



Pre-feasibility Study

MANUFACTURING OF MOTORCYCLE SAFETY HELMETS

April 2021

“The figures and financial projections are approximate due to fluctuations in exchange rates, energy costs, and fuel prices etc. Users are advised to focus on understanding essential elements such as production processes and capacities, space, machinery, human resources, and raw material etc. requirements. Project investment, operating costs, and revenues can change daily. For accurate financial calculations, utilize financial calculators on SMEDA’s website and consult financial experts to stay current with market conditions.”

Small and Medium Enterprises Development Authority
Ministry of Industries and Production
Government of Pakistan

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1. DISCLAIMER

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2. EXECUTIVE SUMMARY

Motorcycle is an important and the most common mean of transportation in Pakistan. Motorcycles contribute more than 50% in country's registered vehicles. Rapid growth in the use of motorcycle in Pakistan has been accompanied by increase in injuries and fatalities due to road accidents. As per available statistics, wearing a standard, good quality motorcycle safety helmet can reduce the risk of fatal injury by approximately 40% and risk of serious injury by up to 70%. Increase in production and sale of motorcycles, road safety awareness campaigns and mandatory requirement of law to wear a safety helmet, while riding a motorcycle, have generated a high demand for motorcycle safety helmets in Pakistan in recent years.

This "Pre-feasibility Document" provides details for setting up a unit for the "Manufacturing of Motorcycle Safety Helmets", which has a capacity of manufacturing 112,000 units in a year at a maximum capacity of 100%. The initial starting capacity in "Year One" is calculated at 60%, with 67,200 production units annually.

The unit is proposed to be ideally located in any industrial areas in the metropolitan cities like Lahore, Karachi, Faisalabad or Peshawar. These areas are preferred for the proposed unit due to their closeness to the market, and availability of skilled labor.

A small size manufacturing unit will be set up in a rented building with area of 2,250 square feet. The project requires a total investment of PKR 10.774 million. This includes capital investment of PKR 7.377 million and working capital of PKR 3.396 million. It is proposed that the project shall be financed through 100% equity. The Net Present Value (NPV) of project is PKR 31.66 million with an Internal Rate of Return (IRR) of 59% and a Payback period of 2.33 years. Further, this project is expected to generate Gross Annual Revenues of PKR 47.04 million during 1st year, Gross Profit (GP) ratio ranging from 25% to 29% and Net Profit (NP) ratio ranging from 8% to 14% during the projection period of ten years. The proposed project will achieve its estimated breakeven point at capacity of 30% (33,600 units) with annual revenue of PKR 23.47 million.

The proposed project will provide employment opportunities to 25 people including the owner. High return on investment and steady growth of business is expected with the entrepreneur having some prior experience or education in the related field of business. The legal business status of this project is proposed as "Sole Proprietorship". Further, the proposed project may also be established as a "Partnership Concern".

3. INTRODUCTION TO SMEDA

The Small and Medium Enterprises Development Authority (SMEDA) was established in October 1998 with an objective to provide fresh impetus to the economy through development of Small and Medium Enterprises (SMEs).

With a mission "to assist in employment generation and value addition to the national income, through development of the SME sector, by helping increase the number, scale and competitiveness of SMEs", SMEDA has carried out 'sectoral research' to identify policy, access to finance, business development services, strategic initiatives and institutional collaboration and networking initiatives. Preparation and dissemination of prefeasibility studies in key areas of investment has been a successful hallmark of SME facilitation by SMEDA.

Concurrent to the prefeasibility studies, a broad spectrum of business development services is also offered to the SMEs by SMEDA. These services include identification of experts and consultants and delivery of need-based capacity building programs of different types in addition to business guidance through help desk services.

National Business Development Program for SMEs (NBDP) is a project of SMEDA, funded through Public Sector Development Program of Government of Pakistan.

The NBDP envisages provision of handholding support / business development services to SMEs to promote business startup, improvement of efficiencies in existing SME value chains to make them globally competitive and provide conducive business environment through evidence-based policy-assistance to the Government of Pakistan. The Project is objectively designed to support SMEDA's capacity of providing an effective handholding to SMEs. The proposed program is aimed at facilitating around 314,000 SME beneficiaries over a period of five years.

4. PURPOSE OF THE DOCUMENT

The objective of the pre-feasibility study is primarily to facilitate potential entrepreneurs in project identification for investment. The project pre-feasibility may form the basis of an important investment decision and in order to serve this objective, the document/study covers various aspects of project concept development, start-up, and production, marketing, finance and business management.

The purpose of this document is to provide information to the potential investors about "Manufacturing of Motorcycle Safety Helmets". The document provides a general understanding of the business to facilitate potential investors in crucial and effective investment decisions.

The need to come up with pre-feasibility reports for undocumented or minimally documented sectors attains greater imminence as the research that precedes such reports reveal certain thumb rules; best practices developed by existing enterprises by trial and error, and certain industrial norms that become a guiding source regarding various aspects of business set-up and its successful management.

Apart from carefully studying the whole document one must consider critical aspects provided later on, which form the basis of any investment decision.

5. BRIEF DESCRIPTION OF PROJECT & PRODUCTS

Motorcycle helmet makes motorcycle riding safe by protecting the rider's head in the event of an accident. The helmet reduces the risk of head injury, the major cause of death in such accidents. In recent years, wearing a helmet has been made mandatory by law in many countries, including Pakistan.

Motorcycle helmet consists of a polystyrene foam inner shell that absorbs the shock of an impact, and a protective plastic outer layer. Several design variations exist, with two major classifications; the helmet that covers the chin area and the helmet that does not. Some helmets provide additional conveniences such as, ventilation, face shields, sun visors, ear protection, etc.

There are five basic types of helmets in which some are intended for motorcycling and some are not. Those helmets which are not intended for motorcycling are also used by some riders. All types of helmets are secured by a chin strap. The protection provided by a helmet reduces by not fastening the chin strap.

From most to least protective, as generally accepted by riders and manufacturers, the helmet types are: Full face, Off-road (motocross), Modular (flip-flop), Open face (3/4 helmet) and Half helmet. Types of helmets are shown in Figure 1.

