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USAID/PAKISTAN NON- AGRICULTURAL VALUE CHAIN ASSESSMENT

ASIA AND THE MIDDLE EAST ECONOMIC GROWTH
BEST PRACTICES PROJECT

MAY 2013

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BEST PRACTICES PROJECT**

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The authors' views expressed in this publication do not necessarily reflect the views of the United States Agency for International Development or the United States government.

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ACRONYMS

3G	Third generation
ADB	Asian Development Bank
AHAN	Aik Hunar Aik Nagar
AMEG	Asia and the Middle East Economic Growth Best Practices Project
APMIA	All Pakistan Marble Industry Association
ASTM	American Society for Testing and Materials
BDS	Business development services
BRIC	Brazil, Russia, India, and China
CAD	Computer-aided design
CAMS	Consumer asset management system
CEO	Chief executive officer
CFCs	Common Facility Centers
CFTC	Karachi Common Facility Training Center
CFTCs	Common Facility Training Centers
CMM	Capability Maturity Model
CMMI	Capability Maturity Model Integration
CNC	Computer numerical control
CPI	Centre for Promotion of Imports from Developing Countries
DCA	Development Credit Authority
DISCO	Power distribution company
DRAP	Drug and Regulatory Authority of Pakistan
DSEC	Dimensions Stone Evaluation Center
EOBI	Employees Old-Age Benefits Institution
EPA	Environmental Protection Agency
ERP	Enterprise resource planning
EU	European Union
GBI	Global business intelligence
GDA	Global Development Alliance
GDP	Gross domestic product
GMP	Good manufacturing practice
GTAP	Global Trade Analysis Project

HS	Harmonized system
ICT	Information and communication technology
IFC	International Finance Corporation
ILO	International Labor Organization
IP	Intellectual property
ISO	International Organization for Standardization
IT	Information technology
KPK	Khyber Pakthunkwah
KTDMC	Karachi Tools, Dies, and Molds Centre
LPDI	Leather Product Development Institute and Development Program
LTE	Long-term evolution (fourth generation)
M&G	Marble and granite
MEDA	Mennonite Economic Development Associates
MFI	Microfinance institution
MIDC	Metal Industry Development Center
MSME	Micro-/small/medium enterprise
MT	Metric ton
NADRA	National Database and Registration Authority
NCNPR	U.S. National Center for Natural Product Research
NIH	National Institutes of Health
NILT	National Institute of Leather Technology
OEM	Original equipment manufacturer
PASDEC	Pakistan Stone Development Company
PBS	Pakistan Bureau of Statistics
PCISR or PCSIR	Pakistan Council of Scientific and Industrial Research
PEDRA	Pakistan Electronic Media Regulatory Authority
PHMA	Pakistan Hosiery Manufacturers Association
PIFF	Pakistan Infrastructure Financing Facility
PISDAC	Pakistan Initiative for Strategic Development and Competitiveness
PITB	Punjab Information Technology Board
PITMAEM	Pakistan Institute of Technology for Minerals and Advanced Engineering Materials
PKR	Pakistan rupee

PLGMEA	Pakistan Leather Garments Manufacturers and Exporters Association
PNAC	Pakistan National Accreditation Council
PPP	Public-private partnership
PRGMEA	Pakistan Readymade Garments Manufacturers and Exporters Association
PRGTTI	Pakistan Readymade Garments Technical Training Institute
PSEB	Pakistan Software Export Board
PSQCA	Pakistan Standard and Quality Control Authority
PTPMA	Pakistan Tibbi Pharmaceutical Manufacturers Association
R&D	Research and development
RCA	Revealed comparative advantage
REACH	Registration, evaluation, authorization, and restriction of chemicals
SECP	Security and Exchange Commission of Pakistan
Sedex	Supplier Ethical Data Exchange
SIMAP	Surgical Instrument Manufacturers Association of Pakistan
SMART	Self-Monitoring and Reporting Tool
SME	Small/medium enterprise
SMEDA	Small and Medium Enterprises Development Authority
SMI	Surgical and medical instruments
SMTL	Sialkot Material Testing Laboratory
SWOG	Marble and Granite Strategy Working Group
TDAP	Trade Development Authority of Pakistan
TEVTA	Technical Education & Vocational Training Authority
TUSDEC	Technology Up-gradation and Skills Development Company
UNCTAD/ITC	United Nations Conference on Trade and Development / International Trade Centre
UNIDO	United Nations Industrial Development Organization
WHO	World Health Organization
WITS	World integrated trade solution
WRAP	Worldwide responsible accredited production
WTO	World Trade Organization

