on the increase in exports (which have been excluded from the model) are overall economic growth, inflation, currency devaluation, award of GSP plus status to Pakistan by European Union, and diversion of trade routes during COVID-19 pandemic. Moreover, lag effect of refund has not been accounted for in correlating the exports over

the entire data set, however, since the analysis covered 04 years therefore impact of the lag was reasonably captured.

To further investigate the effect of improved liquidity on exports sample based analysis of 10 companies (highest materiality) paid through FASTER is as follows:

Limited Companies	**% increase in refunds (refund in last year/refund in first year)**	**% increase in exports (Last year exports/First year exports)**
Nishat	570%	195%
Gul Ahmed	125%	213%
Feroze 1888	366%	169%
Liberty Textiles	338%	207%
Getz Pharma	1540%	189%
Artistic Milliners	195%	n/a
US Apparel	426%	n/a
Interloop	707%	329%
Yunus Textiles	216%	187%
Sadaqat Textiles	260%	184%

It is evident from the above table that although there was an increase in exports, however, percentage increase in refund payments didn't commensurate with percentage increase in exports for any of the companies with only one exception.

The management vide its letter dated 17th January 2024, replied that there was 31% increase in exports of ex-zero rated sectors in 2022 compared to the previous FY. The increase in refunds for the same period stood at 27%. However, the management questioned the reliability of sample data on the grounds that the data pertained mainly to textile sector.

The Audit is of the view that subject export data includes textile sector because of high materiality of refund amounts. Moreover, the management is only considering the increase in exports in two (02) consecutive years whereas the instant study covers a span of four (04) years. The management may share month-wise data of exports of ex-zero rated sectors from 2019 onwards for further analysis.

4.1.4. Decreased visits to the tax office

FASTER also intended to decrease the number of visits of taxpayers to tax offices. This objective was indirectly linked with increasing taxpayer's confidence and trust.

According to the survey conducted by these offices with Chambers of Commerce and Industries Lahore and Karachi, responses are summarized as follows:

Number of visits to tax office	
Before	8
After	3

As depicted in the table above the number of visits to tax office reduced by 5 visits per taxpayer on an average.

4.1.5. Increased trustworthiness of FBR

Another objective of this intervention was to decrease the interaction of taxpayers with the tax officials and increase trustworthiness of FBR. The results of the survey are summarized as follows:

Trust Rating after introduction of FASTER

Highly trustworthy	4%
Trustworthy	48%
Somewhat distrustful	35%
Highly distrustful	0%
No Comments	13%

The results tabulated above show that majority of the taxpayers (48%) showed trust in FBR after introduction of FASTER for processing of refunds. However, 35% respondents viewed FBR authorities with distrust and 13% respondents reserved their comments.

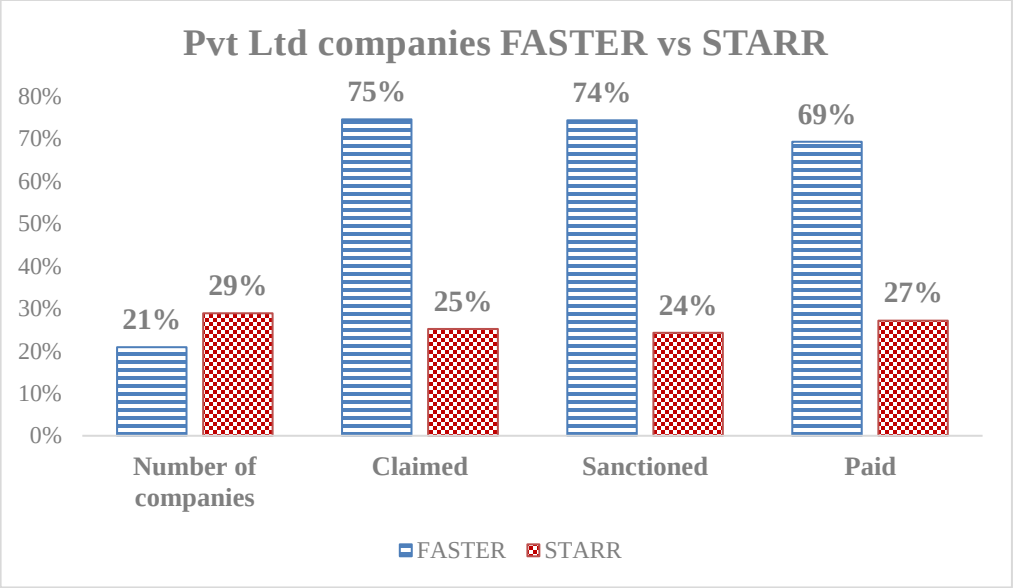
4.2. Impact on Fairness

4.2.1. Payments to private limited companies

Fairness of an intervention in public sector lies in equal treatment of all citizens. An analysis of payments to the listed companies in proportion to total claims revealed the following:

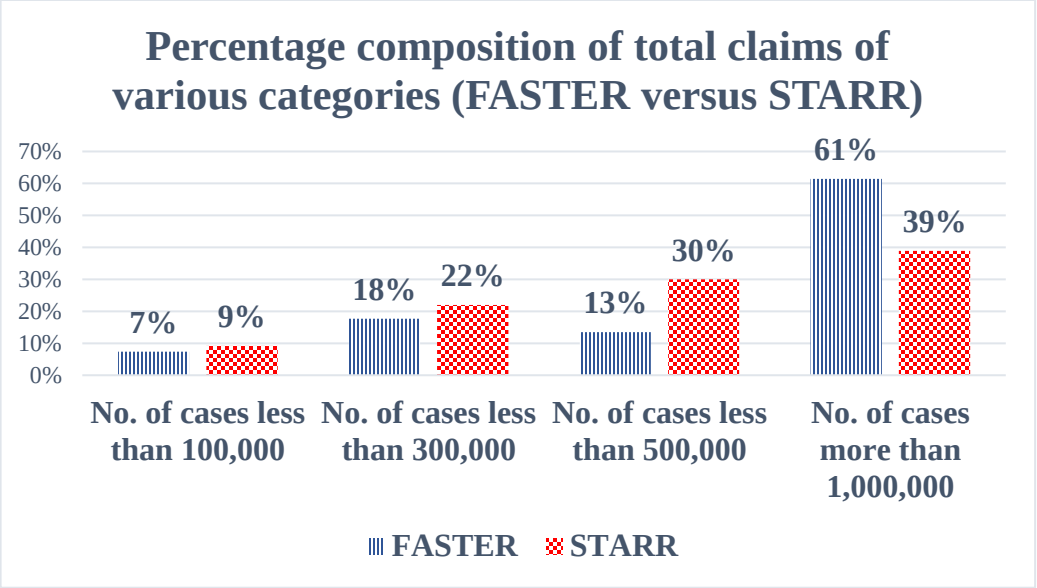
(Rs in Billion)

Description	**STARR**		**FASTER**	
	(Pvt) Ltd Companies	**(Pvt) Ltd as %age of total cases**	**(Pvt) Ltd Companies**	**(Pvt) Ltd as %age of total cases**
Number of companies	790	29%	1,117	21%
Claimed amount	32	25%	1,099	75%
Sanctioned amount	28	24%	1,056	74%
Paid amount	13	27%	568	69%



The above table and graph show that although the number of private limited companies was 8% lower in FASTER but these companies were paid 42% more refunds as compared to STARR. It is also pertinent to mention here that larger claims which constituted only 10% of the total claims were paid 76% of the total refund amount through FASTER. The Audit also observed that FASTER allowed relaxation to refund claimants of filing Annex-H (stock position) 120 days after submission of sales tax return. The unfair quantum of payments to corporate sector and relaxation of legal requirements raises question on the fairness of FASTER towards small taxpayers.

Moreover, further analysis of percentage composition of claims processed by the systems according to ceilings of refund amount is as follows:



As depicted in the above graph claims of Rs 1.00 million or more constituted 61% of the total cases processed through FASTER which was proportionately greater as compared to STARR. On all other accounts, STARR had a better distribution of cases according to various ceilings.

The management vide its letter dated 17th January 2024, replied that the intervention does not differentiate between registered persons whether a company or an individual and that refund claimants can file Annex-H with or 120 days after the submission of sales tax returns.

The Audit is of the opinion that subject analysis found that FASTER was discriminatory because the quantum of payments is unduly tilted towards corporate sector. Refund is a government liability, therefore, an intervention to ease taxpayer's refund woes should ideally be available to other taxpayers as well.

4.3. Impact on Accountability

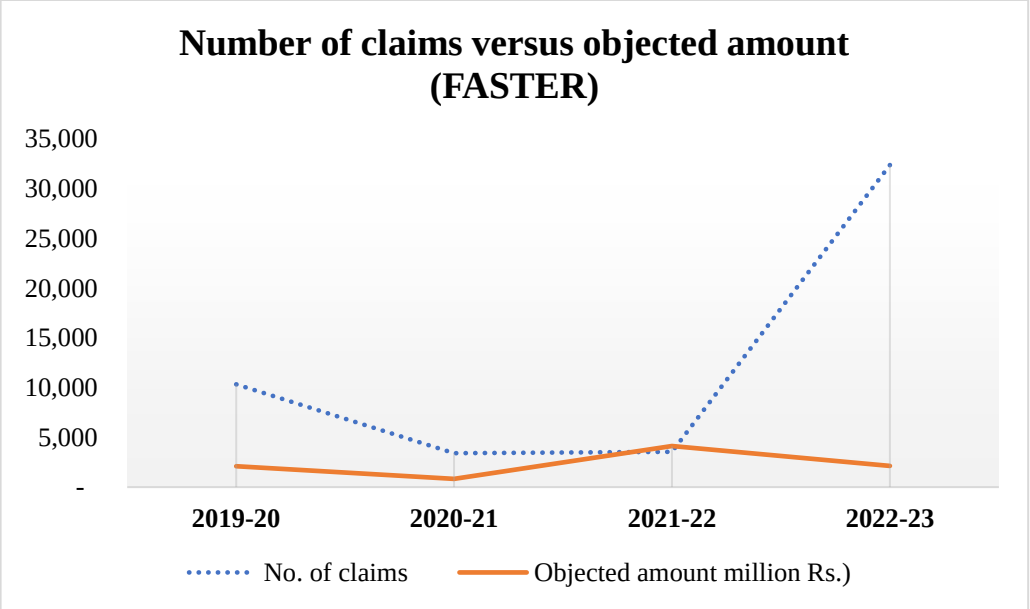
4.3.1. Analysis of objected claims

After processing the risk based system either sanctions, rejects, defers or carry forwards the claimed amount. A comparison of FASTER and STARR systems on above classifications is as follows:

	Rejected ratio		Deferred ratio		Carry forward ratio	
	FASTER	**STARR**	**FASTER**	**STARR**	**FASTER**	**STARR**
2019-20	2%	8%	2%	4%	195%	45%
2020-21	1%	11%	2%	13%	222%	50%
2021-22	1%	5%	7%	6%	238%	35%
2022-23	3%	2%	5%	4%	251%	16%

The above table shows that although FASTER had comparatively lower rejected ratios but the scale of carried forward amounts was much larger as compared to STARR. Moreover, deferred ratios for FASTER were initially lower but increased in recent years as compared to STARR. The huge quantum of deferred amount is problematic because governments are forced to devise alternative financing sources to pay outstanding refund claims (like issuance of bonds and securities). This ultimately increases a government's liabilities.

An analysis of number of claims processed through FASTER and amount objected by the system is presented below:



As shown in the above graph the amount objected by the system remained static as compared to the number of claims except for FY 2021-22. The amount objected by FASTER was highest in 2021-22 after which controls appear to have been scaled down thereby decreasing the objected amount.

The management vide its letter dated 17th January 2024, replied that FASTER was a fully integrated system with an inherent mechanism to reject claims which were not related to list of approved HS codes of five export oriented sectors. Moreover, only non-export claims with refund amount greater than zero were being rejected.

The Audit is of the view that a number of observations have been raised in various Audit Reports where inadmissibility of inputs for refund payments were established. In addition to this, the management also admitted to processing refunds of other sectors in the cited letter,

therefore, the risk management system needs to be reviewed in the light of audit observations. The management may share the risk parameters and validation checks of the RMS with the Audit for further analysis. Moreover, the management did not reply on the issue of high carry forward and low rejection ratios of refund.

4.3.2 Refund payments through FASTER to other than ex-zero rated sectors

Subsequent to the abolition of zero rating and application of VAT mode to ex-zero rated sectors, FASTER was introduced for processing of refunds to export-oriented sectors specifically textiles, leather, carpets, sports, and surgical goods. However, the Audit observed that refund claims of taxpayers belonging to other than these five sectors were also processed through FASTER. A summary of these payments is tabulated below:

(Rs in million)

Industry	Number of claims	Amount of claim	Amount paid
Pharmaceutical	375	8,004	4,352
Rice Mills	876	1,678	1,313
Food	1,702	11,320	8,147
Soap	25	56	41
Stainless steel	167	2,149	1,338
Kitchen and Cookware	42	49	38
Total	**3,187**	**23,256**	**15,231**

The above refund payments are indicative of the fact that arbitrary barriers to entry incentivize collusion and malpractice.

The management vide its letter dated 17th January 2024, replied that it was decided by FBR that in order to facilitate the exporters and to overcome the limitations of the system during teething period that refund

to all exporters shall be processed through FASTER. However, since the system has matured now, therefore, the temporary arrangement has been done away with and FASTER has been restricted to five export oriented sectors from September 2023 as provided in the rules.

The Audit requires the management to share the approval of the quoted decision.

4.3.3. Non-compliance of legal framework for refund payment

Section 8(1)(h) and (i) of Sales Tax Act, 1990 forbids adjustment of input tax on purchases of certain items including building and construction materials, vehicles and parts of vehicles. Section 7(2)(i) of the Act ibid read with Rule 33 of Sales Tax Rules, 2006 disallows input tax on utility bills not used in taxable supplies. Section 8(2) requires apportionment of input tax between taxable and non-taxable supplies. Rule 33 of Sales Tax Rules, 2006 limits the refund to the extent of input tax paid on purchases/imports actually consumed in the manufacturing of goods which have been exported or supplied at the rate of zero percent. Section 33 (11) (c) requires levy of penalty on any person who knowingly/fraudulently makes false statement/false declaration. Section 21 read with Rule 12 of Sales Tax Rules, 2006, requires that no refund can be paid to suspended/blacklisted registered persons.

The Audit has repeatedly pointed out absence of validation checks in refund processing against incorrect claims of domestic purchases, non-verification of use of utility bills as input invoice, unlawful adjustment of prior year's refunds, non-apportionment of input tax between taxable/non-taxable supplies, non-consideration of outstanding liabilities in sales tax refunds, and non-levy of penalties. One of the control failures observed during the conduct of this study pertained to payment of refund claims on the basis of invoices issued by suspended/blacklisted registered persons **(list attached as Annex-92)** as depicted in the following table:

FY	No. of claims	Amount Paid (Rs in million)
2019-20	8	70
2020-21	51	201
2021-22	54	310
2022-23	41	323

An increasing trend of payment to taxpayers claiming input on invoices issued by blacklisted/suspended taxpayers is visible in the above table. Furthermore, an inquiry report vide Order C.No.ST/I&I-IR/FR/04/2020-21/937 dated 28.08.2020 by FBR highlighted the fact that certain System Based Risk Minimizing Checks/Parameters were disabled (made non-functional) in order to facilitate expeditious processing despite clear legal provisions. Similarly, the cross-checking of refund claims by an authorized treasury office has also been eliminated. The role of treasury officer as principal signatory is being performed by Chief CSTRO while the DDO is performing the role of co-signatory. Moreover, Rule 39-G of Sales Tax Rules, 2006 which requires post refund audit of sales tax refunds is also not implemented consistently. To simplify the process of refunds, conventional documentation isn't required to be submitted and the rules require the claimant to produce the necessary documentation only when asked by the tax authorities. Despite clear instructions by the Board to institute post-refund audit cells in each formation, post-refund audit is not being conducted by the formations. This has led to an increase in the risk of refund fraud. The Audit is of the view that taxpayer facilitation and any intervention by the management thereof, should not compromise on the legal framework.

Accountability is established through robust internal controls and monitoring mechanisms. Progressive automation of governmental processes can lead to a sense of diffused responsibility due to the presence of a 'system' which can have negative consequences in terms of reduced

accountability and non-compliance. Therefore, the drive of automation through FASTER needs to be coupled with a continuous review of internal controls so that facilitation of taxpayers goes hand in hand with prevention of undue refunds.

The management vide its letter dated 17th January 2024, replied that no payment to black listed/suspended registered persons had been made through the CSTRO module. Moreover, post audit refund cells were operational in field formations despite of human resource constraints and a designated cell was also working at FBR HQ level to conduct post refund audit.

The Audit is of the view that refund claims have been processed by FASTER, based on invoices issued by black-listed/suspended registered persons (as provided in the Annex-92). The management may like to conduct a fact-finding inquiry to ascertain these cases. The Audit holds that post refund audit cells are non-functional as communicated by various formations. Moreover, the record of registered persons is available with the respective formation where the taxpayer is registered, therefore, post refund audit should be carried out at the formation level.

5. Key Audit Findings

i) The number of processing days on average before FASTER were 632 which were reduced to 13 days. Similarly, average credit days were 160 which were reduced to 18 days.

ii) There was a positive correlation between refund payments and exports. A sample of major exporters, however, shows that the increase in exports did not commensurate with the increase in refund payment.

iii) The number of visits to tax office were reduced to 5 visits per taxpayer on an average. Majority of the taxpayers availing facility of FASTER (52%) reposed their trust in FBR.

iv) Corporate sector was paid 42% more refund through FASTER as compared to STARR. Moreover, 10% largest claims processed through FASTER were paid 76% of the total claimed amount.

v) There was a huge incidence of deferred amounts on both systems. However, the quantum of carried forward amounts was very high in FASTER as compared to STARR.

vi) Payment function had been centralized in the office of CSTRO. The rules required a treasury officer to pre-audit the claims, however, the role of treasury officer had been eliminated in violation of these rules.

vii) FASTER was discriminatory to other than ex-zero rated sectors as it relaxed legal requirements like filing Annexure-H (stock position) at the time of filing of refund claims. The relaxation of regulatory framework selectively for refund processing had increased the risk of refund fraud specifically in the absence of effective post-refund audit.

6. Conclusion

FASTER achieved transparency by reducing processing/credit times, increasing taxpayer trust and decreasing interaction with tax officials. There is some evidence which links efficient refunds to an increase in exports due to increased liquidity. However, fairness of FASTER is questionable on the touchstone of equitable treatment. The intervention needs improvement in terms of inclusivity as 76% of the payments were made to large taxpayers who constituted only 10% of the population of claims. The huge quantum of deferred amounts of refunds is still problematic. In the context of accountability, health of internal controls is weak as evidenced by reported violations of regulatory framework and non-conduct of post-refund audit. Thereby, risk of refund fraud has multiplied. Moreover, exclusive treatment created incentive for

misuse/collusion as evident by payments to taxpayers from other sectors through FASTER. A multitude of refund processing systems and multiple barriers to access pose challenges to good governance. Above in view, sustainability of FASTER as a tool for refund payments should be reviewed to address its shortcomings in fairness and accountability.

7. Recommendations

i) There should be one platform for processing of refund cases. Other sectors not falling within its ambit as of now may also be allowed to file refund claims through FASTER.

ii) The Tax Gap Framework of FBR needs to be reviewed to incorporate refund liabilities and potential refunds. The department needs to address the systemic issue of non-payment of refunds. Risk categorization of pending refund claims be carried out and payments be prioritized according to risk.

iii) Annexure-H enclosed with sales tax returns be made machine-readable.

iv) Consistent enforcement with increased rates of penalties may act as a deterrent and decrease risk of refund fraud.

v) The centralized processing of payments by CSTRO be pre-audited by a treasury officer.

vi) The computerized risk management system be reviewed and updated regularly. The risk parameters of the system be reviewed by the management for regulatory compliance.

vii) Post refund audit (PRA) be ensured according to Rule 36(1) of the Sales Tax Refund Rules 2006 at field level. Separate reports by the field formations on conduct of PRA of claims processed through FASTER may be made a part of Monthly Performance Reports (MPR).

DGA (P&TS)

Impact Audit Of USF Project "Broadband Sustainable Development Program- Khyber Lot"

10.1 Introduction

The Broadband for Sustainable Development (BSD) Program, initiated by the Universal Service Fund (USF), is a telecom service-related program designed to bridge the digital divide by extending telecommunication services to un-served/under-served areas in Pakistan. The program became significant after the issuance of 3G and 4G licenses by the Federal Government; therefore, broadband data (internet) services were included as a mandatory component. The objective was to empower communities across the country with access to both voice and data communication so as to promote economic development and social inclusion.

The Broadband Sustainable Development (BSD) of Khyber Lot is a significant part of this program which focuses on the un-served areas within Khyber, Kohat, Karak and Hangu districts including erstwhile FR Peshawar and FR Kohat. The Khyber Lot comprises 720 Mauzas with an estimated rural population of 3.1 million[3]. Out of these Mauzas, approximately 70% was un-served area, which lacked basic telecommunications services/facilities. This un-served area accounted for 56.6% of the rural population in the Khyber Lot.

To address this digital divide and extend telecommunication services to these unserved areas, the Universal Service Fund (USF) entered into a contract with M/s Pakistan Telecommunication Mobile

[3] Schedule-C of Services & Subsidy Agreement (SSA) with M/s PTML

Limited (PTML), which operates under the brand name of Ufone on 23-10-2017.

The program aims at bringing voice communication and broadband internet connectivity to the people of the Khyber Lot and enhance their access to information, education, healthcare, and economic opportunities.

To sum up, the Broadband Sustainable Development, Khyber Lot program is a vital initiative of the Universal Service Fund under the MoITT to promote sustainable development and inclusivity in Pakistan's telecommunication infrastructure.

10.2 Overview

The program was initiated at a cost of Rs 1,985 million[4] with a specific goal to provide essential telephony and data services including broadband Internet as well as necessary infrastructure such as fiber networks and community tele-centres (commonly known as Net Cafés) to the unserved areas in Khyber Lot. The program commenced on 23.10.2017, with a projected completion date of 22.10.2019. To ensure efficient and timely execution of the program, a milestone-based framework was formulated to provide a structured roadmap for the program. Accordingly, the program was divided into four milestones. The first milestone was required to be completed within six months from the date of signing of contract agreement, whereas the rest of the three milestones were to be accomplished during the ensuing eighteen (18) months. The program could not be concluded within the stipulated timeframe and was extended up to June-2020.

[4] Schedule-D of Services & Subsidy Agreement (SSA) with M/s PTML

The uniqueness of the program was its funding model. It was financed through 1.5% contributions[5] made by the telecom operators, namely, cellular mobile operators, Long Distance & International operators, Local Loop etc. out of their adjusted revenues to USF and remarkably did not involve direct government funding. The USF hired telecom service providers through competitive bidding under reverse auction model, which encouraged healthy competition among various telecommunication companies like M/s Ufone, Jazz, Telenor, Zong, PTCL and Nayatel. Major projects were awarded to the cellular mobile operators during the currency of the program.

In short, the program's unique funding model, structured milestones, and competitive bidding process contributed to bridge the digital gap in the Khyber Lot region and led to the sustainability and efficiency of the program. Though the program achieved the intended objectives of providing broadband internet services in the unserved areas of Khyber Lot, yet more focus is needed to improve the coverage and data speed in the target areas.

10.3 Scope and Methodology

The scope of the program covers the execution period starting from October, 2017 to June, 2020. To ascertain the impact of the program, Audit visited the USF Company H/Q, Islamabad and carried out site inspection of Khyber Lot. Audit noticed that the program accomplished the objectives of providing broadband services to the unserved population of the Khyber Lot but the quality of service in terms of data speed was deficient and did not serve the purpose of the people at large. Moreover, the erstwhile FATA region and the adjoining districts remained under continuous militancy threat which greatly affected people’s lives. It is

[5] Rule 4(2) of USF Rules, 2006.

worth mentioning that modern telecom facilities did not exist before intervention of USF Company in the unserved area of Khyber Lot. In fact, the program targeted the provision of voice and internet services in 428 mandatory Mauzas; however, the population of the unserved area would have been deprived of the basic telephony, data services, uplift of online educational facilities, healthcare, economic growth and social bonding, had there not been provided broadband services by the company. It is pertinent to mention that the project of providing broadband internet services was awarded to M/s Ufone only in the target areas; therefore, the data collected reflect the status of broadband internet services to that extent.

The impact audit was carried out by adopting a mixed method approach, based on quantitative and qualitative methods and tools of data collection like field survey questionnaire, key stakeholders and government officials' interviews, drive testing and documents analysis. In addition, data from Pakistan Telecommunication Authority (PTA) and MoITT was also collected to see the tele-density in the Khyber Lot area. The audit team also collected and analyzed data on key indicators such as internet usage, economic activity and health and educational attainments.

10.4 Findings of Impact Audit

The findings of the impact audit are highlighted as under:

i. Improved broadband connectivity and effect on socio-economic life

The program has successfully achieved the intended objectives in terms of provision of consistent high speed broadband services in the

unserved targeted areas of Khyber Lot which has increased access of the local population to reliable internet services; thereby creating positive life experiences and improving communication. As per audit survey[6] based on a sample of 100 respondents, 78% of the respondents of target area had smart phones; 68% of the respondents used voice and data facility, 57% used mobiles for access to public services, and 34% of the respondents opined that broadband services made their communication easy with others. 32% of the respondents were of the view that telecom services were helpful to interact with their relatives and enhanced individual participation in online community groups and pages; thereby fostering a sense of communal engagement. The program also influenced people's livelihoods by engaging them in online economic activities. As per audit survey, 22% of the respondents of target areas apprised that they used mobile services for their business expansion. The program was intended to enhance the use of e-commerce and social media platforms in the target areas in order to promote online business and social interaction. As per audit survey, 58% of the respondents replied that they used social media (Facebook and WhatsApp) for promotion and sale of products; thereby stimulating local economies and entrepreneurship. 12% of the respondents in the target area used mobile services for online shopping. The program also enhanced access of the local people to email and web browsing for gathering required information for multifarious purposes. As per audit survey, 16% respondents of the target areas used mobile service for obtaining information on social issues. Detail is given in Annex-II.

10.4.2 Increased digital literacy and skill

The program also contributed to increase in digital literacy and skills among the local population which has raised the likelihood of

[6] Field Survey Results

exploring new jobs and business opportunities through information technology and services online. As per audit survey, 40% of the respondents of target areas apprised that they used mobile phones and other equipment for e-learning, whereas 32% informed that broadband services were useful for studies and learning. The program also achieved the goal of promoting financial thinking and literacy through online services. 26% of the respondents of the target area used internet services for mobile banking facilities. The program also facilitated the farmers in acquiring the knowledge of agriculture economics and weather updates through information online.

10.4.3 Access to health information

Access to professional health-related information has enhanced the probability of receiving quality advice. The program effectively contributed to health awareness, consultation services and information accessibility in the target areas. As per audit survey, 13% of the respondents used internet for online health services.

10.5 Impact on connectivity

Broadband internet services did not exist before commencement of the program. Only fixed landline telephone service could work in certain areas without using Digital Subscriber Line (DSL) service. With the arrival of program, the local population got the facility of mobile broadband internet services as per details given in the table below:

Districts	Data Subscribers	Voice Subscribers
KOHAT	168,680	174,524
HANGU	75,122	70,486

KHYBER AGENCY	74,605	75,261
KARAK	59,848	63,377
FR KOHAT	19,648	19,294
FR PESHAWAR	9,782	7,811
Total	407,685	410,753

Source (Data received from M/s Ufone)

10.6 Problem areas of the program

The erstwhile FATA regions and their adjoining districts have been under continuous militancy which has greatly affected people's lives and livelihood. The local population was deprived of the basic telephony and data services. The program provided the modern telecom facilities only in 428 mandatory Mauzas out of 729 Mauzas due to security situation and low population below the minimum threshold of 100 persons in the target Mauza. Besides, the quality of broadband internet services was not up to the mark. As per audit survey, 45% of the population opined that quality of voice was good with slow net speed.

10.7 Conclusion

The Broadband Sustainable Development Program in Khyber Lot, spearheaded by the Universal Service Fund (USF) was implemented in only 428 Mauzas instead of 729. In those Mauzas the programme has made significant strides in narrowing the digital gap and fostering socio-economic development in under-served regions. The initiative successfully achieved its core objectives, providing consistent high-speed broadband services to previously unconnected areas.

Despite commendable achievements, challenges persist. Security concerns in erstwhile FATA regions have limited the program's reach, leaving some areas untouched. Additionally, the quality of broadband

services, particularly data speed, falls short of expectations for 45% of the surveyed population.

Moving forward, targeted actions are essential. Efforts to expand coverage should prioritize collaboration with law enforcement agencies to ensure secure deployment in previously inaccessible areas. Infrastructure upgrades and technological enhancements are imperative to address the identified deficiencies in data speed. Community engagement initiatives and awareness campaigns will play a pivotal role in maximizing the program's impact, promoting digital literacy, and unlocking economic opportunities.

Regular monitoring and evaluation, coupled with public-private collaboration, will be key to the program's sustained success. These measures will enable the refinement of strategies, ensuring that the benefits of connectivity reach a wider population, and fostering a resilient digital infrastructure that contributes to the region's sustainable development.

In conclusion, while the program has laid a robust foundation for connectivity and socio-economic empowerment catering the challenges, the targeted actions will be instrumental in realizing the full potential of the Broadband Sustainable Development Program in Khyber Lot.

DGA PNR

Impact Audit
Development Scheme No. 842 - "Energy for All"

5.1 Introduction

With increasing population, Pakistan's energy demand is also on the rise. The issue of clean domestic fuel is more pronounced in rural areas where 61.18% of the population lives[7]. The natural gas provision can help in mitigating socio-economic hardships associated with the use of coal, wood and other conventional sources, which have their environmental impact as well. In cities, the population is concentrated and laying pipelines from their own resources is not an issue for gas distribution companies due to financial viability of such projects. However, when it comes to deprived areas, lack of business potential necessitates the intervention of the Government funding which is provided through Public Sector Development Programme.

Keeping in view the socio-economic development goals of the country, Government of Pakistan (GoP) initiated various development schemes for supply of natural gas to the deprived areas. Sui Northern Gas Pipelines Ltd. (SNGPL) and Sui Southern Gas Company Ltd. (SSGC) - two public sector gas utility companies engaged in transmission and distribution of natural gas – are entrusted with execution of these gas supply schemes. One of such schemes titled "Scheme No. 842 - Energy for All" was initiated in 2017-18 through Public Sector Development Programme (PSDP) at the cost of Rs 12,500.000 million.

5.1.1 Background of the Scheme

[7] Census of Pakistan, 2023

Impact audits have been started from the audit year 2023-24 by the office of the Auditor-General of Pakistan which aim at determining the impact of government initiatives or programs with special focus on determining the outcomes attributable to an initiative, new program or recent change to an existing program by separating other contributing factors or variables. The impact audit reports shall benefit the stakeholders in understanding the net results of the programs and initiatives in a more systematic manner and if timely addressed, shall lead to improving service delivery, financial management and better governance. “Scheme No. 842-Energy for All” was selected for impact audit to look into the impact of government spending with special reference to the transfer of benefits to the ultimate beneficiaries.

Feasibility studies of gas supply schemes, identified by the public representatives, are prepared by the relevant gas companies. Finance Division allocates funds to the relevant gas distribution company. “Scheme No. 842-Energy for All” included 44 schemes to supply natural gas to 221,655 deprived households. However, three (3) gas supply schemes were completed and 5,409 households were gassified by utilizing funds of Rs 286.039 million. Audit focused on the impact of these three gas supply schemes on the lives of the people who were provided natural gas through these schemes.

5.1.2 Role of the Project

One of the purposes of Gas Development Schemes was provision of gas to population of selected localities. Initially there were 44 schemes in the project. However, funds were released for only 34, which were to cater for 221,655 connections. The intended objective of the project was to shift from traditional fuel sources to natural gas for improved environmental, social and financial impact.

5.2 Overview

Impact Audit was undertaken in order to assess long term outcome of the gas development schemes i.e. “Scheme No. 842-Energy for All” under PSDP programme 2017-18. This Programme included 44 schemes with a financial outlay of Rs 8,377.530 million. Out of this amount, funds to the tune of Rs 5,890.870 million for 34 schemes were released for gasification of 221,655 households. A substantial amount of Rs 5,370.600 million for 25 schemes got lapsed resulting into non-provision of gas supply to 181,871 households. Merely three (3) out of remaining nine (9) schemes were completed. Under these three (3) completed schemes, 6,056 households were planned for gas supply. A total number of 5,409 households were gassified leaving a balance of 647 households.

Gas supply schemes were to be executed by both SNGPL and SSGC. SNGPL completed three (3) schemes while SSGC could not initiate development work.

5.3 Scope and Methodology

a. Scope

Impact Audit was carried out for three (3) completed schemes for gas supply to various villages of UC Darya Gali and UC Numbal of Tehsil Murree and UC Mangowal (selected villages) of District Chakwal. Since the schemes were planned and executed during the FY 2017-18, therefore, the scope was confined to the FY 2017-18. A total number of 5409 households were provided with natural gas facility leaving 647 households without gas connections.

b. Methodology

Audit methodology comprised of following procedures:

i) desk audit of feasibility reports, documents regarding funds released & surrendered;

ii) analysis of funds allocated, released and utilized;

iii) review of execution documents regarding completed schemes

iv) analysis of targeted consumers;

v) field visits and interview with consumers;

vi) data collection through questionnaires; and

vii) analysis of environmental, social and financial impact.

5.4 Findings

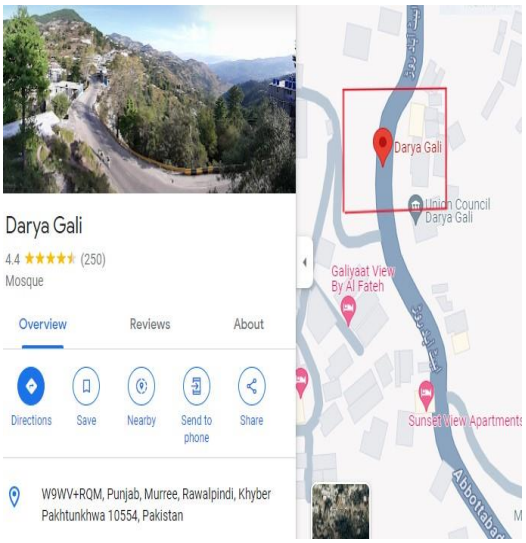
5.4.1 Impact Analysis of completed gas schemes

Questionnaire was framed and administered to obtain viewpoint of gas consumers regarding outcomes of gas supply. Data helped to assess the effectiveness of gas supply as enumerated below:

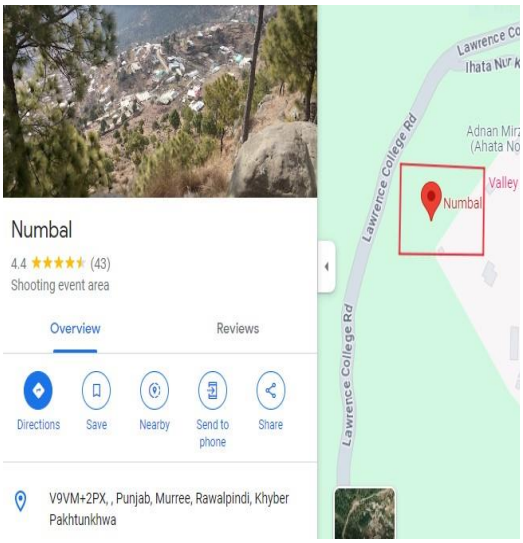
Financial impact

5.4.1.1 Financial impact to the resident of UCs Numbal and Darya Gali

There were 3,767 number of connections, out of which audit team conducted a survey by visiting 430 (11.41%) households of two Union Councils of Tehsil Murree namely Darya Gali and Numbal to assess the impact of gas schemes on the lives of the general public. Geographical location of these Union Councils is depicted in the following picture:



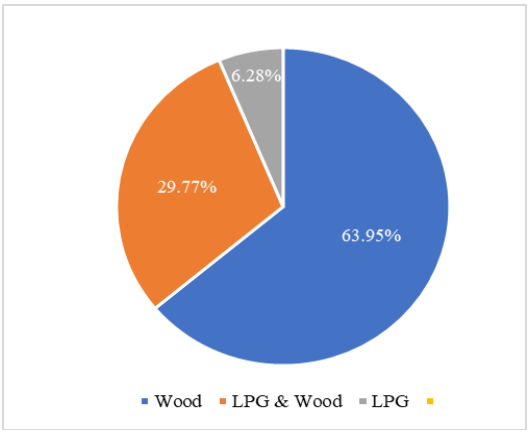
UC Dary Gali



UC Numbal

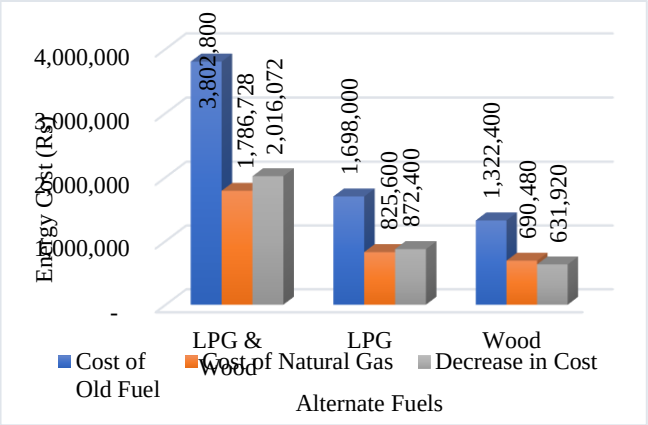
In a sample of 430 households, there was a population of 2,213. The survey revealed that 63.95% households were using wood, 29.77% were using mix of wood & LPG, remaining 6.28% were using LPG as their primary fuel source for cooking and heating prior inception of the schemes. A significant cost cutting impact was witnessed due to these schemes during the study. Following graphs showed comparative position of different types of fuel sources used by 430 households before provision of gas:

Fuel used before supply of natural gas



According to the survey results accumulated annual total cost of sample households of traditional fuel sources i.e. wood, LPG and coal in these localities was estimated at Rs 6.823 million (i.e. Rs 15,905 per household). The cost of fuel using gas was estimated at Rs 3.302 million (i.e. Rs 7,700 per household) after completion of the schemes. Thus, the cost of using gas is approximately 50% lower than the cost of using alternative fuels i.e. wood, LPG and coal. Gassified households were able to save 50% of their fuel cost after completion of these schemes enabling them to meet other expenses through savings.

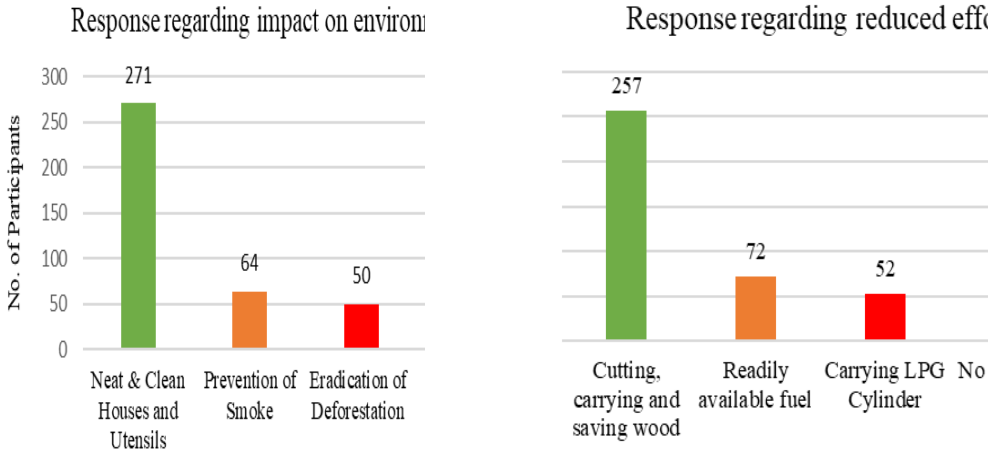
Cost comparison of different fuels is depicted below:



Social Impact

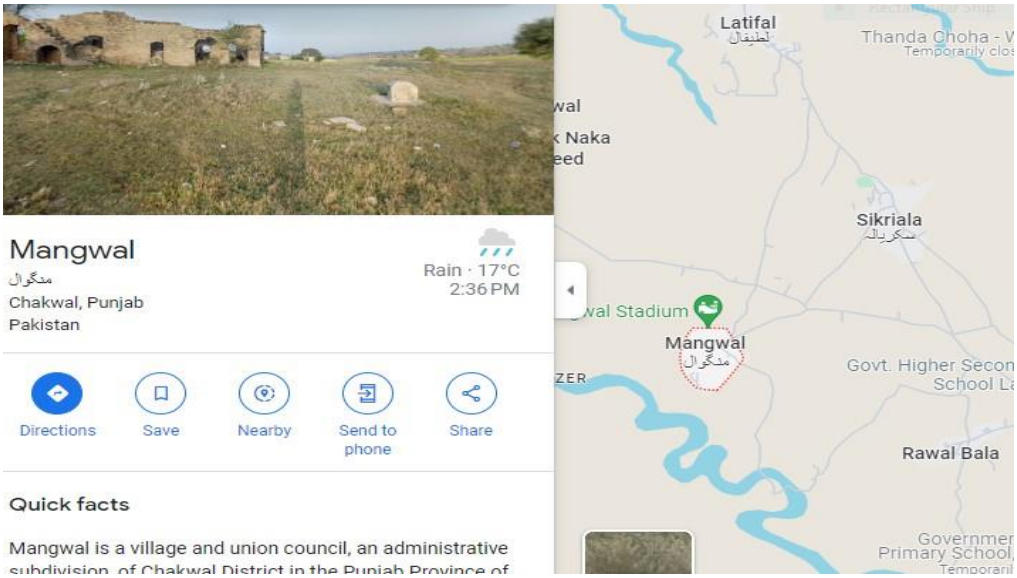
5.4.1.2 Villages of UCs Darya Gali and Numbal, Murree

The survey of 430 households revealed that 63.95% households were using wood, 29.77% were using mix of wood & LPG, remaining 6.28% were using LPG as their primary fuel source for cooking and heating before inception of the schemes. Analysis of data collected during survey indicated various improvements in their fuel collection, storage and transportation after completion of these schemes. Respondents reported that difficulties in the process of fuel availability, especially in winter season, like cutting, carrying and storing of wood / cylinders were resolved. Participants further responded an improvement in the cleanliness of house and utensils due to absence of smoke and improved living standard. Following graphs showed the responses of 430 participants of the survey:

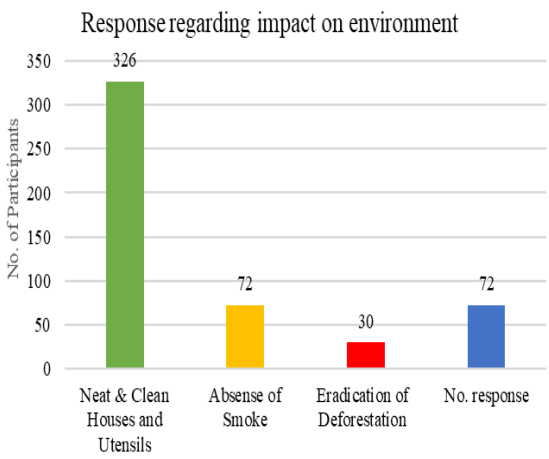


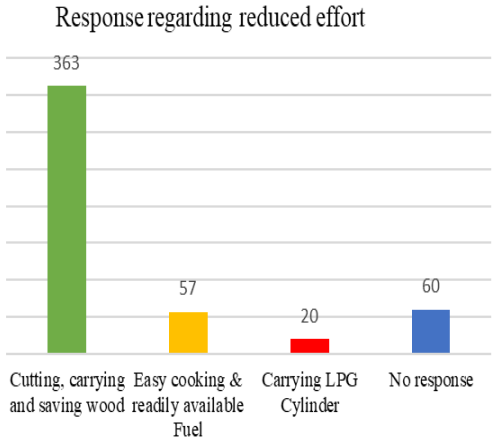
5.4.1.3 Villages of UC Mangowal, District Chakwal

There were 1,642 number of gas connections in UC Mangowal, District Chakwal. Audit team conducted survey by visiting 500 (30.15%) households having a population of 2,814. A large portion of people (87.47%) were using wood, 9.3% people were using mix of wood & LPG and remaining 3.23% were using only LPG as their primary fuel source for cooking and heating before introduction of gas schemes. Geographical location of the Union Council is depicted in the following picture:



The sample households mentioned various improvements after commissioning of gas scheme. Most of the respondents reported that the difficulties during the process for provision of wood i.e. cutting, carrying & storing issues were resolved. Some participants opined improvement in cleanliness and living standards. Following figures depicts the different types of responses by 500 participants of survey after the provision of natural gas:





Environmental Impact

5.4.1.4 Reduction in CO_2 emission in Darya Gali, Numbal and Mangowal

Provision of gas to the consumers who were using alternative fuel previously brought positive impact on the environment of the area. Impact of provision of gas significantly reduced CO_2 emission and de-forestation. Data revealed the following impacts:

Locality	Total MMBTU of gas used	Equivalent No. of trees*	CO_2 emission in case of wood usage (Tons)**	CO_2 emitted by burning gas (Tons)***	Difference in CO_2 emission (Tons)
UCs Darya Gali and Numbal	77,525	4,180	8,640	4,535	4,105
UC Mangowal	27,240	1,469	3,036	1,593	1,443
Total	**104,765**	**5,649**	**11,676**	**6,128**	**5,548**

*Burning 18.55 MMBTU gas can save one tree
**2.067 Ton CO_2 emitted on burning of one tree
***0.0585 Ton CO_2 emission by burning one MMBTU natural gas

The above table shows that provision of gas to the localities previously burning wood as source of fuel brought significant and

beneficial impact on reducing carbon emissions. 104,765 MMBTU gas burned in the localities of three UCs which were estimated to be emitting 6,128 Tons of CO_2, as compared to 11,676 Tons of CO_2 in case of burning wood. Resultantly, 5,548 Tons of CO_2 emission were reduced each year. This reduction in CO_2 emissions is equivalent to planting approximately 5,649 trees. Simultaneously, 5,649 trees were saved meaning thereby enhanced absorption by 378.465 Tons of CO_2.