Figure 1: Types of Helmets



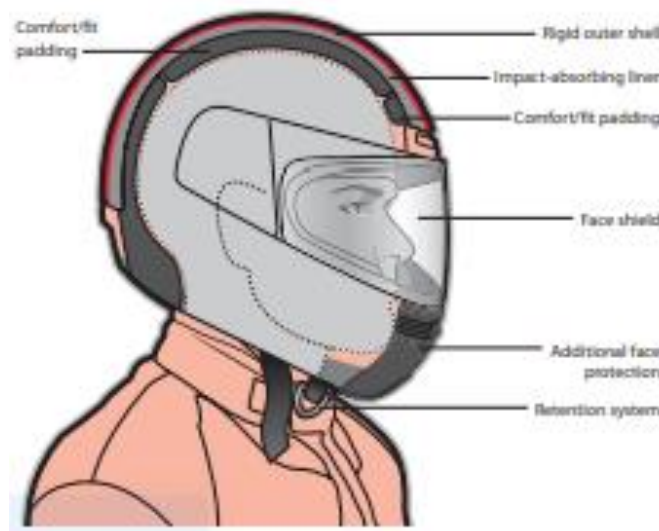
Currently in Pakistan, it is mandatory by law¹, for the driver, to wear helmets made of prescribed material², while riding a motorcycle. In many countries, it is mandatory for both, the driver and the person sitting at the pillion seat (a secondary pad, cushion or seat behind the main seat on a motorcycle, bicycle or moped). to wear helmets while driving motorcycle. The number of motorcycles in Pakistan is rapidly increasing, in the year 2019/2020 alone, despite outbreak of pandemic, the total number of motorcycles produced³ were 1,370,417 and the total number of sales were 1,370,005. This shows the rapidly increasing demand for motorcycle helmets in the local market.

The production versus sale trend of motorcycles provides an attractive opportunity for setting up a unit for manufacturing of motorcycle safety helmets, which is expected to offer a good sale potential in Pakistan.

In this study, the manufacturing of full-face plastic helmets has been suggested. A full-face helmet covers the entire head, with a rear that covers the base of the skull, and a protective section over the front of the chin. Such helmets have an open cutout in a band across the eyes and nose, and often include a clear or tinted transparent plastic face shield, known as a visor, that generally swivels up and down to allow access to the face, vents to increase the airflow to the rider and a retention system with the chin strap's ability to stay fastened without stretching or breaking.

Labeled full-face helmet is shown in Figure 2.

Figure 2: Labeled full-face helmet



¹ PMVO 1969, 89-A, mandates that: "Rider to wear helmet. - No person shall drive, or ride the pillion seat of, a two-wheeled motor vehicle except when he is wearing a crash helmet. Explanation- In this section, "crash helmet" means a helmet made of such material and meeting such other requirements as may be prescribed".

² Currently, the law in Pakistan does not prescribe a standard for motorcycle helmets or a requirement for motorcycle helmets to meet an international safety standard.

³ <http://www.pama.org.pk/statistical-information/historical-information/annual-sales-production>

Full-face plastic helmets have been suggested due to the following reasons;

- According to our primary & secondary research, there is a high demand in the country for full face helmets as compared to other types of helmets.
- Full face helmet fulfills the basic requirements of the users in low cost.

For setting up the proposed manufacturing unit, major cities of Pakistan (i.e., Lahore, Karachi, Faisalabad, Hyderabad, and Peshawar) are more suitable locations.

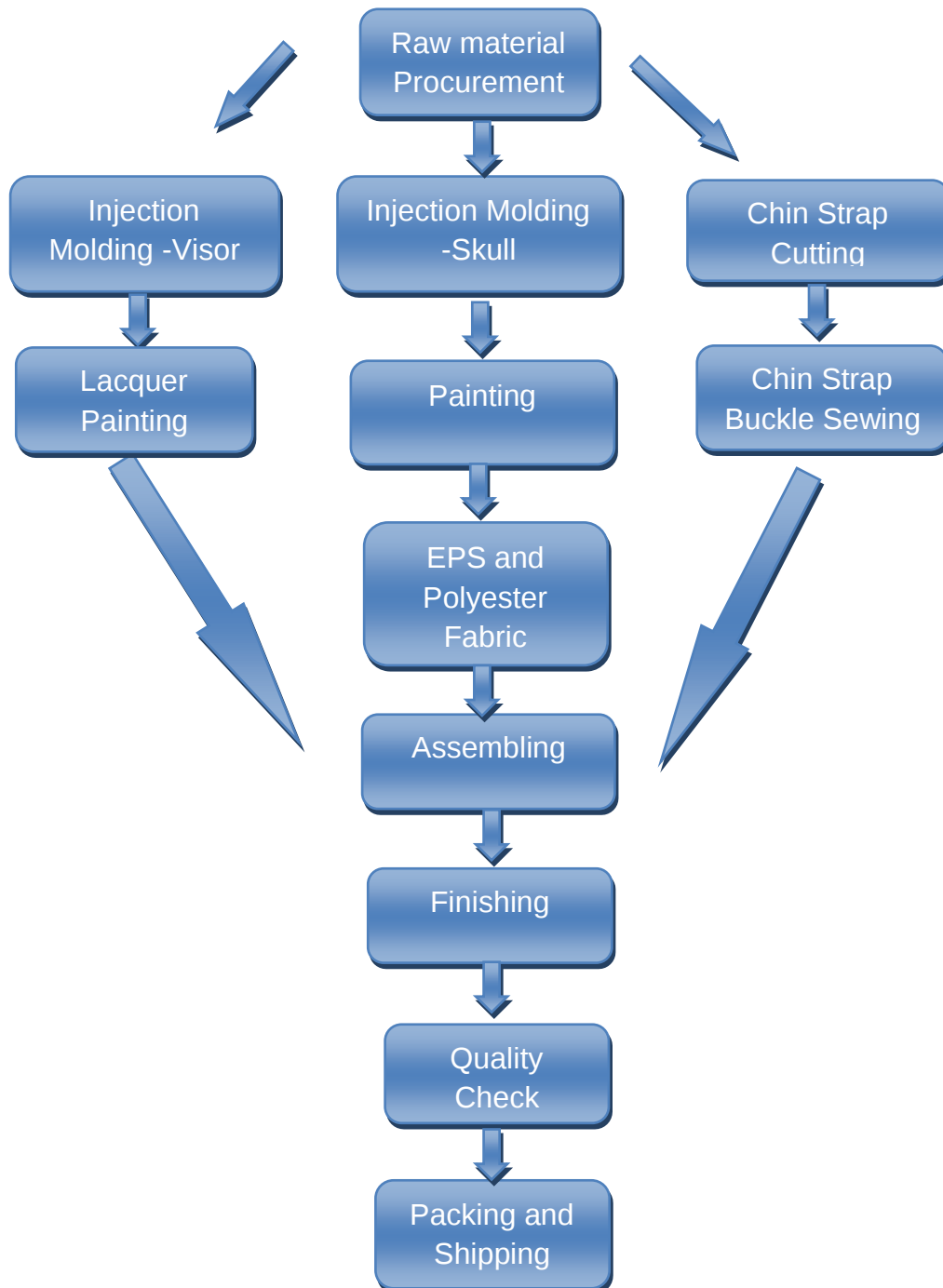
A medium sized Motorcycle Safety Helmets Manufacturing Unit is proposed to be set up in a rented building to avoid the cost of land and building. The proposed project at maximum installed capacity (100%) shall manufacture 112,000 motorcycle helmets per year. However, during first year of operations, the project will attain capacity of 60% producing 67,200 units.