EXECUTIVE SUMMARY

A. INTRODUCTION AND BACKGROUND

Deterioration in the global economy in the past few years has created difficult external conditions for Pakistan to transform, strengthen, and diversify its economy through export-led strategies. In addition, external shocks, internal policy inaction, political disorder, and structural issues have placed Pakistan in a dire economic condition. The country's per-worker manufacturing output has grown by a mere 1.5 percent each year during the past decade. Trade indicators reflect low outward orientation, concentration on low value-added activities (low sophistication), and an undiversified product mix. Pakistan's export share of gross domestic product (GDP) has remained low and falling—from 13 percent to 11 percent in 2010, according to statistics from the State Bank of Pakistan. The Punjab and Sindh regions, which are the hub of Pakistan's manufacturing industry, have borne the brunt of adverse developments, resulting in rising unemployment — especially among youth and women. Systemic structural issues such as energy and infrastructure have further complicated the economic situation.

In light of these systemic constraints, USAID/Pakistan requested a value chain assessment of 10 to 20 non-agricultural sectors to provide strategic input for future programming efforts and to strengthen Pakistan's economy. The objectives of the assessment are to summarize: (1) value chain-specific systemic constraints; (2) trade and competitiveness potential; (3) time, cost, and difficulty of improving the business enabling environment; (4) multiplier effects; and (5) impact on environment and gender. The 10-week study was funded through the USAID Asia and the Middle East Economic Growth Best Practices (AMEG) project.

Nihal Pitigala led overall design of the evaluation and management of the team. Dr. Pitigala was supported by Janice K. Stallard, a value chain expert from Banyan Global; Aijaz Ahmad, an infrastructure expert; Gustavo Marquez, a labor economist from JBS International; Ambreen Gilani, a Pakistani economist; and Andrew Batchelor and Veenita Kaushik, economic researchers.

Before their arrival in Pakistan, the AMEG team developed a preliminary value chain selection process and presented it to USAID for input and finalization. Once in Pakistan, the team gathered qualitative and quantitative data using information from a mini-survey by Grant Thornton, key informant interviews, and focus group discussions. The team traveled initially to Islamabad for government level meetings but spent the majority of their time in Lahore, Sialkot, and Karachi to meet with key business leaders, chambers of commerce, banks, business service providers, government officials, and other stakeholders.

B. METHODOLOGY AND SELECTION PROCESS

Value chain selection was completed based on agreed criteria including chains' potentials for growth and competitiveness, impact, and contribution to other development objectives such as natural resource management, women's

empowerment, and food security. The following specific criteria and weighting were used to select an initial list of 16 value chains¹:

- Revealed comparative advantage (RCA) index (weight of 25 percent)
- Employment potential (weight of 20 percent)
- Income potential (weight of 15 percent)
- Geographic location (weight of 10 percent)
- Scale-up and growth potential for small and medium enterprises (SMEs) (weight of 15 percent)
- Multiplier effects, forward and backward linkages (weight of 15 percent)

These criteria and associated weighting were applied to the initial set of 16 value chains, which was further refined through stakeholder interviews and discussions with USAID, into six final value chains: garments, marble, information technology (IT), surgical instruments, leather, and herbal medicines.