5.5 Conclusion

The impact analysis of completed gas schemes in various localities, namely UCs Darya Gali, Numbal, and Mangowal, reveals significant financial, social, and environmental benefits. However, only 03 out of 44 schemes were completed, highlighting the lack of realistic planning and execution. The comparison of alternate fuel before and after provision of natural gas highlights the transformative potential of gas development schemes as detailed below:

Condition without scheme	Condition with scheme
The households using alternate fuel were previously facing the following problems: i) LPG was more expensive and risky fuel, ii) Cutting, carrying and storing wood; iii) Burning wood creates smoke that makes houses and utensils black; iv) Carrying woods and LPG cylinders was time consuming activities; and v) More emissions of carbons from burning of woods.	i) Gas was a relatively economical and clean source of energy as compared to alternatives like wood or LPG, which could reduce pollution and environmental impact in the areas; ii) People relied on firewood or other biomass for heating and cooking, however, supply of gas reduced deforestation and the strain on local ecosystems; iii) Supply of gas reduced storage space and cost of alternate fuels; iv) The use of gas for cooking led to better indoor air quality, reduced health problems associated with wood or biomass cooking methods;

	v) Expansion in the distribution network also increased job opportunities and source of earning to locals; and vi) Beneficial impact on reducing carbon emissions.

Audit recommended that based on the positive outcomes observed in the surveyed areas, there was a need to expand gas schemes to deprived communities. This expansion should prioritize areas with high reliance on traditional fuel sources and limited access to clean energy alternatives. For this purpose, incomplete gas development schemes may be completed to achieve the desired target for supply of gas to 221,655 households as envisaged in the feasibility reports.

By implementing these recommendations, Petroleum Division may accelerate the transition towards cleaner energy solutions, fostering sustainable development and improving the overall well-being of communities with ultimate target of mitigating the effects of use of traditional fuel sources.

DGA Power (Lahore)

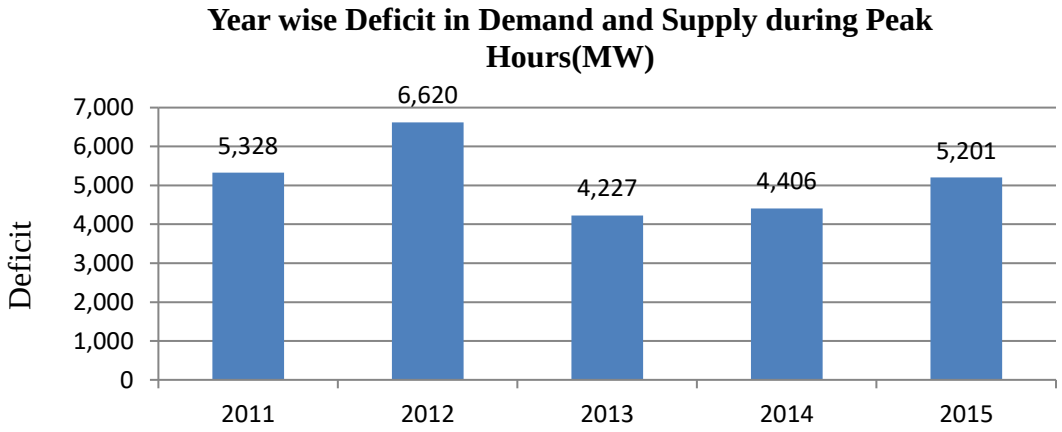
IMPACT AUDIT ON NET-METERING INITIATIVE IN LESCO AND IESCO

4.1 Introduction

Net energy metering is an electricity policy that enables consumers with renewable energy facilities to both consume electricity as needed and receive credit for supplying excess energy to the grid.

4.2 Background

In past, Pakistan has grappled with a substantial energy crisis characterized by a significant disparity between energy demand and supply. The nation frequently faced substantial energy deficit resulting in frequent load-shedding and severe power outages. The actual position of demand and supply of the electric power during peak hours in the NTDC's system have been reproduced in the following graph:



{Source: NEPRA State of Industry Report 2015 – (table 27)}

Recognizing these challenges, the Pakistan government has been actively promoting the use of renewable energy as a fundamental component of its future plans aimed at stabilizing the country's power sector. In pursuance of this vision of the GoP, NEPRA, referring to the international studies and the data indigenously collected, proposes that renewable energy projects are best suited to be commissioned as distributed generation, specifically for the scattered load. The preferable proposition for induction of renewable

energy projects should be at the distribution network, near the load centers, and at locations where the adequate resource is available. This approach minimizes the need for extensive enhancements to the transmission network, streamlining the incorporation of renewable energy sources into the existing energy infrastructure.[8]The same vision led to the initiatives like net energy metering which was facilitated by the Alternative Energy Development Board. Under this scheme, individuals and businesses were encouraged to invest in renewable energy infrastructure, especially solar panels, which allowed them to not only meet their own electricity needs but also enabled them to contribute surplus energy to the national grid. This strategy aligned with Pakistan's endeavors to address its energy crisis while simultaneously promoting sustainable and greener energy solutions.

4.3 Role of the Program

On September 01, 2015, the National Electric Regulatory Authority (NEPRA) introduced the official Distributed Generation and Net energy metering Regulations. These regulations had broad implications, opening up opportunities for a wide range of electric grid customers, particularly those with three-phase connections, to participate in the Net energy metering program. This program enabled the installation of small-scale renewable energy systems by eligible customers, allowing them to seamlessly integrate their renewable energy generation with the existing grid infrastructure. Under these regulations, any customer with a three-phase connection can take advantage of Net energy metering, making it accessible to a more extensive segment of the population.[9]

4.4 Overview

The purposes for the promotion of net energy metering include the encouragement of the individuals, businesses, and industries to invest in renewable energy sources like solar and wind power, thereby reducing reliance on fossil fuels and promoting a cleaner and more sustainable energy mix.[10] Furthermore, net energy metering initiative is undertaken to mitigate the country's chronic energy shortages by incentivizing the generation of additional electricity through distributed renewable energy systems, helping bridge the gap between supply and demand. The State of Industry Report of NEPRA 2022 highlights that net energy metering significantly contributes towards minimizing T&D losses and provides flexibility in investments for augmentation or development of distribution facilities.[11]As per the data acquired from AEDB, the current status of Net

[8] 2015, State of Industry Report, NEPRA, p. 120
[9] 2015, SRO 892(1)/2015, NEPRA
[10] Notification dated 06, February, 2018, AEDB
[11] 2022, State of Industry Report, NEPRA, p. 68

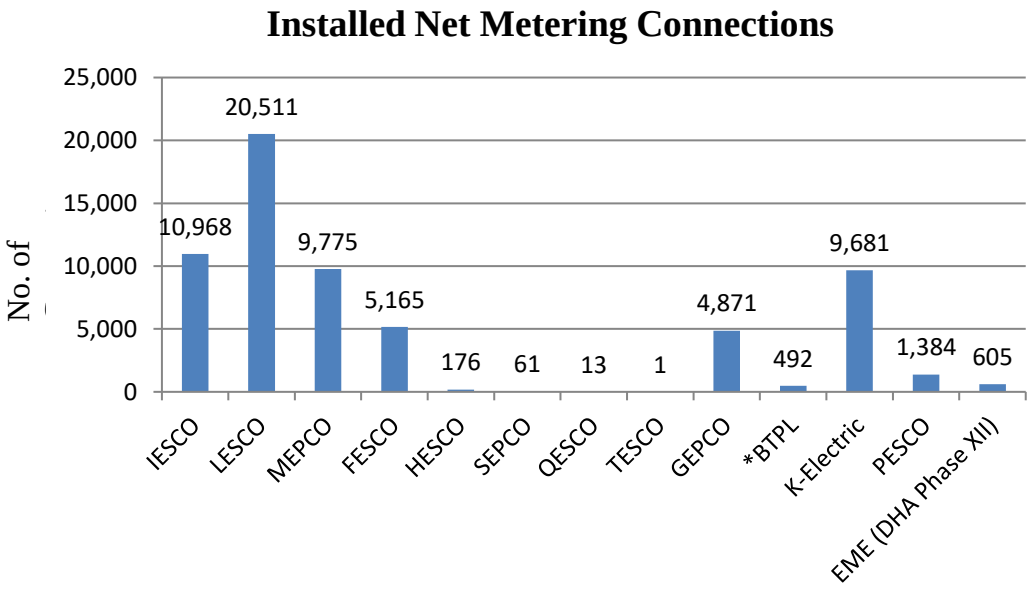
Energy Metering in Pakistan, up to June 30, 2023, is exhibited in the table below:

Table-1

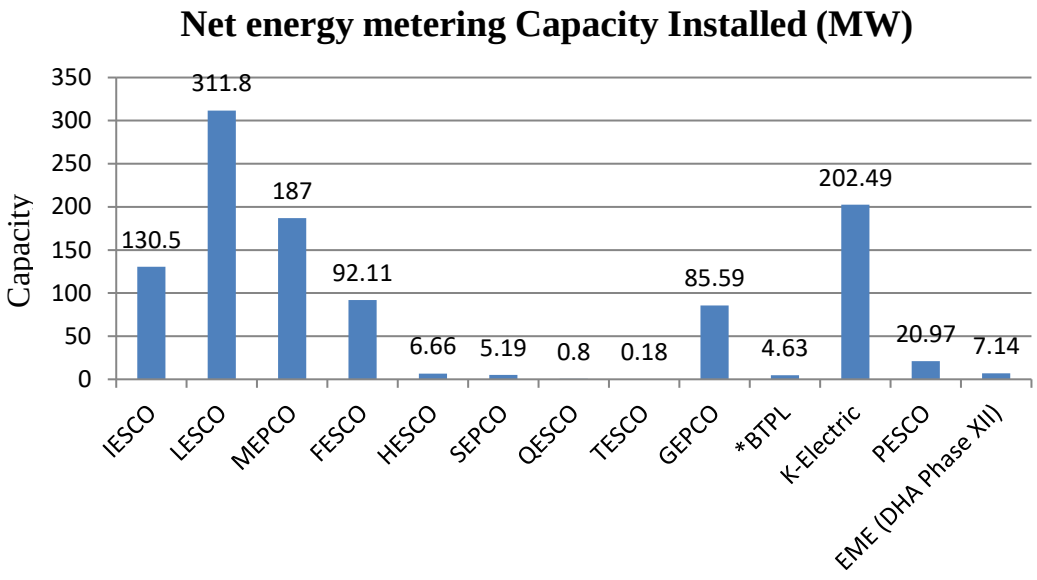
Sr. No.	Name of DISCO	Installed Net energy metering Connections	Capacity Installed (MW)
1	IESCO	10,968	130.5
2	LESCO	20,511	311.80
3	MEPCO	9,775	187
4	FESCO	5,165	92.11
5	HESCO	176	6.66
6	SEPCO	61	5.19
7	QESCO	13	.80
8	TESCO	1	.18
9	GEPCO	4,871	85.59
10	*BTPL	492	4.63
11	K-Electric	9,681	202.49
12	PESCO	1,384	20.97
13	EME (DHA Phase XII)	605	7.14
Total		**63,703**	**1,055.03**

(*Bahria Town Private Limited)

LESCO and IESCO lead the rest by having maximum numbers of net energy metering connections. However, the efforts of HESCO, TESCO, SEPCO and QESCO with regard to the promotion of net energy metering seem abysmal and discouraging.



As far as the installed capacity for generation is concerned, LESCO is the frontrunner, followed by K-Electric and MEPCO.



4.5 Scope & Methodology

4.5.1 Scope

The impact audit was carried out during the year 2023-24 in two electricity distributing companies in Pakistan i.e., LESCO and IESCO, along with CPPA-G. The purpose of the audit was to understand any notable differences that were brought in by the net energy metering initiative.

In particular, the study sought to investigate whether the implementation of net energy metering has a measurable impact on reducing Transmission and Distribution (T&D) losses in the electricity grid. To address this question, a systematic sampling technique was used to identify feeders with the highest number of net energy metering connections. Due to constraints such as time limitations and other practical factors, a subset of the top 15 feeders was selected as sample for further inspection.

4.5.2 Methodology

The methodology employed for the impact audit consists of a broad and comprehensive approach, involving the collection of data from various key stakeholders in the power sector. These stakeholders include the distributing companies, the Central Power Purchasing Agency-Guaranteed (CPPA-G), the Alternative Energy Development Board (AEDB), and the National Electric Power Regulatory Authority (NEPRA). This diversified data was diligently gathered to form a strong and robust foundation for conducting in-depth analyses. To ensure the data was effectively utilized, it was meticulously organized into spreadsheets. This systematic arrangement facilitated comparisons and contrasts among different variables. Scatterplot tool was employed to ascertain a correlation between variables; furthermore, regression analysis was carried out to shed light on whether net energy metering can be associated with the reduction in T&D losses. Moreover, to gain insight into the viewpoints of Net energy metering Consumers, questionnaire was developed and administered. This qualitative aspect added depth to the study's findings, leading to a more comprehensive assessment of the implications and effectiveness of net energy metering from the consumer's standpoint.

4.6 Audit findings

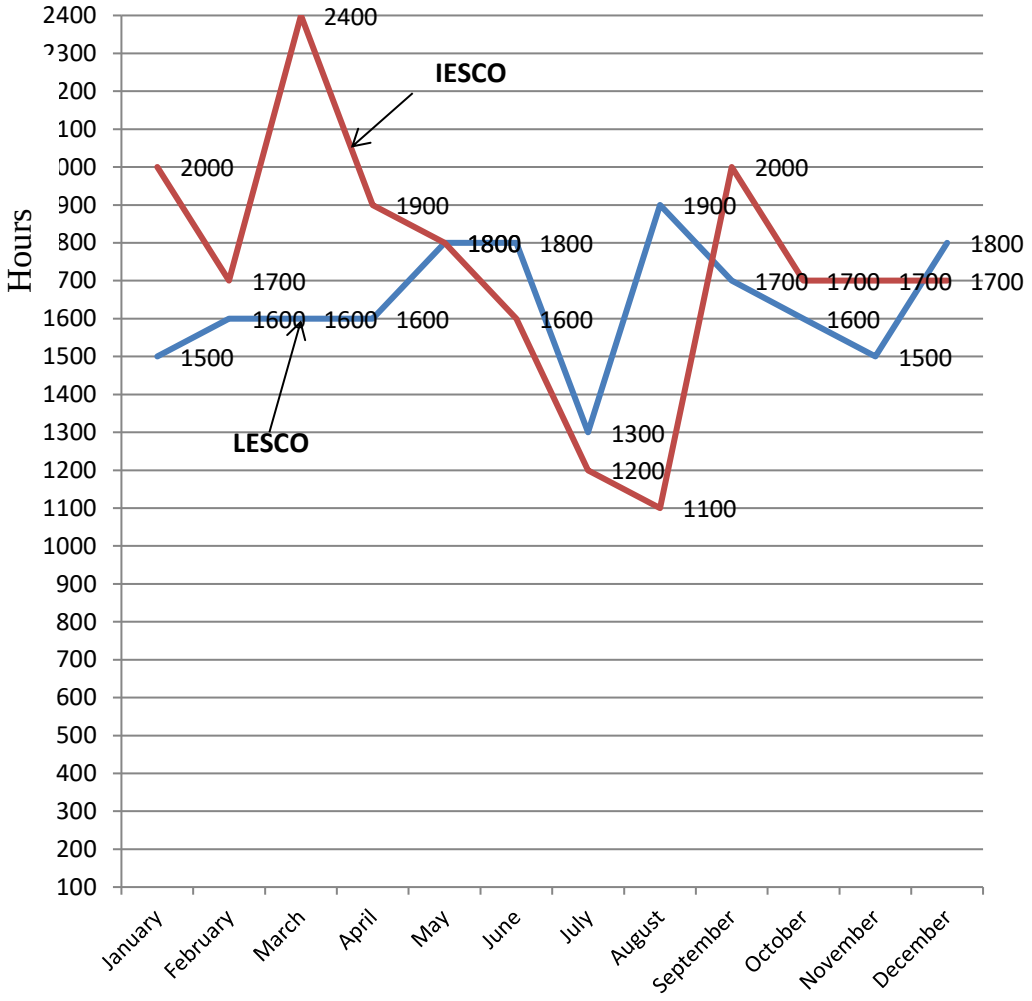
4.6.1 Impact of Net Energy Metering to Decrease the Deficit of Electricity during the Hours of Peak Demand in a Month

One of an important objective of the net energy metering initiative is to mitigate the shortage of electricity in the country especially during the time of peak demand. The data gathered from both LESCO and IESCO highlights that the peak demand for electricity typically occurs between 1300 and 1900 hours in LESCO and between 1100 and 2400 hours in IESCO in a day during the whole year.

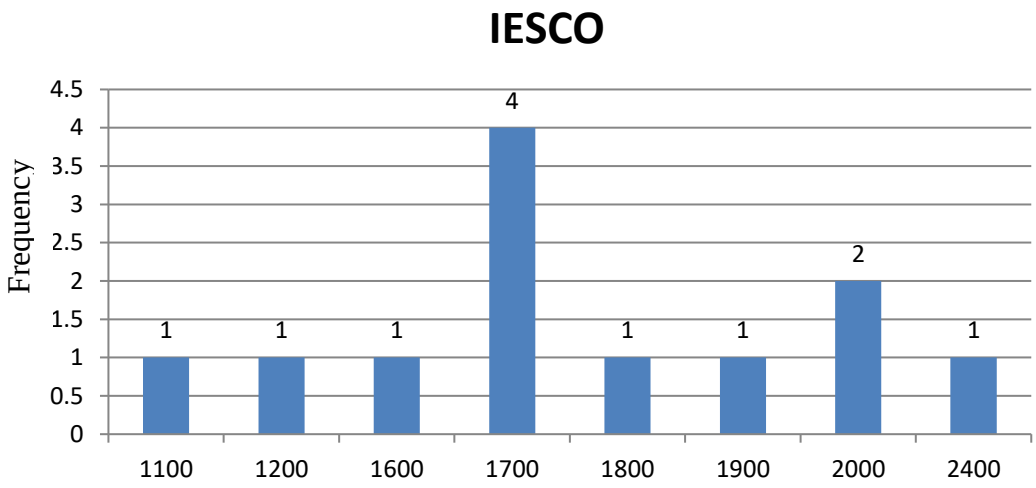
Table-2

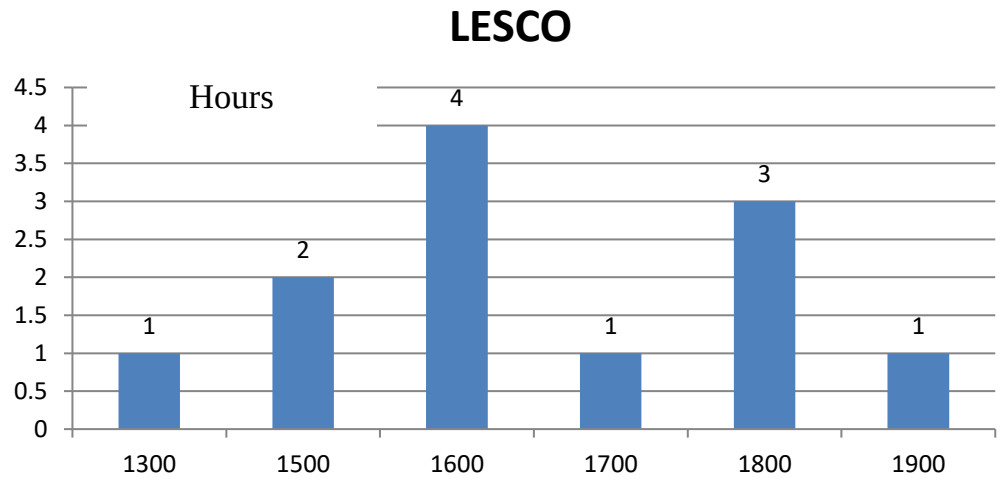
Period	Date & time of peak in LESCO	Date & time of peak in IESCO
July-2022	05-07-2022 (1500 HRS)	07.07.2022 (2000 HRS)
Aug-2022	13-08-2022 (1600 HRS)	10.08.2022 (1700 HRS)
Sept-2022	01-09-2022 (1600 HRS)	01.09.2022 (2400 HRS)
Oct-2022	04-10-2022 (1600 HRS)	01.10.2022 (1900 HRS)
Nov-2022	01-11-2022 (1800 HRS)	24.11.2022 (1800 HRS)
Dec-2022	27-12-2022 (1800 HRS)	29.12.2022 (1600 HRS)
Jan-2023	24-01-2023 (1300 HRS)	24.01.2023 (1200 HRS)
Feb-2023	01-02-2023 (1900 HRS)	03.02.2023 (1100 HRS)
Mar-2023	16-03-2023 (1700 HRS)	15.03.2023 (2000 HRS)
Apr-2023	17-04-2023 (1600 HRS)	17.04.2023 (1700 HRS)
May-2023	23-05-2023 (1500 HRS)	23.05.2023 (1700 HRS)
June-2023	14-06-2023 (1800 HRS)	23.06.2023 (1700 HRS)

The data reveals that in LESCO there is a consistent pattern in the occurrence of maximum demand of electricity; however, the pattern in IESCO for maximum demand in a day is more sporadic.



To be more exact, when we remove the outliers from the considerations, it can be deduced that the maximum demand in LESCO happened with greater frequency between 1500 and 1800 hours, while, the same phenomenon occurred in IESCO between 1700 and 2000 hours.





In order to develop a relation between the time of maximum demand and the contribution from net energy metering during the same time, it was necessary to look into the presence of sunshine, which is the primary element for the generation of energy through solar panels, during the hours of peak demands. As per the study conducted by the University of Queensland, Australia, "PV output rises with increasing sunshine levels."[12] The World Meteorological Organization defines sunshine as the sum of the time during the day for which the direct *normal irradiance exceeds 120 W/m2*.[13] If the fact of the availability of sunshine could be established then it will be easier to determine the efficacy of net energy metering during the hours of peak demands in both of the companies.

For this purpose, solar radiation data pertaining to Pakistan was collected from the World Bank website.[14] The threshold of 120 *W/m2 was applied on the direct normal irradiance received in Lahore for the year 2016-17. The output highlights the availability of sunshine during the day. Thereafter, a comparison was made between the presence of sunshine and the time of the peak demand occurred during the day so that the contribution of net energy metering in the generation of electricity is determined.*

Table-3

Lahore Electric Supply Company	
Date & Time of Peak Demand	**Avg. Time of Decline in Sunshine**
05-07-2022 (1500 HRS)	1623 HRS
13-08-2022 (1600 HRS)	1700 HRS
01-09-2022 (1600 HRS)	1620 HRS
04-10-2022 (1600 HRS)	1550 HRS*

[12]https://sustainability.uq.edu.au/files/6527/SolarResourceKit_0818.pdf

[13]2014, World Meteorological Organization, https://library.wmo.int/viewer/56225?medianame=CIMO_Guide_2014_en_I_8_

[14] 2023, World Bank, https://datacatalog.worldbank.org/search/dataset/0038550/Pakistan---Solar-Radiation-Measurement-Data

01-11-2022 (1800 HRS)	1520 HRS**
27-12-2022 (1800 HRS)	1630 HRS**
24-01-2023 (1300 HRS)	1607 HRS
01-02-2023 (1900 HRS)	1637 HRS**
16-03-2023 (1700 HRS)	1647 HRS*
17-04-2023 (1600 HRS)	1723 HRS
23-05-2023 (1500 HRS)	1720 HRS
14-06-2023 (1800 HRS)	1813 HRS

**indicates that +/- 15 minutes net energy metering contributes in the system*
***points to no contribution of net energy metering in the system*

The analysis highlights a significant contribution of net energy metering towards the system from April to September and in January. However, October and March are categorized as medium in terms of energy generation during peak demand. On the other hand, there is no observed contribution to energy generation during peak demand in November, December, and February.

Table-4

Islamabad Electric Supply Company	
Date & Time of Peak Demand	**Avg. Time of Decline in Sunshine**
07.07.2022 (2000 HRS)	1700 HRS*
10.08.2022 (1700 HRS)	1803 HRS
01.09.2022 (2400 HRS)	1723 HRS*
01.10.2022 (1900 HRS)	1630 HRS*
24.11.2022 (1800 HRS)	1323 HRS*
29.12.2022 (1600 HRS)	1623 HRS
24.01.2023 (1200 HRS)	1720 HRS
03.02.2023 (1100 HRS)	1717 HRS
15.03.2023 (2000 HRS)	1630 HRS*
17.04.2023 (1700 HRS)	1817 HRS
23.05.2023 (1700 HRS)	1720 HRS
23.06.2023 (1700 HRS)	1747 HRS

**points to no contribution of net energy metering in the system*

In the case of IESCO, it was observed that during July, September, October, November and March the sunshine diminished before the onset of peak demand time. Nevertheless, apart from these five months, net energy metering positively contributed towards the system during peak demand period.

The amount of contribution made by net energy metering in the system is reflected in the table below:

Table-5

IESCO					
Month	**Max Demand (MWH)**	**Drawl (MWH)**	**Shortfall (MWH)**	**Export by Net Metering (MWH)**	**% Shortfall saved by Net Metering**
Jul-22	2554	2140	414	7.6	1.80
Aug-22	2550	2285	265	8.2	3.00
Sep-22	2347	2019	328	9.8	2.90
Oct-22	1808	1717	91	12.1	11.74
Nov-22	1253	1237	16	11.1	40.96
Dec-22	1475	1279	196	8.9	4.34
Jan-23	1656	1356	300	7.5	2.44
Feb-23	1498	1383	115	10.1	8.07
Mar-23	1332	1200	132	14.2	9.71
Apr-23	1698	1652	46	19.7	29.98
May-23	2220	2009	211	23.9	10.17
Jun-23	3035	2644	391	20.5	4.98

Table No. 5 highlights that the shortfall of electricity during the peak demand time is curtailed by net energy metering. Had there been no net energy exported, the amount of shortfall would have risen by the equal amount. To elaborate further let's take the example of the month of July-2022. In this month IESCO faced the shortfall of 414 MW. Presumably, if

there was no export witnessed from net energy metering during July the shortfall would have risen to 421.6 MW (414+7.6). Thus, the net energy metering saved the shortfall by 1.80% during that month.

However, it is important to mention here that in order to evaluate the data on realistic grounds table no. 5 needs to be read along with table no. 4. The comparison between both the tables will lead to the conclusion that the aversion of shortfall as described in table no. 5 may be disregarded for the months of November, December and February as there was no sunshine available during the time of peak demand.

Table-6

LESCO					
Month	**Max Demand (MW)**	**Drawl**	**Shortfall**	**Export by Net Metering**	**% Shortfall saved by Net Metering**
Jul-22	6099	5450	649	6.5	0.99
Aug-22	5539	4929	610	8.2	1.33
Sep-22	5115	4535	580	8.7	1.48
Oct-22	4411	3967	444	12.2	2.67
Nov-22	3042	2949	93	11.6	11.09
Dec-22	3033	2681	352	9.3	2.57
Jan-23	3288	2258	1030	7.5	0.72
Feb-23	3062	2792	270	11.8	4.19
Mar-23	3111	2801	310	17.1	5.23
Apr-23	4140	3756	384	22.5	5.54
May-23	5074	4660	414	22.6	5.18
Jun-23	5779	4980	799	20.6	2.51

Table No. 6 may also have the same explanation as given above with regard to table no. 5. Moreover, the comparison of table no. 6 is to be drawn with table No. 3 for considering the impact of sunshine on the contribution of net metering.

It may be concluded that net energy metering curtails the shortfall during the time of peak demand; however, it is influenced by other variables such as the availability of sunshine for the generation of energy through solar panels. Thus, if the time of the availability of sunshine and that of the peak demand of electricity coincide, net energy metering will have a valuable contribution margin to the system, reducing shortfall in the process.

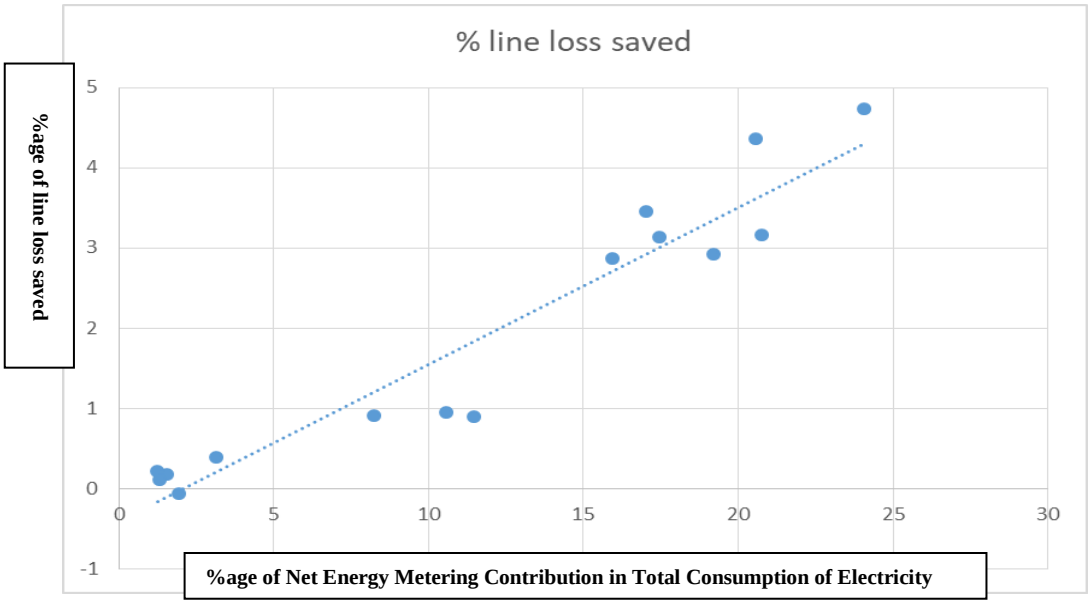
The finding was taken up with the management in August, 2023 and reported to the Ministry in December, 2023. The management of IESCO was unresponsive, however, LESCO management replied that they recognized the 2015 Distributed Generation & Net Metering Regulations, updating over time. The AEDB, now PPIB, played a key role, supporting the 2020 goal of 20-30% renewable energy by 2030. The 2021 and 2023 policies emphasized net metering and renewable targets, with LESCO compliant since 2016, aiming for 60% by 2030, improving system efficiency

The DAC in its meeting held on December 15 & 18, 2023 directed the management of IESCO & LESCO to take into consideration the Impact Audit on Net Metering and give their joint input within a month.

Audit recommends implementation of DAC’s decision.

4.6.2 Line Losses saved with the impact of Net energy metering - Rs.65.781 million

Line losses are generally defined as those losses that occur at HT lines due to distance of feeders from consumers, and excessive load on the feeders. As NMCs do not use HT lines therefore the amount of line losses equaling to the units exported through net energy metering are saved.



In order to analyze the above-mentioned argument, a sample of 15 feeders with maximum number of Net energy metering consumers was taken from LESCO and IESCO. The data was meticulously organized as reflected in table no. 7; Column no. 5 in the table elaborates the actual losses suffered by the respective feeder. However, in column no. 11, those losses are shown which could have occurred at the feeders had there been no energy supplied by the net energy metering consumers (NMCs). In the presumed absence of the NMCs, the exported units as shown in column 6 would have been transmitted by the feeder, thus enhancing the line losses.

In order to ascertain the correlation between percentages of net energy metering in total consumption of electricity (explanatory variable) and that of line losses saved (dependent variable), data was incorporated in scatterplot; the trend line exhibited a positive relationship between both the variables.

Table-7

FEEDER NAME	UNITS RECEIVED	UNITS BILLED	UNITS LOST	%LOSSES (5)	EXPORTED UNITS (6)	% of Total Consumption (7)	Units not lost due to Net energy metering (8)	Probable Units Lost without Net energy metering (9)	Probable % Line Losses (10)	% Line Losses saved (11)
LESCO										
RDC-14	13976100	12004131	1971969	14.11	390033	3.15	55,032.02	2,027,001	14.50	0.39
PHASE-8	21642060	19330586	2311474	10.68	344370	1.57	36,780.34	2,348,254	10.85	0.17
RDC-4	22720225	18670512	4049713	17.82	284345	1.24	50,682.40	4,100,395	18.05	0.22
EXPRESS FEEDER 4 PHASE-V	12417342	12805024	-387682	-3.12	248888	1.96	(7,770.54)	(395,452)	(3.18)	(0.06)
DEFENCE NO.6	19502360	17941273	1561087	8.00	264627	1.34	21,182.35	1,582,269	8.11	0.11
IESCO										
SECTOR-E	17456313	15310542	2145771	12.3	4150159	19.21	510,469.56	2,656,240.56	15.22	2.92
AOWHS	7324710	6433758	890952	12.2	1920926	20.78	234,352.97	1,125,304.97	15.36	3.16
NAVY-1	13490570	11236038	2254532	16.7	2775007	17.06	463,426.17	2,717,958.17	20.15	3.45
EX-LAWYER COLONY DHA-I	5572906	4632135	940771	16.9	1444104	20.58	244,053.58	1,184,824.58	21.26	4.36
SECTOR-B	10542147	8966571	1575576	14.9	2000488	15.95	298,072.71	1,873,648.71	17.77	2.87
SECTOR-H	5577997	4742853	835144	15	1768057	24.07	265,208.55	1,100,352.55	19.73	4.73
SECTOR-G	7571809	6451615	1120194	14.8	1605024	17.49	237,543.55	1,357,737.55	17.93	3.13
G-15 SECTOR	14471812	13051684	1420128	9.8	1319676	8.36	129,328.25	1,549,456.25	10.71	0.91
GULBERG-5	15030539	13992193	1038346	6.9	1952451	11.50	134,719.12	1,173,065.12	7.80	0.90
NEW RACE COURSE	11673271	10780670	892601	7.6	1382345	10.59	105,058.22	997,659.22	8.55	0.95

After establishing a strong correlation between the two variables a regression analysis was carried out. Following two hypotheses were tested:

H_o: There is no relationship between percentage of net energy metering in total consumption and percentage of line losses saved.

H_a: There is strong relationship between percentage of net energy metering in total consumption and percentage of line losses saved.

Microsoft Excel was used to execute the regression analysis:

Table-8

Summary Output of Regression Analysis carried out on Microsoft Excel	
Multiple R	0.9575
Coefficients for % of Total Consumption	0.19527
P-value	2.155E-08

Multiple R is the "correlation coefficient". It is a measure of the applicability of the regression model. Moreover, it also indicates the strength of the linear relationship between the variables. For example, a value of 1 means a perfect positive relationship and a value of zero means no relationship at all. In this case, the value of multiple R is .9575 i.e. 96% which is significantly on higher side showing a strong positive correlation between the two variables.

The coefficient for percentage of Total Consumption is approximately 0.195. The positive sign indicates that as Consumption of net energy metering increases, percentage of line losses saved also tends to increase. There is a positive correlation between these two variables. For every 1% increase in consumption of net energy metering in total share of electricity, percentage of line losses saved increases by an average of .195%. The p-values for the coefficients indicate whether the dependent variable is statistically significant. When the p-value is less than the significance level (.05), the null hypothesis can be rejected. In this case, the p-value of 2.155E-08 is extremely small. Such a minuscule p-value strongly suggests that the observed correlations between the percentage of net energy metering in total energy consumption and the percentage of line losses saved are not mere coincidences. Instead, they are highly statistically significant. Thus, the null hypothesis stands rejected. The results are conclusive enough to establish the argument that as the contribution of net energy metering increases in the system, the percentage of line losses saved is also increased.

Furthermore, the effect of other variables such as the sacking of line superintendents cannot be incorporated in this finding because it is the policy of the company to rotate and transfer the line superintendents as per the need. Moreover, during discussion with the management it was revealed that the

company generally avoids transferring the line superintendents because of their knowledge and understanding of a particular area. So, due to the shortage of the availability of staff including the LSs, it is important that workers with broader experience are retained in the field. Lastly, the changes in line losses may not be solely attributable to a qualitative variable like sacking of line superintendent.

The finding was taken up with the management in August, 2023 and reported to the Ministry in December, 2023. The management of IESCO was unresponsive, however, LESCO management replied that they recognized the 2015 Distributed Generation & Net Metering Regulations, updating over time. The AEDB, now PPIB, played a key role, supporting the 2020 goal of 20-30% renewable energy by 2030. The 2021 and 2023 policies emphasized net metering and renewable targets, with LESCO compliant since 2016, aiming for 60% by 2030, improving system efficiency

The DAC in its meeting held on December 15 & 18, 2023 directed the management of IESCO & LESCO to take into consideration the Impact Audit on Net Metering and give their joint input within a month.

Audit recommends implementation of DAC's decision.

4.6.3 Shifting the burden of capacity purchase price (CPP) from Net energy metering consumers to Non net energy metering consumers in LESCO & IESCO - Rs.3,408.937 million

According to Section 7, 31(4) and 31(7) of the NEPRA Act 1997, NEPRA is mandated to determine a uniform consumer end tariff at national level.

During the activity of impact audit for the year 2022-23 on net energy metering it is observed that the cost of electricity is recovered through sale of energy to end consumers on volumetric basis i.e. the cost of electricity is distributed on units consumed by the consumers. As a result, the more the number of units are sold the lesser will be the per unit

rate and vice versa. The shifting of net energy metering consumers on alternative resources results in increased cost of electricity for other non-net energy metering consumers. As per NEPRA determined consumer end tariff, dated July 22, 2022, the capacity purchase price component represented 49.7% of power purchase price during the year 2022-23, whereas the capacity charges for the financial year 2023-24 is worked out at around 71% of the total projected power purchase price of DISCOs as per NEPRA's determined power purchase reference for the financial year 2023-24. The net energy metering facility is not a firm capacity; therefore, a suitable size of firm capacity power plant is also required in order to meet the power demand of net meter consumer. The distribution companies have to reserve the energy quota for the net energy consumers as the net energy consumers are fully dependent on centralized generation during night hours for which the capacity payments have to be made to IPPs. Moreover, long term contracts with take or pay capacity regime are already committed resulting in capacity adequacy for next few years. As per state of industry report 2021-22, the installed capacity of power plants is 40,813MW against a peak demand of 28,253MW. The Indicative Generation Capacity Expansion Plan (IGCEP) has forecasted demand of 41,338MW against installed capacity of 69,372MW by the year 2031.

The financial impact of capacity charges due to reduced consumption of electricity from the national grid by the net energy metering consumers is allocated by DISCOs across its customer base. Thus the net energy metering increases the marginal cost of capacity charges for the consumers without net energy metering system. The net energy metering consumers averted the share of capacity purchase price to the extent of Rs 3,408.937 million [Average per unit cost of CPP X (Units produced by NM generators – Units purchased by IESCO & LESCO)] during the year 2022-23, which was shifted on the non-net energy

metering consumers resulting in increase of per unit cost to non-net energy metering consumers.

The finding was taken up with the management in August, 2023 and reported to the Ministry in December, 2023. The management of IESCO was unresponsive, however, LESCO management replied that they guided by AEDB (now PPIB) and NEPRA, had embraced net metering since 2015. Actively implementing since 2016, these efforts aligned with policies targeting up to 30% renewable energy by 2030. The National Electricity Plan of 2023 aimed for 60% renewables, reflecting a nationwide, collaborative push for distributed generation and efficient energy use.

The DAC in its meeting held on December 15 & 18, 2023 directed the management of IESCO & LESCO to take into consideration the Impact Audit on Net Metering and give their joint input within a month.

Audit recommends implementation of DAC's decision.

4.6.4 Non-recovery of use of system charges (UoSc) from net energy metering consumers in LESCO & IESCO - Rs.638.300 million

According to Section 7, 31(4) and 31(7) of the NEPRA Act 1997, NEPRA is mandated to determine a uniform consumer and tariff at national level.

The Net energy metering consumers use DISCOs system wires for import and export of energy however the UoS charges and system services are not being recovered from them. Non-recovery of use of system charges and system charges increases the marginal cost of distribution, transmission and ancillary services and cause extra burden on non-metering consumers. The NTDC use of system charges and CPPA-G fee (System services) should also be applicable to all net energy metering consumers. This system service charge is not addressed in the existing regulation resulted in non-recovery of UoS charges for an amount of

Rs.638.300 million [Average per unit cost of UoSc x (Units produced by NM generators – Units purchased by IESCO & LESCO)] during 2022-23.

The finding was taken up with the management in August, 2023 and reported to the Ministry in December, 2023. The management of IESCO was unresponsive, however, LESCO management replied that they guided by AEDB (now PPIB) and NEPRA, had embraced net metering since 2015. Actively implementing since 2016, these efforts aligned with policies targeting up to 30% renewable energy by 2030. The National Electricity Plan of 2023 aimed for 60% renewables, reflecting a nationwide, collaborative push for distributed generation and efficient energy use.

The DAC in its meeting held on December 15 & 18, 2023 directed the management of IESCO & LESCO to take into consideration the Impact Audit on Net Metering and give their joint input within a month.

Audit recommends implementation of DAC's decision.

4.6.5 Undue burden on Exchequer due to aversion of recovery of Inter DISCO Tariff Rationalization Surcharge (IDTRS) in LESCO & IESCO - Rs.549.238 million.

As per NEPRA Act Section 31.8 "Notwithstanding anything contained in this Act and in addition to the tariff, rates and charges notified under sub-section (7) and this sub-section, each electric power supplier shall collect such surcharges from any or all categories of consumers, as the Federal Government may charge and notify in the official Gazette from time to time, in respect of each unit of electric power sold to any or all categories of consumers and deposit the amount so collected in such manner as may be prescribed. The amount of such surcharges shall be deemed as a cost incurred by the electric power supplier and included in the tariff notified under sub-section (7):"

During the impact audit of LESCO & IESCO it is revealed that in order to maintain a uniform consumer end tariff at national level, the

consumer end tariff of better preforming DISCOs is enhanced by inter DISCOs tariff rationalization surcharge which is built-in consumer end tariff to give relief to the consumers of inefficient DISCOs. However, the net energy metering consumers avoided the payment of IDTRS through self-generation of energy units to the extent of Rs.549.238 million [Average per unit cost of IDTRS X (Units produced by NM generators – Units purchased by IESCO & LESCO)] during the year 2022-23. Non-recovery of IDTRS from net energy consumers would be an extra burden on national exchequer as the GoP has to inject more subsidy into the system to maintain uniform rate of tariff.

The finding was taken up with the management in August, 2023 and reported to the Ministry in December, 2023. The management of IESCO was unresponsive, however, LESCO management replied that they guided by AEDB (now PPIB) and NEPRA, had embraced net metering since 2015. Actively implementing since 2016, these efforts aligned with policies targeting up to 30% renewable energy by 2030. The National Electricity Plan of 2023 aimed for 60% renewables, reflecting a nationwide, collaborative push for distributed generation and efficient energy use.

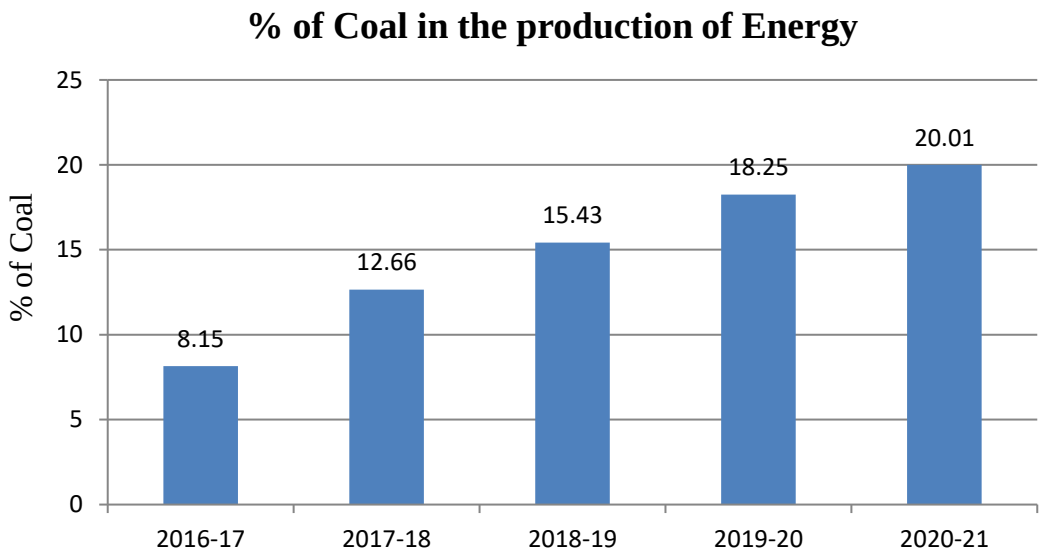
The DAC in its meeting held on December 15 & 18, 2023 directed the management of IESCO & LESCO to take into consideration the Impact Audit on Net Metering and give their joint input within a month.