Total area required for the unit is 2,250 Sq. ft. which shall be rented. Estimated employment required for this project is 25 persons.

5.1. Production Process Flow

The production process flow of motorcycle safety helmet is shown in Figure 3.

Figure 3: Safety Helmet Production Process Flow



The brief description of process flow is as follows:

Procurement of Raw Material

The process of manufacturing of a motorcycle helmet starts with the procurement of raw materials, listed below:

- **Acrylonitrile Butadiene Styrene (ABS)**

It is a common thermoplastic polymer. ABS provides favorable mechanical properties such as impact resistance, toughness, and rigidity when compared with other common polymers. ABS is used as a raw material for skull manufacturing.

- **Polycarbonate (PC)**

Polycarbonates (PC) are a group of thermoplastic polymers containing carbonate groups in their chemical structures. Polycarbonates used in engineering are strong, tough materials. Despite being strong, they can be easily worked, molded, and thermoformed. Polycarbonate is used as a raw material for visor manufacturing.

- **Synthetic Rubber**

A synthetic rubber is any artificial elastomer. They are polymers synthesized from petroleum byproducts. Synthetic rubber, just like natural rubber, has many uses in the automotive industry. Solid rubber strips are used upon of helmets to make it comfortable.

- **Expanded Polystyrene Foams (EPS)**

EPS is a rigid, closed cell, thermoplastic foam material. It is produced from solid beads of polystyrene. Expansion is achieved by virtue of small amounts of gas contained within the polystyrene bead. The gas expands when heat in the form of steam is applied, thus forming closed cells of EPS. EPS is made of 98% air, making it one of the lightest insulating materials. It is used in the internal padding of the helmet.

- **Polyester Fabric**

Polyester is a synthetic fabric that's usually derived from petroleum. This fabric is one of the world's most popular textiles, and it is used in thousands of different consumer and industrial applications. In the process of helmet manufacturing, this fabric is used for the inner clothing.

- **Nylon/Polypropylene**

Polypropylene, also known as polypropene, is a thermoplastic polymer used in a wide variety of applications. Common extrusion methods include production of melt-blown and spun-bond fibers to form long rolls for future conversion into a wide range of useful products. In the process of helmet manufacturing, this material is used to make chin straps.

- **Paints and Lacquer**

Solid paint is used in helmet manufacturing industry The paint is formed by topping a single layer of color with a clear-coat layer, designed to protect the helmet against small damage such as light scratches and paint chips. Lacquer is a special liquid, painted on the visor as a transparent coating to protect it and give it shine.

Skull Manufacturing

As a first step of manufacturing a helmet, Acrylonitrile Butadiene Styrene (ABS) beads is added in a tank, where the raw material is melted. ABS is melted and injected into a mold cavity, where it cools and hardens to the configuration of the cavity. Once the skull is sufficiently cool, the mold opens and the skull is ejected.

- **Painting**

After the skull manufacturing process, the skull is cleaned of tiny materials and dust which might affect the overall result of the painting process. The tiniest dust particle is completely absorbed by applying industrial alcohol and vacuum machines before the helmet proceeds to a hermetically sealed painting booth. Depending on the pre-decided color and design options, the colors and mix by an expert and using a painting gun, the surface is painted with a base coat that is followed by another layer of the primary color.

- **EPS and Polyester Fabric Padding**

One of the important parts in a helmet is the EPS shell. EPS comprises of tiny little beads of polystyrene which are expanded under pressure and heated to create what is commonly known in the industry as 'foam'. In technical terms, the polystyrene now becomes expanded polystyrene (EPS). This forms the internal shell of a motorcycle helmet, but this shell alone does not have the mechanical resistance to withstand high-impact forces which is why it is covered with a shell made of ABS. Both the shells are attached together using industrial adhesive into one combined external structure.

Polyester Fabric are cut and stitched by sewing machines according to the shape of the skull. This forms the internal skull padding and cheeks padding of a helmet.

Chin Straps Preparation

Nylon / Polypropylene is used to form the chin straps. In a separate part of the manufacturing unit, workers design the straps and strapping mechanism along with other rivets and bushes that go into the helmet for securing the strap in place. Workers in the assembly line merge the painted shell with the strapping mechanism using multiple specialized tools for punching holes and attaching the straps security.

Visor Manufacturing

In the final step of manufacturing parts of the safety helmets, Polycarbonate goes in the other injection molding machine and visor is shaped out from the barrel of the machine. It is then manually checked to ensure the consistency.

- **Lacquer Painting**

Lacquer is coated on visor by dipping it in that liquid. Lacquer is coated to protect it from scratches. It is then dried in a heating machine so that the coating sticks to the visor and excess is removed.

Assembling

After all the parts are manufactured and prepared, assembling process is performed. Polyester Fabric is manually attached on the EPS/Styrofoam using tapes. The entire padding is manually placed and attached inside the skull. Visor is attached to the helmet as the last operation, manually or through bolt injection machine (as the bolts are fixed inside the helmet).

Finishing

Pads and inner lining of the helmet are precisely cut with an accuracy of a few millimeters which ensure that the wearer gets the best comfort and safety while using the product.