C. IMPLEMENTATION

Desk review. The value chain assessment was launched with a comprehensive desk review of secondary data and literature on the selected value chains. This desk review examined numerous existing analyses of the economic potential of specific value chains done by donor projects such as USAID FIRMS, Entrepreneurs, Pakistan Initiative for Strategic Development and Competitiveness (PISDAC), the Competitiveness Support Fund, International financial institutions, multi-lateral and bi-lateral organizations, and Pakistani organizations such as the Small and Medium Enterprises Development Authority (SMEDA), the Technology Up-gradation and Skills Development Company (TUSDEC), Aik Hunar Aik Nagar (AHAN), and NGOs and sector development companies. The literature review's findings helped ground truth and guide the study's assessment of systemic constraints and opportunities for USAID intervention.

SME survey. Grant Thornton was hired to undertake a comprehensive survey of the selected value chains. Grant Thornton's team interviewed approximately 200 value chain actors in the selected six value chains using individual and stakeholder meetings based on a survey designed by the study team. A stratified random sampling² was used for selection of 200 SMEs from the list generated through background research. Geographical areas covered included Karachi and Hyderabad in Sindh, and Lahore, Gujranwala, Gujrat, Sialkot, and Faisalabad in Punjab. Data from this survey were used to supplement the findings from key informant interviews.

Field work. The AMEG team carried out more than 100 in-depth interviews with key informants (SMEs, input providers, government representatives, research and testing centers, chambers of commerce, training institutes and universities, wholesalers and traders, and financial institutions), held multiple stakeholder workshops, and conducted on-site direct observation in the selected value chains. The team developed

¹Several of these were suggested in the original AMEG scope of work; the indicators are described in detail in the inception report.

²SMEs were stratified into sectors, and a probability proportionate to size technique will be employed for assigning weight to samples drawn from each sector.

a survey instrument to guide the field work and ensure that the multiple team members gathered uniform data sets and findings.

D. KEY FINDINGS AND RECOMMENDATIONS

The survey team produced maps of each value chain —found in each value chain summary in the following section — depicting constraints and opportunities for intervention. This executive summary highlights some of the key constraints identified for all six value chains. Recommendations marked with asterisks (*) could be fully or partially implemented through an AMEG pilot study or through follow-up research.

Key Survey Finding

According to the survey, marketing is one of the weakest links in the garment and marble value chains.

D1. BUSINESS ENABLING ENVIRONMENT AND POLICY ISSUES AFFECTING MANUFACTURING COMPETITIVENESS

Findings. Overarching policy issues that are having an impact on the value chains and industrial growth include zoning laws that discourage commercial development of small enterprises through punitive taxation and obsolete rental laws; trade policy issues that favor domestic orientation (rather than exports) and large-scale enterprises (versus SMEs); and an inefficient duty drawback system for exporters.

At the value chain level, the imposition of duties on machinery and raw materials and weak mining laws are punitive for the textile and marble sectors. Pakistan’s policy environment is fraught with inconsistencies and a lack of coordination among the ministries supporting SMEs. For example, due to an ongoing disagreement between government institutions, the Export Development Fund has not been used equitably for product and export development. In some cases, such as leather, environmental policies are simply not followed; in other cases, such as herbal medicines, governing bodies have not yet formalized regulations to guide private sector manufacturing. In still other sectors, particularly IT, policies are outdated and insufficient to meet changing market requirements.

Recommendations. Interventions in policy and the business enabling environment will require a long-term, phased approach to streamline and improve conditions as follows:

- Simplify the tariff and trade regulatory regime to help reduce Pakistan’s anti-export bias.
- Eliminate all trade-related statutory regulatory orders to facilitate swift simplification of the trade regime.
- Provide the government with assistance to promote trade and industrial policy reforms, including empirical analyses of economic and employment impacts of reforms.
- Offer sector associations technical assistance to support their advocacy for reform, such as streamlining the duty drawback regime and reforming the regulatory framework on mining techniques (e.g., banning explosives).

- Reform zoning and building regulations to allow land use in response to market demand.