Audit recommends implementation of DAC's decision.

4.6.6 Environmental Impact of Net energy metering – Reducing Carbon Emissions by 374,206.5 tons a year

Net energy metering policy by NEPRA highlights the importance of net energy metering in the generation of cleaner and greener energy. Pakistan's two-third electricity generation is based on fossil fuels and this

has been a trend over the past decade.[15] Notably, in recent years Pakistan has shifted its focus towards coal-fired electricity, resulting in substantial growth in coal-based production of energy over the past five years.



[Source: NEPRA State of Industry Report 2022 (p. 103)]

Here, a comparison is drawn examining the carbon footprints generated by coal and net energy metering to uncover any noteworthy environmental effects attributed to net energy metering.

The report titled "The Promise of Solar Energy: A Low-Carbon Energy Strategy for the 21st Century" published by United Nations mentions that the Carbon dioxide (CO2) emissions for PV panels are in the range of 25 to 32 g/kWh, while a coal-fired power plant emits about 200g/kWh.[16]

Table-9

[15] 2021, Dawar Butt, Sunil Dahiya, CO_2 Emissions from Pakistan Energy Sector
[16] 2007, United Nations, https://www.un.org/en/chronicle/article/promise-solar-energy-low-carbon-energy-strategy-21st-century

Type	Capacity (MW)	Units kWh (million)	Per unit Carbon Footprints (grams)	Carbon Footprints (grams in million)	Carbon Footprints (tons)	Carbon emission Saved (Tons)	Carbon Footprints saved	Equal to Trees Plantation (M)
Solar	1005	1,496.6	32	47,892.7	52,792.62			
Coal	1005	1,936.8	200	387,367.2	426,999.1	374,206.5	87.6%	15.6

(*Calculation are attached as Annex-I)

It can be deduced from the table above that implementing net energy metering has a significant and beneficial impact on reducing carbon emissions. Even though the solar panels used in net energy metering do carry the "Carbon Debt" which means that the mining of the components used in solar panels, the production of solar panels and the transportation of the same cause carbon emission, yet, when it is compared with the carbon footprints of a coal-fired power plant, the adoption of net energy metering results in a remarkable reduction of 87.6% of carbon emissions into the atmosphere.

As the current installed capacity of net energy metering in Pakistan stands at 1,005 MW, almost 374,206.5 tons of carbon emission in the atmosphere is saved each year in comparison to a coal plant of the same generation capacity. This achievement is equivalent to the environmental benefit of planting approximately 15.6 million trees.

Pakistan ratified Paris Agreement in 2016, which necessitated the stricter greenhouse gases regulations. The Paris Agreement (Article 4, paragraph 2) requires each Party to prepare, and communicate to the UNFCCC, every five years, successive nationally determined contributions (NDCs) that it intends to achieve. Net energy metering can be an important factor contributing towards the satisfactory accomplishment of the goals set by Paris agreement.

The finding was taken up with the management in August, 2023 and reported to the Ministry in December, 2023. The management of IESCO was unresponsive, however, LESCO management replied that they complied with NERRA's updated Net Metering Regulations since 2015. Led by AEDB (now PPIB) and NEPRA, this initiative aligned with policies targeting 20-30% renewable energy by 2025-2030, aiming for 60% by 2030, necessitating continuous regulatory updates.

The DAC in its meeting held on December 15 & 18, 2023 directed the management of IESCO & LESCO to take into consideration the Impact Audit on Net Metering and give their joint input within a month.

Audit recommends implementation of DAC's decision.

4.6.7 Aversion of cost of establishing a Power Plant amounting to Rs.437,250.11 million

As per the Article 9 of the NEPRA ARE (Alternative & Renewable Energy) Distributed Generation/Net energy metering Rules issued by NEPRA in 2014, the responsibility of the installation and maintenance of the Distributing Generation system lies with the Distributed Generator. Thus, it emancipates the company as well as the government of Pakistan from bearing any burden of investment for the generation of electricity. A comparison is generated between the Quaid e Azam Solar Park and Net energy metering facilities to further elucidate the above-mentioned argument.

The first phase of Quaid e Azam solar Park was completed in 2015 with the capacity of generating 100 MW of electricity. As per NEPRA, the establishment of QeA Solar Park cost 144.92 million[17] dollars and the annual operating cost is 3.07 million dollars.

Table-10

Source	Capacity (MW)	CAPEX ($)	OPEX ($)
Quaid-e-Azam Solar Power Plant	100	144.92M	3.07M
Net energy metering	1055	1,528.9M**=Rs.437,250.11	32.39M***

Estimated Cost, had a solar power plant of the capacity of 1055MW was to be established (144.92*1055/100)

****** (3.07*1055/100)***

To date, the cumulative installed capacity of net energy metering in the country stands at 1055 MW. This achievement has not incurred any expenses for the government, as there has been no investment required for the installation of net energy metering facilities. If a solar power plant with the capacity of 1055 MW was to be established then, extrapolating the cost of Quaid e Azam Solar Power Plant, the new project would have an estimated cost of 1582.5 million USD. Moreover, net energy metering

[17] Case no. NEPRA/TRF-303/QASPL-2015/8359-8361, NEPRA, dated: June 2nd, 2016, Page. No. 2

has been saving the annual operational cost as well which would have had an impact of around 32.39 million USD per annum.

One of the key objectives of the net energy metering initiative is to promote renewable energy so that the dependence on expensive fuels may be minimized. The results drawn from the comparison of net energy metering with Quaid e Azam Solar Park underscores the notion that, in this regard, the initiative of net energy metering along with ensuring a cleaner and greener production of energy may also alleviate the national exchequer from any sort of expense-related burden.

The finding was taken up with the management in August, 2023 and reported to the Ministry in December, 2023. The management of IESCO was unresponsive, however, LESCO management replied that they complied with NERRA's updated Net Metering Regulations since 2015. Led by AEDB (now PPIB) and NEPRA, this initiative aligned with policies targeting 20-30% renewable energy by 2025-2030, aiming for 60% by 2030, necessitating continuous regulatory updates.

The DAC in its meeting held on December 15 & 18, 2023 directed the management of IESCO & LESCO to take into consideration the Impact Audit on Net Metering and give their joint input within a month.

Audit recommends implementation of DAC's decision.

4.6.8 Credit unpaid to Distributed Generators - Rs.1,154.588 million

As per the clause 3 of rule 11 of the NEPRA ARE (Alternative & Renewable Energy) Distributed Generation/Net energy metering Rules issued by NEPRA in 2014, "if the kWh supplied by Distributed Generator exceed the kWh supplied by DISCO, the net kWh shall be credited against Distributed Generator's next billing cycle for future consumption, or shall be paid by the DISCO to the Distributed Generator annually in accordance with the Applicable Tariff at the option of Distributed Generator."

Out of total consumers of Net energy metering, LESCO and IESCO had credit balances to be received against 10,522 and 11,475 consumers respectively. The total amount to be paid to these consumers

was Rs.1,154.588 million. According to the rule mentioned in the criteria, the Distributed Generators had the option to either get paid against the credited units in their favor or get the units stored in the system for future netting off against the imported units. The net credit balance in favor of 21,997 DGs in both companies highlighted that there was unwillingness on the part of the management to pay the Distributed Generators their due credit amounts.

Table-11

Company	Consumers with unpaid Credits	Total Amount of Credit (Rs.)
LESCO	10,522	528,888,374
IESCO	11,475	625,699,819
Total	21,997	**1,154.588 M**

The finding was taken up with the management in August, 2023 and reported to the Ministry in December, 2023. The management of IESCO was unresponsive, however, LESCO management replied that they complied with NERRA's updated Net Metering Regulations since 2015. Led by AEDB (now PPIB) and NEPRA, this initiative aligned with policies targeting 20-30% renewable energy by 2025-2030, aiming for 60% by 2030, necessitating continuous regulatory updates.

The DAC in its meeting held on December 15 & 18, 2023 directed the management of IESCO & LESCO to take into consideration the Impact Audit on Net Metering and give their joint input within a month.

Audit recommends implementation of DAC's decision.

4.7 Conclusion

With prudent management, the net energy metering program can prove to be a powerful tool to encourage distributed power generation from Pakistan's indigenous renewable resources and establish a distributed renewable energy industry in the country. The net metering offers

significant benefits to increasing the supply of sustainable energy at peak demand time thus relieving the overburdened/ overloaded distribution system, reduction in T&D losses and improvement in voltage profile of local area network. Moreover, the Distribution Generation using solar helps control environmental degradation through reduced carbon emissions.

In this context of this study, following recommendations are proposed:

1. Encouraging the net energy metering program to promote distributed power generation from Pakistan's indigenous renewable resources, fostering a distributed renewable energy industry.
2. Addressing the financial implications for non-net metering consumers, as they bear the increased marginal costs of distribution, transmission, and ancillary services due to reduced electricity consumption from the national grid by net metered consumers.
3. Recovering Use of System charges from net metering consumers for the use of the distribution system, as net metering involves the wheeling of power from generators to consumers using the distribution system.
4. Reviewing tariff regulations for net metering consumers and the introduction of a two-part tariff in the schedule of tariff to recover capacity charges from net metering consumers
5. Carrying out a detailed technical study to determine the maximum feasible induction of net metering into the system, to ensure system stability and efficiency.

DGA LG Sindh

Impact Audit Report on "Impact of Door-to-Door Garbage Collection by Sindh Solid Waste Management Board on the Citizens of Korangi and Central Districts of Karachi"

10.1 Introduction

In 2000, Karachi Metropolitan Corporation (KMC) was abolished and six District Municipal Corporations (DMCs) were merged in newly established City District Government Karachi. The City District Government Karachi was divided into 18 Towns and 178 union councils. In 2011, Sindh Government again restored Karachi Metropolitan Corporation (KMC) and six Districts as Municipal Corporations. Newly created district Keamari has also been given status of 7th District Municipal Corporation in October 2020.

Karachi is one of the largest and most populated metropolitan cities in the world. In 2015, the built-up area of Karachi was about 379.09 square kilometers. Because of improper solid waste management by Karachi Metropolitan Corporation (KMC) and District Municipal Corporations (DMCs), Karachi became infamous as the dirtiest city in Pakistan. In order to resolve the issue of garbage collection Sindh Solid Waste Management Board (SSWMB) was established through Sindh Solid Waste Management Board Act, 2014.

10.1.1 Background

Impact Audits have been started from the Audit Year 2023-24, by the Department of Auditor-General of Pakistan which aim at determining the impact of initiatives or programs with special focus on determining the outcome results attributable to an initiative, new program or recent change to an existing program by separating other contributing factors or variables. The Impact Audit Reports shall benefit the stakeholders in understanding the net results of the programs and initiatives in a more systematic manner and if timely addressed, shall lead to improving service delivery, financial management and better governance.

Over the years, efficient and sustainable management of solid waste is getting more attention at national and local levels. Sindh Solid Waste Management Board (SSWMB) collects and disposes of solid waste in Karachi and other districts of Sindh province. The initiative of door-to-door garbage collection by Sindh Solid Waste Management Board in District Korangi and District Central was executed in January and February, 2022 respectively. Keeping in view the public importance of the issue, the Impact Audit on "Impact of Door-to-Door Garbage Collection by Sindh Solid Waste Management Board on the Citizens of Korangi and Central Districts of Karachi" was identified in the Annual Audit Plan 2023-24.

10.1.2 Role of the Program

The objectives of establishment of the Sindh Solid Waste Management Board (SSWMB) included effective delivery of sanitation services and provision of pollution free environment. Another salient feature of the Board was to develop and implement an integrated solid waste management system with integrated approach for the sustainable management of solid waste covering all sources and aspects such as collection, transfer, treatment and disposal.

10.2 Overview:

a) Reasons behind establishment of Sindh Solid Waste Management Board

The shopkeepers of commercial areas and visitors of shopping malls and residents usually throw garbage at the corner of each street and in front of shops. According to survey conducted by of SSWMB in 2021 the estimated waste generated in Karachi city was between 12,000 to 15,000 tons/day. Out of which, the quantity of waste being generated by District Korangi and District Central was 1,575 and 1920 tons per day respectively. Zone wise detail of waste generation in both the Districts was as under:

Garbage Generation for the Year 2020-21

(District Korangi)							
Area	**Korangi Zone**	**Landhi Zone**	**Model Colony Zone**	**Shah Faisal Zone**	**Total Garbage Generation Tons per day**	**Total Garbage Generation Tons per year**	**Area wise%**
Urban Residential	412	213	148	172	945	344,925	60
Commercial	69	35	25	29	158	57,670	10
Bulk Waste (Industrial)	206	106	74	86	472	172,280	30
Total Waste	**687**	**354**	**247**	**287**	**1,575**	**574,875**	**100**

Waste Generation for the Year - 2020-21 (District Central)							
Area	**Liaqatabad Zone**	**North Nazimabad Zone**	**Gulberg Zone**	**New Karachi Zone**	**Total Garbage Generation Tons per day**	**Total Garbage Generation Tons per year**	**Area wise%**
Urban Residential	406	320	224	394	1,344	490,560	70
Commercial	87	69	48	84	288	105,120	15
Bulk Waste (Industrial)	87	69	48	84	288	105,120	15
Total Waste	**580**	**458**	**320**	**562**	**1,920**	**700,800**	**100**

For resolving above issue, the Sindh Solid Waste Management Board (SSWMB) was established through Sindh Solid Waste Management Board Act, 2014 (now revised as SSWMB Act, 2021) for collection and disposal of all solid waste, effective delivery of sanitation services and provision of pollution free environment in the Province of Sindh. The Board needed to develop and implement an integrated solid waste

management system with the strategic approach for sustainable management of solid wastes, covering all sources and aspects such as generation, collection, segregation, transfer, sorting, treatment, recovery, trading and disposal of waste, in an integrated manner.

b) Objectives

The main objectives of the program planned for impact audit were:

i. To check whether the initiative of door-to-door garbage collection provided convenient and systematic waste disposal system to the citizens.

ii. To assess the level of performance achieved after the initiative vis a vis the situation prevailing prior to the intervention.

iii. To check whether the management is collecting garbage effectively as per objectives of the initiative.

iv. To check that the initiative resulted in reduction of illegal dumping of waste.

10.3 Scope & Methodology:

a. Scope

The scope of the Impact audit was restricted to District Korangi and District Central of Karachi Division. However, Municipal Corporation Sukkur was also chosen as control group for data analysis.

b. Methodology

The Impact Audit was initiated by the meetings with the management of Sindh Solid

Waste Management Board responsible for providing the service of door-to-door garbage collection in District Korangi and District Central. Post-group comparison (Control and Treatment groups) and Before-and-After design methods were applied for ascertaining the impact of initiative.

Due to non-availability of garbage generation data for the year 2022-23, the data of Survey reports conducted by the SSWMB for the DMC Korangi/Central and MC Sukkur for the year 2020-21 was utilized for the financial year 2022-23 after adding 15% keeping in view the growth of cities.

In addition, following methodology was also applied:

- Questionnaire was prepared by the audit team to be filled by the management and the residents of District Korangi and District Central for qualitative and quantitative insights.
- The financial statements and other relevant record of Sindh Solid waste Management Board and District Municipal Corporations, DMC Korangi, Central and Sukkur was reviewed.
- Conducting field visits of various sites for solid waste activities under jurisdiction of District Korangi and District Central to ascertain the performance of SSWMB regarding solid waste collection and dumping.

10.4 Audit Findings

10.4.1 Door-to-door garbage collection

As per Clause 4.2(a) of Request for Proposal (RFP) of bidding document for the establishment of primary and secondary solid waste collection system in District Korangi and District Central, "wherein waste collecting vehicles with one or two waste collecting workers move around the residential blocks on a specified time each day and sounds horn or ring bell and wait at intermediate locations for residents to bring waste in polythene bags to the collection vehicles or where the workers with the collecting vehicles collect garbage in a basket at the door step of the residents and throw the same in the collecting vehicles, which is then disposed of to nearest dustbin site."

During impact audit of Sindh Solid Waste Management Board, it was observed from the survey conducted by SSWMB in 2021, that the estimated waste generated in Karachi city was between 12,000 to 15,000 tons per day. Out of which, the quantity of waste generated by Districts Korangi and District Central was 1,575 and 1,920 tons per day respectively. The initiative of door-to-door garbage collection by Sindh Solid Waste Management Board in District Korangi and District Central was executed in January and February, 2022 and the contracts were awarded to M/s Gansu Construction Investment Heavy Industry Technology Co. Ltd and M/s Gansu Biguiyan Environment Technology Pakistan (Pvt) Ltd with sanctioned cost of Rs20,914.376 and Rs24,077.532 million respectively for a period of nine years.

Detail of total waste generated and collected by SSWMB through the contractor in District Korangi and District Central during the year 2022-23 is as under:

[Amount in Rs.]

Office	**Year**	**Waste Generated (tons)**		**Waste Collected (tons)**		**% of waste Collected**	**Total Expenditure Per Year**
		Per	**Per**	**Per**	**Per**		

		Day	Year	Day	Year		
Korangi	2022-23	1,811	661,015*	1,791	653,715	99	2,694,009,505
Central		2,208	805,920*	1,591	580,715	72	2,530,734,588

**The figure after adding 15% in the survey figures of garbage collection during 2020-21*

Critical Analysis:

The record revealed that management of SSWMB was able to collect and lift 99% and 72% of garbage generated from the limits of District Korangi and District Central respectively. However, SSWMB is collecting garbage only from various specified points of the respective districts but the actual objective of SSWMB regarding door-to-door garbage collection from citizens' homes has not yet been started despite incurrence of huge expenditure.

Audit was of the view that actual objective of the Sindh Solid Waste Management Board regarding door-to-door garbage collection has not been achieved which indicated poor management and weak internal controls.

Audit recommends that the management should take practical steps for initiating the door-to-door garbage collection from citizens' homes on priority basis.

10.4.2 Garbage collection by Sindh Solid Waste Management Board

During impact audit of Sindh Solid Waste Management Board, the conditions before and after the initiative were as follows:

i) Conditions before the initiative

Before establishment of SSWMB, the Shopkeepers of commercial areas, visitors of shopping malls and residents used to throw

garbage at the corner of each street and in front of shops. Main Roads and lanes were cleaned manually using brooms and brushes Mechanical sweeping was not done except for some special occasion. Every year on the eve of Eid-ul-Azha offal, bone, skin parts and intestinal organs of the animals were thrown at the door step, road side, open ground, collection points and Katchra Kundis. Further, District Municipal Corporations (DMCs) were facing following problems in collection and lifting of garbage:

- Poor attendance of sanitary workers/officials
- Ineffective monitoring & reporting system
- Shortage of funds for providing proper number of dustbins, containers and POL
- Defective, inappropriate and old garbage vehicles
- Political and labour union intervention
- Encroachment in commercial areas
- Improper garbage transfer station facility and lack of scientific approach for integrated solid waste management

ii) Conditions After the initiative

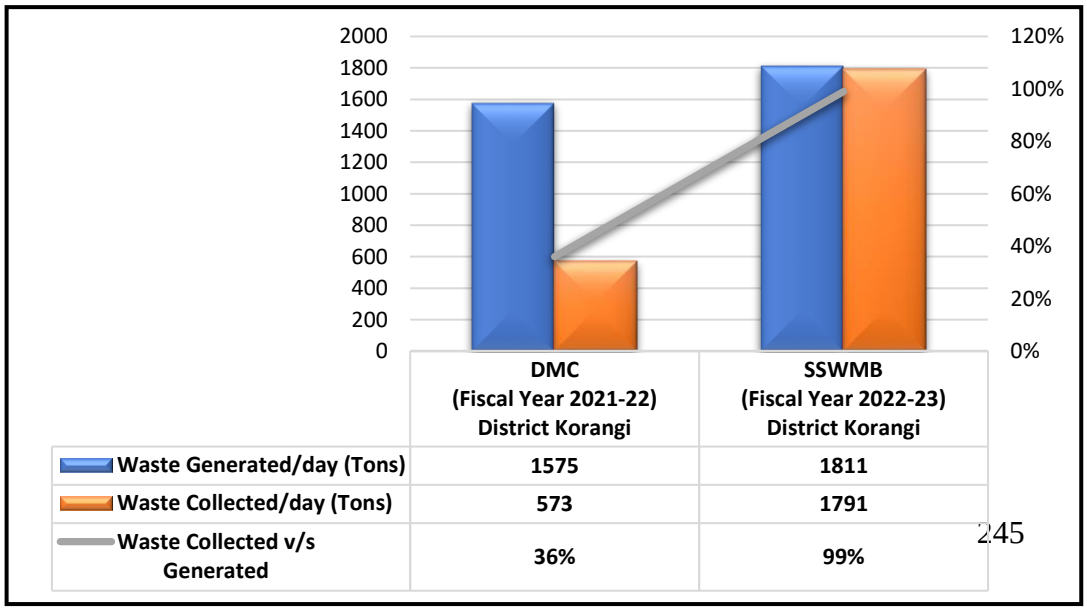
After the intervention of Sindh Solid Waste Management Board, the solid waste activities are being performed by the contractor who collects garbage and solid waste on daily basis through their 3,200 trained and professional labor in the limits of District Korangi and District Central. Lifting and transportation of solid waste from community dustbins sites and collection points nearby designated Garbage Transfer Station (GTS) has been enforced. The management has deployed most efficient and cost-effective machinery (2,500 numbers) in different selected areas. Command & Control System for monitoring, tracking and operation has been established. Android based attendance system with face recognition and location, vehicle tracking system and bin management system (GPS Based) has been introduced. Offal and other

residual animal waste are being collected through machinery and is being disposed of timely in the pits already excavated at designated places where the buried offal may not create any hazard to the surroundings. The management has arranged 6,800 dust bins of different sizes which have been kept in various limits of District Korangi and District Central for collection and lifting of the waste.

Critical Analysis:

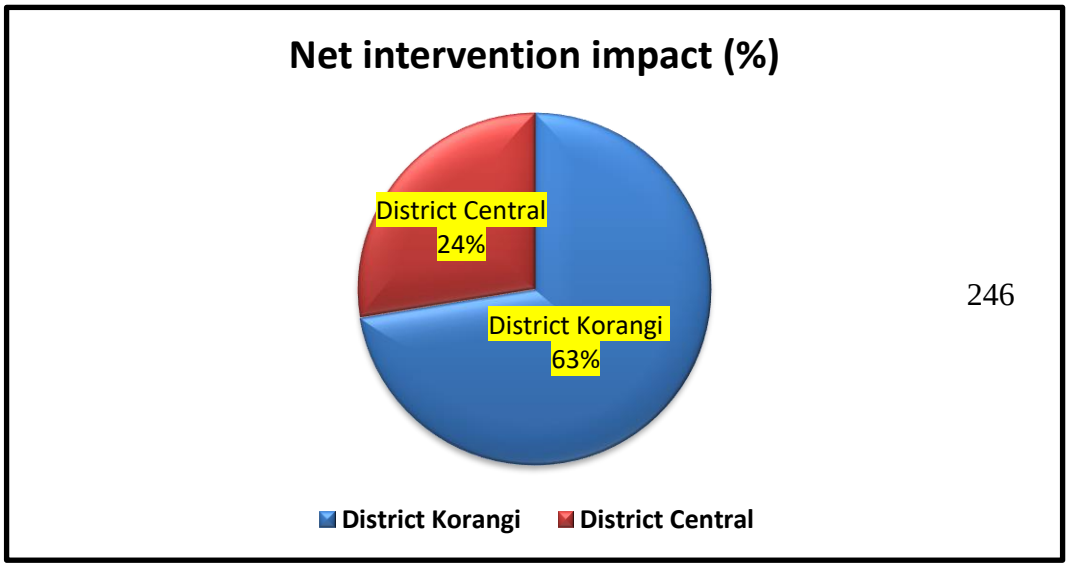
According to survey reports of SSWMB, the status of garbage generation and garbage collection by DMCs (Chosen as Control Group) before and after establishment of SSWMB is as under;

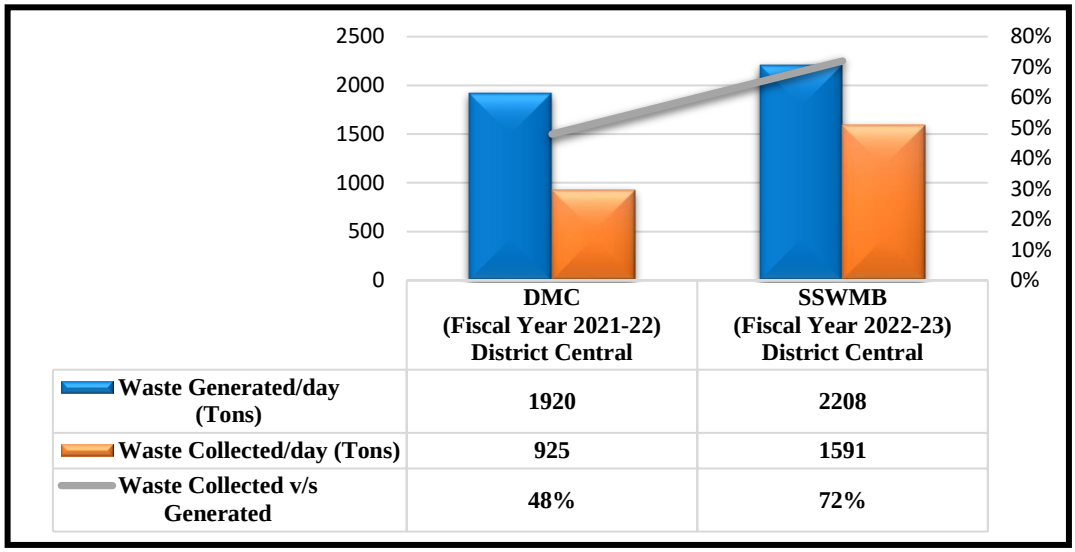
Description	**DMCs (Fiscal Year 2021-22) Control Group**		**SSWMB (Fiscal Year 2022-23) Treatment Group**	
	District Korangi	**District Central**	**District Korangi**	**District Central**
Waste Generated per day (tons)	1,575	1,920	1,811	2,208
Waste Collected per day(tons)	573	925	1,791	1,591
Percentage of Waste Collected against Generated	36%	48%	99%	72%



Description	DMCs (Fiscal Year 2021-22) Control Group		SSWMB (Fiscal Year 2022-23) Treatment Group	
	District Korangi	District Central	District Korangi	District Central
Net intervention impact	-	-	63%	24%

Audit observed that there was a positive impact of local government's intervention for garbage collection executed through SSWMB which is evident from the above table and the charts given on next page:





	DMC (Fiscal Year 2021-22) District Central	SSWMB (Fiscal Year 2022-23) District Central
Waste Generated/day (Tons)	1920	2208
Waste Collected/day (Tons)	925	1591
Waste Collected v/s Generated	48%	72%

The ratio of garbage collection versus garbage generation in District Korangi and District Central by SSWMB was 99% and 72% respectively, whereas the ratio of garbage collection versus garbage generation in District Korangi and District Central by DMCs was 36% and 48% respectively. By deducting the percentage of garbage collection V/S garbage generation of DMCs in District Korangi and District Central from the percentage of garbage collection V/S garbage generation of SSWMB in respective districts, the net impact of the government intervention stood 24% in District Central and 63% in District Korangi

10.4.3 Cost Analysis

During impact audit of Sindh Solid Waste Management Board, on the basis of data provided by the management of SSWMB, audit carried cost analysis of expenditure incurred on garbage collection before and after the initiative. Audit observed that performance of SSWMB in terms of ratio of garbage collection versus garbage generation in District Korangi and District Central was 99% and 72% respectively which was much better than the performance of DMCs before establishment of SSWMB in District Korangi, District Central and District Sukkur, where, ratio of garbage collection V/S garbage generation was 36%, 48% and 46% respectively. Detail is as below:

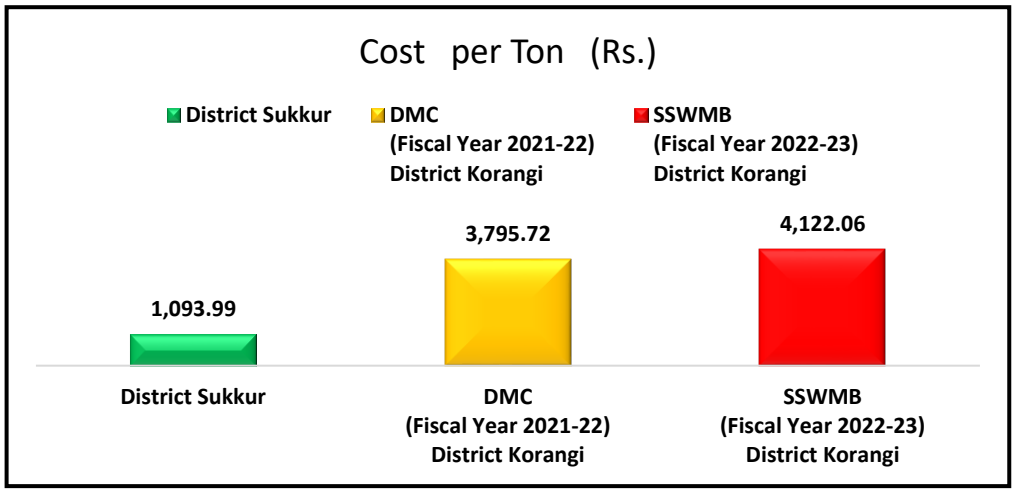
Description	**DMCs (Fiscal Year 2021-22) Control Group**			**SSWMB (Fiscal Year 2022-23) Treatment Group**	
	District Korangi	**District Central**	**District Sukkur**	**District Korangi**	**District Central**
Waste Generated per year (tons)	574,875	700,800	146,365	661,015	805,920
Waste Collected per year(tons)	209,003	337,543	66,795	653,559	580,830
Percentage of Waste Collected v/s Generated	36%	48%	46%	99%	72%
Impact of	-	-	-	63%	24%

Description	DMCs (Fiscal Year 2021-22) Control Group			SSWMB (Fiscal Year 2022-23) Treatment Group	
	District Korangi	District Central	District Sukkur	District Korangi	District Central
Intervention In percentage					
** Total Expenditure per Year (Rs.)	793,317,438	265,414,651	73,073,108	2,694,009,505	2,530,734,588
Cost per Ton (Rs.)	3,795.72	786.31	1,093.99	4,122.06	4,357.10
Cost increase with respect to DMC in%	-	-	-	9%	454%
Cost increase with respect to DMC Sukkur in %	-	-	-	277%	298%

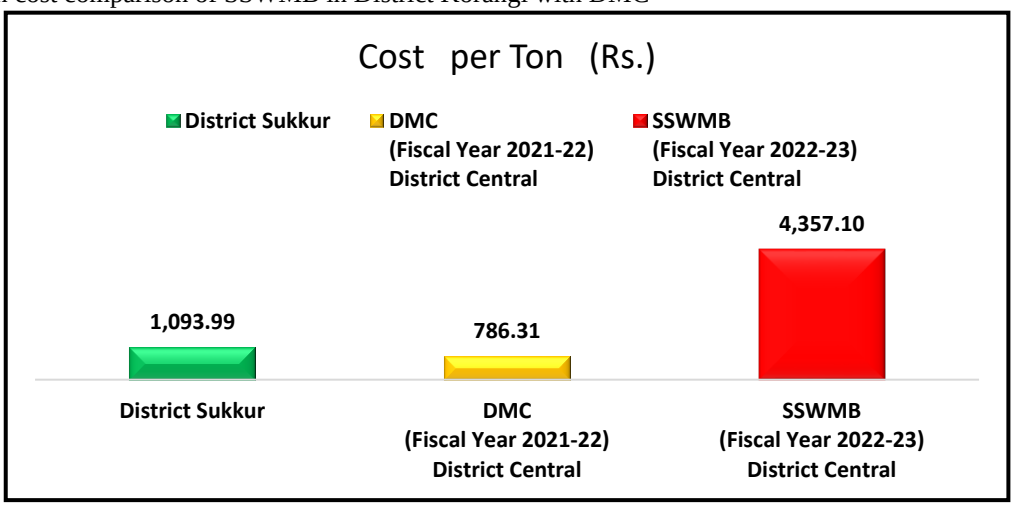
** Annual Accounts of MC Sukkur and information received from SSWMB

However, per ton cost of garbage collection incurred by SSWMB in District Korangi and District Central was Rs 4,122 and Rs 4,357, which was 9% and 454 % higher than the per ton cost incurred by the respective

DMCs. Further, the comparison of per ton cost of garbage collection by SSWMB with DMC Sukkur showed that per ton cost incurred by SSWMB in District Korangi and District Central, was on higher side with increase of 277% and 298% respectively. The cost analysis has also been depicted in the following charts:



Per ton cost comparison of SSWMB in District Korangi with DMC



Per ton cost comparison of SSWMB in District Central with DMC

The management is required to address the matter of per ton cost on garbage collection which was disproportionately on higher side in comparison to District Municipal Corporations.

10.4.4 Non-removal of unauthorized waste dumping points

According to sub-clause 2.7.1 of the Operation & Maintenance Agreement, regarding work plan for services of integrated municipal solid waste (MSW) signed between Contractor and SSWMB for District Korangi and District Central, the contractor will remove all un-authorized dumping points from the area.

During impact audit of Sindh Solid Waste Management Board, it was observed that management failed to remove un-authorized waste dumping points as per agreement (**Annex-IA**). Non-removing of un-authorized dumping points was polluting the environment. Further, hazardous materials could contaminate soil and water, leading to spread of diseases and health risk to both humans and animals.

Audit was of the view that non-removing of illegal dumping points by the management of SSWMB through their contractors despite incurrence of huge expenditure showed non-seriousness towards achieving the devised plans.

Audit recommends removing the un-authorized waste dumping points on priority basis besides taking remedial measures.

10.5 Conclusion

There was positive impact of government's intervention of garbage collection executed through Sindh Solid Waste Management Board (SSWMB) which has been able to collect and lift 99% and 72% of garbage generated from the limits of District Korangi and District Central respectively, whereas net impact of Local Government's initiative was

63% and 24% in the respective districts. However, SSWMB was collecting garbage only from the various specified points of the respective districts but the actual objective of SSWMB regarding door-to-door garbage collection from citizens' homes has not yet been started despite incurrence of huge expenditure and lapse of considerable time since its launching. Further, the management is required to address the matter of per ton cost on garbage collection which was disproportionately on higher side in comparison to District Municipal Corporations.

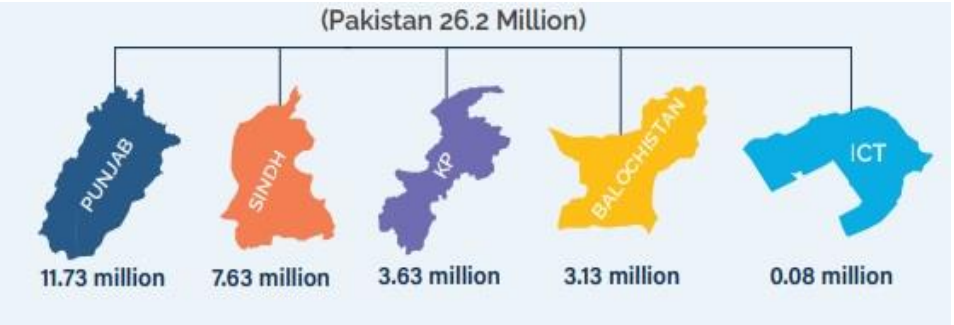
DGA LG Punjab (North)

IMPACT AUDIT

AFTERNOON SCHOOLS PROGRAMME

21.1Introduction

Pakistan confronts a significant challenge in ensuring universal access to education, especially for the academically deprived children. As of October 2023, the country held the world's highest number of Out of School Children (OOSC) aged between 5-16 years [18]. Despite the recent progress in reducing the percentage of OOSC from 44% in 2016-17 to 39% in 2021-22, the number still stands at 26.21 million[19]. There are 36% OOSC in primary level and 30% in middle level. The percentage of OOSC is more pronounced for high school and higher secondary levels with 44% and 60% respectively. The province wise breakup of OOSC is given below:

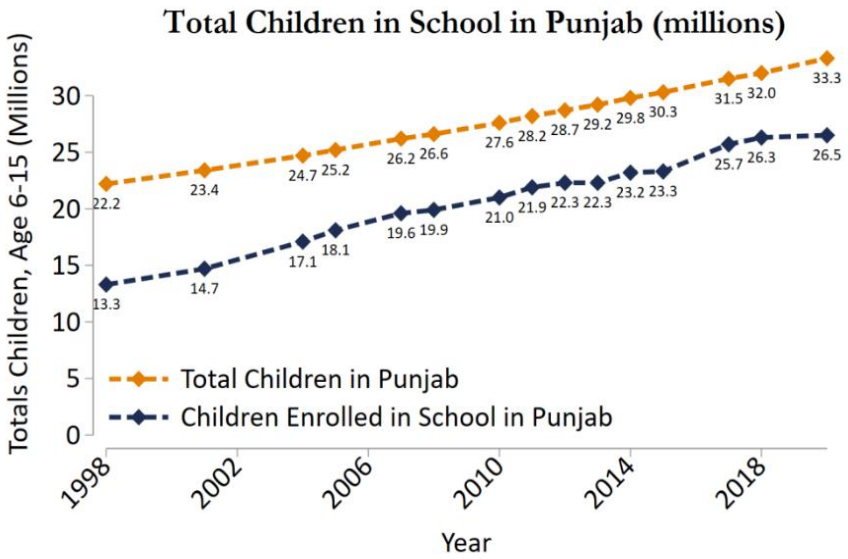


Punjab and Sindh report the highest numbers of OOSC with 11.73 million and 7.63 million respectively. Despite Government of the Punjab's endeavors to boost school enrollment from 13 million in 1998 to 26

[18] Abbassi, K. (2023, October 17). Despite lofty claims, out-of-school children soar to over 28 million. Retrieved from https://www.dawn.com/news/1781436

[19] Pakistan Education Statistics 2021-22 by PIE (Publication No. 300) I. Analysis of Education Statistics II. Education Statistics –Pakistan ISBN: 978-969-444-121-4

million in 2020, almost 20% of school-age children in Punjab still did not attend school, as illustrated in the graphical representation[20] below:



To address the challenges of dropouts, OOSC and to improve enrollments, Government of the Punjab launched the Afternoon Schools Programme (ASP). Impact audit was undertaken to assess whether the ASP produced results that created impact on the citizens.

a. Background

Impact audits have been started from the Audit Year 2023-24 by the office of the Auditor-General of Pakistan. These audits are aimed at determining the impact of initiatives or programmes. Specifically, impact audit focuses on determining the effectiveness of outcomes attributable to an initiative, new programme or recent change to an existing programme. It answers cause-and-effect questions about the outcomes attributable to an initiative by isolating other contributing factors or variables. This audit

[20] Geven, A. T. (2023). Bringing 13 million more children into school: Lessons from Punjab. Retrieved from https://blogs.worldbank.org

type is the beginning of a new era in public sector auditing, which emphasizes the analysis of real-time benefits of government initiatives. The impact audit reports shall benefit the stakeholders in understanding the net results of the programmes and initiatives in a more systematic manner and if timely addressed, shall lead to improving service delivery, financial management and better governance.

The Government of Punjab undertook multiple initiatives over the years to impart basic education to all children between the ages of 5 to 16 years across the province.

The Nai Roshni Schools Programme, undertaken from 1987 to 1989, started afternoon sessions in existing primary schools for children aged between 10 to 14 years who never attended or left schools[21]. The Non-Formal Basic Education Schools Programme launched in 1996, engaged parents and communities to promote education through non-formal methods, facilitating return of dropouts to the schools.

Similarly, the initiative of ASP was launched in 2018 for bringing in dropouts and OOSC back to the education system. SED adopted an approach of optimally utilizing the infrastructure and human resources of existing primary schools for addressing the challenge of supply gap with limited resources.

b. Role of the Afternoon Schools Programme

ASP involved conducting afternoon classes in government schools to actively combat dropout challenges and improve educational accessibility to the academically deprived children. In response to shortage of schools' infrastructure coupled with limited funds, the SED had implemented a strategy aimed at optimizing the utilization of existing primary schools' facilities and human resources. This strategic approach had given rise to the ASP, which specifically aimed at facilitating the educational transition from primary to middle school level and maximizing retention rates.

[21] Shahid, N. (2017). How non-formal education developed as an important sector of education in Pakistan? Retrieved from https://www.nation.com.pk

The ASP specially focused on bringing back female students to schools who had dropped out after the primary level as 60% of the schools were established in government-owned girls' primary schools.

21.2Overview

The programme was launched in 22 districts in 2018 and extended to the whole of Punjab in 2019 by upgrading 7,008 primary schools in FY 2021-22. In Lahore district alone, 103 schools (61 for girls and 42 for boys) were upgraded for this purpose. The total cost of the programme was Rs 5,802.624 million as per approved PC-I. The objectives of the programme were:

i. to fulfill the constitutional obligation under Article 25-A;
ii. to provide the safe environment to the young learnsers;
iii. to fulfill national and international commitments/SDGs. Gender parity at all levels of education;
iv. to improve access to elementary-level education;
v. to increase enrollment in elementary classes;
vi. to minimize dropouts and maximize retention;
vii. to accommodate existing enrollment of the school as well as the surrounding schools, and
viii. to enroll out of school, dropped out and missed out children in 6^{th} to 8^{th} grades.

21.3 Scope & Methodology

a. Scope

The ASP aimed at providing free and compulsory elementary education up to the age of 16 with a special focus on transitioning from primary to middle level, *inter alia*, addressing retention issues. Out of total 103 schools in Lahore, audit selected a sample of 08 schools using a stratified sampling technique. Four (04) schools were male and four (04) female; representing rural and urban areas on equal basis. The impact audit evaluated the ASP's impact vis-à-vis its following four objectives:

i. to increase enrollment in elementary classes;
ii. to minimize dropouts and maximize retention;
iii. to accommodate existing enrollment of the school as well as the surrounding schools, and
iv. to enroll out of school, dropped out and missed out children in 6^{th} to 8^{th} grades.

b. Methodology

The Audit applied quantitative techniques to derive inferences. The audit methodology focused on utilizing eight types of questionnaires to gather data for assessing programme objectives. Interviews were conducted with senior management of DEA Lahore, school management, teachers, students, parents, and the community at large. A specific questionnaire was prepared for dropout children. The data gathered through questionnaires was analysed using following tools:

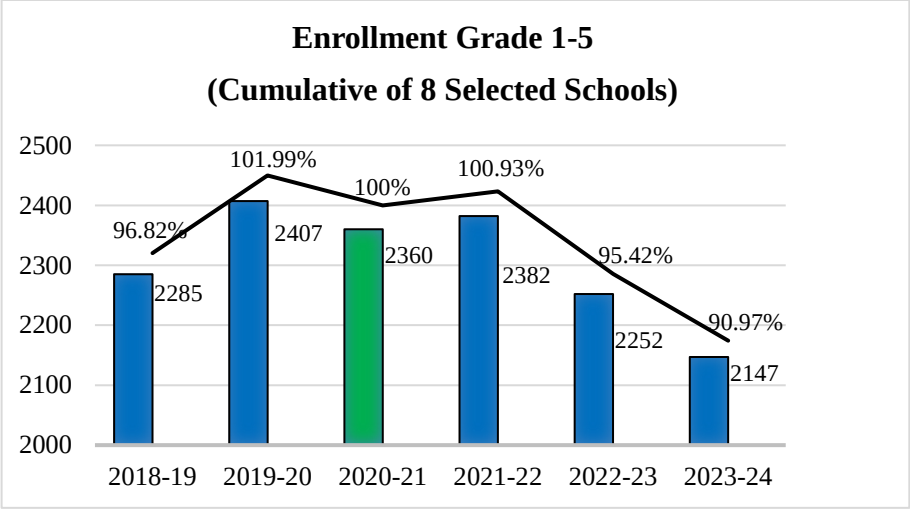
i. before and after comparison (condition with and condition without method), and
ii. fishbone diagram technique.

Additionally, a comparison of targets and achievements was drawn to analyse trends. Moreover, various research papers and monitoring reports were consulted to draw inferences.