Quality Check

Each of the steps mentioned above passes through stringent quality checks to ensure that all the manufactured parts meet the set quality parameters. The parts not meeting the required quality parameters are removed and recycled to reduce waste. The helmets meeting the quality standards are marked with the insignia of the company.

Packing and Shipping

The finished helmets are packaged and shipped to market, along with a user manual to help the customer make the best use of the product.

5.2. Installed and Operational Capacities

The proposed manufacturing unit shall, at maximum capacity of 100%, will produce 112,000 units of motorcycle helmets annually. It is projected that, during the period of 10 years, the facility shall continue to operate with 10% annual increase in capacity each year.

The unit would operate for 8 hours per day, working in one shift per day for 280 working days in a year. Based on the calculations, the unit will attain a capacity of 60% during the initial year of operations.

Table 1 depicts the installed and operational capacities of the proposed unit for the initial year.

Table 1: Installed and Operational Capacity

Product	Time Consumpti on Per Helmet (Seconds)	Produ ction Per minute	Injection Molding Machine Capacity Per Day (A)	Annual Working Days (B)	Annual Producti on C=(A*B)	Annual Capacit y @ 60 %
Safety Helmet-Skull	72	50	400 (50*8)	280	112,000	67,200

		(60*60/ 72)				
Safety Helmet-Visor	30	120 (60*60/ 30)	960 (120*8)	280	268,800	161,280

6. CRITICAL FACTORS

The following factors may be taken into account while making investment decision:

- Technical know-how and basic knowledge of the entrepreneur
- Production of a quality product, specific to user need and satisfaction
- Availability of specialized workforce
- Strict checks on quality standards
- Up-to-date knowledge of market needs and new technology
- Selection of appropriate machinery, technology and human resources
- Rigorous supervision of the production process at every level
- Ability to generate work orders through industrial networking (B2B and B2C)
- Quality products and customer satisfaction
- Attractive labeling and packaging

7. GEOGRAPHICAL POTENTIAL FOR INVESTMENT

For the success of this manufacturing unit, it is necessary to determine the target market of the product. In recent years the demand of motorcycles has increased in all across the country. However, metropolitan cities like Lahore, Karachi, and Faisalabad, Peshawar carries greater potential for setting up this proposed unit.

Locating the unit in large developed cities would provide advantage of easy acquisition of quality raw material, proximity with buyers to generate consistent orders, followed by an increased demand.

8. POTENTIAL TARGET MARKETS

In Pakistan, motorcycle helmets were used by the riders as an option. However, in recent years, its use has increased because it has been made mandatory under the Law. The manufacturing unit will produce motorcycle safety helmets and sell through wholesale dealers in the market.

Pakistani motorcycle industry accelerated and scored the best ever sales. According to government of Pakistan statistics motorcycle industry's March sales were close to

500,000 units, which are 27.7% higher from 2020 and 14.5% higher from the 2019, which is expected to 1,500,000 units in 2025. Helmet market is associated with motor cycle market; therefore, helmet demand will increase. This increase in demand is met with import as well as induction of new manufacturers in the industry.

Increased sale of motorcycle and implementation of Law, can potentially support a shift towards more demand of helmets in coming years. Therefore, it can be inferred that it is timely to invest in the proposed project.

As per tests and study conducted by the Ministry of Science and Technology, millions of helmets both locally manufactured are not up to safety standards. Not only the helmets are poor in quality but in most of the accidental cases, they have proved to be dangerous for the wearers.

Currently in Pakistan helmet manufacturer industry operates as a cottage industry which has no reliable record about their numbers and production. These manufacturing units target local market. The locally manufactured helmets do not meet the quality standards for export.

9. PROJECT COST SUMMARY

A detailed financial model has been developed to analyze the commercial viability of the unit for manufacturing of motorcycle safety helmets. Various costs and revenue related assumptions along with results of the analysis are outlined in this section.

The projected Income Statement, Cost of Goods Sold, Cash Flow Statement and Balance Sheet are attached as Annexure.

9.1. Project Economics

All the figures in this financial model have been calculated after carefully taking into account the relevant assumptions and target market.

9.2. Project Cost

Total investment cost of the project has been calculated to be PKR. 10,774,595 . The project will be financed through 100% Equity. Table 2 provides the detail of cost calculated for the proposed manufacturing unit.

Table 2: Project Cost

Description of Costs	Amount (PKR)
Building Renovation Costs	470,500
Machinery & Equipment	4,345,000
Furniture & Fixtures	355,000
Office Equipment	678,000
Office Vehicles	80,800

Pre-operating Costs	1,245,886
Advance Rent / Security	202,500
Total Capital Cost	7,377,686
Working Capital	
Equipment spare part inventory	36,208
Raw material inventory	2,293,200
Upfront building rent	67,500
Cash	1,000,000
Total Working Capital	3,396,908
Total Project Cost	10,774,595

9.2.1. Land

The Motorcycle Safety Helmet Manufacturing Unit will be started in a rented building with an area of 2,250 sq. ft. High land cost in urban areas and easy availability of suitable units on rent for setting up a business makes it economically rational to start a business in a rented space. Therefore, no land cost has been added to the project cost.

Breakup of the space requirement is provided in Table 3.

Table 3: Breakup of Space Requirement

Area Description	Area (sq. ft.)
Covered Area	
Admin Block	290
Factory Area	1440
Workshop	240
Store	120
Washroom	80
Total Area	2,250

9.2.2. Building

The safety helmets manufacturing unit will be set up in a rented building of 2,250 sq. ft. Industrial electricity connection having load up to 15-25 KW (B1) is required for proposed project. There will be no cost of building construction; however, building renovation and interior decoration cost is included in the capital investment. Building rent is included in the operating cost.

Table 4 provides details of building renovation and interior decoration cost.

Table 4: Building Renovation Cost

Cost Item	UOM	Total Liter / Area / Number	Unit Cost/ sq.ft. (PKR)	Total Cost (PKR)
Paint Cost	Litre	225	500	112,500
Labour Cost	Feet	22,500	8	180,000
Wall Racks	Units	10	15,000	150,000
Curtains	Units	4	5,000	20,000
Blinds	Units	4	2,000	8,000
Total				470,500

9.2.3. Machinery and Equipment Requirement

Table 5 provides details of machinery and equipment required for the project.