D2. SUPPORT INSTITUTIONS

Findings. Pakistani SMEs face significant obstacles to obtaining the support they need to develop or improve marketing, technology, locally based and internationally recognized testing facilities, research and development (R&D), international accreditations, and financing, to function in today's global marketplace. For example, the lack of local chemical testing facilities (that meet international requirements) for the herbal medicines value chain increases overall production costs and extends production time frames. The IT sector lacks funding for R&D that could catalyze indigenous development of Pakistan's intellectual property.

Key Survey Finding

Ninety percent of SME survey respondents had never borrowed from a formal financial institution.

Recommendations

- Assist banks to develop down-market lending programs. This would include the development of less risk-adverse lending strategies, lower collateral conditions, and new business assessment strategies (e.g., cash flow-based lending versus collateral-based lending). The State Bank of Pakistan noted interest from Askari Bank, the National Bank and Aledia Bank to develop down-market SME lending programs; this training and technical assistance program could also be expanded to the Islamic banking sector.
- Conduct a study on innovative credit and equity product offerings. Assess alternative lending and equity approaches and include documentation of international best practices and provide recommendations for value chain-specific types of loan/equity products. The study will also assess the legal barriers to crowd sourcing as an equity investment vehicle for SMEs. Research could be implemented in coordination with interested banks to ensure buy-in and ownership of findings.*
- Support R&D across all value chains through specific initiatives (described in each value chain summary) to catalyze private sector-oriented and industry-focused research.
- Expand Pakistani-owned testing capacity through a Global Development Alliance (GDA).
- Promote international accreditations and expand marketing linkages through buying house/distribution partnerships — considered to be one of the most direct avenues for assisting smaller businesses to access new domestic and international market opportunities. Support local buying houses to expand technical assistance and advisory support to smaller businesses in the identified value chains.

D3. WORKFORCE DEVELOPMENT

Findings. A common complaint in every value chain was that training and academic programs were not oriented toward industry needs — curricula often do not include skills development in the areas firms most need. There are promising examples of

industry-academic linkages occurring organically across the six value chains, and one is summarized in the box at right. Similarly, students reported a lack of funding to attend technical training and university programs that would advance their career opportunities.

Recommendations

- Hold a conference that brings together the relevant stakeholders (such as the Higher Education Council, industry leaders, universities, and provincial education departments) to discuss key industry developments in all six value chains. The conference could be a platform for sharing information across industries and academic fields and addressing the gaps in development of relevant, qualified professionals. A summary paper from this conference could further advance learning and knowledge sharing among academics, students, and sector stakeholders.*
- Assess the viability of student loan programs to address workforce gaps (many youth from working class families lack access to financing that would help them attend technical training programs or enter universities). The assessment would review interest in introducing student loan programs among microfinance institutions (MFIs), MFI banks, commercial banks, or non-bank financial institutions.*
- Support the replication of private sector initiatives from firms such as TerraData, to improve industry-academic linkages.

Key Survey Finding

Since 2005, TerraData has delivered its own training-of-trainers program at major universities to create a curriculum on data warehousing and storage. TerraData's staff have developed a course on data warehousing, which includes hands-on lab work. TerraData continues to support the universities that have adopted the course.

D4. FIRM-LEVEL CONSTRAINTS

Findings. Some 80 percent of SMEs are family-owned. Most factory managers lack technical degrees and training in their fields, and only a handful have business diplomas. These factors have contributed to a series of interconnected organizational, managerial, and technological mismatches, such as the following:

- Limited knowledge of upgraded machinery and its benefits (i.e., improved productivity, quality, and energy efficiency).
- Lack of understanding about the benefits of digitization (i.e., enabling management to make time-sensitive decisions on buying inputs, traceability, and accessing real-time profit/loss information).
- Lack of international certifications.
- Lack of general understanding of the positive impact computers and social media can have on productivity and marketing.
- Not hiring professional marketing and/or distribution firms that could better represent their interests with international buyers.