21.4 Findings

a. Decrease in enrollment in elementary classes (primary level)

***Audit Objective*:** Had enrollment increased in elementary classes (primary level) after implementation of ASP?



Condition With*:* It was observed that the enrollment in primary level increased by 0.93% in the Academic Year 2021-22, reduced to 4.58% in the Academic Year 2022-23 and further reduced to 9.03% in the Academic Year 2023-24 as compared to base Academic Year 2020-21 when ASP was launched.

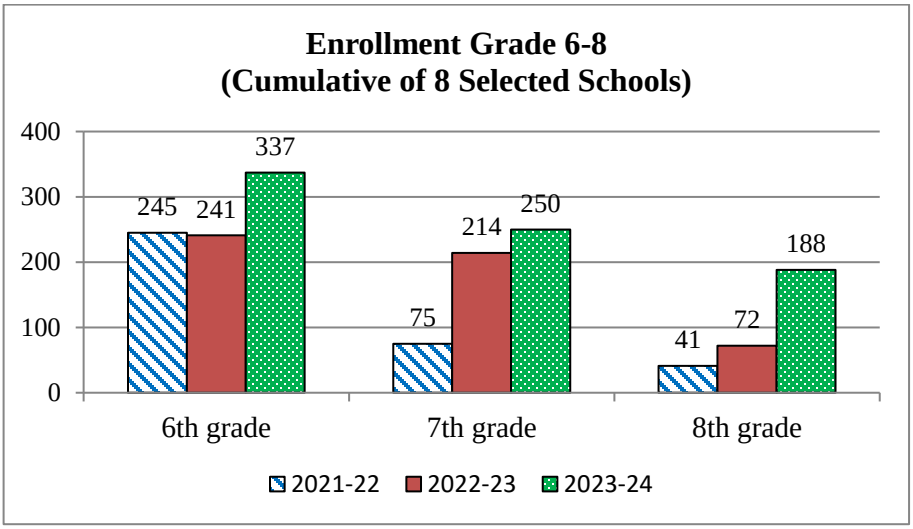
Enrollment in primary level of boys' schools reduced to 7.33%, whereas, the same reduced to 10.90% for girls' schools in the Academic Year 2023-24 as compared to the base Academic Year 2020-21.

Condition Without**:** Before the initiative, enrollment increased to 5.17% in the Academic Year 2019-20 as compared to the previous Academic Year 2018-19.

Impact: There was an overall decrease in enrollment in elementary classes (primary level) both in boys' and girls' schools in the Academic Year 2023-24 when compared with base Academic Year 2020-21. Therefore, it could be inferred that ASP had no impact in increasing enrollment in elementary classes (primary level).

b. Increase in enrollment in elementary classes (middle level)

Audit Objective: Had enrollment increased in elementary classes (middle level) after implementation of ASP?



Condition With: There had been a 37.55% increase in enrollment for 6th grade, 233.33% in 7th grade and 358.54% in 8th grade over the three years' period of ASP.

For boys, there had been a 37.10% increase in enrollment for 6th grade, 229.03% in 7th grade and 329.41% in 8th grade over the three years' period of ASP.

For girls, there had been a 38.02% increase in enrollment for 6th grade, 236.36% in 7th grade and 379.17% in 8th grade over the three years' period of ASP.

***Condition Without*:** Before ASP, there were no middle level classes in the selected schools so there was no enrollment.

***Impact*:** After implementation of ASP, there had been a considerable increase in enrollment in all middle level classes with more girl students enrolled than boys.

c. Increase in dropouts

***Audit Objective*:** Had the dropouts reduced after implementation of ASP?

Description	Boys		Girls		Total	
	Condition Without	**Condition With**	**Condition Without**	**Condition With**	**Condition Without**	**Condition With**
Primary Level						
Enrolled in 3rd grade (2018-19)	204	-	220	-	424	-
Passed in 5th grade (2020-21)	176	-	154	-	330	-
Enrolled in 3rd grade (2020-21)	-	310	-	235	-	545
Passed in 5th grade (2022-23)	-	225	-	183	-	408
Total dropouts	**28**	**85**	**66**	**52**	**94**	**137**
Dropout ratio (%)	**13.73**	**27.42**	**30.00**	**22.13**	**22.17**	**25.14**
Middle Level						
Enrolled in 6th grade (2018-19)	No middle level classes in the selected schools before ASP.					
Enrolled in 8th grade (2020-21)						
Enrolled in 6th grade (2021-22)	-	124	-	121	-	245
Enrolled in 8th grade (2023-24)	-	73	-	115	-	188
Total dropouts	**-**	**51**	**-**	**6**	**-**	**57**
Dropout ratio (%)	**-**	**41.13**	**-**	**4.96**	**-**	**23.26**

Condition With: It was observed from the data of the selected schools that the dropout ratio was 25.14% and 23.26% for the primary level and middle level respectively after implementation of ASP.

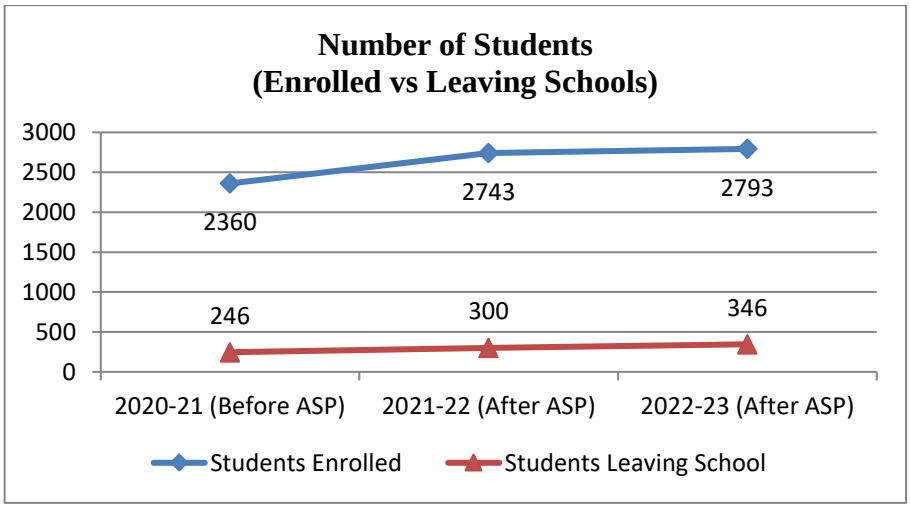
There was considerable rise in dropout ratio of boys' schools in both primary and middle levels, whereas, the same decreased in girls' schools.

***Condition Without*:** It was observed from the data of the selected schools that the dropout ratio was 22.17% for the primary level. However, it could not be ascertained for the middle level because no such classes exist before the ASP initiative.

Impact: After implementation of ASP, the dropout ratios for primary and middle level were 25.14% and 23.26% respectively. The dropout ratio increased by 2.97% in primary level despite ASP initiative. However, standalone impact of ASP on dropout ratio for middle level could not be gauged. The programme had a positive impact in reducing dropout ratio for girls but a negative impact on dropout ratio for boys.

d. Decrease in retention of students

Audit Objective: Had the schools been successful in maximizing retention in grade 1st to 8th after ASP?



Condition With: After the implementation of programme, the number of students leaving the school increased to 300 (10.94%) and 346 (12.39%) in 2021-22 and 2022-23, respectively, against total enrollments of 2,743 and 2,793 students.

In boys' schools, the number of students leaving the school rose to 146 (10.42%) and 255 (18.41%) in 2021-22 and 2022-23, respectively, against total enrollments of 1,401 and 1,385 students.

On the other hand, in girls' schools, the number of students leaving the school decreased to 154 (11.48%) and 91 (6.46%) in 2021-22 and

2022-23, respectively, against the total enrollments of 1,342 and 1,408 students.

***Condition Without*:** Before ASP, it was observed that 246 students (10.42%) left the school out of a total enrollment of 2,360 during the Academic Year 2020-21.

Impact: There was an overall decrease in retention of students after implementation of ASP with more boys leaving the schools as compared to girls.

e. Non-accommodating existing enrollment of schools

***Audit Objective*:** Had ASP been successful in accommodating existing enrollment of schools?

Academic Year	Description	No. of Students		
		Boys	**Girls**	**Total**
2020-21 to 2021-22	Completed 5th grade	176	154	330
	Accommodated in 6th grade	124	121	245
	Accommodated (%)	**70**	**79**	**74**
2021-22 to 2022-23	Completed 5th grade	212	153	365
	Accommodated in 6th grade	115	126	241
	Accommodated (%)	**54**	**82**	**66**
2022-23 to 2023-24	Completed 5th grade	225	183	408
	Accommodated in 6th grade	170	167	337
	Accommodated (%)	**76**	**91**	**83**
Average accommodated (%)		**70**	**84**	**74**

Condition With: After implementation of the programme, on average 74% of the existing students of 5th grade were enrolled in 6th grade. It was observed that 84% of existing girl students and 70% of the existing boy students of 5th grade were accommodated in next grade.

***Condition Without*:** There were no middle level classes before ASP, therefore, impact of accommodating existing students could not be assessed in before and after comparison.

Impact: The programme could not accommodate 100% enrollment of existing students let alone accommodating enrollment of surrounding schools. However, it fared better in accommodating girl students as compared to boys.

f. No enrollement of OOSC, dropped out and missed out children in 6th to 8th grades

***Audit Objective*:** Had ASP been successful in enrollment of OOSC, dropped out and missed out children?

Audit sought data of OOSC, dropped out and missed out children who were enrolled in 6th to 8th grades in fulfillment of one of the objectives of the programme from the management. The management responded that not a single OOSC, dropped out and missed out child was enrolled in 6th to 8th grades. Already enrolled students in primary level classes were promoted to middle level classes. However, efforts would be made to identify and enroll such children in the catchment area of schools under ASP through School Councils.

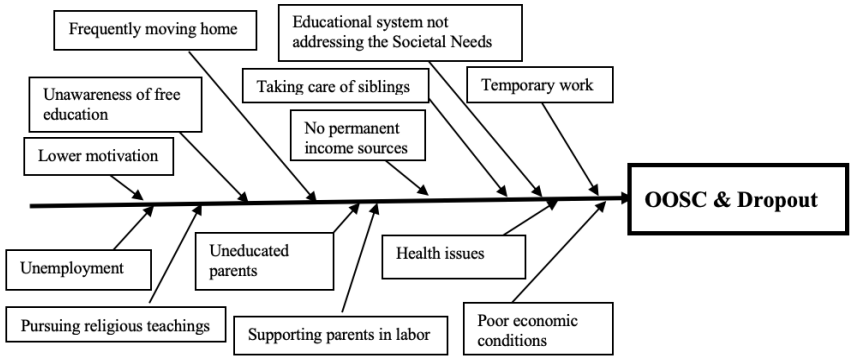
g. Factors affecting achievement of ASP objectives

In addition to consulting various research papers, national[22] and international[23] reports, Audit also carried out structured interviews of stakeholders to identify factors affecting achievement

[22] Government of the Punjab (2019), Punjab Education Sector Plan 2019/20-2023/2024

[23] UNICEF, (January, 2014). Global initiative on out-of-school children. South Asia Regional Study: Covering Bangladesh, India, Pakistan and Sri Lanka, Kathmandu, Nepal: Regional Office from South Asia.

of ASP objectives. The responses obtained from the stakeholders were then analysed through fishbone technique to outline potential factors which were contributing towads issues of increased dropouts, reduced enrollments and increase in OOSC. The same is illustarated below:



It was identified from the responses obtained from the stakeholders through questionnaires **(Annexure-S)** that almost 32% girls left school to undertake household responsibilities, 22% to acquire practical skills for earning livelihood, and 16% to pursue Islamic teachings. Similarly, 40% of boys discontinued their education to study Islamic teachings, 26% to acquire professional skills for earning livelihood, and 14% without any reason. It was also noticed that more than 90% parents of dropouts were uneducated. Therefore, the major contributing factors towards OOSC could be categorized as poor economic conditions, uneducated parents and lack of awareness of benefits of education.

During the DAC meeting held on 28th December 2023, the management replied that the approved PC-I did not specify the class and school-wise enrollment targets. Consequently, determining the actual physical progress of the project was challenging. DAC directed the relevant head teachers, AEOs, and Dy. DEOs of DEA Lahore to provide justifications for the overall increase in OOSC, dropouts, and the decrease in enrollments from grades 1st to 8th.

21.5 Conclusion

The impact audit of eight (08) schools revealed that the ASP could not achieve its objectives of increasing enrollments, minimizing dropouts, maximizing retention, accommodating enrollment of existing students and bringing back dropped out, missed out and OOSC.

ASP had no impact in increasing enrollment in elementary classes (primary level). There was an overall decrease in enrollment in elementary classes (primary level) both in boys' and girls' schools in the Academic Year 2023-24 when compared with base Academic Year 2020-21. However, there had been a considerable increase in enrollment in all middle level classes with more girl students enrolled than boys.

The programme had a positive impact in reducing dropout ratio for girls but a negative impact on dropout ratio for boys. The dropout ratio increased by 2.97% in primary level despite ASP initiative. However, standalone impact of ASP on dropout ratio for middle level could not be gauged. Moreover, there was an overall decrease in retention of students after implementation of ASP with more boys leaving the schools as compared to girls.

ASP could not accommodate 100% enrollment of existing students let alone accommodating enrollment of surrounding schools. However, it fared better in accommodating existing girl students as compared to boys. Additionally, not a single OOSC, dropped out and missed out child was enrolled in 6^{th} to 8^{th} grades.

The programme could not deliver substantial results vis-à-vis its objectives. The major factors could be attributed to poor economic conditions, uneducated parents and lack of awareness of benefits of education. The increased burden of earning livelihood coupled with strained macro economic condition of the country had further aggravated the unequitable access to education during Academic Year 2023-24.

The situation underscores the need for collaborative efforts to create inclusive and equitable educational opportunities. The government needs to implement cross-sectoral strategies to comprehensively address

various barriers to schooling for OOSC, recognizing the importance of addressing economic obstacles alongside systemic bottlenecks, opportunity costs, and socio-cultural expectations.

DGA Punjab

IMPACT AUDIT OF SOCIAL PROTECTION PROGRAM ON THE EFFECTIVENESS OF ZEWAR-E-TALEEM PROGRAM IN TEHSIL RAJANPUR

1. INTRODUCTION

An Impact Audit verifies a program's performance against its pre-defined objectives by considering the bearings or implications of a new project or intervention, on a specific group of people or the public at large[24]. Impact Audit seeks to establish a relationship between an organization's inputs and outputs leading towards desired outcomes. Subdividing the main goal, establishing the hierarchy of objectives, giving each goal quantifiable criteria, assessing performance, and offering feedback are all essential prerequisite of good policy formulation and implementation to achieve desired outcomes[25]. This audit is conducted as an important extension in the audit portfolio of OAGP to enable the audit to comment on policy interventions of Government of the Punjab based on evidence rather than assumptions.

Impact audit provides a systematic knowledge and analysis to be utilized by policymakers in making decisions and for better utilization of Government resources. At the time, when Zewer-e-Taleem Program was launched, a research study identified that 22.8 million children aged between 5-16 years were out of school in 2016-17 with noticeable gender disparities in budgets for the public education sector[26].

Numerous studies demonstrate that closing the gender gap in education improves several social outcomes, including infant and maternal

24 Adams, Sarah, Matthew Hall, and Xinning Xiao. "Styles of verification and the pursuit of organizational repair: The case of social impact." Accounting, Organizations and Society (2023): 101478.

25 Domokos, László, Erzsébet Németh, and Katalin Jakovác. "Supporting the Effectiveness of Governance: Expediency control and performance measurement in SAI's audit." (2016): 7-24.

26 Chhabra, Esha, Fatima Najeeb, and Dhushyanth Raju. "Effects over the Life of a Program: Evidence from an Education Conditional Cash Transfer Program for Girls." World Bank Policy Research Working Paper 9094 (2019).

mortality, and boosts economic growth in emerging nations[27]. This impact appraisal will also help the stakeholders, policymakers, education department, and the Government to guide them to make effective strategies to enhance the enrollment of female students in public schools.

1.1 Background

Government of the Punjab launched the "Zewar-e-Taleem Program" in 2016 under the auspices of the Punjab Education Sector Reform Program (PESRP), to increase enrollment of girls in public schools by offering a cash stipend of Rs. 1000 per month. The purpose of this initiative is to improve enrolment and retention of female students in schools of poverty-stricken areas and provide them with basic stationery supplies/necessities for schools and add to their nutritional requirements. The cash is transferred quarterly, to the girls enrolled in public schools from grades 6 to 10, with a pre-condition of maintaining 80% attendance and successful completion of academic sessions till matriculation. Initially, the program started with an amount of Rs. 2,586 million in the year 2016 with a closing balance of Rs. 1,940.54 million in 2022-23. An amount of Rs. 26.075 billion has been disbursed to the registered female students in sixteen districts of Punjab since 2016.

1.2 Objectives of the Zewar-e-Taleem Program

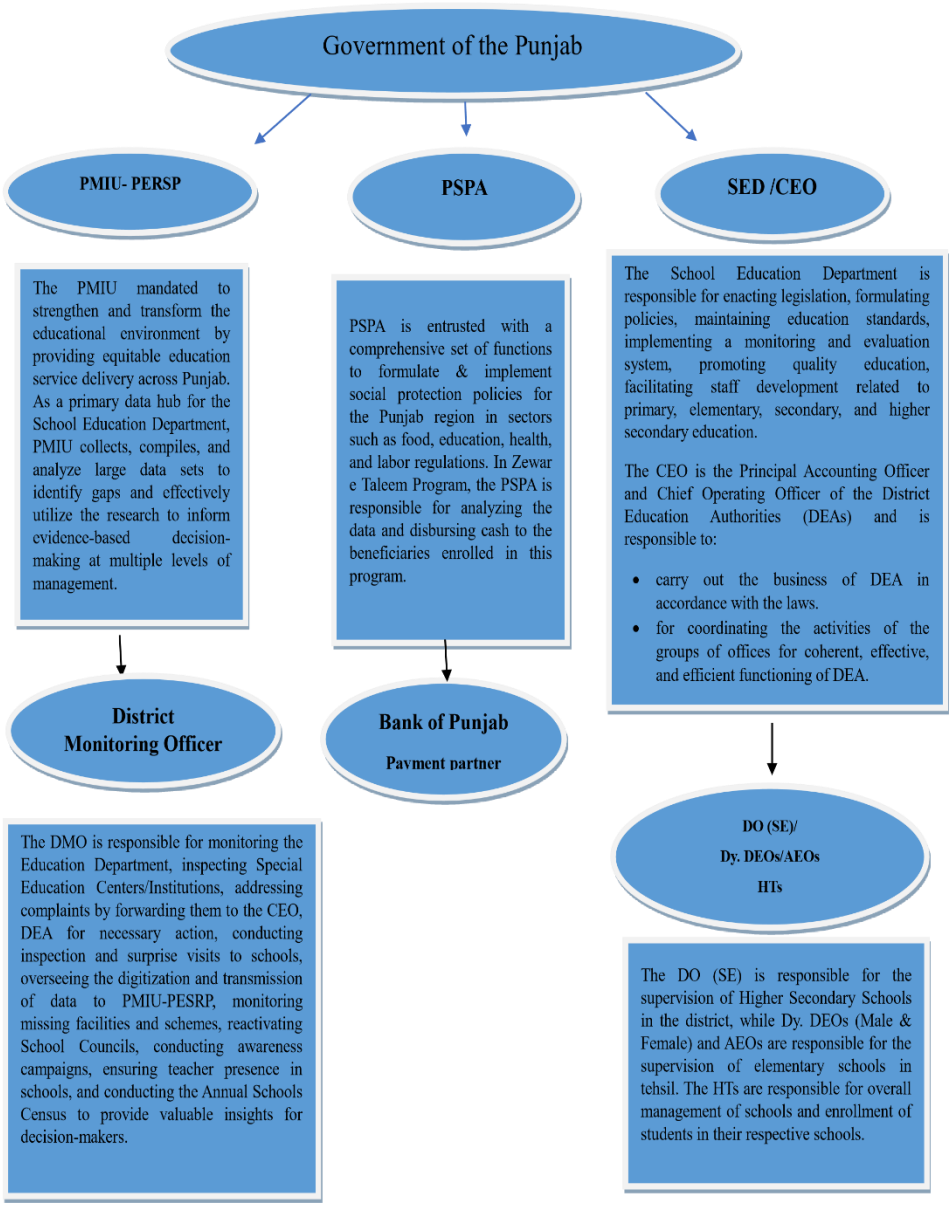
i. To educate more girls in middle/higher secondary schools.
ii. To improve girl's enrolment/attendance in schools at selected 16 districts with low literacy, in Punjab for gender parity
iii. To provide financial assistance to bear the burden of meeting their educational expenses and their basic nutritional requirements.

27 Abera, Halefom Gezaei. "The Role of Education in Achieving the Sustainable Development Goals (SDGs): A Global Evidence Based Research Article." International Journal of Social Science and Education Research Studies 3, no. 01 (2023): 67-81.

1.3 Workflow and Stakeholders of the Program

For smooth implementation and timely disbursement of funds to eligible girls, the School Education Department (SED) and Punjab Social Protection Authority (PSPA) have defined roles, as the main executing agencies of the program. Data collection is the responsibility of SED, which is done by the Program Monitoring and Implementation Unit (PMIU), while PSPA disburses the funds through the Bank of Punjab (BOP) after the verification of credentials of the beneficiary data through the Biometric Verification System (BVS). The beneficiaries can collect the amount of stipend from authorized agents of HBL Konnect, UBL Omni, and Alfalah Alfa Pay.

Organogram and Functions of Implementing Authorities of ZTP



2. OVERVIEW

Pakistan has traditionally been characterized by low enrolment rates and gender disparities in educational achievements as compared to the other developing countries, and also neighboring countries in the South Asian region. Government of the Punjab offers free of cost education to its citizens through the School Education Department, Special Education Department, Literacy and Non-Formal Basic Education Department, Punjab Education Foundation, Punjab Education Initiative Management Authority, Punjab Daanish Schools and Centers of Excellence, and several scholarships/stipends and subsidies are being offered for the underprivileged willing to seek education. The Punjab Social Protection Authority (PSPA) is an autonomous body under Government of the Punjab with a mandate to provide an effective, comprehensive, and efficient social protection system in society. The Authority has been working with a mandate to formulate a social protection policy for the whole province in education, health, and social assistance by new interventions and to monitor social protection programs, already in place.

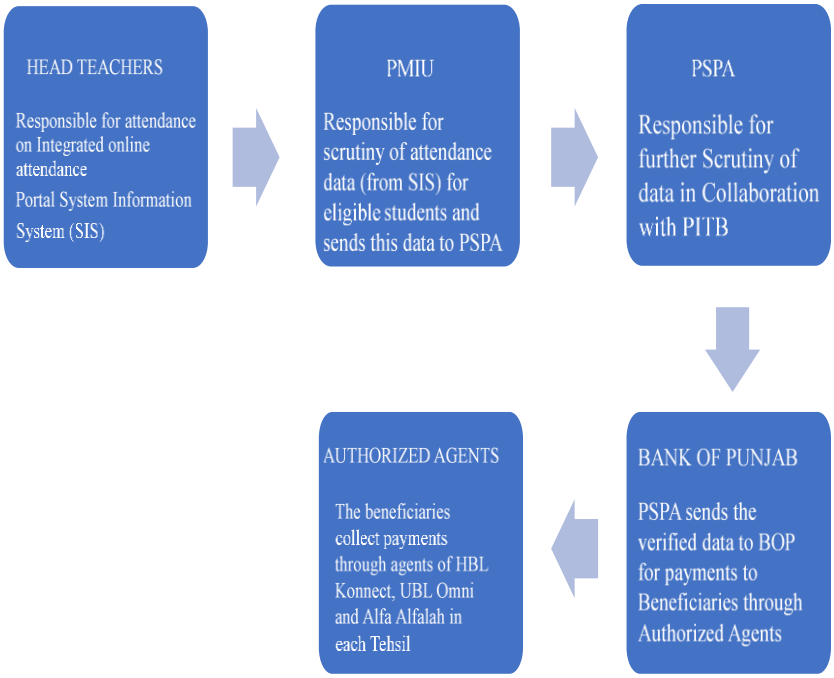
The Program Monitoring and Implementation Unit (PMIU) is a project implementation wing of the School Education Department (SED) working as the primary data hub for the School Education Department. PMIU collects, compiles, and analyzes large datasets to identify gaps, its rectification and provides this data for evidence-based decision-making at multiple levels of SED management. PMIU has been operating the Punjab Secondary School Stipend Program (PSSSP) since 2004 with Rs. 200 monthly to girl students of class 6-10 in Public Schools. The Punjab Secondary School Stipend Program was re-launched in 2016 in sixteen districts of Punjab as Zewar-e-Taleem Program with an increase in stipend

amount from Rs. 200 to Rs. 1000 for the girl students in grades 6th to 10th in the Districts of Punjab with low literacy rates i.e. Bahawalnagar, Bahawalpur, Bhakkar, Chinniot, DG Khan, Jhang, Kasur, Khanewal, Layyah, Lodhran, Muzaffargarh, Okara, Pakpattan, Rajanpur, Rahim Yar Khan, and Vehari. The stipend was being disbursed through the Post Office, but with the revamped Zewar-e-Taleem Program the postal deliveries of stipends were replaced with the ATM-based disbursement, called Khidmat Cards. However, this system was rendered ineffective, mostly due to delays in the registration process. A new system of payments through authorized agents of HBL Konnect, UBL Omni, and Alfa Alfalah account was introduced in 2023.

2.1 Flow of disbursement

The stipend is a conditional cash transfer on the fulfillment of the following criteria:

- Girl students studying in classes 6-10, enrolled in Government schools.
- Retaining 80% attendance in each quarter of the year
- The students who do not maintain 80% attendance are declared ineligible for the stipend for that quarter
- Successful completion of an academic year till class 10th.
- Registration of a student is deemed cancelled if she drops out at any level between classes 6-10



Process Flow Depiction

PMIU does an in-house cleansing of SIS data to check for issues such as duplication, invalid CNIC numbers, invalid B-Form numbers, and missing or incorrect contact numbers. PMIU sends the verified data to PSPA for further scrutiny.

PSPA and the Punjab Information and Technology Board (PITB) analyze the data for authenticity checks. The PMIU sends lists of new eligible students to DMO offices in each district so that the beneficiaries would be informed about the opening of accounts for disbursement.

The DMO further communicates the lists to the head teachers in schools. The unverified data is sent back to PMIU for rectification while the approved data is forwarded to BOP for disbursement of stipend.

3. SCOPE & METHODOLOGY

a. Scope

The scope of this audit was to assess and analyze the causal relationship between the program objectives and the improvement of female enrollment, attendance, and retention rate in tehsil Rajanpur, district Rajanpur, and for the sake of drawing meaningful insights comparison was also drawn with relevant parameters of tehsil Kabirwala, district Khanewal.

Sampling

Samples with the denomination of Randomized Control Trial (RCT) of 1371 female students (600 students from Rajanpur and 771 from Kabirwala) were selected from both Tehsils. The details of the sampling are as under:

Particulars	Tehsil Rajanpur	Tehsil Kabirwala
Total schools (High & Elementary)	29	117
Selected schools	18	50
Selected Schools' total Population	4373	7235
Sample selected	600	771

The following model indicates the flow of inputs, outputs, outcomes, and expected impact in this program:

Inputs	Activities	Output	Outcomes	Impact
• Programs Funds • Programs guidelines • Human Resource • Defining roles of all key departments and stakeholders • Trainings	• Selection of districts • Enrollment data collection • Maintenance of data record • Awareness & publicity • Coordination among • Stakeholders • Funds • Disbursement	• Better enrolment in schools • Retention of girls students in schools • Self-sufficiency for girls in meeting studies-related expenses and nutritional requirements. • Motivation to complete basic education	• Better literacy rate • Lesser gender disparity • Better earning opportunities for girls • Improved social structure. • Improved health	• Living standards improvement • Increased literacy rates in districts • Improved health and wellbeing • Integrated data maintenance for policymakers

To assess what happens to those who do not participate in the program, the evaluation team must choose a comparison group, also referred to as a control group, and compare it to the group that has participated in the program, also referred to as the treatment group[28]. To determine the causal effect or impact of a program on outcomes, the impact evaluation method selected must estimate the "counterfactual," or the outcome for program participants if they had not taken part in the program[29]. Organizational structures and funding schemes, the direction and control of activities, outputs, and results, the efficiency and efficacy of activities, or the effects of activities are all possible topics for performance audits tilted towards impact evaluations[30].

Scope Limitation

A scope limitation was faced during the field activity as there was no data available on the disbursement of stipends and the status of pending complaints, which restricted the verification of data collected from the field. The team encountered cultural barriers to approaching the beneficiaries (females) due to the conservative mindset in these rural areas.

The selection of tehsils was done owing to the challenging cultural and geographical aspects related to both districts. District Rajanpur is one of the backward districts of Punjab and has several issues like cultural backwardness, gender inequality, and lack of infrastructure. Similarly, district Khanewal has a peculiar variation of contextual underpinnings as compared to that of district Rajanpur e.g. better opportunities, geographically located near a big city (Multan), better literacy rate, and lesser gender disparity, etc.

28 Mury, L. G. "Performance Audits Focused on the Principle of Effectiveness: An Overview of Public Audit Agencies." Applied Finance and Accounting 4, no. 2 (2018): 45-54.

29 Reichardt, Charles S. "The counterfactual definition of a program effect." American Journal of Evaluation 43, no. 2 (2022): 158-174.

30 Morra-Imas, Linda G., Linda G. Morra, and Ray C. Rist. The road to results: Designing and conducting effective development evaluations. World Bank Publications, 2009.

b. Methodology

The investigations and procedures used for a particular study or making up the process of participant selection, sampling, data collection methods, data analysis, and interpretation techniques are collectively referred to as the research method. The research design of this study was quantitative by method and descriptive by purpose[31] encompassing enrollment, attendance, interest level, encouragement of parents, motivational level of parents, and continuity of education of female students from grades 6th to 10th. Governmental commitments to uphold human rights in education, mandated under Article 25-A of the 1973 Constitution are further outlined in a straightforward 4-As framework that makes instruction available, accessible, acceptable, and adaptable[32]. The study carefully integrates qualitative approaches, clearly defines each strand, and uses one or more strands to successfully support conclusions.

Various documents of the program were analyzed, interviews of key resource persons involved in executing the program were conducted, particularly stipend data of tehsils Rajanpur and Kabirwala was analyzed vis-à-vis data maintained by the School Information System. The key organizations involved in program execution like PMIU PERSP, SED, and DMOs Rajanpur and Kabirwala were visited. A survey was also conducted to analyze the impact before finalizing the audit findings and making recommendations. Randomized Control Trials (RCT) were adopted as a means of meaningful and incisive analysis[33].

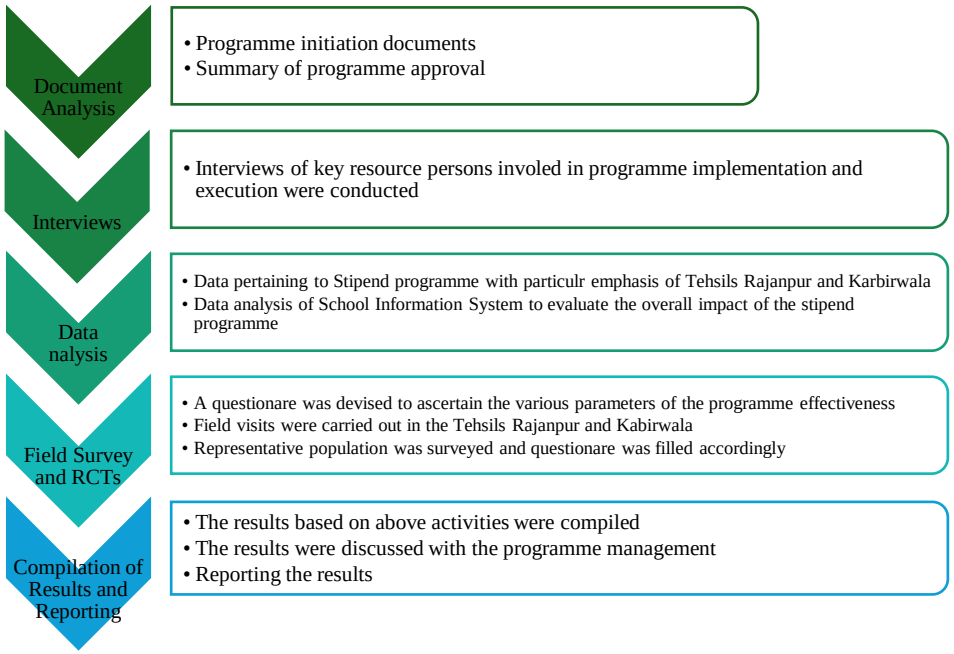
31 Hendren, Kathryn, Kathryn Newcomer, Sanjay K. Pandey, Margaret Smith, and Nicole Sumner. "How qualitative research methods can be leveraged to strengthen mixed methods research in public policy and public administration?." Public Administration Review 83, no. 3 (2023): 468-485.

32 Qayyum, Sehrish. "Implementation of Article 25-A of the Constitution in Punjab: Challenges and Way Forward."

33 Arslan, Aslihan, Ndaya Beltchika, Romina Cavatassi, Mir Md Shahriar Islam, Naila Kabeer, Deborah Sun Kim, Vibhuti Mendiratta et al. "Evidence Review on the Effectiveness of Interventions Promoting Women's Empowerment in Developing Countries." (2022).

Over the past 20 years, technology has been acknowledged as a significant and influencing factor in education, rendering traditional teaching methods obsolete. It serves no purpose to learn how to integrate technology if one does not comprehend the underlying idea. Acceptance of technology is just as important to effective application as skill and resources.

A stepwise approach was followed as explained hereunder:



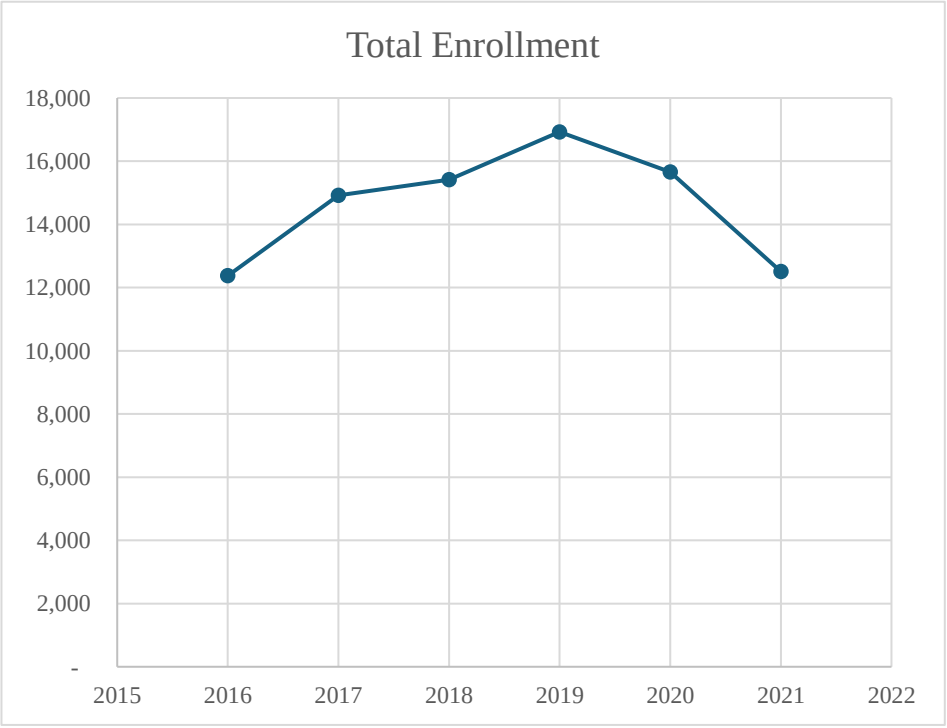
4. AUDIT FINDINGS

A. Overall Impact of the Zewar-e-Taleem Program (analysis on data provided by PMIU)

i. Enrollment trend analysis District Rajanpur

Increase in enrollment of students is the main objective of the program. After this intervention, enrollment in schools must show an increase each year to achieve this objective.

The graphical presentation of the increasing and decreasing trend of girls' enrollment (class 6th to 10th) in district Rajanpur from the years 2016 to 2021 is given below:



The above data shows a relative change in total enrollment in consecutive years (year 2016-2021). In the year 2017, just after the intervention, there was a notable increase in enrollment of 2,548 students, representing a 21% rise as compared to 2016. However, this positive trend was not sustained in 2018, as there was a comparatively lower increase of 498 students, equivalent to a 3% growth over last year. However, in 2019, there was again an increase of 10% as compared to year 2018. In the year 2020, there was a decline of 1,271 students i.e. 8%. This downward trend continues in 2021, with a significant decrease of 3,148 students, presenting a 20% decline in female student enrollments as compared to 2020, and the decrease must have been caused by COVID-19. However, the field visits and analysis of enrollment data in schools of tehsil Rajanpur showed the same fluctuating trend. The intervention seems to have a limited impact on enrollment as it could not produce an upward trend of enrollment as envisaged by its objectives.

Sustainable Development Goal 4 "ensures inclusive and equitable quality education and promotes life-long learning opportunities for all[36]." The problem of dropping out of school is a barrier to such goals[37]. According to an insightful study, the fathers' of dropped-out students have opined that the main causes of a student's school dropout included concerns with instructors' involvement in the classroom, low academic achievement, and poverty within the home[38]. Another study looks into the views of head teachers in public secondary schools in rural Punjab, Pakistan, about the issue of school dropouts. The results show that, aside

36 Qayyum, Sehrish. "Implementation of Article 25-A of the Constitution in Punjab: Challenges and Way Forward."

37 Mughal, Abdul Waheed, Jo Aldridge, and Mark Monaghan. "Perspectives of dropped-out children on their dropping out from public secondary schools in rural Pakistan." International Journal of Educational Development 66 (2019): 52-61.

38 Mughal, Abdul Waheed. "Secondary school students who drop out of school in rural Pakistan: The perspectives of fathers." Educational Research 62, no. 2 (2020): 199-215.

from a few socioeconomic and personal characteristics, various test patterns at the primary, elementary, and secondary levels; an easy promotion policy in the early grades, and inadequate educational backgrounds of Children leaving school early are mostly due to a combination of factors, including high class 9 failure rates, top-down pressure on teachers to fulfill non-academic activities[39].

The primary data for this study is gathered through interviews and is based on qualitative methodologies. Pakistan has the second-highest percentage of primary-age out-of-school children worldwide[40], despite having stated in the Constitution Eighteenth Amendment Act, 2010 that it must provide free and compulsory education to all children aged five to sixteen.

The low enrollment in public schools in the aforementioned district may be attributed to the growing number of private and Public Private Partnership (PPP) schools, as parents are choosing to send their kids there for a higher caliber of education[41]. These results imply that compromises that frequently occur [42]while pursuing several objectives in educational interventions can be resolved by comprehensive treatments instead of standalone interventions[43].

ii. Analysis of enrollment vs registered students in ZTP in District Rajanpur

39 Mughal, Abdul Waheed, and Jo Aldridge. "Head Teachers' Perspectives on School Drop-Out in Secondary Schools in Rural Punjab, Pakistan." Educational Studies 53, no. 4 (2017): 359-376.

40 Mughal, Abdul Waheed, Jo Aldridge, and Mark Monaghan. "Perspectives of dropped-out children on their dropping out from public secondary schools in rural Pakistan." International Journal of Educational Development 66 (2019): 52-61.

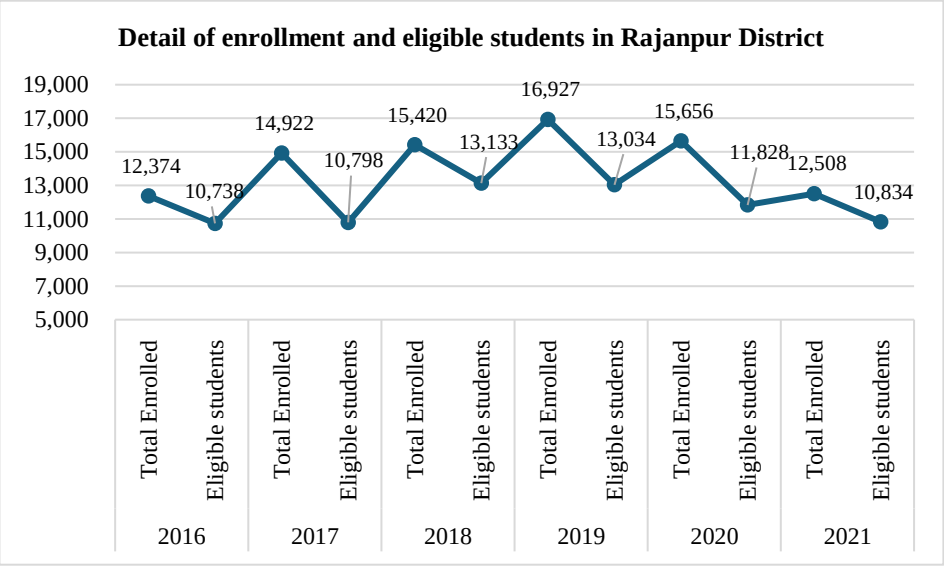
41 Ghazi, Safdar Rehman, Riasat Ali, Muhammad Saeed Khan, Shaukat Hussain, and Zakia Tanzeela Fatima. "Causes of the decline of education in Pakistan and its remedies." Journal of College Teaching & Learning (TLC) 7, no. 8 (2010).

42 Akram, Huma, and Yingxiu Yang. "A critical analysis of the weak implementation causes on educational policies in Pakistan." International Journal of Humanities and Innovation (IJHI) 4, no. 1 (2021): 25-28.

43 Bergstrom, Katy, and Berk Özler. "Improving the well-being of adolescent girls in developing countries." The World Bank Research Observer 38, no. 2 (2023): 179-212.

Retention of students in schools is one of the objectives of this program, which means that the students enrolled in schools must maintain 80% attendance in each quarter to be eligible for registration in ZTP. The effectiveness of this program could be termed substantive if the number of registered students increases each year, with the number of enrolled students. Additionally, assessors' tools were to be explored to help program evaluation advance, also contributing significantly to discussion and investigation of the issues generated for fostering cooperation and communication among evaluators and stakeholders[44].

The graphical presentation of year-wise student enrollment in schools versus the students registered in ZTP, in the district Rajanpur from the years 2016 to 2021 is given below.



The data shows the total number of enrolled students in each year and accordingly the number of registered students in respective years, but it reflects irregular fluctuations. In 2016, there were 12,374 total enrolled

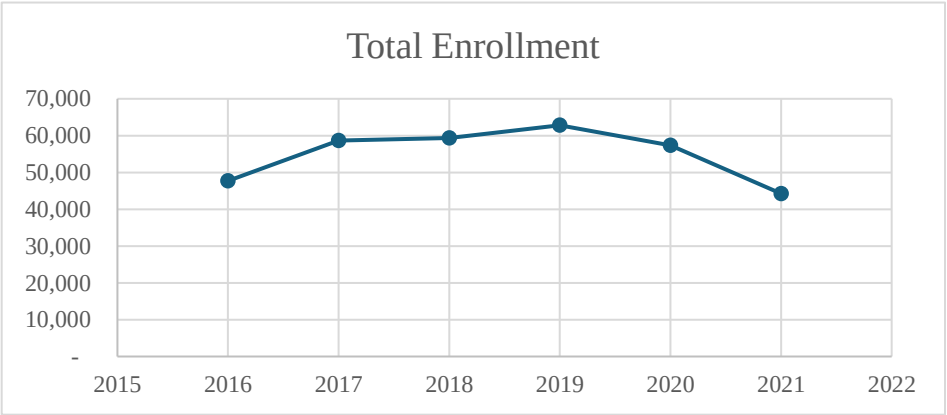
44 Zorzi, Rochelle, Burt Perrin, Martha McGuire, Bud Long, and Linda Lee. "Defining the benefits, outputs, and knowledge elements of program evaluation." Canadian Journal of Program Evaluation 17, no. 3 (2003): 143-150.

students, out of which 10,738 were got registered for stipend, indicating substantial participation. This number remained nearly the same in 2017 despite an increase in number of enrollments. The number of registered students remained the same in 2018 and 2019 whereas the number of enrollments increased in 2019. The same trend can be observed in subsequent years which shows the ineffectiveness of the intervention.