Table 5: Machinery and Equipment Requirement

Cost Item	Unit(s)	Unit Cost (PKR)	Total Cost (PKR)
Injection Molding Machine- Skull (Cycle time 32 Sec) (120 Ton Force)	1	2,500,000	2,500,000
Injection Molding Machine- Visor (Cycle time 72 Sec) (40 Ton Force)	1	1,000,000	1,000,000
Sewing Machine (domestic)	4	25,000	100,000
Molds of Helmets	4	100,000	400,000
Molds of Visor	4	50,000	200,000
Plastic Drums	5	3,000	15,000
Hand Drill Machines	4	15,000	60,000
Mechanical Tool Kits	2	20,000	40,000
Electrical Tool Kits	2	15,000	30,000
Total Cost			4,345,000

Table 6 provides details of tool kits.

Table 6: Components of tool kits

Mechanical Tool Kit	Electrical Tool Kit
Wrenches (Set)	Multi-meter
Screwdrivers	Voltage Tester
Pliers	Wire Strippers
Hammer	Circuit Finder
Multi-meter	Screw drivers & Nut drivers
Scissors	Pliers
Electrical Tape	Fish Tape
Hex Wrench(Set)	Tape Measure
LED Headlamp	Hammer
Mechanic Gloves (Disposable and Non-disposable)	Level
Wire Terminal Crimper	Torch
Wire Terminals (set)	Utility Knife

9.2.4. Furniture & Fixtures Requirement

Table 7 provides details of the furniture and fixture requirement of the project.

Table 7: Furniture and Fixtures Requirement

Cost Item	Units	Unit Cost (PKR)	Total Cost (PKR)
Executive Table	1	30,000	30,000
Reception Counter	1	50,000	50,000
Executive Chairs	1	20,000	20,000
Office Chairs	12	10,000	120,000
Staff Table	4	25,000	100,000
Sofa Sets	1	35,000	35,000
Total Cost			355,000

9.2.5. Office Equipment Requirement

Details of office equipment required for the project is provided in Table 8.

Table 8: Office Equipment Requirement

Cost Item	Units	Unit Cost (PKR)	Total Cost (PKR)
Air Conditioners	3	90,000	270,000
Water Dispenser / Water Cooler	2	20,000	40,000
Laptop	2	80,000	160,000
Printer	1	40,000	40,000
Wi-Fi / Internet Connection with Router Cost	1	5,000	5,000
Ceiling Fan	14	4,500	63,000
Security Cameras (2MP)	8	2,000	16,000
Exhaust Fan	10	2,000	20,000
DVR	1	12,000	12,000
Bracket Fan	3	4,000	12,000
LED/LCD	1	40,000	40,000
Total Cost			678,000

9.2.6. Office Vehicle Requirement

Details of office vehicle required for the project is provided in Table 9.

Table 9: Office Vehicle Requirement

Cost Item	Unit(s)	Unit Cost (PKR)	Registration fee @ 1%	Total Cost (PKR)
Motorcycle	1	80,000	800	80,800
Total Cost				80,800

9.2.7. Pre-Operating Cost

Details of pre-operating cost for the project are provided in Table 10.

Table 10: Pre-Operating Cost

Cost Item	Unit Cost/ Month (PKR)	Total Cost (PKR)
Administration Cost		0
Utilities exp.		940,886
Total Cost		940,886

9.2.8. Security against Building Rent

Details of pre-operating cost for the project are provided in Table 11.

Table 11: Security against Building Rent

Cost Item	Months	Unit Cos/Month (PKR)	Total Cost (PKR)
Security against Building Rent	3	67,500	202,500
Total (PKR)			202,500

9.3. Financial Feasibility Analysis

The financial feasibility analysis given in Table 12 provides the information regarding projected IRR, NPV and payback period of the study based on 100% equity.

Table 12: Financial Feasibility Analysis

Description	Project
IRR	59%
NPV (PKR)	31,656,837
Payback Period (years)	2.33
Projection Years	10
Discount Rate used for NPV	20%

9.4. Financial Feasibility Debt Financing

The financial feasibility analysis given is shown in table. Table 13. provides the information regarding projected IRR, NPV and payback period of the study based on combination of equity (50%) and debt (50%) financing for the proposed project.

Table 13: Financial Feasibility Debt Financing

Description	Project
IRR	59%
NPV (PKR)	47,353,918
Payback Period (years)	2.33
Projection Years	10
Discount Rate used for NPV	14%

9.5. Breakeven Analysis

Breakeven analysis is provided in Table 14.

Table 14: Breakeven Analysis

Particulars	Amount First Year (PKR)	Ratios
Sales	47,040,000	100%
Variable Cost	36,681,847	78%
Contribution	10,358,153	22%
Fixed Cost	5,338,587	11%
Breakeven		
Breakeven Units		34,635
Breakeven Revenue		24,244,392
Breakeven Capacity		31%

9.6. Revenue Generation

The proposed product ex-factory price is 700 per unit. Local manufacturers' offer price range 500-1000 per unit, whereas import price range is 1,000-1,800 per unit.

Based on the 60% capacity utilization of the unit, sales revenue during the first year of operations is estimated in Table 15.

Table 15: Revenue Generation

Product	Production / Year (Unit)	Capacity Utilization @ 60%	Price per Unit	Annual Revenue (PKR)
Safety Helmets	112,000	67,200	700	47,040,000

9.7. Variable Cost Estimate

Variable costs of the project have been provided in detail in Table 16.

Table 16: Variable Cost Estimate

Description of Costs	Total Cost (PKR)
Raw material Cost	27,518,400
Direct labor	7,020,000
Utilities	717,197
Machinery maintenance	217,250

Travelling expense	246,000
Communications expense (phone, fax, mail, internet, etc.)	369,000
Office vehicles maintenance	102,000
Office expenses (stationery, entertainment, janitorial services, etc.)	492,000
Total Variable Cost (PKR)	36,681,847

9.7.1. Raw Material Cost

Per unit cost of goods sold related to major components used in manufacturing and total cost of goods sold based on estimated annual sales of 67,200 units is provided in Table 17.

Table 17: Raw material

Description of Costs	Price per KG	Consumption per unit (KG)	Per Unit Cost (PKR)
Acrylonitrile Butadiene Styrene (ABS)	150	1	150
Polycarbonate	60	0.30	18
Rubber	210	0.20	42
Expanded Polystyrene Foams (EPS)	220	0.35	77
Polyester Fabric	415	0.10	41.5
Nylon/Polypropylene	170	0.10	17
Paint and Lacquer			50
Packing and Assembling Cost			14
Total Per Unit Cost		2.05	409.5
Total Cost (67,200 sold units)			27,518,400

9.7.2. Office Vehicle Maintenance

Office vehicle cost is provided in Table 18.