Recommendations

- Develop an executive-level certification course on financial and business training through an industry-led partnership with local training institutions and universities. This would take the form of a specialized series of sessions on the importance and financial impact of digitizing their financial and organizational functions, the financial benefits of modernizing equipment, human resource management, accessing formal financial services (e.g., loans and business advisory services), and marketing.*
- Promote the adoption of supply-side and demand-side standards. On the supply side, strengthen the Pakistan Standards and Quality Control Authority (PSQCA) to set mandatory standards for safety and compliance in key sectors to uplift consumer welfare while helping the industry move toward higher standards. On the demand side, USAID can support sector associations to build awareness of the importance of international standards and provide firm-level technical assistance.
- Fund feasibility studies to launch firms in new sectors, such as herbal extraction and herbal processing businesses, and support GDAs with interested private sector investors.

D5. BACKWARD AND FORWARD LINKAGES

Findings. For backward linkages, the lack of consistent local supply and uniform quality of inputs cuts across most of the six value chains. For the marble sector, this stems from damage to 74 percent to 85 percent of marble during the mining process. For herbal medicines, this results from lack of cultivation and unsustainable collection processes. For leather, the gap in local supply reflects an unorganized input supply system (no commercialized raising of cattle, and 25 percent raw material losses at the slaughter and husbandry levels).

In terms of forward linkages, there are significant opportunities for deeper exploration of domestic market segments in the selected value chains, for example in the domestic garments sector for branded markets, an aspect that has not been addressed in previous value chain assessments. The domestic IT market is also mostly untapped. The commercial IT sector offers prospects of increased productivity across industries through social media and IT services (for example, using ERP systems to manage accounting and traceability for herbal medicine manufacturers). The social IT sector (health and education) offers prospects of reducing the costs of these services while increasing access (for example, ComSept is teaming with local hospitals to provide online diagnostics to rural communities through real-time video links).

Recommendations

- Support increased cultivation of herbs in farming communities throughout Sindh and Punjab, in partnership with major herbal manufacturers such as Herbion and Qarshi.
- Tap domestic IT market opportunities through support for R&D (through the Ministry of IT's ICT R&D Center) and provide assistance to catalyze emerging

business incubators' product development efforts (such as a return-on-investment tool for social marketing).

- Reform zoning and building regulations to allow land use to respond to market demand.
- To tackle waste issues at marble mines, USAID could facilitate a GDA to establish a model mining facility and support sector training on modern mining practices

D6. CROSSCUTTING ISSUES

E-payment findings and recommendation. Lack of a global e-payment platform is one of the most significant constraints to the expansion of the IT sector. This issue also has crosscutting implications for the productivity and competitiveness of Pakistan's SME sector.

Recommendation

- Hold an international conference, coupled with a white paper on the economic impact of e-payment services in Pakistan.*

Energy findings and recommendations. Pakistan's complex energy problems reflect the lack of a comprehensive and integrated energy strategy and insufficient fiscal support for energy generation and infrastructure. The National Planning Commission estimates the gap in power availability for 2012 to 2013 to be around 5,000 megawatts. This gap adversely affects businesses, especially SMEs, and is estimated to reduce GDP by 3 percent a year.

Recommendations

- Conduct a technical and financial feasibility study for setting up a captive power - producing plant in a strategic location (such as in Sialkot) to support the surgical and leather sector clusters. The study would (1) determine current and forecasted power needs of the sector; (2) propose fuel options (such as coal, biomass, and solar power) for setting up the captive power producing plant, keeping affordability in mind; (3) test the viability and bankability of each option as well as interest from the local and U.S. private sector; and (4) inform key stakeholders.
- Support the government to establish a Pakistan Infrastructure Financing Facility (PIFF) to attract long-term investors and donors into the energy and infrastructure space. The PIFF would develop power and infrastructure business plans on the viability of lending to and investing in this sector.

Gender findings and recommendations. There is limited women's involvement in all value chains, even when their skills could add great value (as in the garments and leather industries). Women's employment in the six value chains ranged from 1 percent to 5 percent.