The findings reflect the variety of the fields also triggering a productive discussion about the nature of evaluation, which boosts the results' credibility[45]; and these yield optimization of the advantages that an impact audit review can provide[46].

iii. Enrollment Trend Analysis at District Khanewal

The graphical presentation of girls' enrollment in district Khanewal for the years 2016 to 2021 is given below:



The analysis of girl's enrollment from the year 2016 to 2021 reveals a fluctuating trend. In the year 2017, there was a significant increase in enrollments of 10,932 students i.e. 23% in schools as compared to 2016, the year of intervention. However, this positive trend was not

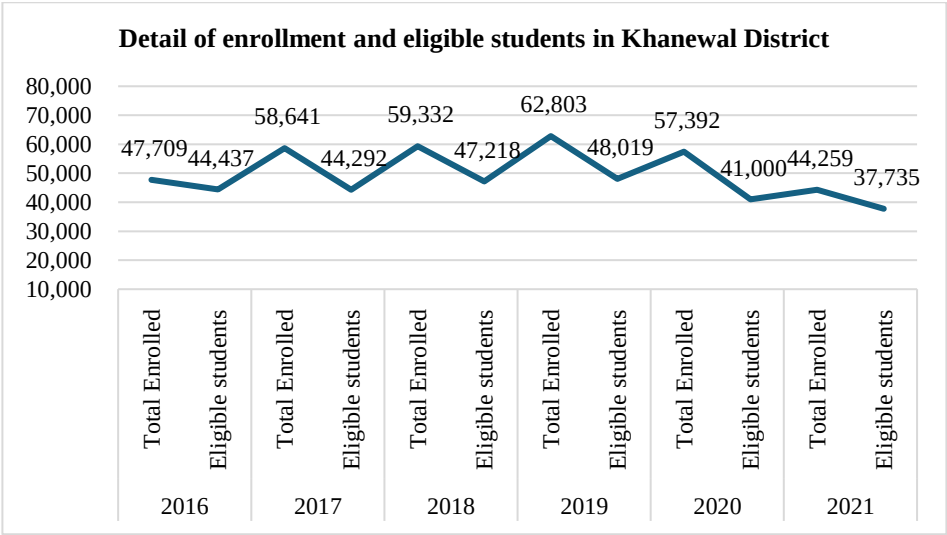
45 De Arteaga, Maria, Stefan Feuerriegel, and Maytal Saar-Tsechansky. "Algorithmic fairness in business analytics: Directions for research and practice." Production and Operations Management 31, no. 10 (2022): 3749-3770.

46 Marzano, Robert J., and Michael D. Toth. Teacher evaluation that makes a difference: A new model for teacher growth and student achievement. ASCD, 2013.

maintained in 2018, with only 1.2% increase as compared to the previous year. The subsequent year of 2019, also shows a nominal increase of merely 6%. In 2020, a substantial decrease in enrollment can be seen i.e. 9% due to the incidence of COVID, and it further reached a notable decrease of 23% in the next year. This variation indicates a lack of program effectiveness according to its objectives.

iv. Analysis of enrollment vs registered students in ZTP district Khanewal

The graphical presentation of the students enrolled vs students registered in ZTP in district Khanewal from the years 2016 to 2021 is given below.



The same trend can be observed in district Khanewal as that of district Rajanpur. The number of registered beneficiaries' students is not increasing in accordance with the increase in enrollment of students. The number of registered students remained the same in 2016 and 2017 despite an increase of nearly 11000 enrollments in 2017. Likewise, in the year, 2018 and 2019, there was a nominal increase in registered students

whereas the total enrollment strength reached 62,803 but the number of registered students increased by only 801. However, from 2019 onwards, the trend of total enrollment is decreasing because of Covid-19.

This shows a marginal impact of this program as the number of registered students has not increased corresponding with the increase in enrollment.

v. A large number of enrolled girls were not registered as beneficiaries of the stipend.

Audit ascertained during the data analysis of the Zewar-e-Taleem program that a large number of girls, despite being eligible for the stipend were not registered in the program and ironically the percentage of such students is not only very high but increased drastically after 2016 which was the first year when the stipend was enhanced from Rs. 200 to 1,000. The year 2021 is an exception because due to the COVID-19 outbreak when schools were closed and new enrollments shrank.

This leads to the conclusion that the full impact and objectives of the program cannot be fully materialized in the presence of a large number of students who despite being eligible could not be enrolled as registered beneficiaries in the program. The details gathered from all the 16 districts where this program is implemented is as under:

Year	Eligible to get stipend	Enrolled in Program	Not Registered	%age of eligible not registered
2016	526,878	454,832	72,046	13.67
2017	633,507	458,267	175,240	27.66
2018	617,544	466,543	151,001	24.45
2019	621,522	462,651	158,871	25.56
2020	589,251	425,426	163,825	27.80
2021	465,258	389,270	75,988	16.33

The aforementioned data reflects either the program management is not able to fully register the students eligible for the stipend or the parents are not motivated enough to get their girls registered. The lack of interest has its bearing on the overall impact of the stipend scheme finding it difficult to improve girls' literacy in the province. Non-interest of

students/parents could have been due to complicated procedures for registration and delayed distribution of stipends. The continued professional development for teachers also remained elusive. The professional needs of teachers, for enhancing teachers' empowerment could not be catered for, and thus the given state of affairs underscores professional development endeavors yet to be rolled out in a systematic manner. These findings may particularly help educational leaders to understand the demands of their callings[47].

vi. Non-disbursement of stipend to the registered girls

The financial record of the stipend program revealed that a huge liability of worth Rs. 10.845 billion has been generated due to non-disbursement to eligible female students in 16 districts

Undisbursed liability of only two tehsils Kabirwala and Rajanpur is calculated as Rs. 303.270 million.

47 Smith, Cristine, and Marilyn Gillespie. "Research on professional development and teacher change: Implications for adult basic education." In Review of Adult Learning and Literacy, Volume 7, pp. 205-244. Routledge, 2023.

The year-wise detail of the un-disbursed amount is as under:

Financial Year	Unpaid girls in Kabirwala	Unpaid girls in Rajanpur
2016-17	3,700	1,227
2017-18	4,979	1,880
2018-19	6,338	2,433
2019-20	7,143	2,681
2020-21	6,706	3,212
2021-22	15,915	7,138
2022-23*	23,304	14,434
Total	68,085	33,005
Total unpaid students (Rs.)		**101,090**
Total Liability (Rs.)		**303,270,000**
*Figures of 3 quarters compiled only		

The above-mentioned data reveals the lack of commitment on the part of Government/program management toward timely and full disbursement will impact the outcomes of the program adversely48.

No program can achieve its intended objectives with a shortage of finances. Not only the interests of already registered girls would diminish but those girls who are not going to school would have little incentive to get attracted towards the program.

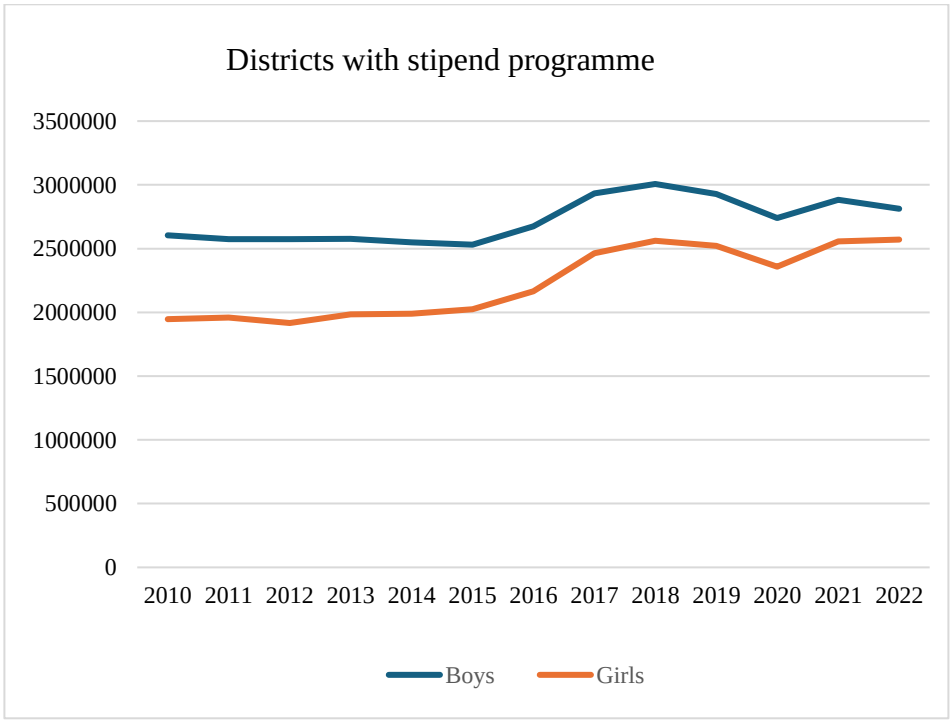
vii. Insignificant impact of stipend program in enrollment of girls as compared to the regions where no stipend scheme is introduced.

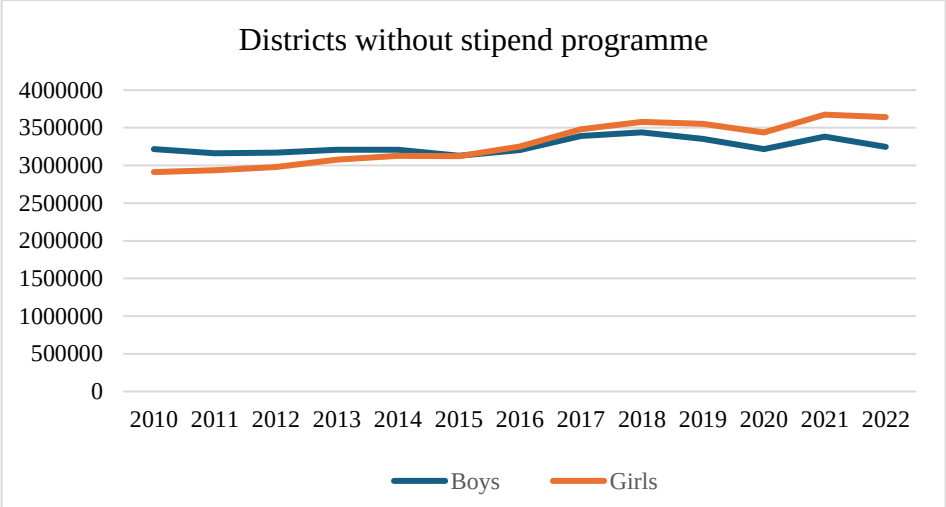
The enrollment of girls in the districts where a stipend program is introduced remains below the enrollment of boys when compared with districts where no stipend is in place reflecting that a stipend to encourage enrollment of girls is not bringing fruitful results.

48 Hashim, Ali, and Moritz Piatti. "Lessons from reforming financial management information systems: a review of the evidence." World Bank Policy Research Working Paper 8312 (2018).

The detailed and graphical representation are as under:

Year	Districts with Stipend		Districts without stipend	
	Boys	Girls	Boys	Girls
2010	2,604,927	1,945,792	3,216,138	2,912,387
2011	2,575,099	1,960,155	3,160,285	2,937,103
2012	2,574,996	1,916,343	3,171,566	2,977,788
2013	2,576,312	1,985,506	3,210,173	3,075,614
2014	2,548,980	1,989,138	3,209,041	3,127,443
2015	2,530,789	2,025,274	3,129,553	3,124,903
2016	2,675,593	2,165,185	3,202,741	3,251,014
2017	2,933,595	2,463,302	3,391,437	3,480,647
2018	3,006,911	2,562,132	3,439,552	3,578,559
2019	2,927,081	2,520,814	3,355,090	3,552,629
2020	2,739,129	2,359,242	3,217,576	3,438,881
2021	2,882,129	2,555,551	3,384,755	3,674,933
2022	2,811,649	2,570,831	3,247,873	3,642,712





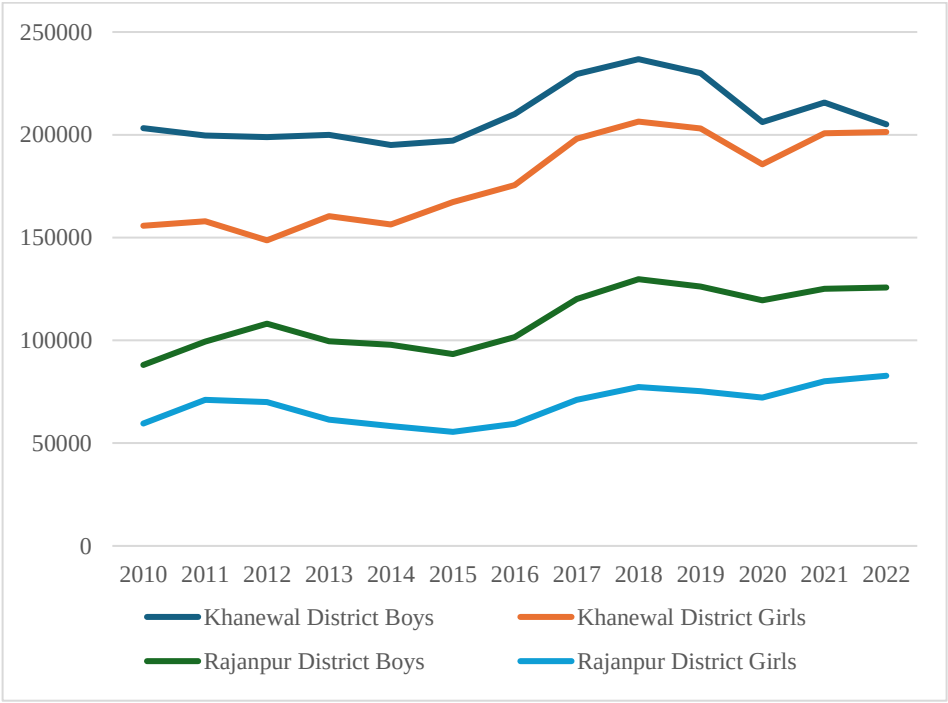
The above-mentioned depiction indicates an insignificant impact of the stipend program on the enrollment of girls. The trend of enrollment of girls in the districts where there is no stipend program is much more encouraging as compared to the districts where stipend is provided.

The enrollment data of boys and girls of district Khanewal is not different from that of the overall trend of the province where stipend is being provided to girls, i.e. the rate of increase in enrollment of girls who receive stipend is similar to that of the boys. However, the results in district Khanewal (including tehsil Kabirwala) is more encouraging and the trend indicates that the pace of increase in enrollment of girls is more as compared to the boys, and eventually in the year 2022, the enrollment trend of girls catches up with that of boys.

Year	Khanewal District		Rajanpur District	
	Boys	Girls	Boys	Girls
2010	203,211	155,736	88,033	59,547
2011	199,687	157,863	99,397	71,025
2012	198,853	148,658	108,114	69,945
2013	199,969	160,365	99,544	61,445
2014	195,043	156,448	97,823	58,379
2015	197,099	167,237	93,315	55,488
2016	210,009	175,547	101,586	59,372
2017	229,471	198,141	120,096	71,138

Year	Khanewal District		Rajanpur District	
	Boys	Girls	Boys	Girls
2018	236,794	206,429	129,756	77,251
2019	229,948	203,115	126,144	75,304
2020	206,237	185,591	119,556	72,164
2021	215,690	200,793	125,058	80,115
2022	205,066	201,292	125,783	82,770

The graphical representation amplifies this trend as under:



B. Field Audit Findings and Observations

The following observations were made during the field visits of both tehsils and with direct responses from the main stakeholders of the program. The analysis provided below is from the responses to questionnaires and interviews conducted directly with students, teachers, principals, and the heads of concerned Government offices.

i. Absence of defined roles among the key stakeholders of ZTP

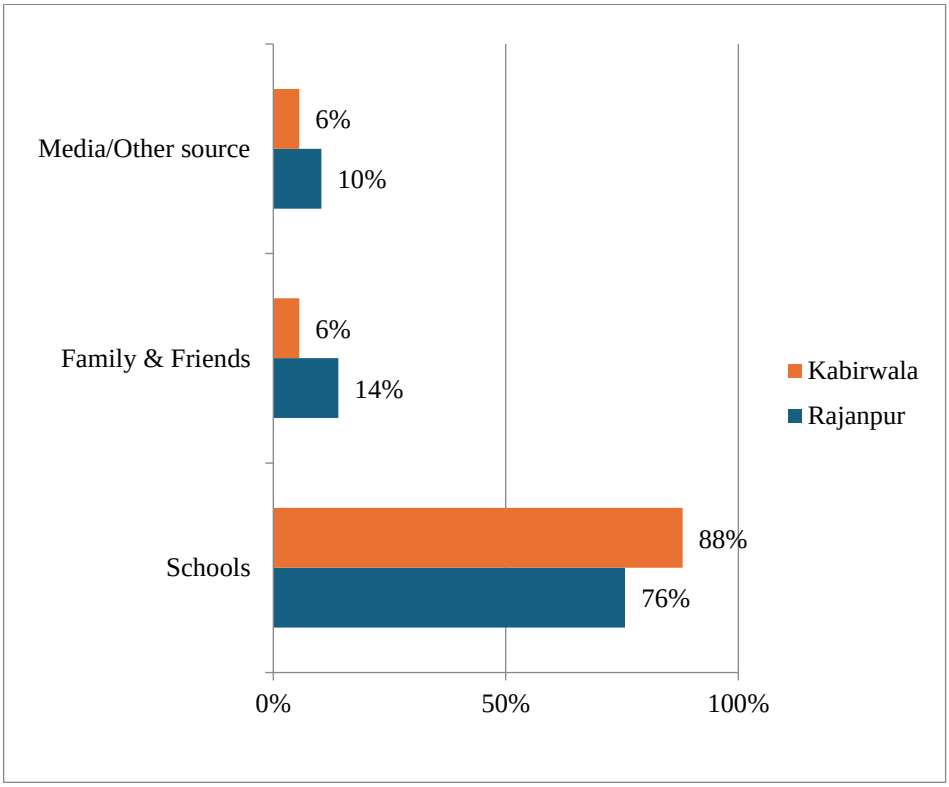
By conducting meetings with key stakeholders of ZTP, the audit has come to know that there are serious issues of coordination, hindering the desired outcomes to be materialized. CEO of the district has a mandate to resolve any issue pertaining to educational activities, but the office has failed to address the problems of students and teachers alike. It would be easier for beneficiaries to have access to administration through the offices of CEOs and DMOs operating in Districts. The lack of coordination and the inability of concerned CEOs and DMOs to perform their defined roles at tehsil levels represents a significant impediment to the smooth functioning ZTP. Over the past 20 years, technology has been acknowledged as a significant and influencing factor in education, rendering traditional teaching methods obsolete. It serves no purpose to learn how to integrate technology if one does not comprehend the underlying idea. Acceptance of technology is just as important to effective application as skill and resources[49].

ii. Lack of an awareness campaign for ZTP for enhancement of literacy and enrollment.

A survey employing interviews and questionnaires was conducted among girls' students in both tehsils i.e. Rajanpur & Kabirwala to assess their awareness of ZTP, a significant majority of students indicated that they gained awareness through school management. The impact of this program can be manifold if it is given an appropriate advertising campaign. Community mobilization and advocacy by Civil Society Organizations were not tangibly channelized either.

49 Suwardi, Suwardi, Sudirman Sudirman, and Fahruddin Fahruddin. "Management of School Operational Assistance Funds at SMKN 2 Kuripan, Lombok Regency, Indonesia: Reviewing From Planning Aspects." Path of Science 8, no. 10 (2022): 5028-5032.

The graphical presentation of the feedback of students is under:

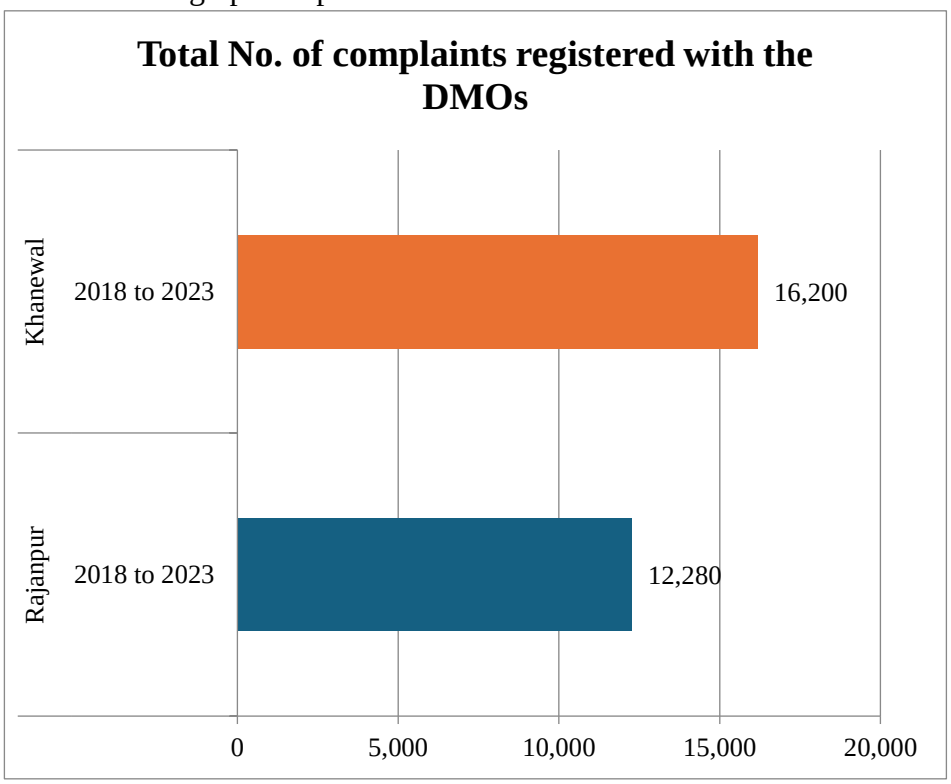


iii. Non-maintenance/non-provision of record

The CEOs, DMOs offices, and HTs had not maintained/provided the necessary record of ZTP i.e. special register for complaints, correspondence among concerned offices, yearly school budget regarding ZTP, data on disbursement of stipend and reconciliation thereof, monitoring and inspection reports by MEAs, progress report of the project and the data of 'missing students' etc. The concerned offices are not playing their part in record maintenance. The impact review can be made better through data analysis in each tehsil with proper maintenance of data.

iv. Non-follow-up and non-redress of complaints

The negative impact on the Zewar-e-Taleem Program in tehsil Rajanpur and Kabirwala was observed due to the negligence in addressing and resolving outstanding complaints. This negligence has increased the number of unregistered students. The complicated and delayed registration and verification process has caused a delay in the distribution of stipends. Similarly, the DMO office does not provide any information about the status of the complaints to the complainants despite having a clear role in complaints to be redressed by PMIU. The resolution status of 28,480 outstanding complaints (Rajanpur 12,280, Kabirwala 16,200) is still unknown. The graphical presentation of the same is as under:



v. Non-recruitment of teachers and inadequate training sessions for HTs

The requisite number of teachers is not available in tehsil Rajanpur and Kabirwala due to which the targets of the program could not be achieved. Furthermore, most of the elementary schools of tehsil Rajanpur and Kabirwala do not have IT teachers, and the lack of formal training of HTs regarding the usage of the online attendance system (SIS), resulted in entries of incorrect data of students' particulars in the system. The vacancy position of teaching staff of both district Rajanpur and Khanewal is as under:

Sr. No.	Tehsil Name	Total Posts	Filled	Vacant
1	Rajanpur	7224	6020	1204
2	Khanewal	13464	9540	3924
Total		**20688**	**15560**	**5128**

vi. Undue continuation of registration of students in the stipend program

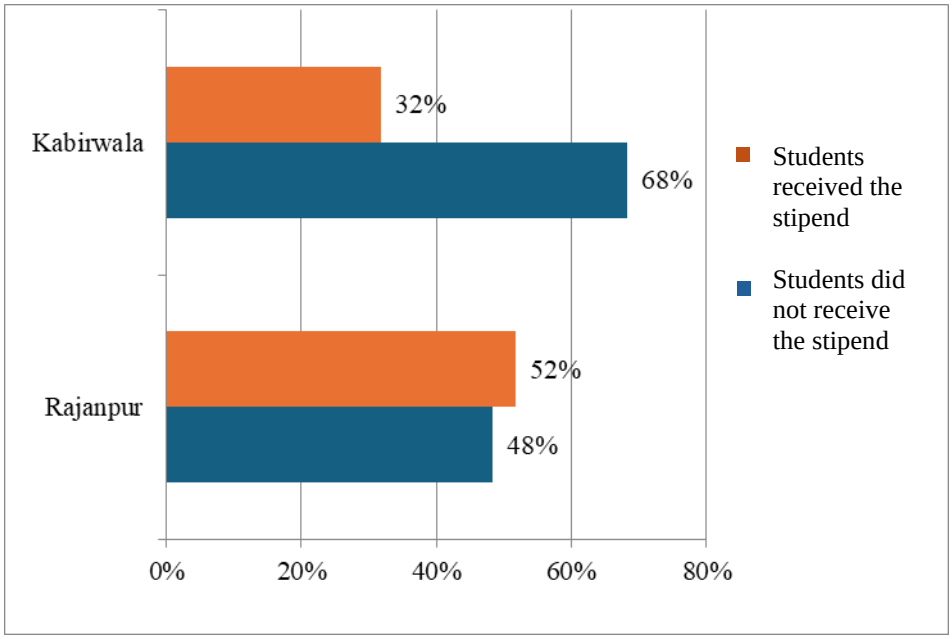
The quarterly attendance data received from the District Monitoring Officer (DMO) reveals that the 421 students in the Rajanpur (Annexure-53) and Kabirwala (Annexure-54) tehsils, who got registered in ZTP during 2016 were supposed to conclude their academic sessions in the first quarter of 2021 and were expected to be excluded from the stipend program. However, they remained part of the stipend program beyond the specified period, raising serious concerns about the misappropriation of funds, as indicated by the data shared by DMO Rajanpur in 2022.

vii. Non-awarding of stipends to eligible female students

The low impact of the ZTP was observed as many students responded in questionnaires and interviews that they don't get the stipend despite meeting the eligibility criteria. In tehsil Rajanpur, out of 600 sample students' data, 290 (48%) indicated that they have not received the stipend while in tehsil Kabirwala out of the 771 students surveyed, a

significant majority of 526 students (68%) of the sample indicated that they were not getting the stipend.

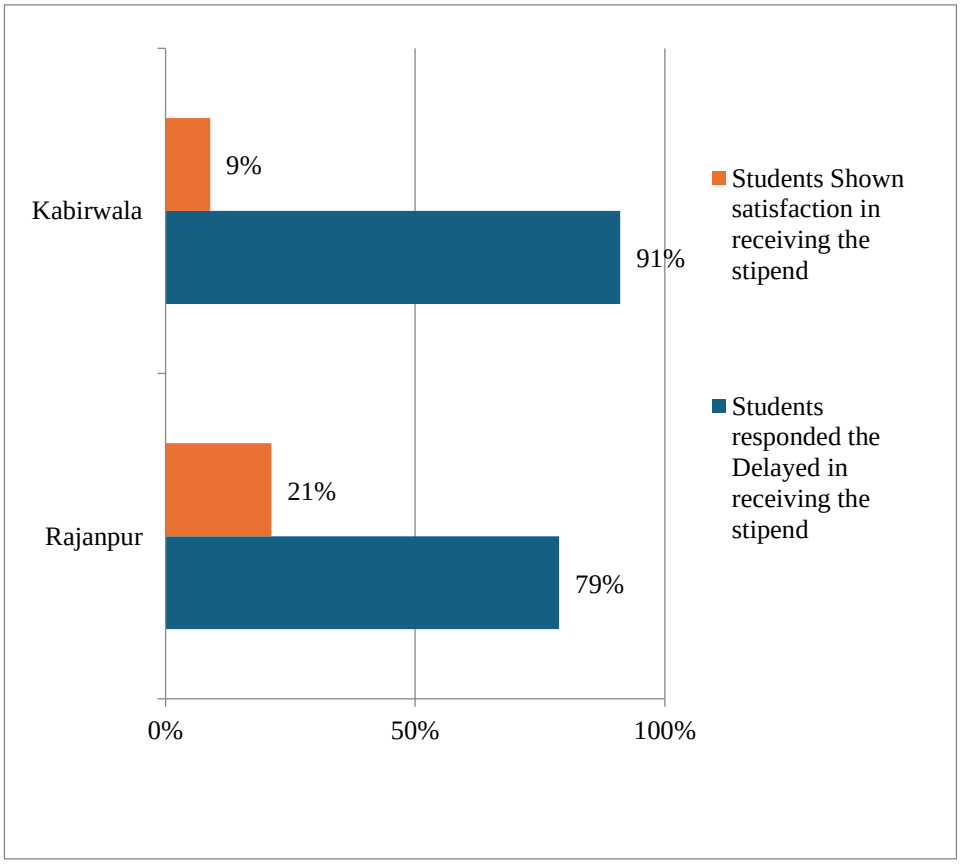
The graphical presentation of the remarks of students is shown below:



viii. Unlawful charges imposed by the agents

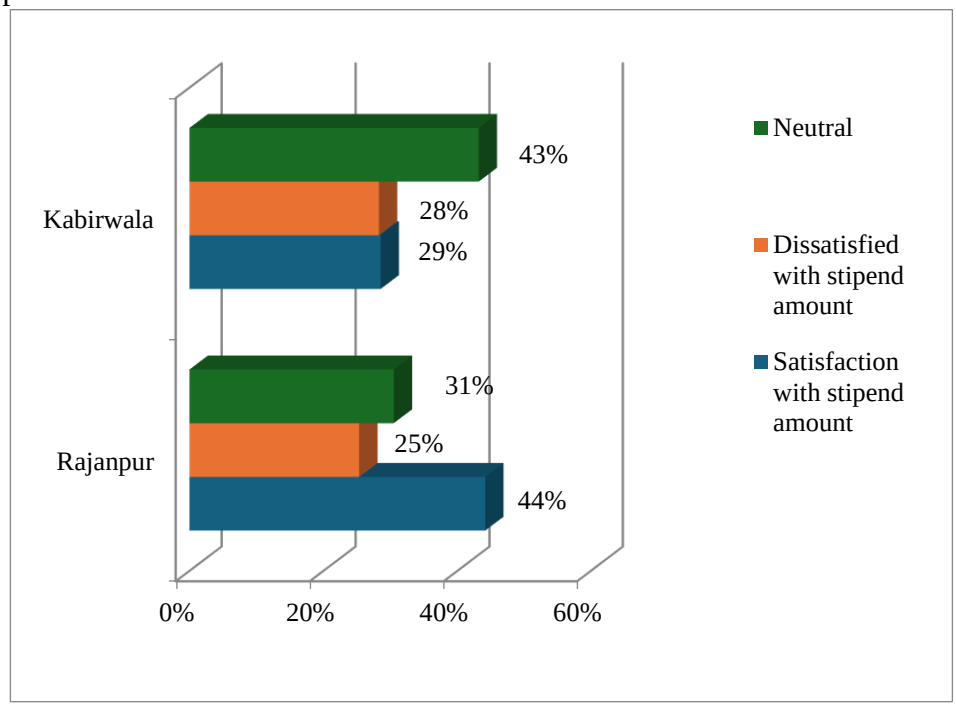
The effectiveness of ZTP is undermined by delayed stipend payments, a lack of transparency in disbursement processes, and additional charges imposed by agents unlawfully for opening of accounts and stipend payments. To assess the feedback on the disbursement of stipend funds, interviews were conducted with female students, and data was collected through questionnaires. In tehsil Rajanpur, out of 600 students surveyed, 473 (79%) indicated that they faced challenges with delayed payments while 127 (21%) students expressed satisfaction. In tehsil Kabirwala, among the 771 students coopted with the Randomized

Control Trials, 702(91%) indicated that they experienced delays in receiving the stipend, and only 69 (9%) expressed satisfaction. During interviews in both tehsils, the students also expressed that they have to pay extra charges i.e. Rs. 200 to 500 to the agents at every stage. The CEO and DMO are not employing and monitoring checks on such activities and the issue remained unaddressed. Some of the girls informed that complaints have been lodged against the unlawful practice of agents but no action has been initiated against them. The graphical presentation of the feedback of students is shown below.



ix. Insufficient stipend amount for educational expenses and nutritional needs

The interview with the students reveals that the stipend amount falls short of covering both educational expenses and nutritional needs, undermining the intended impact of the program. During interviews, most of the girls conveyed that the stipend barely addressed their stationery requirements and had minimal impact on fulfilling nutritional needs. In tehsil Rajanpur, out of 600 students surveyed, 265 (44%) remained satisfied, 152 (25%) students conveyed dissatisfaction, and 183 (31%) remained neutral. In tehsil Kabirwala, the survey result indicates mixed sentiments among 771 regarding satisfaction with the stipend amount, 220 (29%) students expressed satisfaction, 218 (28%) students expressed dissatisfaction, and 333(43%) remained neutral. The graphical presentation of the remarks of students is shown below.

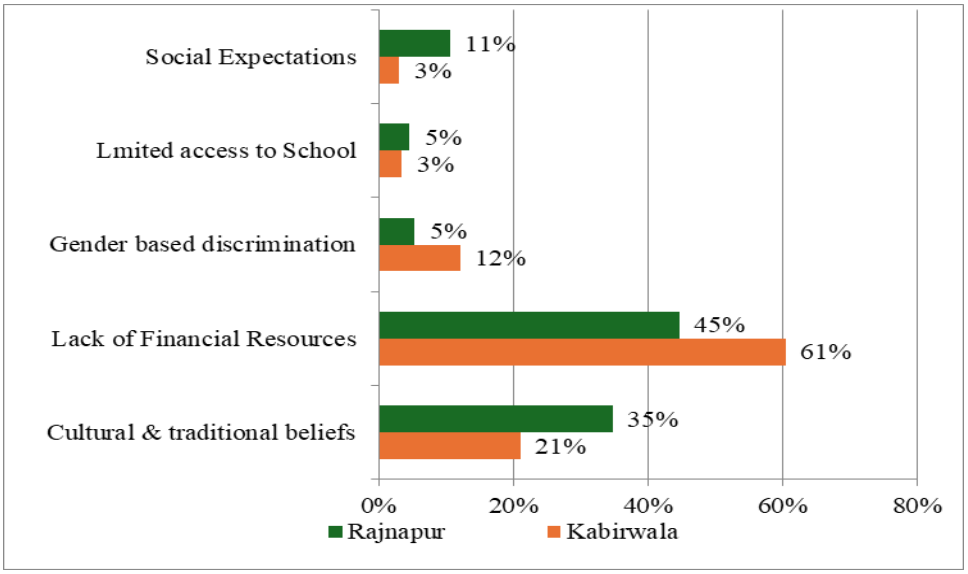


x. Inefficient supervision for the Verification and Stipend Disbursement process by CEOs

The departmental administrator and the CEOs had no effective role in ZTP for the registration process and disbursement of the stipend. The CEOs of both tehsils remained unaware of any issues/problems with the registration of students and disbursement of stipends. During the surveys and interviews conducted with students and parents, they expressed dissatisfaction with the cumbersome process of verification of guardians at the time of payments. The parents had to travel long distances to get the biometric verification done and they faced difficulty as sometimes they had to visit the registration center several times. The current system does not provide any alternative method of verification, consequently delaying the payments. The ineffective role performed by the CEO in the processes of verification and disbursement can have profound repercussions on the overall functionality of the Program.

xi. Social, Cultural, and Financial Barriers to Girls' Education

The social, cultural, and financial barriers to girls' education also contribute to the low impact of this program. A survey employing interviews and questionnaires was conducted among female students to assess the major limitations encountered by female students in accessing education. The graphical presentation of the responses of female students depicts that the foremost hurdle to enrolling in schools is the financial constraints. These girls found jobs as a house help with a reasonable salary.



xii. Non-registration of 12,223 eligible students in the ZTP

According to data obtained from the DMO office, a total of 3,612 eligible female students in tehsil Rajanpur and 8,611 eligible female students in tehsil Kabirwala were not registered in the ZTP program. While the CEO's office did not know this matter, the DMO office had only communicated the lists to concerned schools to get enrolled girls registered in the system, but there was no follow-up from the CEO's office.

xiii. Non-posting of the regular DMO

The ZTP could not be properly supervised/monitored due to the non-posting of regular DMOs in both districts for the last 4 years. This not only hampers the efficiency of the system but also results in the non-performance of the desired role of the DMO office. As the DMO office appears to be the only medium of communication between the beneficiaries and the PMIU administration, its absence creates more problems for beneficiaries.

xiv. Initiation of mass-level program without proper planning.

Government of the Punjab is allocating a substantial amount of funds for the Zewar-e-Taleem program without seeking subscription to the formal regime of Project Appraisal under the framework of the planning manual. PC II, PC I, and PC III submissions and approvals in the manner prescribed have been circumvented. The ZTP lacks the proper feasibility and Monitoring and Evaluation mechanism required for the success of any project whereas this intervention is warranted to be regulated in the Project mode to enable constructive reviews and mid-course corrective actions. Codal formalities have not been fulfilled in true letter and spirit, resulting in making expenditure of billions of rupees as irregular.

xv. Primary-level formal education for girls is completely ignored.

The primary level of formal education for girls is completely ignored in the ZTP, hampering the overall ability of the program to generate results. The girls who have not been enrolled or passed the primary classes remain ineligible to benefit from the program from the very outset thus curtailing the enfranchisement canvass for female students in the age bracket of 5-14.

5. CONCLUSION

The Zewar-e-Taleem Program is a significant initiative of Government of the Punjab to increase the female literacy rate in the backward districts of Punjab province. However, the impact of this program is not optimal because of procedural lapses and considerable delays in each step of the program execution. It is significant to mention here that there are five key stages of this program: Enrollment, Eligibility, Registration, Payment, and Complaint. Audit has concluded that there are certain bottlenecks and delays at every stage of the program resulting in an impact loss. The enrollment statistics indicate that despite the introduction of the stipend program, the impact remains minimal. Lack of coordination among key stakeholders for effective stipend disbursement, insufficient awareness campaigns, non-maintenance of records, and unresolved complaints contributed to the program's ineffectiveness. In addition to the above, deferred payments, lack of monitoring, and cultural and financial barriers added fuel to the fire. To meet the SDGs' 2030 deadline, dropout prevention tactics should have been the main focus of national and international policy. For interventions to be effective, local problem analyses and evaluations of possible solutions must always be conducted at the service delivery point placing reliance on bottom-up strategy for policy formulation and implementation.

6. RECOMMENDATIONS

By analyzing the data/information gathered by conducting focused group discussions, surveys with key stakeholders, and general observations during field visits, the following recommendations have been formulated to increase the effectiveness of the program.

- The main issue in the implementation of this program is the procedural lapses in the system e.g. unaddressed complaints, backlog of registration and delayed payments. Efforts should be made to ensure seamless processing of registration and a timely complaint redress system.
- There should be an active and well-coordinated monitoring mechanism at the district level through the offices of the CEO and DMO. The stakeholders at the district level should be sensitized and made accountable for their defined/assigned roles in the program.
- There should be a yearly agenda for each district specifically for this program including target enrollment, monitoring mechanism, training schedule for head teachers, advertisement plan, and review of previous year's statistics. The progress of each district should be gauged against the well-defined KPIs by strict monitoring of the CEO of each district.
- Proper record maintenance should be emphasized at each level i.e. at the school level, DMO office, and CEO office, as this appears to be the weakest area at the tehsil level. Clear instructions should be issued and regular monitoring and up-dating of the record be ensured.
- There appears to be a huge backlog of complaints, there should be a real-time dashboard on website or a dedicated helpline where the students can track their complaint status easily. The students have more trust in the ombudsman and PM portal for their complaint resolution as they are time-bound mediums for redress. The current system should reciprocate in the same way.
- There should be a receiving form available with every authorized agent that the recipient should sign when they receive the amount. A copy of that form should be submitted to DMO by every agent by the end of each quarter. This can minimize the chance of corruption at

agents' level as several students registered complaints about agents charging them extra money for every transaction. In case of a dispute the matter must be investigated at the CEO level and in case of any fraudulent activity, the agent must be blacklisted.

- Head teachers' proper training must be planned for a better understanding of their job in the program and to know the sensitivity of their roles in record keeping and usage of online attendance portal to avoid mistakes in data entry.
- B-form should be the main source of verification of the beneficiary data as the details of a B-form remain the same, unlike the data of parents.
- The issues like death of a parent, dissolution of marriage, change of guardian etc. can be avoided. This will ensure smooth and continuous payment of stipends and will also help in reducing the influx of complaints arising due to these issues. This will also provide a unique verified ID for each girl.
- The amount of stipend needs to be revised in relation to the increasing inflation rate of the country, as most of the beneficiaries showed reservations about the meager amount of stipend.
- Inter-departmental communication must also be improved and data sharing must be ensured for enhanced transparency, as it has been observed that complaints redress is being done by PMIU, and it has no access to the fund's utilization and status of disbursement. PMIU should be given 'read-only' access to the status of funds disbursement.
- The real impact of the program can only be ensured if it can be studied in liaison with the enhanced productivity and wages of females in future. It would be useful to understand whether the impact of this program on increasing enrollment is also translated into improvements in learning. It needs to be investigated whether Conditional Cash Transfers (CCTs) and comparable programs also contribute to poverty reduction in the long term.

- A special audit would be undertaken next year on the fund utilization of this program as there seems to be a lack of transparency in the disbursement of stipends and there exists considerable risk of embezzlement in the proper utilization.

2.9 Karachi Neighborhood Improvement Project

1 Introduction:

Karachi is one of the largest metropolises of the world. It is a financial and industrial hub of the country which contributes 15% of the national GDP[i]. It plays pivotal role in economy of Pakistan. However, during the last few decades, there has been a significant decline in access to basic services i.e., water supply, drainage and easy commutation, particularly in poor neighborhoods of Karachi. Due to encroachment and land grabbing, Karachi also lacks accessible, safe and good quality public urban spaces essential to make a highly dense city livable.

Thus, it was inevitable and imperative to invest in development of the infrastructure of the city to extend support to trade and business. In this backdrop, the Government of Sindh has initiated the Karachi Neighborhood Improvement Project (KNIP) of worth Rs 14,367.710 million[ii] funded by World Bank to improve public spaces in the city's selected Neighborhoods. Impact audit was undertaken to assess whether the project produced results that created impacts to the masses.

i Background:

Impact audits have been started from the audit year 2023-24, by the office of the Auditor General of Pakistan which aim at determining the impact of initiative or programs with special focus on determining the outcome results attributable to an initiative, new program or recent change to an existing program by separating other contributing factors or variables. The impact audit reports shall benefit the stakeholders in understanding the net results of the programs and initiatives in a more systematic manner and if timely addressed, shall lead to improving service delivery, financial management and better governance.

To improve the poor living condition of the masses of the area, the Government of Sindh has initiated the Karachi Neighborhood Improvement Project (KNIP) in collaboration with World Bank to improve public spaces in the city's selected neighborhoods. The focus of audit remained to determine the impact of a completed component of KNIP ie., 1.2 Malir Area Road and Public Spaces

Enhancement. Further it was aimed to measure whether the initiative did achieve sustainable economic and social growth of targeted downtrodden section of the society who were deprived of fundamental facilities: education, health and mobility infrastructure. Hence, this audit report chiefly focused on Phase-I of component 1.2 "**Rehabilitation & Improvement of Road of 5KM Saudabad Chowrangi to Thadda Nallah Bridge**" worth Rs 1,202.180 million[iv].

ii Role of Project/Program 1.2 Malir Area Road and Public Spaces Enhancement

The area of Malir is densely populated predominantly mixed land-use: residential as well as commercial with low-income communities. Infrastructure of public places and roads is deteriorated. The selected neighborhood includes sub-projects for upgrading the main road, sidewalks pedestrian crossings, reorganizing vehicular travel lanes to provide adequate space to pedestrians, rehabilitating/enhancing existing open spaces, constructing trash collection facilities, installing street furniture: bus shelters, safety barriers, shade features, and lighting and rehabilitating underground infrastructure and storm water drainage beneath upgraded roads. The project has given boost to businesses and ongoing housing schemes which resulted in urbanizing the people of Malir. The project also uplifts moral of the people by giving them improved environment through rehabilitation of drainage lines, widened pavement/walkways. By providing them roads, the cost and time of transportation has been reduced significantly; and mobility has become much easier than before.

2 Overview:

A feasibility, "Detailed Karachi City Diagnostic" by the World Bank was conducted over a period of one year to provide a multi-sector assessment of the infrastructure, service delivery and institutional gaps of the city. The Diagnostic, based on the framework of improving prosperity livability and social inclusion, found that the complex political economy and institutional fragmentation within the agglomeration of Karachi, have resulted in poor livability indicators for all segments of the population. For instance, The Diagnostic showed that to close its urban infrastructure gaps, Karachi requires large investments (estimated at about US$10 billion over the next ten years) along with substantial institutional development and policy reforms. It also suggested that large investment and policy reforms, both would be benefitted from an inclusive and incremental approach. These findings were

reaffirmed by a diverse group of stakeholders, who also highlighted the issues of citizen inclusion as areas that need to be addressed[vi]. Henceforth, the World Bank was approached by Government for assistance to cope up need of development that Karachi had been awaiting since long. Thus, in order to lay the stone of development especially: the Phase I: The Road of distance 5KM from Saudabad Choarangi to Thaddo Nallah Bridge connecting Soomar Kundrani village was undertaken by awarding contract to M/S Naseeb Khan & Brothers and M/S MAC Engineering & Contractor (JV). The work on the project commenced in July 2019; and it was handed over to District Municipal Corporation in November 2021[vii].