Table 18: Office Vehicle Maintenance

Description of Costs	Amount (PKR)
Fuel cost	7,000
Service charges	500
Oil & tuning	1,000
Monthly expense	8,500
Yearly expense	102,000

9.8. Fixed Cost Estimate

Details of fixed cost for the project are provided in Table 19.

Table 19: Fixed Cost Estimate

Description of Costs	Amount (PKR)
Management Staff	2,460,000
Administration benefits expense	94,800
Building rental expense	810,000
Utilities	223,690
Professional fees (legal, audit, consultants, etc.)	470,400
Depreciation expense	912,920
Amortization of pre-operating costs	249,177
Promotional expense	117,600
Total Fixed Cost	5,338,587

9.9. Human Resource Requirement

For the 1st year of operations, the human resource requirements are projected in Table 20.

Table 20: Human Resource Requirement

Post	No.of Employees	Monthly Salary (PKR)	Annual Salary (PKR)
Management Staff			
Owner	1	100,000	1,200,000
Admin & Finance Officer	1	45,000	540,000
Security Guard	2	20,000	480,000
Office Boy	1	20,000	240,000
Total Management Staff Salary			2,460,000
Direct Labor			
Visor Machine Operator	1	45,000	540,000
Visor Machine (unskilled labor)	2	20,000	480,000
Injection Molding Machine Operator	1	45,000	540,000
Injection Molding Machine (unskilled labor)	2	20,000	480,000
Tailor	4	40,000	1,920,000
Mechanical Foreman	1	40,000	480,000
Packing Labor	4	25,000	1,200,000
Labor (unskilled)	2	20,000	480,000
Assembling Labor (skilled)	3	25,000	900,000
Total Direct Labor Salary			7,020,000
Total Human Resource Cost			9,480,000

10. CONTACT DETAILS

Details of suppliers of Machinery and Equipment are provided in Table 21.

Table 21: Suppliers of Machinery and Equipment

Cost Item	Origin	Supplier Name
Injection Molding Machine- Visor	Pakistan	HI Tech Plastic Engineering (Daroghewala Lahore)
Injection Molding Machine- Skull	Pakistan	HI Tech Plastic Engineering (Daroghewala Lahore)
Sewing Machine	Pakistan	Singer Pakistan Limited (Jubilee Town Raja Chamber Lahore)
Mold of Helmets	Pakistan	Shujah & Co (C Canal City Rail town Lahore)
Mold of Visor	Pakistan	Machine Crafts (Pvt) Ltd (Shahdara Lahore)
Plastic Drum	Pakistan	Steel and Plastic drum Manufacturing (Shahdara Lahore)
Hand Drill Machines	Pakistan	Awh Store
Mechanical Tool Kits	CHINA	JML automation
Electrical Tool Kits	CHINA	MAXX Tools

Contact details of suppliers of Machinery and Equipment are provided in Table 22.

Table 22: Contact Details of Suppliers

Cost Item	Contact Number	E-mail	Web Address
Injection Molding Machine- Visor	923154782666 924236557777	info@hitech-machinery.com	https://hitech-machinery.com/
Injection Molding Machine- Skull	923154782666 924236557777	info@hitech-machinery.com	https://hitech-machinery.com/
Sewing Machine	923244703831	-	www.wavessinger.com
Mold of Helmets	923214697477	shujah99@live.com	http://shujah-co.business.site/
Mold of Visor	924237963351 924237963355 924237963353 924237963354	-	www.machinecrafts.pk
Plastic Drum	923212438190	-	-
Hand Drill Machines	-	-	www.daraz.pk/shop/awh-store
Mechanical Tool Kits	8618560651752 8618561754198	james@jmlautomation.com	www.jmldirect.com
Electrical Tool Kits	8651258689066 8651258689811	Sales04@maxxtools.com.cn	Maxxtools.en.alibaba.com

11. USEFUL LINKS

Table 23: Useful Links

Name of Organization	Website
Small and Medium Enterprises Development Authority (SMEDA)	www.smeda.org.pk
National Business Development Program (NBDP)	www.nbdp.org.pk
Government of Pakistan	www.pakistan.gov.pk
Ministry of Industries and Production	www.moip.gov.pk
Government of Punjab	www.punjab.gov.pk
Trade Development Authority of Pakistan	www.tdap.gov.pk
Security and Exchange Commission of Pakistan	www.secp.gov.pk
State Bank of Pakistan	www.sbp.gov.pk
Federation of Pakistan Chambers of Commerce and Industry (FPCCI)	www.fpcci.com.pk
Technical Education and Vocational Training Authority (TEVTA)	www.tevta.org
Punjab Vocational Training Council (PVTC)	www.pvtc.gop.pk
Punjab small industries corporation (PSIC)	www.psic.gop.pk
Sindh Small Industries Corporation (SSIC)	www.ssic.gos.pk
Small Industries Development Board (SIDB)	www.sidbkp.com
Industries and Commerce Department Balochistan (ICDB)	www.dgicd.gob.pk
Global Source Products	www.globalsources.com
Road Safety Pakistan	www.roadsafetypakistan.pk
Pakistan Automotive Manufacturers Association	www.pama.org.pk