Recommendations

- Train women on mosaic production, leveraging the Marble and Granite Strategy Working Group's interest in supporting women in the marble sector. Draft a plan to design and implement a technical assistance program to design specialized mosaic creations. The project should include methods of product exhibition, support to attend trade shows, and other marketing efforts.
- Provide funding to expand P@SHA's Career Expo to secondary cities and tailor outreach to female students. Funding is needed to develop specialized promotional materials to showcase possible employment opportunities for women in the IT sector and the expansion of the Career Expo to 10 secondary cities.

Environment findings and recommendations. Most respondents had limited understanding of the environmental regulations and national standards for their sectors. This will have a significant impact on the ability of the leather and garments sectors to expand into higher-end export markets.

Recommendations

- Develop a master's training course with SGS Laboratory on environmental safety, occupational health, and modern environmental best practices. SGS could be hired to develop a master trainers program for universities, technical training centers, environmental NGOs, consulting firms, the government (federal and provincial levels of the Environmental Protection Agency), and possibly the future Cleaner Production Center, to create an environmental certification program for trainers. Qarshi Industries is interested in collaborating on this initiative to support its work in the herbal sector.

Summary Recommendations

The recommendations provided below have been selected due to their importance in advancing the targeted value chain, their significant impact in catalyzing growth, and the relative short-term nature of the activity. All of these interventions can be implemented through the AMEG mechanism.

Proposed Intervention	Expected Impact	Time Frame to Realize Impact	Geographic Focus
Garments Value Chain			
Promote streamlining of duty drawback and Duty and Tax Remission for Exporters regimes	Reduce time and cost of process and free up working capital	Short-term	National
Build professional management skills within targeted SMEs, through "Six Sigma" and the Modular method.	Significant improvements in factory-level efficiency and relatively fast response time to downstream sub-contractors	Short-term	Punjab and Sindh

Proposed Intervention	Expected Impact	Time Frame to Realize Impact	Geographic Focus
Develop capacity of PSQCA to adopt international safety standards for products	Improve general standards environment	Medium-term	National
Promote expansion into nontraditional markets through targeted trade promotion	Improved access to buyers in new export markets	Short-term	National
Develop export coaching program through sector association	Improved access to emerging markets	Short-term	Punjab and Sindh
Support PRGMEA in the establishment of modern training facilities in Sialkot	Reduce skills gap	Medium-term	Punjab
IT Value Chain			
Hold conference on global e-payment platform	Catalyze SME expansion through creation of new payment channel	Short-Term	National
Institutionalize P@SHA's Entrepreneurship and Mentoring training program	Expand youth and women's interest in IT sector jobs	Short-term	National
Replicate business incubators in secondary cities	Immediate support for IT startups (physical office space, training, and equity investment)	Short-Term	Sindh and Punjab
Marble Value Chain			
Promote reduction in tariff duties for equipment and materials	Increase value-added production	Short-term	National
Provide funding and technical assistance to TUSDEC to set up a common facility center (CFC)	Improved access to technology for SMEs	Medium-term	Sindh/FATA
Provide funding to DSEC to conduct R&D in partnership with the private sector for alternatives to blasting and efficient use of marble waste	Enhance value-added in sector, reduce costs	Medium-term	KP/Baluchistan
Promote expansion into non-traditional markets through targeted trade promotion, including market research and trade show participation	Improved access to buyers in new export markets	Short-term	Sindh
Develop export coaching program to provide firm-level assistance	Improved access to buyers in new export markets	Short-term	Sindh
Provide funding to TUSDEC-run CFC to provide training for workers at the	Strengthen workforce skills	Medium-term	Sindh/PK