Program Deliverables & Objectives:

The Phase-I of component 1.2 **Rehabilitation & Improvement of Road Saudabad Chowrangi to Thaddo Nallah Bridge** aims at improving mobility and quality of life for local residents:

- KNIP supports Pakistan vision 2025, which aims at transforming Pakistan's urban area into creative, eco-friendly sustainable cities through improved city governance, effective urban planning, efficient local mobility infrastructure, and better security to make urbanization an important drive for growth[viii]. In this connection, **phase I component "Saudabad Chorangi to Thaddo Nallah Bridge Road"** was constructed for local mobility and to facilitate public transport besides enhancing the spaces of footpath and walkways, connecting village areas with district Malir.
- Providing better service delivery to support economic activity and to provide decent standard of living for the Malir.
- This initiative will benefit approximately 140,000 people[ix] of the locality by providing them swift mobility and enhanced public spaces for economic and social well-being.
- Easy access to nearby schools, hospitals and public offices to all the locals
- Rehabilitation of sewerage lines in order to ensure sanitization.
- Development of effective drainage system especially in the season of monsoon for drainage of storm and rainwater.

3 Scope and Methodology

i Scope:

The audit's focus is confined to the completed Component of Phase-I "**Rehabilitation & Improvement of Road Saudabad Chowrangi to Thaddo Nallah Bridge",** i.e. component 1.2 Malir Area Road and Public Spaces Enhancement. The audit aimed at evaluating the tangible outcomes of the initiative. Further, it seeks public opinion about the initiative to ascertain whether the government's actions were aligned with the intended objectives or otherwise. In case of apparent deviation or gap, the audit will highlight remedies and possible suggestions in recommendations portion. The audit also tried to find out what difference the project has made in real terms besides exploring the rival causes and their contributions.

Audit measured the level of performance achieved with the initiative is as under;

Condition with:

The project significantly provided benefits to the deprived masses living in the suburb of Malir, especially the ones who are residing in near about vicinity of Sauadabad Chowrangi to Somaar Kundrani Village. The road linked the village with the city by providing easy access and it enabled people of villages for exploring urban opportunities. Further, the intervention resulted in swift transportation of goods and public. Value of property and rate of rent of the market shops have increased significantly because of intervention and resultantly businesses of the people have flourished. Owing to intervention, drainage and sewerage system have also improved. That is why the area witnessed no untoward incidents, traffic jams, flooding or flashflood even in catastrophic rain in 2022 monsoon season in Karachi. Consequently, the intervention has marked positive impact on lives of the people of the area.

Further pictorial details are given at Annex-1 of Chapter-38.

Audit estimated the level of performance that would likely exist in the absence of the initiative is as under;

Condition without:

As per Audit Survey, the area is inhabited by large number of people comprising various communities who were facing conditions of reduced mobility, degraded environment and associated issues regarding Public Health that was substantially affecting the livability of this area. Practical options for recreation and social gatherings in public spaces did not exist. Had the intervention not taken place, there would have been continuation of miseries for the people of Malir due to damaged portions of this road.

Further pictorial details are given at Annex-2 of Chapter-38.

Before the intervention, the condition of the road was dilapidated, resulted into congestion, traffic jam, less mobility and environmental/health issues. The audit team was told during the survey that only single road was functioning for transportation which created enormous problems for the public. Owing to single road, there use to be congestion.

Before the intervention, the drainage system was in a miserable state. This could have meted out severe problems to people especially in monsoon season. The drainage system may have failed during torrential rains in 2022 if the intervention was not launched.

Identification of rival causes:

The rival causes are KMC (Karachi Metropolitan Corporation), KW&SB (Karachi Water & Sewerage Board) and DMC Malir. The findings suggested that their contribution in construction of roads, maintenance of sewerage lines, street lights, linear plantation, walk ways and sitting places was negligible as discussed below:

I. Due to various financial and administrative issues **KMC** could not adhere to their primary function and duties of planning, developing and continuing maintenance of inter-district roads, therefore, the road from Saudabad Chorangi to Thoddo Nalah was found in deteriorating condition with lack of upkeep and maintenance as revealed during public survey.

II. **KW&SB:** During survey, most of the interviewed people confirmed miserable conditions of drainage system in the area before intervention which showed that KW&SB did not perform their primary function of maintenance of sewerage system and water supply pipelines. Additionally, the audit team held a discussion with Chief Engineer KW&SB at their head office. He told the audit team that sewerage and water lines had been functioning since 1980. He also stated, "KW&SB only undertakes repair & maintenance of water and sewerage lines; however, the KW&SB does not undertake development and construction work of the lines". He further informed that development work is usually assigned to KWSSIP (Karachi Water & Sewerage Service Improvement Project) funded by World Bank.

III. **DMC Malir** did not perform their duties. As per audit survey, there were no streetlights, parks, greenery, and open spaces. This proved that DMCs ignored its essential functions in the area.

ii Methodology

For data collection mixed methods i.e. qualitative and quantitative approaches were adopted.

- Assessed and identified the rival causes in order to estimate their effect.
- Comparative analysis i.e., "before and after" the intervention was carried out to assess the impact of the intervention.

- For better understanding, visited main office of KNIP and site where the development has taken place.
- Conducted interviews from KNIP Official/Officers and getting information over the phone.
- Conducted interviews of officials of DMC Malir, KW&SB and KMC.
- Conducted survey of local residents, businessman and other stakeholders to know the factual position of before & after the intervention through questionnaire. The details are given at Annex-3 of Chapter-38.

Technique employed:

Comparative analysis: Before and after launching of this initiative
Rival causes**:** KMC, KW&SB and DMC

4 Findings:

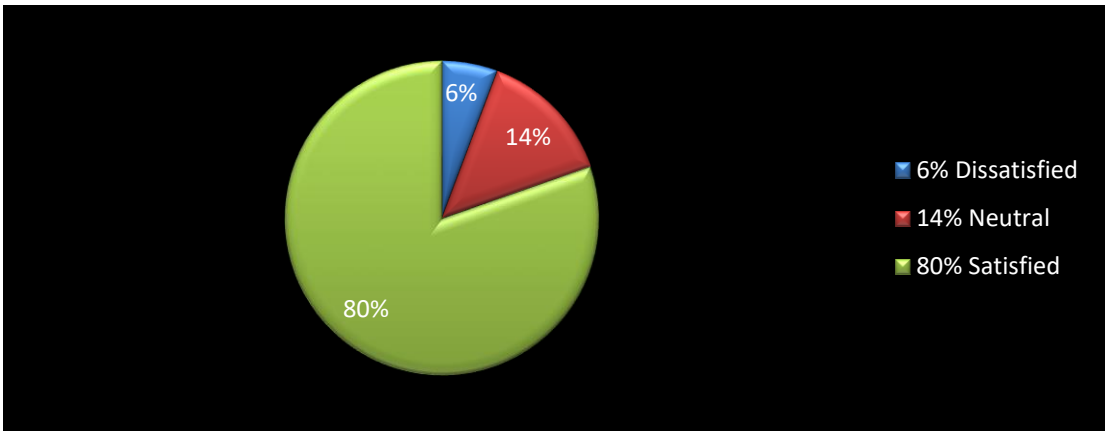
Malir neighborhood is a densely populated area with low-income communities. Due to limited infrastructure, people of the area were deprived of robust commercial activity despite being hub of livestock and dairy farms. The construction of 5 KM road from Saudabad Chowrangi to Thaddo Nallah Bridge linking nearby villages have positively impacted on the social, economic and environmental aspect of the area.

To assess the impact of the project, the audit team designed a survey form/questionnaire comprising 40 brief questions and conducted interviews to ascertain whether the project achieved its desired goals.

Overall impact:

The initiative achieved almost all its deliverables and the overall impact of the project was determined excluding the effects of rival causes.

As per interviews/survey, 80% of respondents showed their satisfaction with the provided infrastructure which reflected satisfaction of their needs. 14% remained neutral and 6% of the respondent were dissatisfied with the intervention.



Easy accessibility of villagers to urban centers

The project has ensured comfortable urban access to people of nearby villages. As the village Somaar Kundrani has been linked with Saudabad with the construction of this 5 km road of worth Rs 1,202.180 million. The road has significantly reduced the travelling time and cost. People can easily move from village to the city by using this road. Further, dual carriage way has been constructed to facilitate transportation of goods and public.

Social impact

As per data obtained through survey, 6% of the respondents (residents of the area) showed dissatisfaction with the intervention. They maintained that there had been no issue of accessibility or mobility for the inhabitants of the area 16% of respondents said that there had not been any significant decrease in crime ratio after the intervention.

The audit survey report showed that 75% people expressed their satisfaction with this initiative. The respondents maintained that the construction of the road has ensured easy access to fundamental and basic amenities of life i.e. health, education, water etc.

As per the survey data, the respondents maintained that this project intervention has ensured easy access to schools and colleges to local teachers and students. The audit team interacted with the patients at hospitals in suburb of the road. The patients and visitors of the hospital showed satisfaction with the intervention.

Now, the patients can also reach hospitals with ease for their treatment. Further, the survey revealed that due to effective drainage system, rain and sewerage water is easily drained now. Improved and enhanced footpath and public spaces have been constructed for pedestrians for their easy movement. Benches, shades and porches were affixed all along the road for the use of public besides streetlights found functioning in the area. For disposal of garbage, the dustbins have been placed. 56% of people stated that the crime ratio has gone down because of easy mobility of the transport and lighting system. Lastly, the audit team felt that these benefits have raised the self-esteem of the local people.

Economic impact

As per survey conducted during the audit, 7% of respondents revealed that intervention had no notable economic impact.

The majority of respondents disclosed that the intervention has brought positive impact in lives of people. The survey further revealed that the masses also harness economic benefits from this initiative. The construction of the road has allowed locals' easy access to markets. People from villages i.e., Memon Goth and Soomar Kundrani have been linked to the urban centers, district Malir and rest of the city. The people of these villages, mostly depend on dairy farming and livestock for their livelihood, they bring milk, vegetables, meat and other edibles to the city at reduced cost and time. Moreover, the construction of the road has given rise to various development schemes. Due to ease of doing business people have started settling their new business by opening shops along the road. Furthermore, Housing Schemes have also been launched after this initiative. Development in the area has given rise to rental income of people. There is also significant increase in property value. Moreover, improved condition of the road has also reduced the cost of maintenance of vehicles. Lastly, both sides of road have thrived with shops and various services. As a result, employment opportunities have been created for the people.

Environmental impact

As per survey conducted by the audit team, it was noticed that 27% of respondents were dissatisfied with the intervention. In opinion of these people, the project does not have any positive environmental impact because of lack of maintenance of the greenery along the road and pathways.

Most of the respondents stated that the construction of the road has also contributed to environmental well-being. Due to poor condition of the road it used to be dusty and stinky with stagnant water. Traffic jams caused noise, fumes and smoke in the area. Now, the road is neat and clean, the air quality has significantly improved after the initiative. Besides, there is a system of solid waste disposal as dustbins are placed all along the road. There is an arrangement of greenery, plantation of various types of trees all along the road which beautifies it. Resultantly, health condition of the locals has improved.

Below is a summary of key audit observations:

i. Overall progress and implementation of initiative was slow.
ii. Maintenance of road and alongside greenery and streetlights is not up to the mark.
iii. People have launched businesses on the pavements of the road.
iv. The grills, wires, lights and other tools have been stolen all along the road.
v. The road has been encroached by street vendors, shopkeepers and by other businesses.
vi. Hotels and cooking centres (Pakwan centres) are disposing of the litter and garbage on the road. Moreover, hotels are disposing solid waste substances into storm water drainage system.
vii. There was no maintenance of plantation and greenery.
viii. The pedestrian bridge over the road is not constructed for crossing.

Summary of discussion with management:

The management agreed with the preceding findings of the audit; however, for slow progress, the management replied that COVID-19 pandemic caused delay in execution of work. They further told that after completion of the project, it was handed over to DMC Malir. Therefore, it is their responsibility to maintain road, streetlights and secure the grills, wires, streetlights etc. from theft. The project engineer told that the World Bank restricted the executor of the project from removing the people's businesses around the road therefore, there is encroachments by small business owners and vendors. Lastly, the management maintained that it is aesthetically unpleasant to construct the bridge at the site. However, the public were

demanding construction of pedestrian bridge to facilitate the crossing from one side to the other side of the road.

5 Conclusion

To recapitulate the findings of this report, the people of the area showed satisfaction with the completion of the project. Our survey showed that 80% of respondents were satisfied with the intervention. Its positive impact was apparent on all spheres of lives of the people of the area, whether it was social, economic, or environmental. The findings proved that the project intervention has brought ease of transportation. Water supply and drainage system have been improved; the business opportunities are flourishing on either side of the road. The aim of connecting the villages to urban areas has been achieved. However, the people were deeply concerned about the maintenance of the road and drainage system. Since the road has been handed over to local Government, therefore it is their responsibility to maintain the road, streetlights, greenery and to upkeep the drainage system in order to delay the decadence and wear and tear.

Recommendations:

i. Replicate development of such infrastructure in other parts where economic and social activities are restricted due to damaged infrastructure of roads and sewerage / water supply line to ease the lives and uplift the livelihood of the general public and business community.
ii. Maintain the road, streetlights and greenery in order to delay the decadence and wear and tear.
iii. Discourage encroachment of the road to avoid damage and congestion.
iv. Discourage homeless and drug addicts along the pavement of the road in order to avoid theft of public property.
v. Upkeep the drainage and sewerage lines by imposing fine on careless hotels and cooking centres who throw garbage.
vi. Construct a pedestrian bridge for crossing the road to avoid any road accident.

IMPACT AUDIT

Electrification of Off-grid Areas through Solar Technology in Schools and Villages

8.1 Introduction:

i. Background:

The persisting energy crisis in Pakistan has severely affected the socio-economic conditions of the masses. During peak load hours, people all around the country experience power outages of approximately 10 to 15 hours daily. This problem aggravates a great deal during the summers. The overall energy deficit stands at 9000 MWs[50]. The province of Sindh has also been encountering energy challenges like the rest of the nation. The ever-increasing energy requirements in Sindh, both at domestic and commercial levels, necessitate a strategic approach. The issue of resolving energy scarcity is one of the integral agendas of the Government of Sindh, whereof the adoption of parallel measures both on the demand and the supply side has become an imperative challenge. In this context, where the conventional mode of power generation is being pursued, the generation of electricity through renewable sources, particularly wind, solar and biogas has become the exigency of the day. To contribute towards the power generation capacity by extending the grid network, the Government of Sindh has initiated various Power Projects by mobilizing investment from the Private Sector as per the National Power Policy, 2002 and the Small Independent Power Producers Policy. At present the expansion of the electricity distribution network requires heavy funding and is marred by considerable time constraints. An alternate, cheaper and time-saving way of achieving the goal is to provide electricity through solar photovoltaic technology, which has been recognized as a sustainable and effective source of electricity generation all across developing countries. Sindh is blessed with adequate solar radiation on its land, having annual solar hours of approximately 8 - 10 per day. Using such high solar energy potential, it has been planned to provide electricity to off-grid schools and

[50] Pakistan Economic Survey 2021–22.

villages in the province through the initiation of a project namely 'Electrification of Off-grid Areas through Solar Technology in Schools and Villages'. The instant report is primarily focused on gauging the impact of the project regarding the installation of solar technology in the primary public schools situated in the selected rural areas.

ii. Role of Project:

The Sindh Government, through the Rural Development Department (RDD), has embarked on a comprehensive initiative aimed at electrifying off-grid areas using solar technology. The initiative aims to catalyze transformative change in the villages, fostering educational advancement and community development. This umbrella project was allocated a total budget of Rs.2,000 million, out of which Rs. 500 million was earmarked for the primary public schools. Out of the total allocated budget of Rs. 500 million, the funds worth Rs. 426.640 million were utilized from 2016-17 to 2022-23[51] by the RDD. The fundamental focus of the project, outlined in the PC-I, was to bring alternate electricity to the primary public schools and villages situated in off-grid areas of Sindh. This had to be achieved through the implementation of stand-alone solar photovoltaic-based electricity systems. Further, reliance on solar energy will help in reducing CO_2, SO_2 and other gas emissions, consequently helping the local and global environment which is in line with the National Energy Efficiency and Conservation Policy, 2023.

8.2 Overview

The project recognizes the rich solar resources available in Sindh and intends to harness those for the benefit of communities that currently lack access to reliable electricity. By utilizing the high solar energy potential, the project seeks to electrify off-grid schools and villages in a sustainable and environmentally friendly manner. Sindh is in the grip of severe poverty, unemployment, law and order constraints with rural-urban division and numerous cheerless socio-economic factors. In the educational sector, Sindh's literacy rate is alarmingly low i.e., 61%[52]. One of the integral reasons behind the low literacy rate is the poor infrastructure of the public sector schools that lack basic facilities including electricity. Due to this factor, the dropout rate is on the rise. The situation in rural areas is much worse. As the conventional modes of power generation continue, there is an intensive nationwide effort to harness renewable energy sources. In this perspective, the Rural

[51] Utilization report and PC-I of the project.
[52] www.sindheducation.gov.pk

Development Department took a pioneering step in 2015-16 by initiating the subject project. With a substantial investment of Rs. 2,000 million, this project sought to provide access to affordable energy by utilizing solar photovoltaic technology, specifically targeting off-grid villages and primary public schools. Based on the outcomes of the initial feasibility study the project focused on two possible options of single and two room designs for the electrification of schools. The project aimed to electrify a total of 3,415 schools, out of which 1,521 schools had one classroom and 1,894 schools had two classrooms.

Project deliverables and objectives:

The primary objectives of the project 'Electrification of Off-Grid Areas through Solar Technology in Schools and Villages' as envisaged in the PC-I were as follows:

- To Provide basic electricity to the remote and off-grid areas of the province for socio-economic uplift.
- To ensure electrification of the off-grid schools in rural areas of Sindh through solar panel systems.
- To implement initiatives that contribute to the betterment of the communities in the targeted areas.
- To bridge the persisting electricity demand-supply gap.
- To enhance the share of renewable energy in the overall energy mix in line with international obligations of the Kyoto Protocol.
- To create awareness for green energy technologies in line with the National Energy Conservation Policy, 2006 (Revised 2023).

8.3 Scope and Methodology

i. Scope:

The integral focus of the instant Impact Audit is limited to scrutinizing the project's goals and objectives regarding the electrification of rural public schools. With a keen focus on the educational impact, the audit exercise aims to understand the efficacy of the implemented stand-alone solar photovoltaic electricity systems and evaluate how their installation has contributed to the transformation of educational environments specially in context of student enrollment rate. The audit exercise also strives to assess the tangible outcomes of the project while identifying areas that require further improvements. Given the expansive nature of the research scope, the

audit task was strategically confined to five districts namely Dadu, Sanghar, Matiari, Tando Mohammed Khan and Hyderabad. This limitation ensures a focused and in-depth analysis, enabling a thorough examination of the project's impact on schools within these specific regions.

Condition With:

The substantial investment of Rs. 426.640 million facilitated the provision of electricity in off-grid and on-grid primary public schools. After the installation of the solar panel systems, a rise in enrollment rate was observed under certain conditions. During the field visits, 72 schools situated in Hyderabad, Matiari, Tando Muhammad Khan, Sanghar and Dadu districts were surveyed. By following the Time-series design, the results thereof represented a meagre, but positive correlation between the implementation of the initiative in the off-grid areas, whereof 2.71% increase in enrollment was observed, thus reflecting a certain level of performance.

Condition Without:

In the absence of the project, the primary schools situated in the selected areas would have continued to reflect more dismal and slow increase in the enrollment figures despite the presence of rival factors like increase in population, infrastructure development and preference to private schools. The survey also revealed that, prior to the initiation of the project, a considerable number of children used to waste their time in unproductive activities, resultantly there was an increased prevalence of numerous social vices among the non-school-going children.

ii. Methodology:

The audit was conducted based on the available data relevant to the electrification schemes of the rural primary public schools against which a questionnaire (open and closed-end) was developed while focusing on the quantitative and qualitative aspects. In pursuance of ascertaining the project's impact, the 'Time-series' method was adopted. The progressive enrollment data for three years before the inception of the project (2015-2018) was analysed and compared to the four years (2018-2022) of post-installation of the solar equipment in the targeted seventy-two schools of the five districts. The average difference in the enrollment rate of the two periods was compared in the five districts and the net impact was calculated accordingly.

Further, the following audit techniques were also utilized to supplement the exercise:

- Assessment of audit universe and random selection of schools based on vicinity's proximity.
- Review of PC-I and record scrutiny.
- Field visits and interviews with the stakeholders, including the school management to ascertain the qualitative factor.
- Examination of monitoring and installation reports.
- Review of relevant web-based data/information.

8.4 Findings:

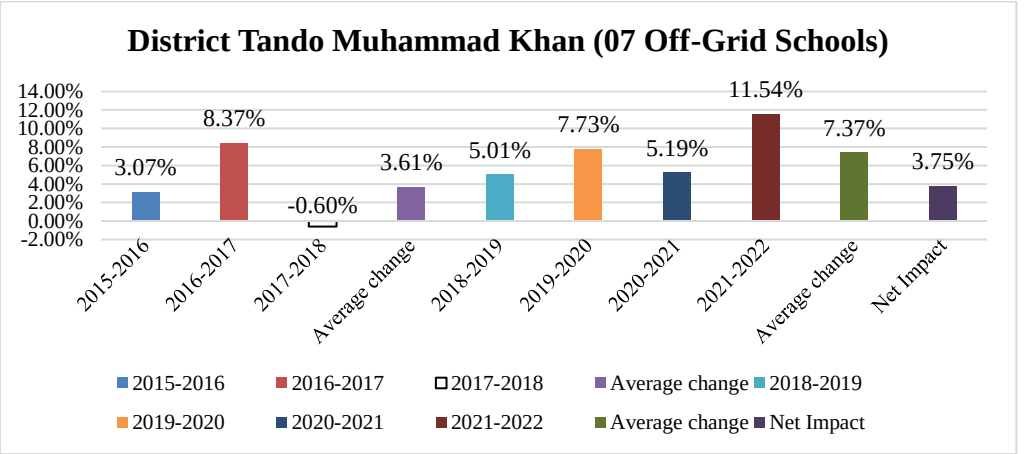
To assess the impact of the project, the audit team collected the data from the primary and secondary sources. The primary data was collected from field visits and questionnaires, whereas the secondary data was gathered from the executing agency.

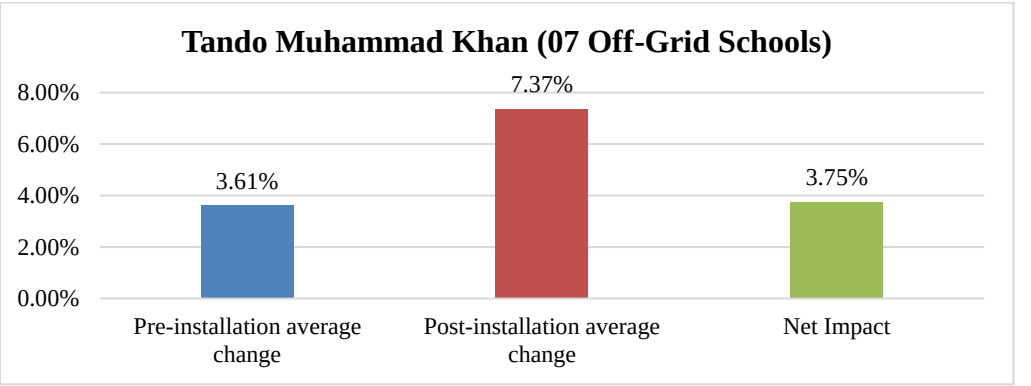
The results extracted through the data were evaluated and compared with the help of graphs and tables to conclude the actual impact of the project. The commentary on the findings is summarized as follows:

District Tando Muhammad Khan:

The sample size of seven primary schools was selected for comparison of the pre-installation period (2015-2018) with the post-installation period (2018-2022). The data of the pre-installation period reflected an increasing trend in enrollment at an average rate of 3.61%. Since no project intervention occurred during this period, therefore this change was a result of rival factors. Similarly, an average change in the enrollment rate for the post-installation period (2018-2022) was calculated, which revealed a rise of 7.37%. The results showed a net impact of 3.75% in the enrollment rate in the targeted schools of the district by subtracting the average rate of the post-installation from that of the pre-installation period. The execution was purely carried out in off-grid areas where no electricity was supplied and energization by solar panel system had a promising impact on the enrollment factor.

District Tando Muhammad Khan (07 Off-Grid schools)									
Pre- installation trend				Post- installation trend					Net Impact
2015-16	2016-17	2017-18	Average change	2018-19	2019-20	2020-21	2021-22	Average change	
3.07%	8.37%	-0.60%	3.61%	5.01%	7.73%	5.19%	11.54%	7.37%	3.75%

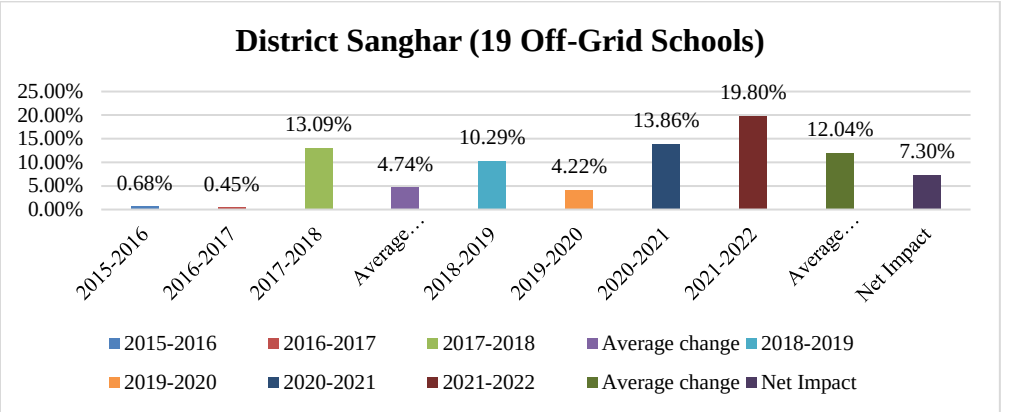


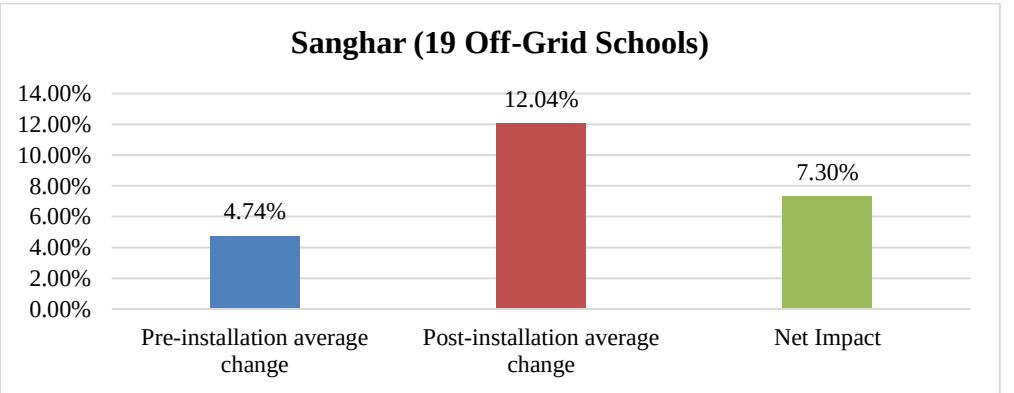


District Sanghar:

The data of 19 schools was selected for the analysis. The pre-installation period results revealed that there was an increase of 4.74% in the enrollment rate. Whereas, in the post-installation period, the figure rose to an average of 12.04%. Thus, a significant net impact of 7.30% in the enrollment rate was noticed in the targeted schools of this district as compared to the targeted schools of the other selected districts.

District Sanghar (19 Off-Grid schools)									
Pre- installation trend				Post- installation trend					Net Impact
2015-16	2016-17	2017-18	Average change	2018-19	2019-20	2020-21	2021-22	Average change	
0.68%	0.45%	13.09%	4.74%	10.29%	4.22%	13.86%	19.80%	12.04%	7.30%



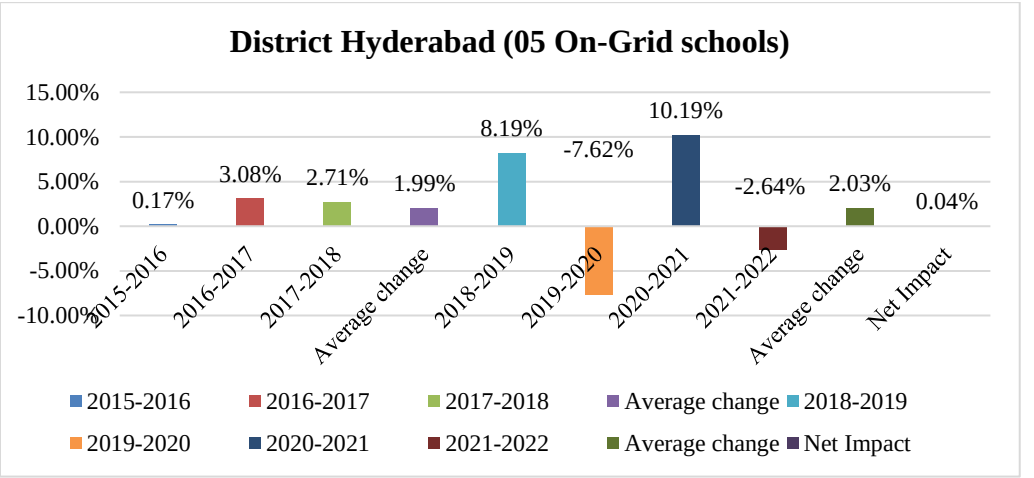


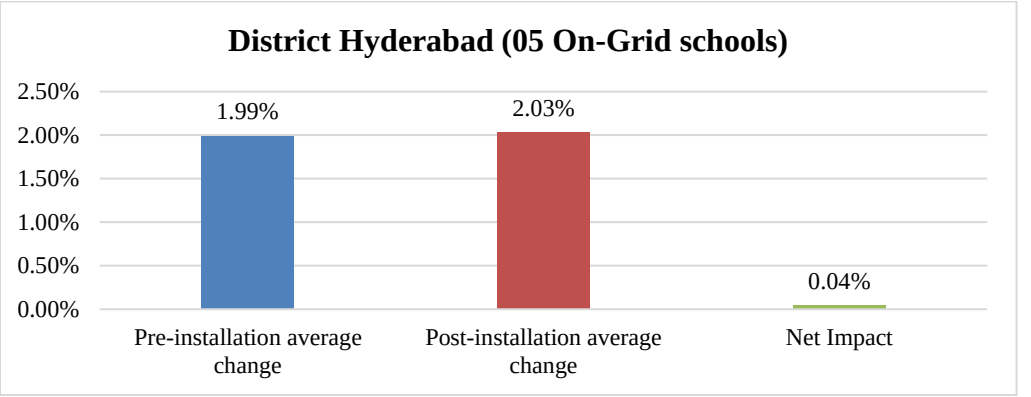
District Hyderabad:

The data of 05 schools was selected for analysis. The pre-installation and post-installation average enrollment rates were calculated as 1.99% and 2.03% respectively. The results showed a dismal impact of 0.04% increase in enrollment rate.

No significant impact of the project was observed in the Hyderabad District which could apparently be attributed to the reason that the solarization was also carried out in the on-grid schools which were already energized. This factor represented a major deviation from the objectives of the PC-I. Further, the targeted schools were located in one of the highly urbanized areas of the province, where other factors like population disparity, presence of public schools with enhanced facilities, preference for private schools etc. could have possibly contributed to such a dismal impact.

District Hyderabad (05 On-Grid schools)									
Pre-installation trend				Post-installation trend					Net Impact
2015-16	2016-17	2017-18	Average change	2018-19	2019-20	2020-21	2021-22	Average change	
0.17%	3.08%	2.71%	1.99%	8.19%	-7.62%	10.19%	-2.64%	2.03%	0.04%



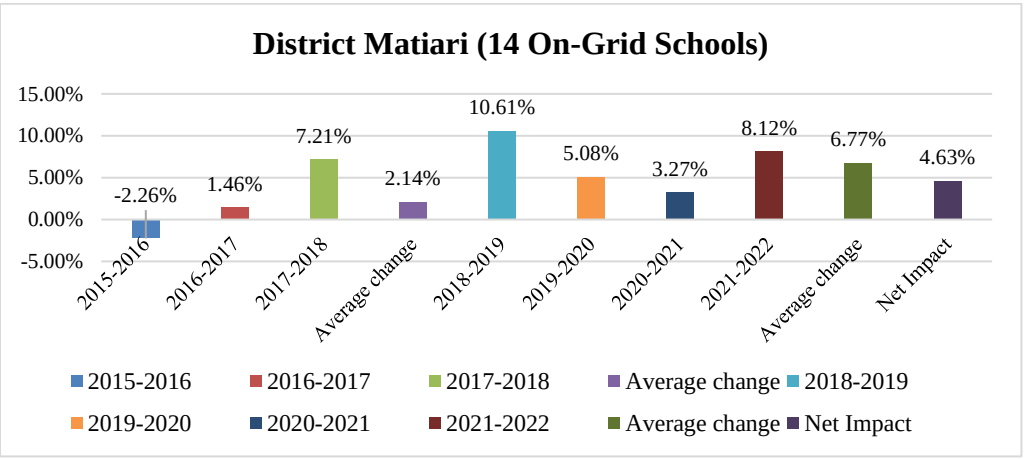


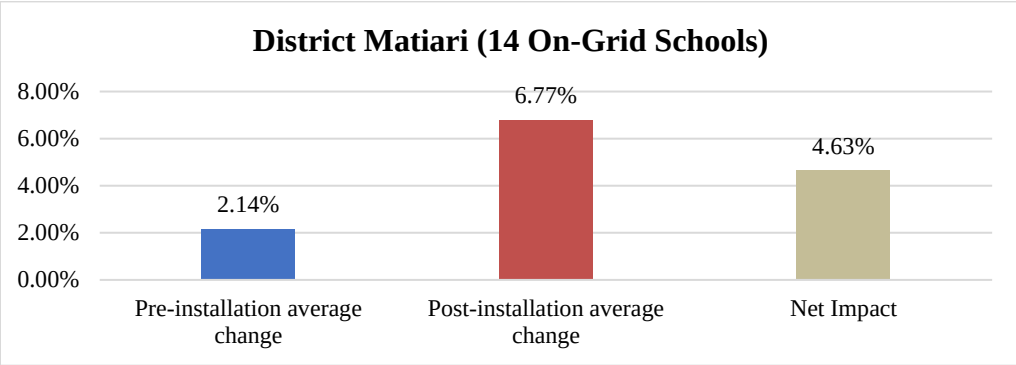
District Matiari:

In Matiari District, the sample size of fourteen primary schools was taken for the post and pre-installation periods. Here, the project was also carried out in the on-grid areas instead of the off-grid locations in violation of the project's design. The survey revealed that the enrollment had been increasing at an average rate of 2.14% in the pre-installation period whereas, the same rose to 6.77% in the post-installation

period i.e., 2019-2022. Hence, the difference in the enrollment rate of the post and pre-installation period was 4.63%, thus reflecting a net positive impact in the relevant area. A significant impact was noticed in the enrollment rate of schools despite being in the on-grid areas. The possible reasons could be that the schools are located in the rural areas of the district where the continuous supply of electricity was frequently disrupted due to excessive load-shedding. This fact was also verified through survey forms where the school management categorically mentioned 10 to 12 hours of load-shedding in the district, whereas the installation of solar equipment guaranteed the uninterrupted supply of electricity and subsequently better enrollment figures were achieved.

District Matiari (14 On-Grid schools)									
Pre-installation trend				Post- installation trend					Net Impact
2015-16	2016-17	2017-18	Average change	2018-19	2019-20	2020-21	2021-22	Average change	
-2.26%	1.46%	7.21%	2.14%	10.61%	5.08%	3.27%	8.12%	6.77%	4.63%



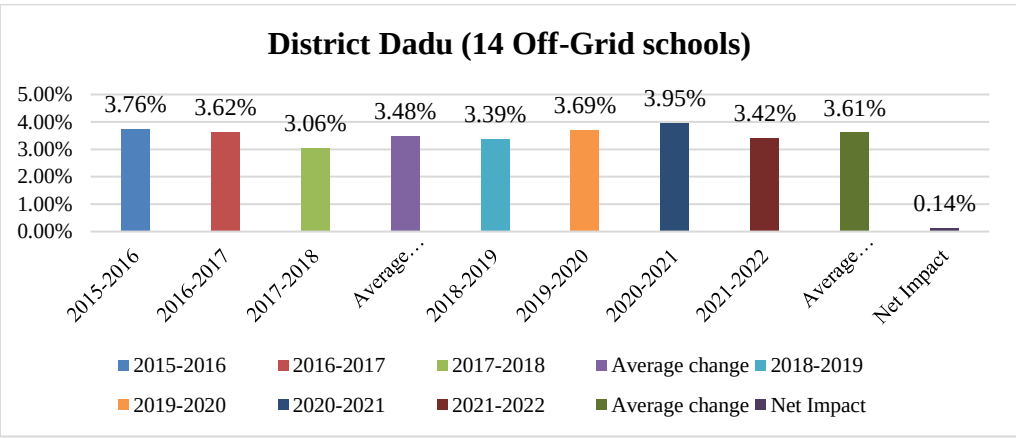


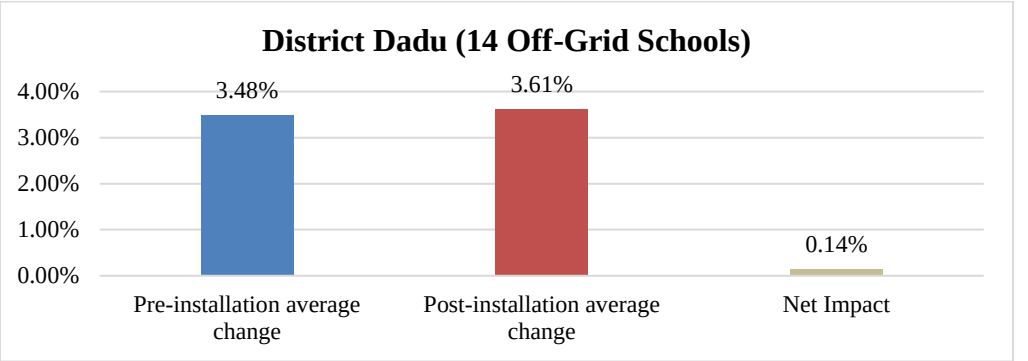
District Dadu:

A sample size of 27 schools was taken for data analysis. In Dadu District, the project was launched in both the off-grid as well as on-grid areas. Therefore, a sample size of 27 schools was selected which included 14 schools from off-grid and 13 schools from on-grid areas for gauging the impact in the respective categories.

As per the analysis of the off-grid schools' data, the enrollment averagely increased by 3.48% during the pre-installation period, whereas an increase of 3.61% was recorded in the post-installation period. Thus, a meager impact of 0.14% was observed.

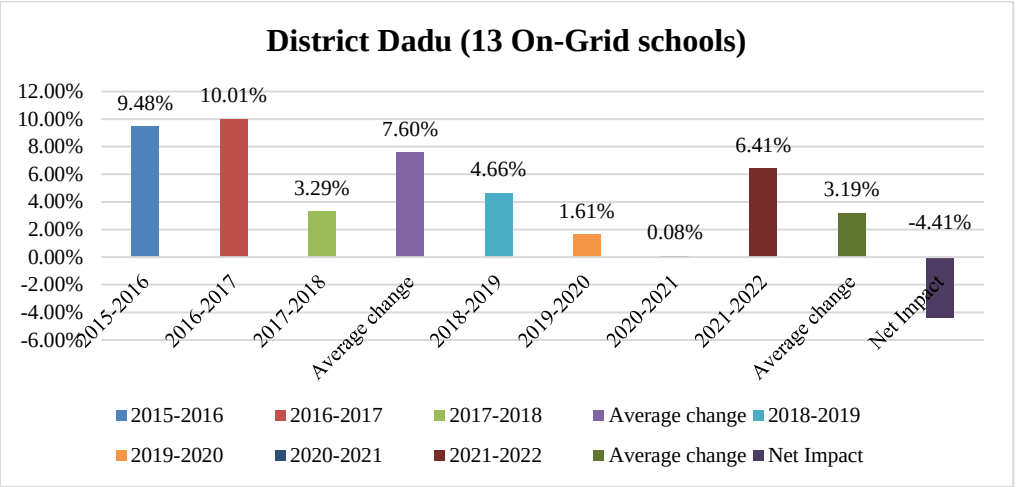
District Dadu (14 Off-Grid schools)									
Pre- installation trend				Post- installation trend					Net Impact
2015-16	2016-17	2017-18	Average change	2018-19	2019-20	2020-21	2021-22	Average change	
3.76%	3.62%	3.06%	3.48%	3.39%	3.69%	3.95%	3.42%	3.61%	0.14%

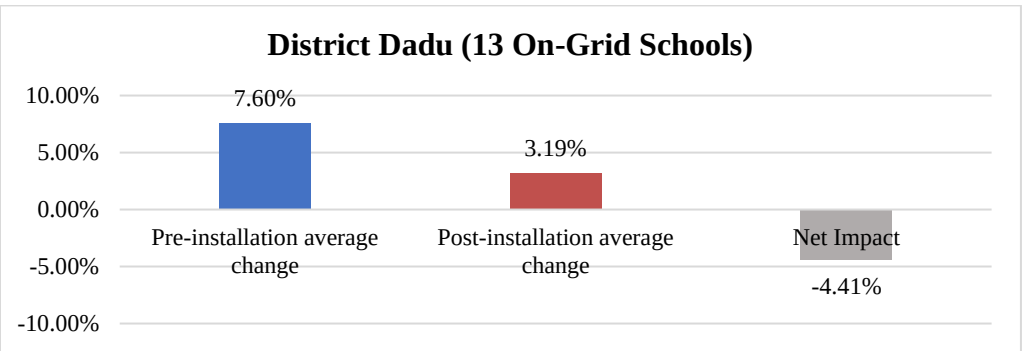




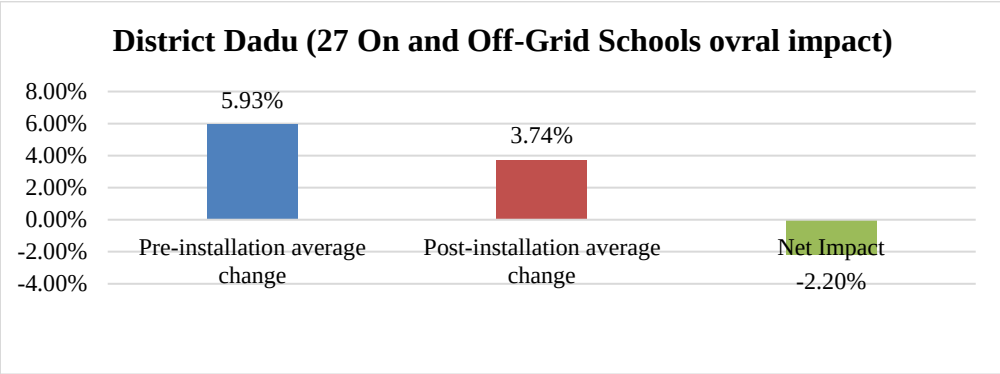
Similarly, the data of on-grid schools was analysed and it was found that the average enrollment rate during the pre-installation period was increased by 7.60%. Whereas, in the post-installation period, the same increased at an average rate of 3.19%. The results registered an overall decrease in the enrollment of 4.41%. This clearly shows that the project had no impact on the enrollment in the targeted schools which were located in the on-grid areas where other factors could have caused the decrease in enrollment rate such as migration, shifting to private schools etc. The overall net impact of -2.20% was registered in the district for on-grid and off-grid schools combined.