12. ANNEXURES

12.1. Income Statement

Calculations	SMEDA									
Income Statement										
	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
Revenue	47,040,000	59,435,040	73,563,598	89,628,049	102,459,798	110,963,961	120,173,970	130,148,409	140,950,727	152,649,638
Cost of sales										
Material Cost	27,518,400	34,769,498	43,034,705	52,432,409	59,938,982	64,913,917	70,301,772	76,136,819	82,456,175	89,300,038
Utilities	717,197	779,999	848,301	922,584	1,003,371	1,091,233	1,186,789	1,290,712	1,403,736	1,526,656
Direct Labor	7,020,000	7,534,800	8,087,352	10,980,366	11,785,593	12,649,870	13,577,527	14,573,212	15,641,914	16,788,988
Machinery Maintenance - Cost	217,250	235,282	254,810	275,959	298,864	323,670	350,534	379,629	411,138	445,262
Total cost of sales	35,472,847	43,319,579	52,225,168	64,611,318	73,026,810	78,978,690	85,416,622	92,380,372	99,912,963	108,060,944
Gross Profit	11,567,153	16,115,461	21,338,430	25,016,731	29,432,988	31,985,271	34,757,347	37,768,037	41,037,764	44,588,693
General administration & selling expenses										
Management Staff	2,460,000	2,640,400	2,834,029	3,427,655	3,679,016	3,948,811	4,238,390	4,549,205	4,882,814	5,240,887
Administration benefits expense	94,800	101,752	109,214	144,080	154,646	165,987	178,159	191,224	205,247	220,299
Building rental expense	810,000	891,000	980,100	1,078,110	1,185,921	1,304,513	1,434,964	1,578,461	1,736,307	1,909,938
Utilities	223,690	243,278	264,581	287,749	312,946	340,350	370,153	402,566	437,818	476,156
Travelling expense	246,000	264,040	283,403	342,765	367,902	394,881	423,839	454,921	488,281	524,089
Communications expense (phone, fax, mail, internet, etc.)	369,000	396,060	425,104	514,148	551,852	592,322	635,759	682,381	732,422	786,133
Office vehicles running expense	102,000	110,466	119,635	129,564	140,318	151,965	164,578	178,238	193,031	209,053
Office expenses (stationery, entertainment, janitorial services, etc)	492,000	528,080	566,806	685,531	735,803	789,762	847,678	909,841	976,563	1,048,177
Promotional expense	117,600	148,588	183,909	224,070	256,149	277,410	300,435	325,371	352,377	381,624
Professional fees (legal, audit, consultants, etc.)	470,400	594,350	735,636	896,280	1,024,598	1,109,640	1,201,740	1,301,484	1,409,507	1,526,496
Depreciation expense	912,920	912,920	912,920	912,920	912,920	957,084	684,144	1,545,419	1,545,419	1,545,419
Amortization of pre-operating costs	249,177	249,177	249,177	249,177	249,177	-	-	-	-	-
Subtotal	6,547,587	7,080,111	7,664,514	8,892,051	9,571,250	10,032,723	10,479,839	12,119,111	12,959,786	13,868,270
Operating Income	5,019,566	9,035,350	13,673,916	16,124,680	19,861,738	21,952,548	24,277,509	25,648,926	28,077,978	30,720,423
Other income 2										
Gain / (loss) on sale of machinery & equipment	-	-	-	-	-	-	1,086,250	-	-	-
Gain / (loss) on sale of office equipment	-	-	-	-	-	-	169,500	-	-	-
Gain / (loss) on sale of office vehicles	-	-	-	-	-	-	20,200	-	-	-
Earnings Before Interest & Taxes	5,019,566	9,035,350	13,673,916	16,124,680	19,861,738	21,952,548	25,553,459	25,648,926	28,077,978	30,720,423
Subtotal	-	-	-	-	-	-	-	-	-	-
Earnings Before Tax	5,019,566	9,035,350	13,673,916	16,124,680	19,861,738	21,952,548	25,553,459	25,648,926	28,077,978	30,720,423
Tax	1,405,409	2,569,986	3,915,170	4,625,892	6,024,651	6,643,793	7,608,905	7,346,484	8,050,909	8,817,218
NET PROFIT/(LOSS) AFTER TAX	3,614,158	6,465,364	9,758,746	11,498,789	13,837,087	15,308,755	17,944,554	18,302,442	20,027,069	21,903,205

12.2. Balance Sheet

Statement Summaries											SMEDA
Balance Sheet											Rs. in actuals
	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
Assets											
<i>Current assets</i>											
Cash & Bank	1,000,000	2,247,034	3,809,353	5,292,687	6,055,590	6,216,349	6,890,801	16,562,012	34,044,950	52,907,637	73,581,617
Accounts receivable	-	5,799,452	6,563,530	8,198,546	10,059,759	11,841,032	13,156,259	14,248,229	15,430,832	16,711,591	18,098,653
Raw material inventory	2,293,200	2,293,200	3,137,947	4,206,244	5,550,140	6,871,348	8,059,328	9,452,698	11,086,965	13,003,779	15,251,990
Equipment spare part inventory	36,208	42,351	49,535	57,938	67,767	79,263	92,709	108,436	126,831	148,347	-
Pre-paid building rent	67,500	74,250	81,675	89,843	98,827	108,709	119,580	131,538	144,692	159,161	-
Total Current Assets	3,396,908	10,456,287	13,642,040	17,845,258	21,832,083	25,116,701	28,318,677	40,502,913	60,834,270	82,930,515	106,932,260
<i>Fixed assets</i>											
Machinery & equipment	4,345,000	3,693,250	3,041,500	2,389,750	1,738,000	1,086,250	434,500	7,446,566	6,329,581	5,212,597	4,095,612
Furniture & fixtures	355,000	301,750	248,500	195,250	142,000	88,750	35,500	608,408	517,146	425,885	334,624
Office vehicles	80,800	68,680	56,560	44,440	32,320	20,200	8,080	164,086	139,473	114,860	90,247
Office equipment	678,000	576,300	474,600	372,900	271,200	169,500	67,800	1,161,973	987,677	813,381	639,085
Renovation Cost	470,500	376,400	282,300	188,200	94,100	691,319	553,055	414,791	276,528	138,264	-
Advance against Building Rent	202,500	202,500	202,500	202,500	202,500	202,500	202,500	202,500	202,500	202,500	202,500
Total Fixed Assets	6,131,800	5,218,880	4,305,960	3,393,040	2,480,120	2,258,519	1,301,435	9,998,324	8,452,905	6,907,487	5,362,068
<i>Intangible assets</i>											
Pre-operation costs	1,245,886	996,709	747,532	498,355	249,177	-	-	-	-	-	-
Legal, licensing, & training costs	-	-	-	-	-	-	-	-	-	-	-
Total Intangible Assets	1,245,886	996,709	747,532	498,355	249,177	-	-	-	-	-	-
TOTAL ASSETS	10,774,595	16,671,876	18,695,532	21,736,653	24,561,380	27,375,219	29,620,112	50,501,237	69,287,175	89,838,002	112,294,328
Liabilities & Shareholders' Equity											
<i>Current liabilities</i>											
Accounts payable	-	2,283,123	2,881,177	3,562,804	4,337,765	4,957,571	5,369,613	5,815,951	6,299,448	6,823,205	7,376,326
Total Current Liabilities	-	2,283,123	2,881,177	3,562,804	4,337,765	4,957,571	5,369,613	5,815,951	6,299,448	6,823,205	7,376,326
<i>Other liabilities</i>											
Total Long Term Liabilities	-	-	-	-	-	-	-	-	-	-	-
<i>Shareholders' equity</i>											
Paid-up capital	10,774,595	10,774,595	10,774,595	10,774,595	10,774,595	10,774,595	10,774,595	13,264,827	13,264,827	13,264,827	13,264,827
Retained earnings	-	3,614,158	5,039,761	7,399,254	9,449,021	11,643,054	13,475,904	31,420,458	49,722,901	69,749,970	91,653,175
Total Equity	10,774,595	14,388,753	15,814,356	18,173,848	20,223,616	22,417,649	24,250,499	44,685,285	62,987,728	83,014,797	104,918,002
TOTAL CAPITAL AND LIABILITY	10,774,595	16,671,876	18,695,532	21,736,653	24,561,380	27,375,219	29,620,112	50,501,237	69,287,175	89,838,002	112,294,328