District Dadu (13 On-Grid schools)									
Pre- installation trend				**Post- installation trend**					**Net Impact**
2015-16	**2016-17**	**2017-18**	**Average change**	**2018-19**	**2019-20**	**2020-21**	**2021-22**	**Average change**	
9.48%	10.01%	3.29%	7.60%	4.66%	1.61%	0.08%	6.41%	3.19%	-4.41%



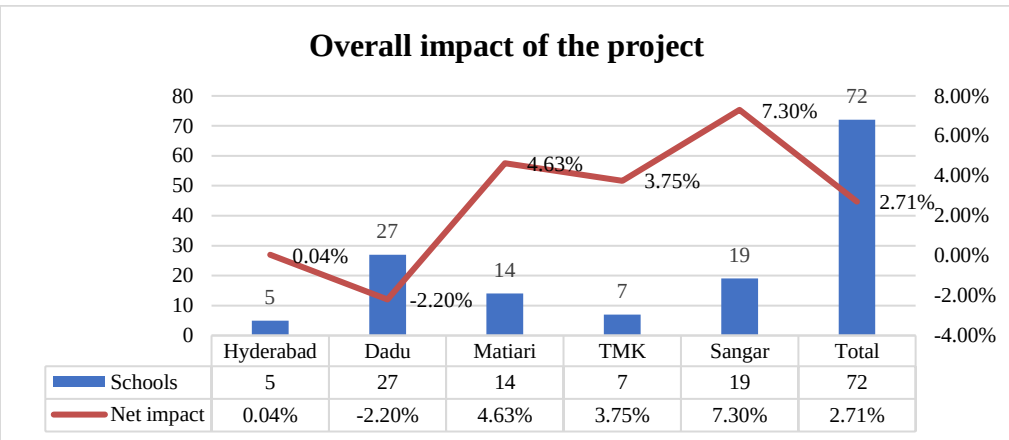


District Dadu (27 On and Off-Grid schools' overall impact)									
Pre- installation trend				Post- installation trend					Net Impact
2015-16	2016-17	2017-18	Average change	2018-19	2019-20	2020-21	2021-22	Average change	
7.54%	7.26%	3.00%	5.93%	4.26%	3.34%	2.19%	5.16%	3.74%	-2.20%



The overall impact of the project in the selected districts:

Based on the 'Time-series' module, the overall statistical data of 72 schools in 05 districts revealed that there was a net impact of 2.71% increase in the enrollment rate as a result of the project's intervention. Though the impact represents a nominal threshold, it is expected that the enrollment would witness gradual and productive progress, provided that the electrification is strictly confined to the off-grid schools only as per the PC-I of the project.



Sr. No.	Name of districts	No. of Schools in sample	Net impact
1	Hyderabad	5	0.04%
2	Dadu	27	-2.20%
3	Matiari	14	4.63%

4	TMK	7	3.75%
5	Sangar	19	7.30%
Total		**72**	2.71%

The significant factors that have hampered the achievement of a desirable impact on the enrollment rate are discussed as follows:

Absence of security: In 16 schools of Dadu and Matiari districts the equipment was found stolen due to the absence of security measures. The management informed that owing to the redundancy of the backup batteries, electricity during the nighttime was not being supplied which resulted in the theft of the equipment. The security of the equipment was the responsibility of the school management, therefore consequent to their negligence the instances of theft occurred. The accumulative loss arising from the thefts of the equipment was Rs.8.164 million.

Improper sustainability plan: The PC-I of the project revealed that the warranty for repair and replacement of equipment was the responsibility of the supplier/contractor for three years after installation. However, after the expiry of the subject period, the operation and maintenance costs were supposed to be borne by the School Education & Literacy Department, Government of Sindh. The primary data obtained from the school management in the form of an open-ended questionnaire of 58 schools in Hyderabad, Matiari and Dadu districts revealed that the solar panel systems were non-functional in 38 schools due to damaged equipment and theft factor. In 20 schools, the systems were found to be partially functional due to total negligence of operation and maintenance.

Execution of the project contrary to the PC-I: The secondary data extracted from the executing agency was compared with the feasibility study for evaluating the success parameters of the project. The results of the data comparison revealed that solar panel systems were installed in 5 districts which were not part of the final PC-I.

The 754 schools (i.e., 25% of overall execution in 3,034 schools) were electrified in Dadu, Sanghar, Umerkot and Tharparkar districts as per the PC-I. Whereas, 2,280 schools (i.e., 75% of overall execution) in Hyderabad, Matiari, Tando Allahyar, Tando Muhammad Khan and Mirpurkhas districts were electrified contrary to the provisions stipulated in the PC-I. This reflects that a major deviation was made against the original approved plan, thus contributing to the ineffective and inefficient project management.

Non-achievement of objectives in some schools: Out of the 72 surveyed schools, a decline in enrollment rate was also observed in some schools. One of the integral reasons as per the school management behind this decrease was the redundancy of the solar panel systems that had not been functioning due to the absence of proper maintenance. It was apprised that subsequent to the installation of this facility, the enrollment started to show positive figures, but due to the gradual wear and tear of the equipment, a slight negative impact was noticed.

Electrification of on-grid schools: The solar panel systems were installed in 45 schools located in on-grid areas of Hyderabad, Matiari and Dadu districts contrary to the PC-I. Similarly, some of the solar systems were installed in on-grid municipal/urban areas. This resulted in an irregular expenditure of Rs. 26.045 million, thus reflecting serious drawbacks in the planning and operational supervision.

Summary of discussion with the Management:

The management in compliance with the Impact Audit findings, did not furnish any written reply however, formal discussions made with the school management and data of survey proformas concluded that the installation of solar panel systems was one of the significant factors that increased enrollment in most of the schools in off-grid areas. As per the contentions of numerous stakeholders, there was a strong demand for the enhancement of the technical capacity of the equipment installed. A serious apprehension was shown regarding the durability prospects of the solar panel systems.

In the purview of operation & maintenance, it was informed that the requisite funds from the School Education & Literacy Department, Government of Sindh were not being released to ensure the proper functioning of the solar panel systems. Owing to this factor, the project's utility was diminishing gradually.

As per the discussion with the management of RDD, it was revealed that the execution of the project in the locations contrary to the final PC-I was done subsequent to the approval of the competent forum. However, no concrete evidence in this respect was furnished.

8.5 Conclusion

In conclusion, the project emerges as a visionary initiative to mitigate the critical need for providing sustainable electricity to rural public schools. The education sector of Sindh has been facing uphill challenges in the shape of a low literacy rate and school infrastructure constraints. Through this project, an attempt

was made to dilute the problems hampering the educational progress in the rural areas of Sindh in the aftermath of the diminishing enrollment rate by making educational premises more conducive to attracting the maximum number of students. The project, strategically deploying stand-alone solar photovoltaic (PV) electricity systems, aimed to elevate the educational landscape in underserved areas, contributing to broader development prospects. The Impact Audit, scrutinized the outcome and efficacy of the electrification initiative, shedding light on both the success and challenging factors. Overall, it was observed that the project did not achieve the flamboyant parameters in terms of the earmarked objectives, as a meagre increase of 2.71% was noted in contrast to the post and pre-inception periods. The audit findings revealed significant deviations from the original project scope. Discrepancies in planning, irregular expenditure and complete absence of maintenance mechanism highlight the areas requiring robust response and corrective measures.

Moving forward, the Rural Development Department must address these findings promptly while ensuring alignment with the project's original objectives. The electrification project with its transformative potential, can only realize its full impact through the observance of diligent commitments, best financial practices and proactive sustainability actions.

Recommendations:

The following recommendations of this Impact Audit Report will help the management in the successful achievement of the objectives of the project:

i) Concrete efforts should be made for the transmission of regular electricity to the off-grid areas to facilitate literacy prospects in the province of Sindh.
ii) Schools falling within the off-grid areas as determined in the PC-I should only be electrified.
iii) The procurements should be made without compromising the quality of the equipment to ensure their reliability and durability.
iv) A robust mechanism of operation and maintenance should be ensured for photovoltaic electric systems.

Concrete measures should be adopted to ensure the safety and security of the equipment.

2.10 IMPACT AUDIT OF "PILOT URBAN REHABILITATION & INFRASTRUCTURE IMPROVEMENT PROJECT" (PACKAGE-II)

2.11 9.1 Introduction

Impact audit is aimed at determining impact of initiatives or programs on a target population. This type of audit goes beyond a mere output evaluation to represent an advanced form of Performance Audit. It rather focuses on the project's ultimate outcomes and broader impacts. It answers cause-and-effect questions about the outcomes attributable to an initiative by isolating other contributing factors or variables. This audit type is the beginning of a new era in public sector auditing, which emphasizes the analysis of real-time benefits of government initiatives taken for citizens.

9.1.1 Background

Lahore, with its rich historical tapestry, stands as a testament to the enduring cultural and architectural legacy of the subcontinent. At the heart of this vibrant city lies the Lahore Walled City - a living paragon of history and cultural blend. Established centuries ago, the Walled City has served as the epicenter for power politics, commerce, trade, cultural activities, and multifarious social cohabitation for various empires, including the Mughals, Sikhs, and the British. Its narrow, labyrinthine streets, adorned with exquisite Mughal and colonial-era structures, encapsulate the essence of Lahore's historical importance. Today, amidst the bustling modernity of Lahore, the Walled City stands a symbol of continuity, bridging the gap between the past and the present. It offers a glimpse into the city's enduring spirit and the convergence of diverse cultural influences that have shaped Lahore into the dynamic metropolis it is today.

Over time, the emergence of new residential colonies with better civic amenities promoted the residents of the old city to move an inhabit these colonies, leaving their ancestral homes due the declining civic amenities in the old city.

"In response to this downturn, the Walled City of Lahore Authority was established in 2012. Assuming a crucial role, the Authority undertook the planning and designing of a dedicated project aimed at rehabilitating the historic Walled City, with a primary focus on restoring its cultural and architectural heritage". This initiative, known as the *"Pilot Urban Rehabilitation & Infrastructure Improvement Project"*, was subsequently subdivided into four distinct packages which are enumerated as follows:

I. Pilot Urban Rehabilitation & Infrastructure Improvement Project from Dehli Gate to Purani Kotwali.
II. Pilot Urban Rehabilitation & Infrastructure Improvement Project from Chowk Purani Kotwali to Akbari Gate, Lahore Fort through Chowk Chuna Mandi and Moti Bazar.
III. Resource development of water supply system for area of package-I (Water Storage Tank etc).
IV. Pilot Urban Rehabilitation & Infrastructure Improvement Project from Chowk Purani Kotwali to Sunheri Masjid via Dabbi.

The focus of this Impact Audit is on Package-II of the project. Package II of the project was implemented in collaboration with various line agencies, including LESCO, WASA, and PTCL. The project's PC-I, with a cost of Rs 890.60 million, received approval from the PDWP on 24th October 2014. The original TS estimate, amounting to Rs 771.07 million, was sanctioned on 14th November 2014. The project was started on 4th June 2015 and completed on 31st January 2018.

The contract for the work was awarded to M/s IKAN Engineering Services (Pvt.) Ltd. on 4th June 2015, following a successful bid of Rs 770.576 million. Later, on November 30, 2018, the project's cost underwent a reduction to Rs 695.02 million. This adjustment was made in light of a revised TS

estimate that took into account the scaled-down scope of work.[53] M/s ACE (Pvt.) served as the design and supervisory consultant for the project Package II.

9.1.2 Role of the Project

Package-II of the project, spans from Chowk Purani Kotwali to Akbari Gate Lahore Fort, passing through Chowk Chuna Mandi and Moti Bazar. This specific initiative was financially supported by Government of the Punjab. The role of Package-II encompasses the comprehensive restoration and renovation of the architectural landmarks, including urban infrastructure and services.

2.12 9.2 Overview

The development and expansion of Lahore led to the diminishing significance of the Walled City. Consequently, this area endured years of neglect, leading to the deterioration of civic amenities and living standards. In response to the dilapidation of the Walled City, the Walled City of Lahore Authority envisioned a comprehensive project aimed at revitalizing the old city through extensive rehabilitation efforts.

The objectives of the project extend beyond mere physical restoration, aspiring to create a holistic experience for both residents and visitors alike. The envisioned heritage trail is designed to offer a distinctive encounter with urban, religious, and vernacular architecture, providing a comprehensive exploration of the cultural and historical richness embedded in the fabric of the Walled City.

The restoration plan not only emphasizes the conservation and preservation of old heritage but also aims to facilitate various stakeholders, including tourists, residents, as well as traders within the market. The overarching goal is to revive and enhance the cultural and economic vibrancy of the specified area.

9.2.1 Objectives of the Project

Project objectives are enumerated below:

[53] Scope of work was reduced due to deletion of SNGPL component and reduction in works like Facade Rehabilitation & Street Surfacing and Infrastructure Developments owing to narrow width of streets rendering works impractical and several litigation issues.

i. To improve living and health standards of the inhabitants by providing infrastructure facilities for solid waste management, water and sanitation system.
ii. To upgrade living standard of people by providing modern network facilities of electricity, sui-gas and telecommunication services.
iii. To restore cultural heritage for attracting tourism.
iv. To create employment facilities for skilled and unskilled workforce.
v. To provide better environmental facilities by reducing air and water pollution.

2.13 9.3 Scope and Methodology

9.3.1 Scope

The scope of this impact audit was to assess the causal relationship between the project outputs and their broader impact on public, culture, and environment. Conditions with the project interventions and conditions without the project interventions were compared for impact analysis. A model illustrating the sequence of output, outcomes, and impact is presented as follows:

Output	Outcomes	Impact
• Façade improvement • Street surfacing • Underground electrification • Solid waste management system • Water & Sanitation improvements	• Better optics of the area • Improved civic amenities • Healthy environment	• Improved aesthetics and better living standards • Increased income • Increased tourism • Increased government revenues

The target population encompasses the beneficiaries of the project, inclusive of both residents and commercial entities, as well as tourists.

9.3.2 Methodology

The assessment of the impact of project interventions entails analyzing specific impact indicators with and without the project interventions for both the treatment group and the control group. The treatment group comprises the beneficiaries of the project, while the control group consists of individuals who are not directly connected to the project benefits. This comparative analysis helps in assessing the effectiveness and influence of the interventions on the targeted population.

Primary data formed the foundation for the majority of the impact analysis. In this regard, a survey, consisting of questions pertaining to specific impact indicators, was conducted on a sample of beneficiaries. The unit of analysis comprised project beneficiaries, including residents, traders, and tourists. To gain valuable insights, beneficiaries were randomly selected for surveys and interviews. The analysis involved comparing the pre-project and post-project conditions of the beneficiaries.

Additionally, for a specific portion of the analysis, the 'Difference in Difference Analysis' was employed to assess the actual impact of the project on the treatment group. Renowned for its comprehensiveness, the 'Difference in Difference' approach involves calculating the difference between the treatment and control groups during both pre-project and post-project periods. This method aims to isolate the true impact of the project by considering changes in both groups over time and removing external variables. The impact indicators considered in this impact analysis are outlined in the following table:

Direct Indicators	Proxy Indicators
• Improved Living Conditions	1. Enhanced Aesthetics 2. Improved Civic Amenities 3. Better Environmental Conditions 4. Residents' Perception of Improved Living Standards 5. Non-intrusive Economic Growth: Balancing Prosperity and Resident's Privacy
• Fostering Tourism Growth	1. A Growing Trend in Tourist Numbers 2. Positive Tourist Impressions Regarding Area Improvements

	3. Tourists Inspiring Others to Explore the Area
• Enhanced Economic Activity	1. Rise in Commercial Activities 2. Rise in Government Revenues
• Empowering Lives of Beneficiaries: Enhanced Income Opportunities	1. Improved Eating and Drinking Patterns 2. Increase in the Number of School Enrolled Children 3. Improved Transportation Modes 4. Improved Patterns of Household Appliance Usage

A summary of the sampling regime for surveys conducted by Audit is given in the following:

- **Total number of units in the project area:**
  Residential: 57
  Commercial: 5974

- **Audit Surveys:**

  Residential Units: A survey sample of 30 residential units was chosen, representing 52.63% of the total residential units in the project area.

  Commercial Units: A survey sample of 1000 commercial units was initially selected, but only twenty survey forms were completed due to non-responsiveness from the majority of the units. The completed surveys constitute 0.33% of the total commercial units in the project area.

  Tourist Survey: A sample of 50 tourists (both local and foreign) was surveyed to gather their impressions on various aspects of the project.

Physical inspections of the area were conducted to observe the tangible improvements resulting from the project. In this regard, thirty streets were visited. The project area is delineated in the map below:

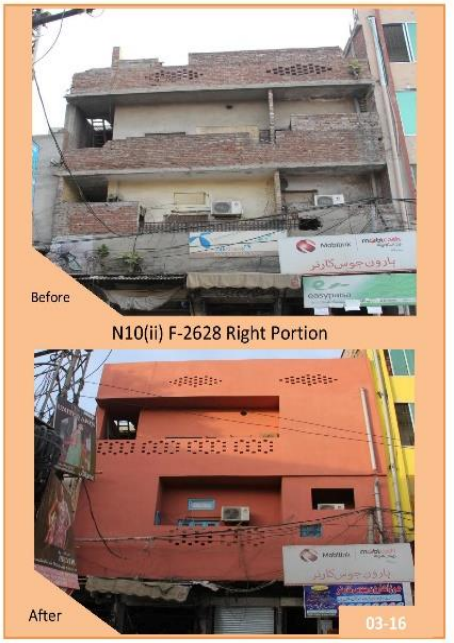
2.14 9.4 Audit Findings

2.15 9.4.1 Improved Living Conditions

The project aimed to improve residents' living conditions and boost their economic potential, primarily by rehabilitating cultural heritage and improving civic amenities. Audit examined various indicators related to living conditions and observed a positive impact of the project in this regard.

9.4.1.1 Enhanced Aesthetics, Civic Amenities and Environment

During site visits, the audit observed a notable improvement in the condition of facades. Approximately, thirty (30) properties were assessed to verify these improvements. Additionally, the Audit inspected thirty (30) streets along the main Royal Trail and noted satisfactory work on street surfacing.



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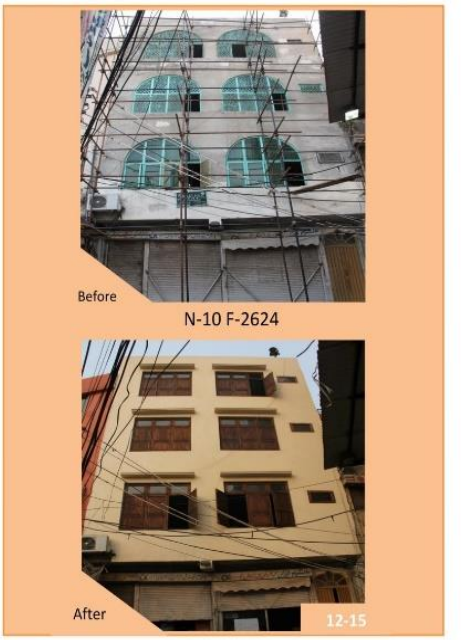

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Audit also observed notable improvements in safety and aesthetics resulting from the replacement of hanging electricity wires and pole-mounted High-tension and Low-tension cables with an underground electrical network. Furthermore, to tackle water pollution, the existing water supply pipelines were upgraded with new HDPE pipes to ensure clean drinking water. The open sewer drain system was also replaced with a concealed sewerage system, and a separate storm water drain system was provided with perforated manhole covers to manage rainwater effectively.

The enhancements to façades, rehabilitation of streets, and improvements in delivering essential utilities had not only contributed to enhanced aesthetics but had also fostered safe and healthy living conditions. However, there was a notable omission in the PC-1 of the project as it failed to include provisions for improving the already existing solid waste management system in the project area, despite this being a part of the original project objectives. Consequently, solid waste management remained a significant issue in the project area, negatively impacting hygiene and aesthetics.

In its response, the authority clarified that solid waste management component was intended to be executed after completing other aspects of the project. Nevertheless, approval for the PC-1 for ‘Solid Waste Management of Walled City Lahore’ could not be obtained from the competent forum despite being submitted for approval under the Annual Development Programmes (ADPs) for the years 2018-19, 2022-23, and 2023-24. In the absence of adequate interventions under the project, the responsibility for managing solid waste in the project area rested with the Lahore Waste Management Company. However, Audit observed that the services provided by the company fell short of the expected standards.

The omission of this crucial component resulted in the presence of scattered solid waste, garbage, and debris along the main Royal Trail and commercial areas. The following pictures (figure 9.4.4.1) depict the solid waste problem in the area. This issue not only detract from the overall success of the project but also compromised the cleanliness and visual appeal of the affected areas.

Figure 9.4.4.1

Similarly, the issue of air pollution had gone unaddressed by the Authority, despite being identified as one of the objectives of the project. The sole intervention related to controlling air pollution involved converting the open sewerage system to a concealed sewerage system. While this measure aided in mitigating the foul smell of sewers, it fell short of addressing the broader dimensions of air pollution.

Audit is of the view that a pollution is a serious problem for the entire city of Lahore. The Authority needs to identify the sources of air pollution in the project area and collaborate with the Environment Protection Agency to plan and implement corrective and preventive measures, ensuring a long-term solution to this problem.

Going forward, it is imperative for future initiatives to conscientiously address and rectify such oversights to ensure the comprehensive and successful implementation of urban development projects.

9.4.1.2 Residents' Perception of Improved Living Standards

By conducting a survey, Audit examined beneficiaries' perceptions of impact of project interventions on their quality of life. The findings revealed that nearly 94% of the treatment group believed their living standards had improved after the project, while only 6% reported no discernible impact on their living standards. The beneficiaries' responses indicate that the project interventions successfully improved the living standards of the area's residents.

9.4.1.3 Non-intrusive Economic Growth: Balancing Prosperity and Resident's Privacy

Audit observed a significant increase in economic activity in the region, primarily attributed to the rise in tourism. This surge in tourism has the potential to intrude on the privacy of the residents in the area. Consequently, a sample of residents was surveyed on this matter. The findings revealed that nearly 14% of the treatment group respondents believed that privacy issues had arisen after the project, while 86% reported no perceived increase in privacy concerns.

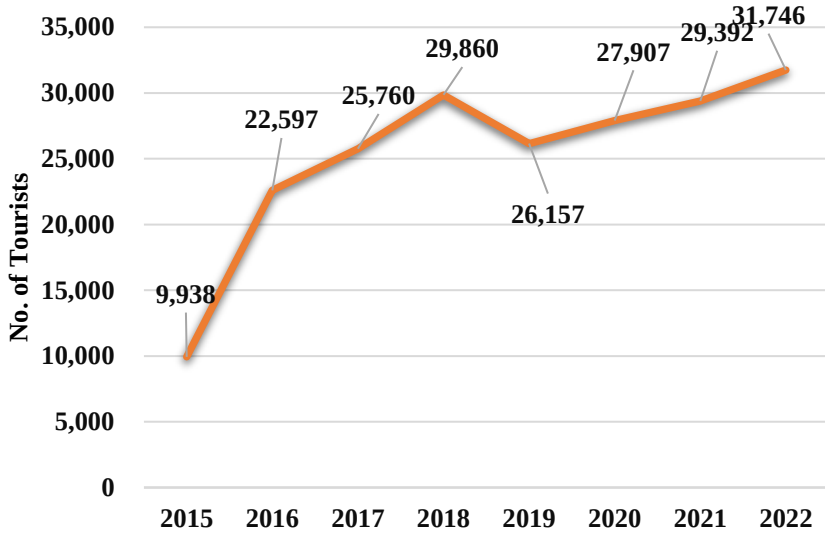
2.16 9.4.2 Fostering Tourism Growth

One of the project's objectives was to boost tourism by restoring the cultural heritage of the area. In pursuit of this goal, the project focused on enhancing the aesthetics and overall visual appeal of the region. Audit observed a positive impact of these interventions, contributing to an increase in tourism.

9.4.2.1 A Growing Trend in Tourist Numbers

The data on tourist numbers, provided by the "Tourism Information Center", pertaining to both local and foreign tourist footfall inside the Walled City, was analyzed. The data revealed a consistent upward trend in tourist numbers over the years, as depicted in Figure 9.4.2.1.

Figure 9.4.2.1
Tourists Foot Fall (Overall)

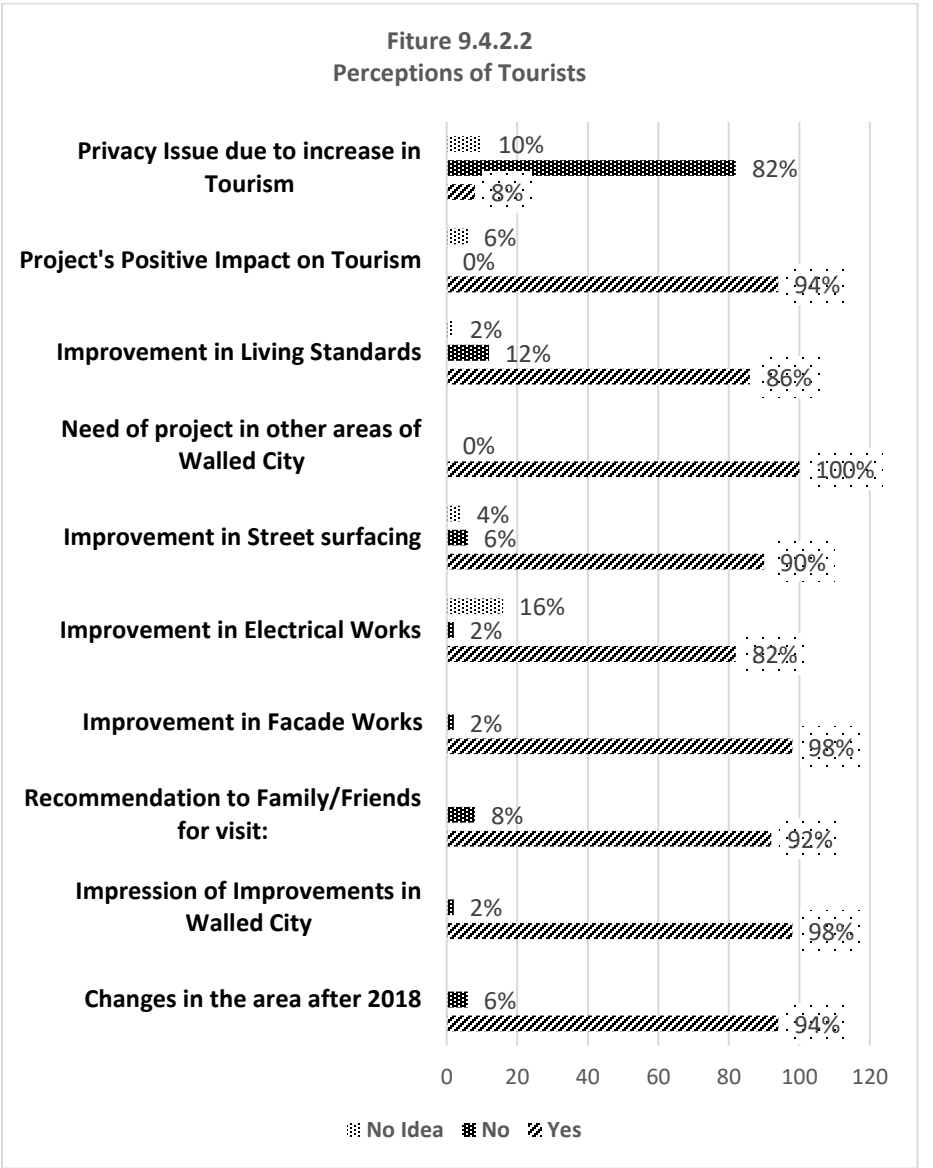


Source: Data provided by the Authority

9.4.2.2 Positive Tourist Impressions Regarding Improvements

Tourists in Pakistan were surveyed for their perceptions of improvements to the area's visual appeal and interaction with residents and shopkeepers. The sample group included foreigners as well as tourists from diverse parts of Pakistan.

Tourists were asked about their impressions of the Walled City's improvement and whether they would recommend it to family and friends. Furthermore, they were asked whether they would recommend similar projects in other areas of the Walled City. As part of the survey, audit also asked for their opinions on different aspects like the success of the project, improvement of living standards, increase in tourism, and the privacy issues associated with the growth of tourism etc. The questions were based on pre-project and post-project changes. The collected data was compiled, and graphical representations of various impact factors are depicted in Fig 9.4.2.2.



The presented figure indicates that tourists in the area had a favorable impression of the project intervention. This positive perception serves as a noteworthy indicator of the project's success.

9.4.2.3 Tourists Inspiring Others to Visit the Area

The tourist sample was surveyed about how they learned about the Walled City Lahore. According to the findings, 64% of the respondents discovered this place through friends, 20% through media platforms, and 16% from other sources. This indicates that the enhanced appeal of the Walled City left a positive impression on tourists, leading them to recommend the area to others and thereby contributing to further tourism growth.

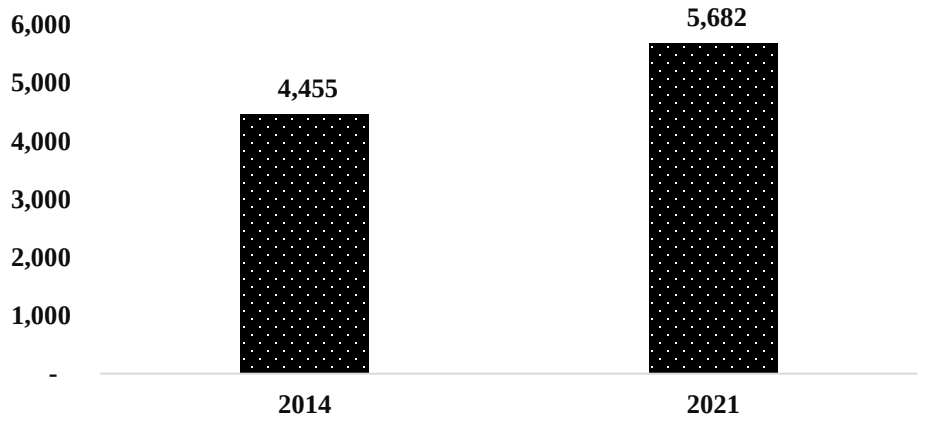
2.17 9.4.3 Enhanced Economic Activity

The economic activities of a region are profoundly shaped by tourism, proper infrastructure, and a healthy environment. In particular, an increase in tourist numbers is poised to augment business opportunities and prosperity in the area. In this context, audit examined the project's impact on the economy of the area.

9.4.3.1 Rise in Commercial Activities

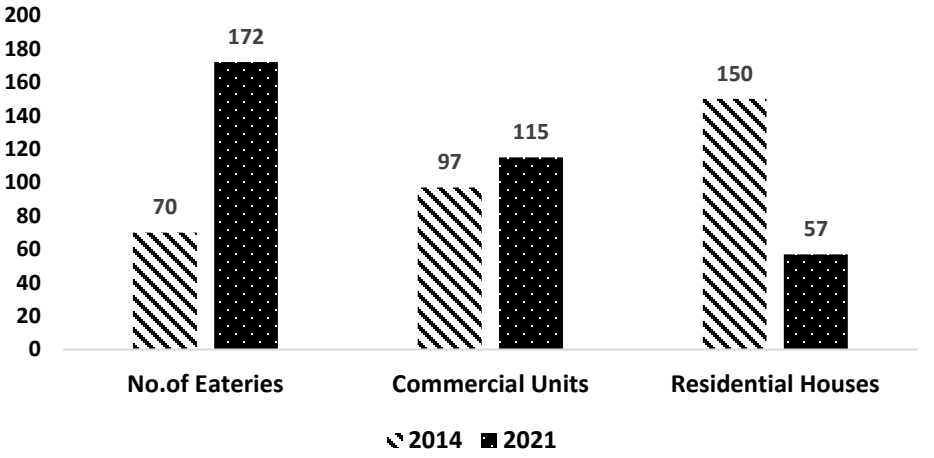
The numbers of residential properties, shops, eateries, and other commercial units were compared with reference to the years 2014 and 2021. This comparison revealed that after the project's execution, commercial activities had increased in the project area. It was also noted that property values had risen, leading residents of the area to sell their properties and relocate to other residential places in Lahore. Consequently, the number of shops, hotels, and industrial units increased, while the number of residential properties decreased. This trend is depicted in figures 9.4.3.1.a and 9.4.3.1.b.

Figure 9.4.3.1.a
No. of Shops



Source: Data provided by the Authority

Figure 9.4.3.1b



Source: Data provided by the Authority

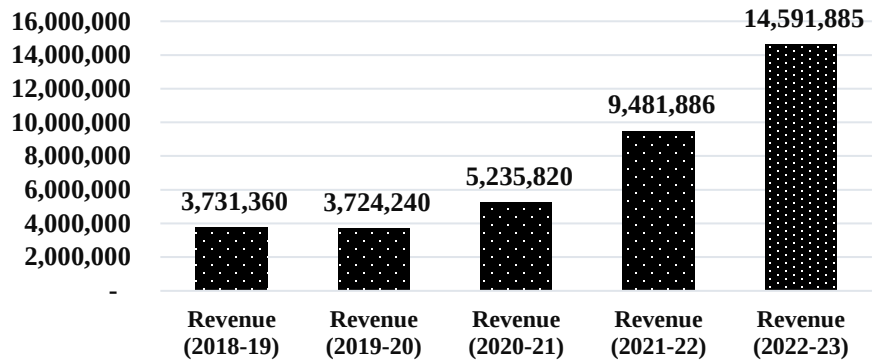
9.4.3.2 Rise in Government Revenues

Revenue from various sources, such as tourism fees, fare from Rangeela Rickshaw, and map fees, collected by the Authority within the project area, is presented in Figure 9.4.3.2. The Authority's revenue exhibits a consistent year-on-

year increase. This upward trend in government revenue signifies an increase in the level of economic activity in the region. Consequently, it underscores the success of the project in fostering a positive impact on the economic dynamics of the area.

(Amount in Rs)

Figure 9.4.3.2
Revenue Analysis



Source: Data provided by the Authority

2.18 9.4.4 Empowering Lives of Beneficiaries: Enhanced Income Opportunities

The project aimed to enhance the living and health standards of the residents while boosting their earning capacity through increased economic activity. Audit noted the project's success in attracting tourists through the restoration of cultural heritage. Additionally, civic amenities were upgraded and there had been an overall economic boost in the area. Against this backdrop, Audit assessed the impact of these project benefits on the income and lifestyle of the residents.

9.4.4.1 Improved Eating and Drinking Patterns

As regards health and nutritional values, meat intake per week was chosen as one of the indicators. It was observed that the daily usage of meat had improved in both the treatment group and the control group. On average, the treatment group's meat consumption increased from 1.10 to 1.46 days/week before and after the project, while the control group's consumption rose from 1.00 to 1.44 days/week. However,

the "Difference in Difference" approach reveals a negative impact of -0.08 days/week, suggesting that meat consumption increased more in the control group. This indicates that factors other than the project interventions were responsible for the observed rise in meat consumption.

Weekly Meat Consumption	Before Days/Week	After Days/Week
Treatment Group	1.10	1.46
Control Group	1.00	1.44
Difference (Treatment Group – Control Group)	**0.10**	**0.02**
Difference in Difference (Difference After- Difference Before)	**-0.08**	

The analysis of drinking water quality focused on the shift in preferences before and after the project, specifically regarding the use of mineral water, filtered water, and boiled water. The study reflected that the residents did not prefer use of mineral water at all. Results of this analysis are depicted in the following table.

Filtered Drinking Water	Before (%)	After (%)
Treatment Group	80	84
Control Group	76	82
Difference (Treatment Group – Control Group)	**4**	**2**
Difference in Difference (Difference After- Difference Before)	**- 2%**	
Boiled Drinking Water	**Before (%)**	**After (%)**
Treatment Group	20	16
Control Group	24	18
Difference (Treatment Group – Control Group)	**- 4**	**- 2**
Difference in Difference (Difference After- Difference Before)	**+2%**	

The analysis indicates an increase in the consumption of filtered drinking water; nonetheless, attributing this increase to the project impact is questionable because "Difference in Difference" analysis unveils a negative 2%, signifying a greater increase in the control group. As for the use of boiled water, a declining trend was

observed in both the treatment and control groups. However, this downward trend does not seem to correlate with the project interventions. Changing preferences in drinking water could be a result of the Punjab Saaf Pani Company, Lahore, installing water filtration plants in the area.

In summary, the project did not appear to significantly influence the eating and drinking preferences of the residents. Nevertheless, this lack of influence cannot be interpreted as indicators of no change in the income of the beneficiaries. Other factors, such as increased economic activity and tourism, strongly suggest improvements in income opportunities of the beneficiaries.

9.4.4.2 Increase in the Number of School Enrolled Children

An increase in the number of school-enrolled children serves as an indicator of rising income. Audit noted an increase in the number of school-going children aged five and above in the treatment group, rising from 0.94 to 1.84 children per household. In comparison, the control group saw an increase from 0.90 to 1.78 children per household. According to the "Difference in Difference" approach, a positive impact of 0.02 children per household was identified, signifying a positive influence of the project on the incomes of the treatment group.

School- Enrolled Children above 5 years	**Before** (Children/Household)	**After** (Children/Household)
Treatment Group	0.94	1.84
Control Group	0.90	1.78
Difference (Treatment Group – Control Group)	**0.04**	**0.06**
Difference in Difference (Difference After- Difference Before)	**+ 0.02**	

9.4.4.3 Improved Transportation Modes

The improvement in the mode of transportation serves as a strong indicator of the rise in incomes. In this context, an analysis was conducted to examine the shift in the usage pattern of motorcycles and cars. Related data is depicted below:

Motorcycle	Before (%)	After (%)
Treatment Group	88	92
Control Group	80	94
Difference (Treatment Group – Control Group)	**8**	**- 2**
Difference in Difference (Difference After- Difference Before)	**- 10%**	
Car	**Before (%)**	**After (%)**
Treatment Group	2	16
Control Group	6	10
Difference (Treatment Group – Control Group)	**- 4**	**6**
Difference in Difference (Difference After- Difference Before)	**+ 10%**	

The presented data indicates a rise in motorcycle and car usage. Regarding motorcycles, the "Difference in Difference" analysis reveals a negative 10%, suggesting that the motorcycle usage increased more in the control group. Hence, this change cannot be directly attributed to project interventions. Additionally, data reflects a notable increase in car usage for both control group and treatment group. The "Difference in Difference" analysis for cars shows a positive 10%, indicating that the rise in car usage was more in the treatment group. This suggests that project interventions had successfully contributed to the increased income of residents in the project area.

9.4.4.4 Improved Patterns of Household Appliance Usage

The increasing household incomes are also manifested in the usage patterns of household appliances. Consequently, audit surveyed both the treatment group and the control group to examine the changes in the usage patterns of air-conditioners, refrigerators, water geysers, washing machines, and computers. Results of the survey are presented in the following table:

Air-conditions	Before (%)	After (%)

Treatment Group	26	72
Control Group	24	68
Difference (Treatment Group – Control Group)	**2**	**4**
Difference in Difference (Difference After- Difference Before)	**+ 2%**	
Refrigerator	**Before (%)**	**After (%)**
Treatment Group	98	100
Control Group	90	94
Difference (Treatment Group – Control Group)	**8**	**6**
Difference in Difference (Difference After- Difference Before)	**-2%**	
Water Geyser	**Before (%)**	**After (%)**
Treatment Group	12	30
Control Group	10	24
Difference (Treatment Group – Control Group)	**2**	**6**
Difference in Difference (Difference After- Difference Before)	**+4%**	
Washing Machine	**Before (%)**	**After (%)**
Treatment Group	98	100
Control Group	94	98
Difference (Treatment Group – Control Group)	**4**	**2**
Difference in Difference (Difference After- Difference Before)	**- 2%**	
Computer/Laptop	**Before (%)**	**After (%)**
Treatment Group	34	66
Control Group	36	64
Difference (Treatment Group – Control Group)	**-2**	**2**
Difference in Difference (Difference After- Difference Before)	**+4%**	

The survey indicates a positive trend in the usage of all selected items. The "Difference in Difference" analysis further suggests that the usage of ACs, water geysers, and computers, increased more in the treatment group as compared with the control group. This implies that the project interventions contributed to the rise in household incomes, enabling residents to enhance their lifestyles.

However, for refrigerators and washing machines, the "Difference in Difference" analysis shows that the control group experienced a 2% increase compared to the treatment group. This small percentage difference does not diminish the success of the project. The overall improvement in the usage of these items underscores the positive impact of the interventions on the surveyed households.

2.19 9.5 Conclusion

The project had the overarching goal of enhancing the living conditions of the residents in the project area through the improvement of civic amenities and economic opportunities. It sought to bolster the local economy by attracting tourism through the restoration of cultural assets and by creating employment opportunities for both skilled and unskilled workforce. Additionally, a key objective was to contribute to environmental improvement by reducing air and water pollution.

Audit findings indicate that despite an overall success, the project fell short of fully achieving its stated objectives. Specifically, environmental goals were not realized as no interventions were implemented to tackle air pollution and improve solid waste management.

Nevertheless, the achieved objectives of the project had successfully made a substantial impact on enhancing living conditions and stimulating the local economy. The revitalization of facades, rehabilitation of street surfaces, and improvement of civic amenities had not only elevated the aesthetics but also transformed the overall milieu of the area, resulting in a noteworthy increase in tourism. These combined economic and aesthetic benefits had profoundly influenced the living conditions of

the residents and contributed to the long-term sustainability of the cultural heritage preserved in the target area.

2.20

2.21 9.6 Recommendations

1. The issues of air pollution and solid waste management merit serious attention. It is imperative for the authority to plan and implement effective measures to tackle these issues. By doing so, the authority can ensure that both the residents of the area and tourists fully reap the benefits of the project.

2. The authority needs to proactively secure adequate annual funds to maintain the infrastructure and civic amenities at the desired quality level in order to ensure the continued benefits of the project in the future.

باب-24 اثراتی پڑتال (Impact Audit)

منصوبہ: Backyard Poultry Development for Women in AJ&K

1- تعارف(Introduction)

آزاد جمونوکشمیر 13297 مربع کلومیٹر (5135 مربع میل) پر پھیلا ہےجوکہ 03 ڈویژنز،10 اضلاع 32 تحصیلوں278 یونین کونسلز پر مشتمل ہے۔آزاد جمونوکشمیر کی کل آبادی 4,32,000 نفوس سے زیادہ ہے جس کا51 فیصد خواتین پر مشتمل ہے ۔ کل آبادی کا80 فیصد سےزائد حصہ دیہاتوں میں آباد ہے۔

آزاد جموں و کشمیر عبوری آئین 1947 کے تحت قائم ہے اور امور مملکت چلانے کے لئے قواعد کار 1985 نافذ العمل ہیں جن کے مطابق محکمہ زراعت و امور حیوانات کو دو حصوں زراعت اور امور حیوانات میں تقسیم کیا گیا ۔

محکمہ امور حیوانات کل1335 ملازمین پر مشتمل ہے جس میں 112 جریدہ آفیسران ہیں۔ محکمہ کا کل میزانیہ برائے سال 24-2023 مبلغ1289ملین روپے ہے جس میں جاریہ میزانیہ965 ملین روپے اور ترقیاتی میزانیہ 324 ملین روپے ہے۔

محکمہ امور حیوانات کے پاس لائیو سٹاک و پولٹری ڈویلپمنٹ کے لیے بذیل یونٹس قائم ہیں۔

شماریہ نمبر	ادارہ(یونٹس)	تعداد
1	وٹرنری ہسپتال	59
2	ویٹنری ڈسپنسریاں	66
3	ابتدائی طبعی امدادی مراکز	129
4	تشخیصی مراکز	06
5	منصوعی نسل کشی کے مراکز	82
6	توسیع مراکز	167
7	لائیو سٹاک کے تحقیقی مراکز	01
8	پولٹری افزائشی مراکز	05

پس منظر (Background)

ہزاروں سال سے گھروں میں مرغیاں پالنے کا شوق چلا آرہا ہے ۔ ابتدائی طور پر مرغیاں خوبصورتی کےلیے پالی جاتی تھیں دوسرا ان کی پیداوار کو بطور خوراک استعمال کیا جاتا تھا۔ وقت گزرنے کے ساتھ ساتھ اور انسانی ضروریات میں اضافہ سے یہ شوق ایک منافع بخش کاروبار کی حیثیت اختیار کرگیا ہے۔ اب ہر گھر میں زیادہ مرغیاں رکھنے کی جستجو بڑھ رہی ہے۔ آزادکشمیر کی کل آبادی کا نصف سے زائد حصہ خواتین پر مشتمل ہے جس میں سے 80فیصد سے زائد دیہاتوں میں آباد ہے۔ اس آبادی کا انحصار لائیو سٹاک پر ہے اور یہ شعبہ ملکی معیشت میں ریڑھ کی ہڈی کی حیثیت رکھتا ہے۔ محکمہ لائیو سٹاک و ڈیری ڈویلپمنٹ آزادکشمیر میں لائیو سٹاک اور پولٹری کے شعبوں کی ترقی اور کسانوں کی مالی حالت بہتر بنانے کے لیے منظم انداز میں کوشاں ہے۔ محکمہ کا فیلڈ سٹاف بھی مال مویشیوں کی پرورش اور نگہداشت کو بہتر سے بہتر بنانے کے لیے اپنا اہم کردار ادا کررہا ہے۔ آزادکشمیر کے ادارہ شماریات کے اعداد و شمار کے مطابق سال 2019 تک آزادکشمیر میں 4,331,990مرغیاں موجود تھیں جن سے سالانہ280 ملین کے قریب انڈے حاصل ہوئے ہیں۔

2. جائزہ (Overview)

محکمہ نے آزادکشمیر میں مرغبانی کی ترقی کے پیش نظر پسماندہ خواتین کے لیے گھریلو سطح پر مرغبانی کو فروغ دینے کی خاطر ایک منصوبہ Backyard Poultry Development for women in AJKمالیتی93.975 ملین روپے مرتب کرتے ہوئے سال 2019 میں حکومت آزاد کشمیر سے منظور کروایا گیا ۔ اس منصوبہ کا بنیادی مقصد آزاد کشمیر میں بینظیر انکم سپورٹ پروگرام (BISP)کے تحت رجسٹرڈخواتین کو بلامعاوضہ 20عدد فی نفر مرغیاں فراہم کرنا تھا جس سے وہ ایک طرف اپنی ماہانہ آمدنی میں اضافہ کرنے کے ساتھ ساتھ گوشت اور انڈوں کی گھریلو ضرورت پوری کرسکیں اور دوسری طرف آزادکشمیر میں مرغبانی کی ترقی کا بھی باعث بن سکیں۔ متذکرہ منصوبہ کے دیگر مقاصد بذیل تھے:

1. آزادکشمیر کی7250 پسماندہ خواتین میں145,000 مرغیوں کی بلامعاوضہ تقسیم (بشرح 250خواتین فی حلقہ اور ہر خاتون کو20 عدد مرغیاں)
2. مرغبانی میں ان7250 خواتین کی بلامعاوضہ تربیت
3. تقسیم کردہ مرغیوں کی بلامعاوضہ طبعی امداد
4. بلامعاوضہ تکنیکی معاونت

متذکرہ مقاصد کو حاصل کرنےکے لیے حکومت آزاد کشمیر کی جانب سے متذکرہ منصوبہ کی تکمیل کےلیے دوران سال20-2019 مبلغ20.975 ملین روپے ، دوران

سال21-2020 مبلغ45.000 ملین روپے اور دوران سال22-2021 مبلغ28.975 ملین روپے کے فنڈز فراہم ہوئے جس کے خلاف بذیل اخراجات عمل میں لائے گئے۔

نوعیت	اخراجات (ملین روپے)
خرید مرغیاں	87.000
تربیت برائے خواتین	20.175
انتظامی اخراجات	3.300
کل میزان	93.975

متذکرہ پراجیکٹ کے تحت آزادکشمیر کی پسماندہ خواتین میں 163210 مرغیاں از قسم روڈ آئی لینڈ ریڈ ، فیومی اور بلیک آسٹرلاپ نسل تقسیم کی گئی ۔

3. دائرہ کار و طریقہ کار(Scope and Methodology)

الف) دائرہ کار(Scope)

منصوبہ Backyard Poultry Development for Women in AJ&Kکے حسابات کی پڑتال کی گئی اور تقسیم کی گئی مرغیوں سے حاصل ہونے والے اثر/ثاثیر کا بذیل بنیادوں پر جائزہ لیا گیا۔

- منصوبہ سے منسوب نتائج کی حد کا تعین کرنا
- *منصوبہ سے منسوب نتائج کی مناسبیت کا تعین کرنا*
- *کیا منصوبہ پرکیے گئے اخراجات کے مقابلے میں زیادہ افادیت کا حامل رہا۔*

ب) طریقہ کار(Methodology)

متذکرہ منصوبہ کے اثر /ثاثیر کے تعین کےلئے ضلعی دفتر مظفرآباد و باغ کے ذریعہ تقسیم کردہ مرغیوں سے متعلق گھروں کے اہلخانہ کے تاثرات /نتائج جاننے کےلیے ضلع مظفرآباد، جہلم ویلی، نیلم باغ اور حویلی کا دورہ کرتے ہوئے اثراتی آڈٹ کے طریقہ کار ''پہلے اور بعد (Before and After)'' کو استعمال کیا گیا۔

4. نتائج(Findings)

دوران اثراتی پڑتال (Impact Audit) حسابات کی چانچ پڑتال کی گئی اور متعلقہ خواتین جن کو مرغیوں کی تقسیم کی گئی ان سے ملاقات کرتے ہوئے منصوبہ کی

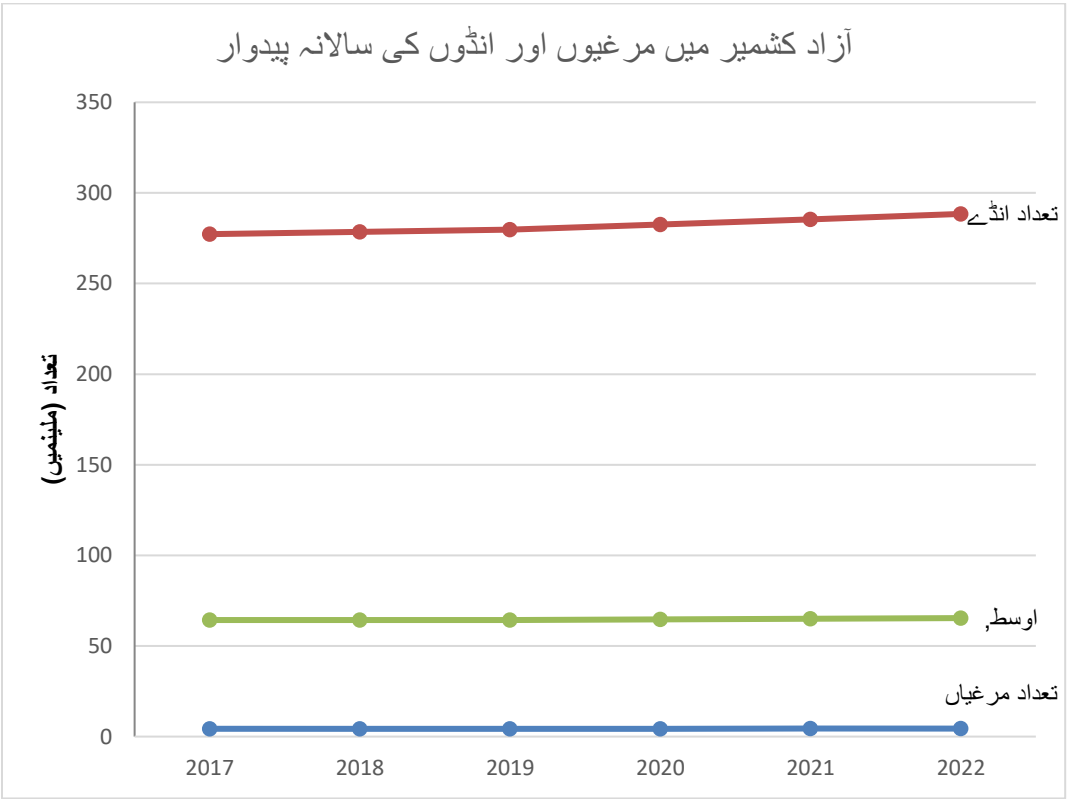
افادیت اور مناسبیت سے متعلق رائے لی گئی۔ اثراتی پڑتال کے نتائج کو بذیل پیراجات میں قلمبند کیا گیا۔

4.1 مرغیوں کی بلامعاوضہ تقسیم کے باوجود پولٹری میں اضافہ کا نہ ہونا۔

محکمہ امور حیوانات کے ریکارڈکی پڑتال کے دوران یہ دیکھا گیا کہ منصوبہ زیر بحث کے تحت سال 2019 تا2022 آزادکشمیر بھر کی پسماندہ خواتین میں 163,210 مرغیاں تقسیم کی گئیں۔ مزید یہ محکمہ کے اس منصوبہ (Intervention)کے علاوہ اسی عرصہ میں حکومت پاکستان کی جانب سے بھی پولٹری کی ترقی کےلیے محکمہ کے ذریعہ 140,000 مرغیاں تقسیم کی گئیں اس طرح دوران سال 2019تا2022 کل 303,210مرغیوں کی تقسیم سے پولٹری کی صنعت میں سالانہ 6.5فیصد اضافہ ہونا چاہیے تھا۔ اس کے برعکس بمطابق ذیل ادارہ شماریات آزادکشمیر دوران سال2017تا 2022 تک آزادکشمیر مرغیوں کی تعداد میں صرف 99874اور انڈوں کی پیداوار میں 11,147,000کااضافہ ہوا جبکہ متذکرہ Interventionسے کم و بیش مرغیوں کی تعداد میں 300,000 اور انڈوں کی پیداوار میں 63,000,000کا اضافہ ہونا مطلوب تھا۔

سال	تعداد مرغیاں	انڈے
2017	4,310,858	277,252,000
2018	4,330,690	278,527,000
2019	4,350,609	279,808,000
2020	4,370,622	282,620,000
2021	4,390,727	285,459,000
2022	4,410,732	288,399,000

یہاں یہ امر بھی قابل ذکر ہے کہ متذکرہ منصوبہ کے ذریعہ محکمہ نے آزادکشمیر میں سالانہ کم از کم 210 انڈے متذکرہ بالا اعداد و شمار سے ظاہر ہوتا ہے کہ سالانہ اوسطاً فی مرغی 64 انڈے دیتی ہے ۔ جبکہ محکمہ کی جانب سے سال 2019 سے زیادہ انڈے دینے والی مرغیوں کی بلا معاوضہ فراہمی سے بھی اس اوسط میں اضافہ ہوا اور نہ ہی مرغیوں کی تعداد میں اضافہ دیکھنے کو ملا۔ جس کو بذیل گراف میں بیان کیا گیا ہے۔



متذکرہ بالا گراف سے ظاہر ہوتا ہے کہ آزادکشمیر میں دوران 2019 تا 2022 تقریباً 300,000 مرغیوں کی فراہمی کے بعد بھی مرغیوں کی تعداد اور نہ ہی انڈوں کی پیدوار میں کوئی خاطر خواہ اضافہ ہوا۔ جبکہ اس تعداد سے کم از کم 6.5 فیصد اضافہ ہونا چاہیے تھا۔ جبکہ یہ اضافہ ایک فیصد سے بھی کم رہا۔

4.2 نامناسب طریقہ کار اور کم تعداد میں تقسیم مرغیاں

محکمہ امور حیوانات نے منصوبہ زیر بحث کے تحت آزادکشمیر کے مختلف اضلاع میں دوران سال 2019تا ۲۰۲۱ کل 163210 مرغیوں کی تقسیم کی گئی۔ منظور شدہ ضابطہ کے تحت یہ مرغیاں آزادکشمیر کے ہر حلقہ کی۲۵۰ خواتین میں 20 عدد جو کہ BISPمیں رجسٹرڈ ہیں کو تقسیم کرنا تھیں۔

فراہم کردہ ریکارڈ کے مطابق ضلعی دفتر مظفرآباد کے ذریعہ ضلع مظفرآباد، جہلم ویلی اور نیلم میں 1923خواتین میں تعدادی 38451 مرغیاں تقسیم کی گئیں۔ اسی طرح ضلعی دفتر باغ کے ذریعہ ضلع باغ و حویلی میں1000خواتین میں تعدادی 20000 مرغیاں تقسیم کی گئیں ۔

1- دوران پڑتال ریکارڈ و معائنہ ضلع مظفرآباد، جہلم ویلی اور نیلم پایا گیا کہ 1923 خواتین میں مرغیاں طے شدہ ضابطہ کے مغائر تقسیم کی گئیں جن میں سے 259 مرد حضرات میں اور 500 ایسی خواتین میں مرغیاں تقسیم کی گئیں جوکہ BISPمیں رجسٹرڈ نہ تھیں۔ مزید دوران معائنہ 29خواتین میں سے 8 خواتین کو 20 عدد مرغیوں سے کم فرغیاں فراہم کرنے کی نشاندہی ہوئی ۔

2- دوران پڑتال ریکارڈ و معائنہ ضلع باغ و حویلی میں 1000 خواتین میں 20000 مرغیاں بذریعہ قراندازی تقسیم کی گئیں۔ 28 خواتین میں 13 خواتین کو واجب مقدار کے مطابق شرح 20 عدد مرغیوں سے کم تقسیم کی نشاندہی ہوئی ۔

اسطرح محتاط اندازہ کے مطابق ضلع مظفرآباد ، جہلم ویلی، نیلم ،باغ و حویلی میں 35فیصد خواتین کو طے شدہ ضابطہ کے مغائر 20 عدد سے کم مرغیاں تقسیم کی نشاندہی ہوئی ۔

محکمہ کی جانب سے اگر دلچسپی رکھنے والی اور مستحق خواتین میں مطابقاً شرح مرغیوں کی تقسیم عمل میں لائی جاتی تو اس سے آزادکشمیر کی سطح پر مرغیوں کی مزید افزائش نسل ممکن ہونے کے ساتھ ساتھ ان سے زیادہ سے زیادہ فوائد حاصل کیے جاسکتے تھے۔

4.3 عدم فراہمی تربیت و تکنیکی معاونت برائے مرغبانی

دوران پڑتال ریکارڈ و معائنہ پایا گیا کہ جن 7250 خواتین کو مرغیاں فراہم کی گئیں ان کو مرغیوں کی دیکھ بھال کے لیے تربیت کے ساتھ ایک ایمرجنسی کٹ بھی فراہم کرنا تھی۔ جبکہ محکمہ کی جانب سے مطابق ریکارڈ کوئی ایمرجنسی کٹ خرید کرتے ہوئے فراہم نہیں کی گئ اور جن خواتین کو مرغیاں فراہم کی گئیں ان میں سے بیشتر کو تربیت نہیں دی گئی۔ نتیجتاً دوران معائنہ پایا گیا کہ کسی بھی خاتون کے پاس کوئی خاطر خواہ تعداد میں مرغیاں باقی نہ ہیں جوکہ یاتو مناسب دیکھ بھال نہ کرنے کی وجہ سے مر گئیں یا عدم دلچسپی /تربیت کے گوشت کے حصول کے لیے استعمال کرلی گئیں۔

محکمہ کی جانب سے اگر متعلقہ خواتین کو مناسب تربیت اور ایمرجنسی کِٹس فراہم کی جاتیں تو حاصل کردہ مرغیوں سے زیادہ اور بہتر نتائج حاصل کیے جاسکتے تھے۔

5- نتیجہ(Conclusion)

دوران اثراتی آڈٹ (Impact Audit) پایا گیا کہ گذشتہ پانچ سالوں کے دوران متذکرہ منصوبہ اپنی نوعیت کا تیسرا منصوبہ ہے۔ لیکن کسی بھی منصوبہ کے عملدرآمد کے بعد آزادکشمیر میں پولٹری کی ترقی میں کوئی قابل ذکر اضافہ نہیں ہوا۔ منصوبہ زیر بحث سے قبل سال 2017 میں بھی اسی نوعیت کا ایک منصوبہ مکمل کرتے ہوئے اس کے اثر ات/فوائد کا جائزہ لیا گیا اور اس جائزہ رپورٹ کی تجاویز کی روشنی میں متذکرہ

منصوبہ حکومت آزاد کشمیر کی جانب سے منظور کیا گیا۔ لیکن منصوبہ پر عملدرآمد کے دوران ایک بار پھر ان تجاویز کو نظر انداز کیا گیا۔ جس کی بناء پر منصوبہ زیر بحث بھی کوئی خاطر خواہ نتائج حاصل نہیں کرسکا۔ محکمہ دوران اثراتی آڈٹ پائی جانے والی بے ضابطگیوں کو مدنظررکھتے ہوئے ان کے تدارک کے لیے اقدامات اٹھائے تو آزادکشمیر میں مرغبانی ایک صنعت کا درجہ اختیار کرسکتی ہے۔ چونکہ آزادکشمیر کی آبادی کا نصف سے زائد حصہ خواتین پر مشتمل ہے جس کا 80فیصد سے زائد دیہاتوں میں آباد ہے جن کےلیے مرغبانی کی سہولت کسی نعمت سے کم نہیں۔ لہذا آڈٹ متذکرہ منصوبہ کی بے ضابطگیوں کے تدارک کے علاوہ بذیل سفارشات پیش کرتا ہے جن پر عمل کرنے سے آزادکشمیر میں مرغبانی کی صنعت ترقی پا سکتی ہے ۔

1- مناسب بریڈ (نسل) کی مرغیوں کا انتخاب جو کمرشل ہونے کے ساتھ ساتھ قدرتی طور پر افزائش نسل کا باعث بن سکیں۔ اور گھریلو خوراک کے لئے بھی پالی جاسکیں۔

2- صرف دلچسپی رکھنے والی اور مستحق خواتین و افراد میں ان کا کوئی اثاثہ رہن رکھ کر زیادہ سے زیادہ تعداد میں مرغیاں فراہم کی جائیں جس سے وہ ایک طرف پابند رہیں اور محکمہ کو بھی ان کی دیکھ بھال اور تکنیکی معاونت میں آسانی رہے۔

3- آزادکشمیر میں ہی تیار ہونے والی مرغیاں تقسیم کی جائیں جوکہ آزادکشمیر کے سرد موسم سے مطابقت رکھتی ہوں اور باقاعدہ طور پر ویکسین کی گئیں ہوں۔

4- خواتین کو مناسب و بروقت تربیت فراہم کی جائے جس سے مرغبانی کی صنعت کو فروغ حاصل ہوسکے۔

محکمہ آڈٹ دوران اثراتی آڈٹ محکمہ امور حیوانات کی جانب سے ریکارڈ کی فراہمی اور پڑتال کے دوران معاونت فراہم کرنے کا شکریہ ادا کرتا ہے۔

DGA GB

IMPACT AUDIT

1. Socio-economic Impacts of Farm to Market Road (FMR) Under Economic Transformation Initiative (Thallay Valley Baltistan), Gilgit-Baltistan

1.1 Introduction

Impact Audit gauges outcomes attributable to an initiative, program or project. It focuses on ultimate outcomes or wider impact as envisaged through the project. This audit has been conducted as a new initiative as per the direction of the Auditor-General of Gilgit-Baltistan for ushering in a new era of audit which focuses on analyzing the real time benefit of a government initiative for the people.

The Economic Transformation Initiative in Gilgit-Baltistan is jointly sponsored by the Government of Gilgit Baltistan, the International Fund for Agriculture Development (IFAD), and the Italian Agency for Development Cooperation (IACS). The project was launched in 2016. The main objective of the initiative was to enhance the economic conditions of the region by increasing incomes, reducing poverty, and alleviating malnutrition in rural areas. The program was aimed to achieve these goals by implementing a holistic and demand-driven approach consisting of three major components:

i. Infrastructure Development: This component mainly focuses on enhancing infrastructure in rural areas of the region, specifically through irrigation development and the improvement of Farm to Market Roads. Its aim is to create a favorable environment for agricultural growth and income generation.

ii. Value Chain Development: This component covers establishment of a value chain fund, provision of technical assistance, mobilizing social support for farmer organizations, extending support to these organizations through government agencies like agriculture research and agriculture extension departments, and facilitating land titling.

iii. Policy Support: This component of the project involves offering policy support across various development areas.

1.2 *Introduction of Scheme*

In Baltistan region the Thallay valley is known for its production of quality potatoes. The valley is situated at 32 km from the district headquarter Khaplu of district Ghanche and is connected through a jeep-able road. The valley consists of 16 hamlets and 1246 households forming a cumulative population of 12,460 individuals. The farthest settlement of the area is Khasumik. Majority of the population is associated with agriculture for earning their livelihoods. Around 85% of the population is engaged in growing potatoes, which is the main cash crop for the locals. Potato is one of the main sources of income for the locals besides their ordinary farming and other skilled and unskilled jobs. According to the information provided, Thallay valley produces more than 1000 metric tons (15000 bags of 100 kg) of potato each year which is the backbone of the local economy.

ETI under its Regional Coordination Unit, Baltistan (RCUB), has completed 21 FMR schemes with total length of 83.98 km involving cost of Rs.260.390 million. In addition, four bridges having length of 123.122 meters linking the roads with markets were also completed. At present 7438 households are benefiting from these schemes.

Thallay Broq is also one of the FMR schemes in Baltistan Region which has been completed in two different phases and handed over to the community by ETI-GB alongwith a bridge. Details are as below.

Details	**Thallay Phase-I Doqbar and Baqma**	**Daltir Bridge**	**Olmo Chumik Phase-II**
Date of signing of MOU	02.10.2018	27.07.2020	25.09.2020
Start date	22.10.2018	04.09.2020	28.09.2020
House holds	893		
Command Areas	624 acres		
FMR length (km)	10.52 KM	1.130	7.7
Approved cost (Million)	20.747	5.411	19.578
Completion cost (Million)	20.747	5.628	20.701

Completion date	31.08.2020	18.2021	31.12.2021

1.3 Background

Infrastructure plays a vital role in successful implementation of policies relating to the any sector. An adequate infrastructure network is an essential component of the economy and has direct impact on socio economic development of the society. Among the basic infrastructure, especially roads are the major contributors to the Socio-Economic development and economic growth. The road network connection leads to increased accessibility, mobility, and connectivity. That in turn increases transport operations, stimulates economic activities, and subsequent economic growth and ultimately eradicates poverty.

In the rural areas of Gilgit-Baltistan, lack of well-maintained roads is a major constraint as most of the people from the rural areas are not connected to the market directly. Therefore, an intervention namely Farm to Market Road (FMR) was launched during 2016-17 across Gilgit-Baltistan connecting certain rural areas of the region to the local markets.

Through this study an effort was made to evaluate the overall outcomes of the intervention and its impact on social-economic development of the area in general and on Thally Broq valley in particular.

Thallay Broq FMR is a 18.76 km road scheme that includes two phases and a bridge. The first phase was initiated in 2018 in two villages' i.e. Doqbar and Boqma while the Bridge scheme was executed in Daltir. The second phase of FMR was executed in Olmo Chumic through which the areas included in the phase-1 FMRs were connected. During the execution period of the scheme, ETI-GB also paid Rs.13.92 million in shape of labour wages to the local community.

In the long-term, the scheme is impacting people's lives in the shape of increase in annual income from agricultural produce. This initiative made connection of a disconnected and abandoned area to the market. It has also brought several affirmative results including reduction of work burden from women besides improving their health condition. It also helped in reducing the travelling time to a great extent and making the area accessible for agriculture besides promotion of tourism.

1.4 Infrastructure Development

Farm to Market Road (FMR): Farm to market road is a sub-component of Infrastructure for value chain development and was allocated US$19.56 million which is 19% of the base cost of the project. The component was aimed at improving critical road linkage for linking the production areas to valley roads and main roads. The sub-component is meant for up-grading of 600 km of shingle compacted roads. Existing pony tracks were to be upgraded to jeep-able roads (40%) and jeep-able roads to truck-able roads (60%). In addition, a lump sum provision of 220 meters of bridges was made. Completion of roads will be aligned with development of value chains in various areas and land development under irrigation component.

In the 1st phase from 2016-22, a total of 71 schemes involving cost of Rs.1,403.250 million relating to farm to market road were executed in three regions. Details are as under:

Region	No of schemes	House hold	Length of FMR	Cost
Astore	30	11,896	167.486	724.396
Gilgit	19	7,824	133.177	418.464
Baltistan	22	7,438	83.98	260.390
Total	**71**	**27,158**	**384.643**	**1403.25**

Similarly, in the 1st phase from 2016-22, RCC and suspension bridges having cumulative length of 324 meters involving cost of Rs.185.653 million were constructed in three regions under FMR initiative. Details are as under;

Region	Name of scheme	Structure	Length (meter)	Beneficiaries	Cost (million)
Diamer	Balonga	RCC	14.00	400	9.100
Diamer	Gayot	RCC	17.23	600	10.338
Diamer	Gayal	RCC	19.00	800	12.350
Diamer	Fina Fachung	RCC	35.00	500	22.750
Diamer	Dalipur C-Truss Bridge	Truss Bridge	15.24	200	3.562
Gilgit	Sherqila Bridge	RCC	31.10	902	18.600
Gilgit	Hasis Bridge	RCC	42.00	4000	25.200
Gilgit	Pingal Bridge	Wooden Suspension	27.44	298	21.788

		Bridge			
Baltistan	Thalley	RCC	33.00	305	21.450
Baltistan	Kandey	Suspension	40.00	144	10.052
Baltistan	Thalley	Truss Bridge	12.00	893	3.542
Baltistan	Hushey Bridge	Wooden Suspension Bridge	38.11	125	26.92
Total			**324.12**	**9167**	**185.652**

1.5 Impact of the Programme

1.5.1 Overall impact

The ETI with support of an international consultant carried out an impact study during March to June, 2022 to evaluate the current socio-economic conditions and living standards and to collect ETI-GB beneficiaries' perception of changes attributable to project. The team selected representative sample of 1,034 households on scientific basis to draw a reliable conclusion on the changes perceived by sample beneficiaries on a number of important variables.

According to results of study the overall project success was evidenced by the large number of beneficiaries as 73% of beneficiaries being highly satisfied with project services and 74% expressed that the services provided under the program were extremely relevant to their needs. The survey findings also showed that ETI-GB has been successful in improving the income of the majority of its beneficiaries (73%), half of which reported a large or very large increase in income (50% compared with the pre-project situation). The reported average monthly income, overall, is twice as high as the minimum monthly wage in Gilgit-Baltistan. Also, even though only 24% were able to accumulate savings in the past year, the reported average savings are worth two months of income.

Similarly, according to the study a drastic reduction of the proportion of households classified as chronically and extremely poor (from 32% to 4%) was pointed out. This was measured in the small sub-sample of beneficiaries for whom baseline data was available. Besides poverty score results, ETI-GB's intervention has also brought improvement in health conditions of beneficiary households as the proportion of households with access to both healthcare and medicine is much better and higher as compared with pre-project situation. Moreover, some proportion of households has also experienced some degree of improvement in the children's schooling situation. The large majority of female heads of households also felt that their family was more respected in the community, are more confident to participate

in community affairs and market their production, or feel that they can earn enough income to feed their families.

1.5.2 FMR Economic Impact

The FMR component of the project focused on developing support infrastructure, including rural roads. In the 1st phase from 2016-22, the 71 schemes having length of 384.64 KM involving cost of Rs.1,403.250 million have been completed and 27,158 households are benefiting. Similarly, in the 1st phase RCC and suspension bridges having cumulative length of 324 meters involving cost of Rs.185.653 million were constructed in three regions under FMR initiative.

During survey regarding economic opportunities, 95% of FMR beneficiaries agree (55% strongly) that there are now more marketing opportunities for their agricultural production, while 94% agree (46% strongly) that there are new income generating activities that have developed in their community. Further, 83% of FMR beneficiaries agree (34% strongly) that they are now able to generate cash from agriculture, which they were not able to do before. In terms of opened access to goods and services, 91% of FMR beneficiaries agree (60%strongly) that it is now easier for middlemen to come and buy their products, while 90% agree (34% strongly) that it is now easier to access agricultural inputs.

The FMR beneficiaries largely perceived that this intervention has opened numerous economic opportunities besides access to goods and services. Improved mobility resulted in increase in annual agriculture income- production of cash crop, fodder. Abandoned fields were brought under cultivation of cash crop. FMR has also created short term employment for local skilled and unskilled laborers. The survey results indicate that the workload on women and children and time spending for traveling to the area has also been drastically reduced, and agricultural activities are now flourishing.

The female beneficiaries in Danal Fina, Diamer district highlighted the additional impact that the road had on the local population who worked on its construction. The road construction created job opportunities for more than 4,000 individuals on a daily wage basis for almost a year which helped many unemployed individuals to earn their livelihood. During the global pandemic COVID-19, this scheme remained operational and became the main source of income for the people of Fina".

1.5.3 Selection of scheme

Gilgit Baltistan is a remote mountainous region where agriculture productivity is generally low due to poor access to quality inputs and huge harvest losses. Gilgit-Baltistan faces challenges of density due to low population, small holdings, and scattered individual production. It also faces the challenge of distances within the region and from main markets and consumption centers with poor infrastructure and transport facilities the Government of Gilgit-Baltistan launched a development project "Economic Transformation Initiatives" with collaboration of IFAD. The main objective was to make substantial increase in irrigated crop area and production and improved connectivity with markets through strategic investment in economic infrastructure. Farm to Market Road (FMR) component was aiming at improving critical road linkage for the supported value chains for linking the production areas to valley roads and main roads. The sub-component focuses on up gradation/construction of 600 km of shingle compacted roads and 300-meter bridges.

The main produce of Thallay is potatoes due to the suitability of soil and related factors, enhancing its quality and taste. Therefore, due to its demand in the market and best economic returns, potatoes are the best option for the locals. Moreover, unlike other crops, potatoes are readily accepted in the market.

The Auditor-General of Gilgit-Baltistan initiated impact Audit to gauge the effectiveness of investment made by government in different sectors. Therefore, considering the quantum of investment and significance of the FMR on socio-economic development of the region, the topic was included in Audit Plan 2023-24.

1.5.4 Objectives

1.5.4.1 Audit objectives

The main objective of the audit was to examine the changes that the project has introduced in the areas and their impact on socio economic condition of the beneficiaries. The objectives include

i. Whether the connectivity has improved.
ii. Whether the production of agriculture produce increased.
iii. Whether the FMR has created job and other economic opportunities for the people of the areas.

iv. How, the beneficiaries of the area viewed this initiative.

1.5.4.2 Objectives of the Project

The main objective of the project was to make substantial increase in irrigated crop area, increase in production besides improved connectivity with markets. The objectives of the FMR component of the project were to provide improved access to markets through upgraded road links. The FMR objectives include.

i. Improving critical road linkage for connecting the production areas to valley roads and main roads.
ii. Up-grading of 400 km of shingle compacted roads.
iii. Up gradation of existing pony racks to jeep-able roads.
iv. Up gradation of jeep-able roads to truck-able roads.
v. Construction of bridges at different location.
vi. Enhance the economic conditions of the region by increasing incomes and reducing poverty.

1.5.5 Scope

ETI under its Regional Coordination Unit, Baltistan (RCUB), has completed 21 FME schemes with total length of 83.98 KM involving cost of Rs.260.390 million. At present 7438 households are benefiting from this initiative. In addition, four bridges having length of 123.122 meters linking the roads with markets were also completed.

2. Stakeholders and government organizations identified as directly/ indirectly involved

- Federal Ministry of Planning, Development and special initiative, Islamabad – Provide overall policy guidelines for road infrastructure in line with other parts of the country.
- Finance Department Gilgit-Baltistan – provide budgets/funds for the project through regular budgetary mechanism.
- Planning & Development Department Gilgit-Baltistan – coordination with higher fora for approval of the projects.
- PWD Department Gilgit-Baltistan – Responsible for repair and maintenance of road constructed in the area under FMR.

- IFAD – Provides funds according to agreed terms and conditions.
- Agriculture Department – Implementation partner.
- AKRSP – Provide support in some area.
- SMT – Social Mobilizer Team of the area.
- Agriculture Cooperative Societies

3. Field Audit Activity

3.1 Methodology

The objective of study was to evaluate the outcome and impact of the Farm to Market Road. The data relating to program criteria, policy and expenditure was obtained from Project Coordinator and Regional Programme Coordinator. As primarily, the people of the area were the beneficiaries of the scheme, therefore a sample of households was selected with the help of ETI regional office Baltistan. Primary data was obtained through participatory approach by direct interview of the beneficiaries. Moreover, a semi structured questionnaire was devised for collection of data. Both quantitative and qualitative data was collected using the questionnaire and having discussions and personal interview of the individual beneficiaries. Physical observation of FMR and group discussions alongwith a team of ETI was also made to analyze the perception of beneficiaries and to acquire an in-depth information and detail of the scheme.

3.2 Audit Analysis

3.2.1 Details of the FMRs

The Phase -I FMR is located in Doqbar and Baqma region. Doqbar village is located on the right bank of Thallay nallah where jeep-able track for road already existed and used by the community to transport their produce to the Modunkhor main road. The road laid in the path of watercourse at three places managed by a temporary bridge and two culverts. The proposed FMR in Daltir connected the main road Mondunkhor to the village of Doqbar. However, Baqma is located at the left side of the main Thallay Nullah. The road passes concurrent to the main Khaplu-Thallay Broq road originating in Baqma before the connection-point at the main Khaplu-

Thallay Broq road where it meets and converges at the main road. During summers, the road remained blocked intermittently due to flooding in the nullah crossing its path in winters. To overcome this issue, the ETI-GB constructed a link road in the region. The link road constructed under the ETI-GB program in Thallay Broq, Ghanche Baltistan was completed in two phases in 2022. The total length of the link road is 17.63 kilometers, while two hanging wooden bridges, one of which is 33 feet long and the other 31 feet, have also been built. Due to lack of a link road and bridge, it was not possible to move agricultural commodities from the fields to the markets. Moreover, the patients, especially women, had to face problems reaching health facilities. The ETI program has fulfilled a long-standing need of the local population, for which the residents were grateful to ETI and the Government of Gilgit-Baltistan as observed by audit during the visit of the area.

3.2.2 Pre-road-conditions

During visit of the area, Mr. Yahya Khan General Secretary, Social Mobilizer Team (SMT) apprised the audit team that due to non-availability of road in the valley the farmers had to consume most of their time on traveling to field in sowing and harvesting season. The use conventional agriculture practices instead of machines thus the farmers were getting little reward as compared to their efforts. Before the intervention of ETI-GB in the region, the area had a challenging and steep road, affecting the transportation of potatoes and other produce. Before construction of road each farming household sold 15 to 18 bags of potato each year on average. Cost of transportation per 100 kg bag from Thallay Broq to Daghoni Bridge, used to be Rs.500 due to poor road network, consequently the framers paid around 17% of the value of one bag in shape of transportation charges. The accumulative transportation cost was Rs.8.03 million (893x18x500=8.03 million). In addition to this the household required employing all adult members for days to transport their produce from field to valley road, which was intensive in labor and required human resource and time.

Furthermore, in absence of road infrastructure the formers could not cultivate their entire farmland to maximize the production which has now become possible for them after using agriculture machinery. The representative of the SMT also informed

the audit team that before construction of the road, the area witnessed several accidents of loaders as temporary local tracks were constructed on self-help basis for transportation. Due to lack of road infrastructure, the farmers were reluctant to cultivate potato and other agriculture produce owing to high transportation and input cost. They stated that occurrence of 5-7 major accidents with injuries as well as loss of vehicle owners and farmers was a routine matter during sowing and harvesting season in the valley. Moreover, in case of health emergencies it was most difficult for people of the area to take their patients to hospital.

3.2.3 Results of the Intervention

The rural communities of the Thallay Valley have generally been provided comfort and convenience of travelling on new road as compared with earth tracks. They also recognized that besides increasing agricultural activities, other business activities will flourish with the passage of time. The scheme has not only improved mobility and agriculture activities in the areas but has also created short term employment for local skilled and unskilled laborers. Beneficiaries generally realized that the workload on women and children, and time spending for traveling to the area has also significantly been reduced, and agricultural activities are now flourishing. Since the area is also rich with natural beauty and has a corridor that connects the valley with Shiger via trekking, a new source of income in terms of tourism has emerged for the beneficiaries.

3.2.3.1 Improved Accessibility

The newly constructed road provided a convenient and fast mode of transportation, connecting the remote rural areas of the valley to settled areas/market (Blagar) enabling farmers to transport inputs timely through vehicles to market during harvesting season. Due to availability of road the farmers are now using comparatively modern machinery like tractors and other mode of transportation instead of conventional methods. The existing improved connectivity has not only reduced the travelling time to great extent but also promoted social and economic development of the rural area and made it easier for people to access essential services like healthcare, education, and employment opportunities.

3.2.3.2 Cost Saving

Road is an important form of infrastructure in rural areas which provides cheap and easy access to farmers for marketing their produce and to bring input to the farmland. According to survey carried by ETI, before the intervention, the farmers of the area were paying almost 17 to 20 % of the produce as transportation cost which was reducing their profit margin. However, the existing intervention has led to substantial cost savings for the farmers community. According to the notables of the area, an estimated annual reduction of Rs.4 to 5 million was noted in transportation cost after completion of the project. Consequently, the reduction in cost of transportation ultimately resulted in increase of profit and earning of the beneficiaries of the FMR.

3.2.3.3 Enhanced safety

Besides other economic benefits, an improved road condition ensures safety of the users. The representative of the community accompanying the audit team during field visit informed that there is a remarkable decrease in loader trolley accidents which was a regular feature before the intervention.

3.2.3.4 Economic Growth

A well-maintained rural road infrastructure assures farmers that their crops can be marketed, which, in turn, encourages increase in commercial production. The primary objective of the initiative, besides provision of improved accessibility, was also to improve the economic conditions of the people particularly those associated with agriculture in Thallay valley. Before construction of road the potato production in the area was from 10,000 to 12,000 bags (of 100 kg). However, massive increase in production of potato was witnessed after construction of road. According to farmers and SMT now the Thallay valley is producing approximately more than 4000 metric tons (40,000 bags of 100 kg) of potato each year. The sale price of each bag in local market is 7000 to 8000 and therefore, the accumulative sale impact comes to Rs.280 to 320 million every year. On an average each farming household sells 45 bags of potato each year and as a result, each farmer is now earning Rs. 315,000 to Rs.360,000 per year.

3.2.3.5 Promotion of Tourism

Tourism is a vital source of income for most of the people in Gilgit-Baltistan. The region having an unmatched natural beauty and rich cultural heritage, has a unique potential for tourism development. Tourism sector has the potential to contribute to economic growth and improve the livelihoods of the local communities. The tourism infrastructure particularly road network and hospitality related infrastructure are of paramount importance for tourism development in Gilgit-Baltistan. The strategic location of Gilgit-Baltistan, coupled with the implementation of mega projects under China Pakistan Economic Corridor (CPEC), the region has gained more importance with reference to sustainable infrastructure.

Thallay valley with approximately 20 km length is unique in its landscape and blessed with rich natural beauty. After construction of road, it has gained more attention of local, domestic and international tourists. The valley also connects District Shigar with District Khaplu though a walking track. The local residents of the area informed the audit team that some local and international tourists have visited the valley for trekking adventure. However, most of the tourists visited the valley to enjoy the distinct landscape and its scenic beauty. The region, including Thallay Broq and the famous Thallay La (Pass), is becoming a popular tourist destination for national and international trekkers. With the passage of time, a substantial increase is expected in number of local, national and international tourists which will further boost the local economy.

The FMR, therefore, has not only connected the farmlands with the markets but has also explored new source of income for locals through tourism. Opening of small seasonal rest houses was also witnessed during visit of the areas. The improved access to valley has initially opened up new avenues for economic growth of small business however, with the passage of time it will expand and further stimulate the local economy.

3.2.3.6 Mode of transportation shift

Before, construction of road, the main means of transport was small tractor trolleys with limited loading capacity besides horse/pony which were used for

transportation of inputs up and produce to the villages. These means were neither reliable nor cost effective. However, after construction of road, the farmers are now using comparatively big tractor trolleys and mini trucks with substantial loading capacity with more convenience, speed, and reliability. The General Secretary of SMT stated that the local transporters and agriculture machinery owners have benefitted a lot from the intervention through transportation, cultivation, and threshing, leading to cost reduction and time savings besides substantial increase in earning of the farmers.

3.2.3.7 Time Efficiency

A representative of community Mr. Ahmed Ali apprised the audit team that earlier the people used to travel to farmland by foot and on horses and therefore, most of their time was wasted in travelling. The farmers were spending about 3 to 4 hours to reach valley from surrounding villages due to poor steep and sloppy track. However, now it hardly takes 25 to 30 minutes to reach the main valley. The time saved is spent on agriculture and other productive activities. After construction of the road, most of the farmers have purchased their own mode of transportation including motorcycles etc. At present it is easier for them to manage daily farming tasks efficiently and conveniently besides managing other social responsibilities. Therefore, the time efficiency factor contributed significantly in poverty reduction and increase in earnings.

3.2.3.8 Improved Agriculture Practices

Road infrastructure in the valley has direct impact on agriculture practices in the valley. Prior to the intervention farmers were using indigenous and conventional methods, for cultivation and harvesting of agricultural products which were time consuming. The Farm to Market Road has made it possible for farmers to use modern agricultural techniques. Consequently, the availability of machinery and improvement in the agriculture practices has reduced human workload and now the farming has become an easy occupation for the people. Consequently, the improved agricultural practices have increased the farm household incomes, overall social welfare and economic development.

3.2.3.9 Employment of locals

Roads in Thallay valley has opened up more areas and stimulated economic and social growth. Construction activities in the areas have provided various new opportunities for employment of local labour force. During construction of infrastructure schemes in Baltistan Region the, ETI paid around Rs.176 million as wages to local skilled and unskilled labors in Baltistan Region. Only the labour relating to Thallay valley generated income of Rs.17 million during executing of FMR projects in the areas. In future with the opening of tourism, further employment opportunities will be available to the locals.

3.2.3.10 Wider Community Impact

Beneficiaries while sharing their view informed the Audit team that the intervention has yielded significant and positive results for the community. According to them almost 830 households are benefiting from these schemes in the valley. The improved roads have positively impacted the entire valley population of around 10,000 individuals and surrounding villages. The intervention has facilitated economic growth and significantly improved the quality of life for the residents of Thallay Valley, making it a model for successful community development initiatives. The SMT express their satisfaction and gratitude for the projects. The community satisfaction level is a sign of positive impact of the scheme.

3.2.3.11 Improved Assets

Every intervention brings some unintended positive results as well construction of road and bridges have led to substantial increase in price of land in the area as stated by the representative of the community. Besides increase in agricultural activities, the valley also provide a tracking corridor for District Shigar besides other tourism activities, and therefore, this aspect has further increase the commercial value of land as the people have now started construction of hotel, guesthouses etc. It was noted that the interest of beneficiaries has increased in such a way that people are now distributing communal lands to households for agriculture purpose. The local representative stated that numerous parties and individuals are

now approaching locals for sale/lease of land in the valley for construction of rest houses etc.

3.2.3.12 Community Satisfaction:

The main purpose of the initiative was to provide improved access, increase in agricultural activities and to improve the socio-economic condition of the residents of the area. The FMR has direct impact on socio economic development of beneficiaries of the area. Therefore, the community satisfaction is said to be the key factor in determining the successful implementation of the scheme. During visit of area, the residents of Thallay Valley expressed their satisfaction and gratitude for the road construed under ETI-GB initiative. The beneficiaries of the area through their SMT were of the view that earlier they did not produce more because they had no way to access local and national markets. However, the improved road has made the availability of inputs easier and stated that there is substantial increase in agricultural activities.

4. Additional Benefits

i. Overall transportation costs for potatoes have decreased by 45%.
ii. Transportation accidents have been substantially reduced.
iii. Mini tractor trolleys used for transportation have been replaced with mini trucks.
iv. Motorbikes have become the preferred mode of transportation for farm work.
v. Improved road conditions enabled easier access to health facilities during emergencies.
vi. Improved access to transport for fuel wood and fodder.
vii. Reclamation of approximately 50% of abandoned land for potato production.
viii. Workload on women and children and time spending on traveling from the villages to Broq has decreased and as a result, people are actively participating in agricultural activities.

5. Recommendations

The newly constructed FMR is of great significance for the area and contributing a lot in improving livelihood and socio-economic development of the beneficiaries. In order to ensure the long term sustainability and to take the utmost benefits from the investment, the following recommendations are made.

i. The FMR is constructed from Baltoro to Khamuik, however, there are some wooded bridges at Nallah in Chundu, Tangheri and Parangus villages which require to be replaced with RCC for better connectivity and smooth flow of traffic.

ii. The GB-PWD has taken over the road for routine repair and maintenance. However, the mutation of land in favour of Government has not been made so far which require to be expedited as with the passage of time it can create legal complications.

iii. Land sliding is a regular feature in the area therefore, special measures may be taken to deal promptly with such situations for smooth functioning of the road.

iv. Capacity of line departments may be enhanced to cope with the repair and maintenance issues in an effective manner.

v. A comprehensive policy may be formulated to ensure long-term sustainability and positive impact of the FMRs.

vi. The executing agencies may ensure that all development activities are carried out with due regard to environmental sustainability to protect the region's natural resources particularly the natural forest.

vii. An effective monitoring and evaluation system may be established in order to track the long-term impact of the program, ensuring achievement of the objectives in an efficient and effective manner.

viii. Overall quantitative and qualitative impact assessment may be carried at government level on scientific basis to quantify the impact of different components including FMRs.

ix. With improvement and development of road infrastructure in remote areas and increase in agricultural activities there is an immense demand of seed and other related inputs which is mostly purchased from down country. Therefore, in order to meet the requirement, a mechanism may be devised for storage of

seed and inputs at different points in the region for further timely supply to the farmers.

x. It has been observed that mostly hybrid varieties of imported seed are used in the region which are costly and in some cases unreliable as well. Due to suitability of soil and environment the quality of potato produced in the region is unique in quality and taste. Therefore, the indigenous seed may be encouraged with the collaboration of Agriculture Department for promoting organic crops to meet the increasing demand.

6. Conclusion

Thallay Valley being remote area was disconnected from the main town and local market. Due to non-availability of proper access, the major part of fertile land in valley was uncultivated and used for grazing in summer season. Eventually accessibility has brought farmers back to abandoned lands, resulting in increased agricultural activities and the cultivation of cash crops especially potatoes. This project has improved income of people, reduced the workload on women and children and enhanced agricultural practices by providing access to quality seeds and fertilizers. As a result, beneficiaries have not only become economically affluent but are also now considering permanent settlement in the area. The intervention has contributed to the development of the assets, increased of land values besides opening of new avenues for tourism. It has also positively impacted local laborers, transporters, and machinery owners, providing employment opportunities and economic benefits. These developments are not only improving living standards but also contributing to long-lasting economic growth in the areas and region as well.

The FMR initiative in the valley has proven to be a transformative force, significantly impacting the socio-economic conditions of the beneficiaries. Through the construction of Farm-to-Market Roads, this initiative has not only improved infrastructure but has also brought multiple positive changes across various aspects of the local economy and society.