12.3. Cash Flow Statement

Calculations	SMEDA										
Cash Flow Statement											
	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
<i>Operating activities</i>											
Net profit		3,614,158	6,465,364	9,758,746	11,498,789	13,837,087	15,308,755	17,944,554	18,302,442	20,027,069	21,903,205
Add: depreciation expense		912,920	912,920	912,920	912,920	912,920	957,084	684,144	1,545,419	1,545,419	1,545,419
amortization of pre-operating costs		249,177	249,177	249,177	249,177	249,177	-	-	-	-	-
amortization of training costs		-	-	-	-	-	-	-	-	-	-
Deferred income tax		-	-	-	-	-	-	-	-	-	-
Accounts receivable		(5,799,452)	(764,078)	(1,635,016)	(1,861,213)	(1,781,273)	(1,315,227)	(1,091,970)	(1,182,603)	(1,280,759)	(1,387,062)
Raw Material inventory	(2,293,200)	-	(844,747)	(1,068,297)	(1,343,896)	(1,321,208)	(1,187,980)	(1,393,369)	(1,634,267)	(1,916,814)	(2,248,210)
Equipment Spare parts inventory	(36,208)	(6,142)	(7,184)	(8,403)	(9,829)	(11,496)	(13,446)	(15,727)	(18,395)	(21,516)	148,347
Consumables Inventory	-	-	-	-	-	-	-	-	-	-	-
Pre-paid building rent	(67,500)	-	(7,425)	(8,168)	(8,984)	(9,883)	(10,871)	(11,958)	(13,154)	(14,469)	159,161
Accounts payable		2,283,123	598,053	681,628	774,960	619,806	412,043	446,338	483,496	523,757	553,121
Other liabilities		-	-	-	-	-	-	-	-	-	-
Cash provided by operations	(2,396,908)	1,247,034	6,602,080	8,882,587	10,211,925	12,495,131	14,150,356	16,562,012	17,482,938	18,862,687	20,673,981
<i>Financing activities</i>											
Additions to Working Capital Loan	-	-	-	-	-	-	-	-	-	-	-
Issuance of shares	10,774,595	-	-	-	-	-	-	2,490,232	-	-	-
Purchase of (treasury) shares											
Cash provided by / (used for) financing activities	10,774,595	-	-	-	-	-	-	2,490,232	-	-	-
<i>Investing activities</i>											
Capital expenditure	(7,377,686)	-	-	-	-	(691,319)	-	(9,381,033)	-	-	-
Acquisitions											
Cash (used for) / provided by investing activities	(7,377,686)	-	-	-	-	(691,319)	-	(9,381,033)	-	-	-
NET CASH	1,000,000	1,247,034	6,602,080	8,882,587	10,211,925	11,803,812	14,150,356	9,671,211	17,482,938	18,862,687	20,673,981

13. KEY ASSUMPTIONS

13.1. Operating Cost Assumptions

Table 24: Operating Cost Assumptions

Description	Details
Building rent growth rate	10%
Furniture and fixture depreciation	15%
Vehicle depreciation	15%
Office equipment depreciation	15%
Inflation rate	8.3%
Wage growth rate	7.3%
Electricity price growth rate	8.8%
Office equipment price growth rate	8.0%
Office vehicle price growth rate	10.7%

13.2. Revenue Assumptions

Table 25: Revenue Assumptions

Description	Details
Sale price growth rate	8.3%
Initial capacity utilization	60%
Capacity growth rate	10%
Maximum capacity utilization	95%

13.3. Financial Assumptions

Table 26: Financial Assumptions

Description	Details
Project life (Years)	10
Debt: Equity	0:100
Discount Rate used for NPV	20%

13.4. Cash Flow Assumptions**Table 27: Cash Flow Assumptions**

Description	Details
Accounts receivable cycle (in days)	45
Accounts payable cycle (in days)	30

Small and Medium Enterprises Development Authority

HEAD OFFICE

4th Floor, Building No. 3, Aiwan-e-Iqbal Complex, Egerton Road, Lahore
Tel: (92 42) 111 111 456, Fax: (92 42) 36304926-7

www.smeda.org.pk, helpdesk@smeda.org.pk

REGIONAL OFFICE PUNJAB	REGIONAL OFFICE SINDH	REGIONAL OFFICE KPK	REGIONAL OFFICE BALOCHISTAN
3 rd Floor, Building No. 3, Aiwan-e-Iqbal Complex, Egerton Road Lahore, Tel: (042) 111-111-456 Fax: (042) 36304926-7 helpdesk.punjab@smeda.org.pk	5 TH Floor, Bahria Complex II, M.T. Khan Road, Karachi. Tel: (021) 111-111-456 Fax: (021) 5610572 helpdesk-khi@smeda.org.pk	Ground Floor State Life Building The Mall, Peshawar. Tel: (091) 9213046-47 Fax: (091) 286908 helpdesk-pew@smeda.org.pk	Bungalow No. 15-A Chaman Housing Scheme Airport Road, Quetta. Tel: (081) 831623, 831702 Fax: (081) 831922 helpdesk-qta@smeda.org.pk