Proposed Intervention	Expected Impact	Time Frame to Realize Impact	Geographic Focus
downstream value chain level			
Develop skills for marble mosaic including those needed for marketing products	Strengthen workforce skills	Medium-term	Sindh/ Baluchistan
Herbal Value Chain			
Allocate funding through the Agribusiness Project to the ASF for herbal extraction	Increase herbal extraction through use of modern machinery	Short-term	Sindh and Punjab
Fund multiple feasibility studies on establishing herbal extraction facilities	Increase herbal extraction through modern machinery	Short-term	Sindh and Punjab
TA to the HEJ Industrial and Analytical Center to establish a national training campaign	Increase manufacturers' and laboratories' compliance with new DRAP guidelines and protocols	Short-term	National
Surgical and Medical Instruments Value Chain			
Leverage the Hunar Foundation model to set up a vocational training institute in Sialkot	Improved efficiency and development of higher value products	Medium-term	Sialkot
Promote partnership between TUSDEC and TEVTA to operationalize services of MIDC	Provide competition and improve vendor access to markets through better technology	Short-term	Sialkot
Support a technical and financial feasibility study for setting up a captive power producing plant for the sector in Sialkot	Reduce costs across SMI	Short- to medium-term	Sialkot
Provide technical assistance to a private entity for a study to assess demand trends at micro-level and the associated trading regimes of the emerging and developing country markets	Capture a share of growing emerging markets and reduce vulnerability of market concentration on U.S. and EU	Short-term	Sialkot
Provide funding to roll out firm-level export coaching	Improved market access	Short-term	Sialkot
Finance			
Replicate successful incubator models that emphasize mentoring and equity investment for IT start-ups	Acceleration of start-ups in the IT value chain	Medium-term	Sindh and Punjab

Proposed Intervention	Expected Impact	Time Frame to Realize Impact	Geographic Focus
Conduct a study on innovative loan product offerings for the banking and non- banking sectors, undertaken in coordination with interested banks to ensure buy-in and ownership of findings	New types of financing instruments are available for SMEs	Short-term	National
Conduct an in-depth review of the legal and regulatory framework and restrictions to mobile banking operations	Expand mobile banking services through diversification of service providers	Short-term	National

SECTION I

INTRODUCTION AND METHODOLOGY

External shocks, internal policy inaction, political disorder, and structural issues have placed Pakistan in dire economic conditions. The country's per-worker manufacturing output has grown by a mere 1.5 percent each year during the past decade. Trade indicators reflect low outward orientation, concentration on low value-added activities, and an undiversified product mix that is not aligned with the fastest-growing areas of global demand. The export share of GDP has remained low and is falling—from 13 percent to 11 percent in 2010 (SBP, 2012). Forty-five products account for more than 80 percent of Pakistan's exports, and 10 of these products, mostly from the textiles and garments sector, represent more than half that percentage. As a result, the share of exports from textiles and garments has consistently exceeded 60 percent, food and leather products account for 17 percent, while engineering's share is barely 2 percent. Global trade has seen 60 percent growth in engineering from rising exporters in East Asia and Latin America. The world's textile shares have remained at a stagnant 6 percent, but with stronger competitors from South Asia and new ones from Southeast Asia and the Caribbean, competition is fierce in the commodities in which Pakistan's traditionally specializes.

Deterioration in the global economy in the past few years has created difficult external conditions for Pakistan to transform, strengthen, and diversify its economy through export-led strategies. The hubs of Pakistan's manufacturing industry, the Punjab and Sindh regions, are taking the brunt of adverse developments, as demonstrated by rising unemployment, especially among youth and women. The situation is further complicated by systemic issues with energy and infrastructure. There is an urgent need for Pakistan to revise its export-led growth strategy, and diversify its export portfolio (both markets and products) while exploring domestic sources of growth. Sustained economic growth will require an interrelated process of technology adaptation, productivity improvements, good investment decisions by firms, and appropriate deployment of resources by markets. For this dynamic to take effect in Pakistan, systemic constraints to doing business — including policy — must be addressed.

A. STUDY OBJECTIVES

This assessment comprises a thorough evaluation of six non-agricultural value chains for USAID/Pakistan, based on their current and potential economic importance. The assessment identifies issues hindering improvements in the competitiveness of each value chain, specifically issues related to the business enabling environment, management, technology, workforce, financial, marketing, and infrastructure. The assessment analyzes the six selected value chains, identifies key constraints and opportunities, and presents a summary of findings and recommendations, identifying macroeconomic and microeconomic factors that are affecting Pakistan's competitiveness.

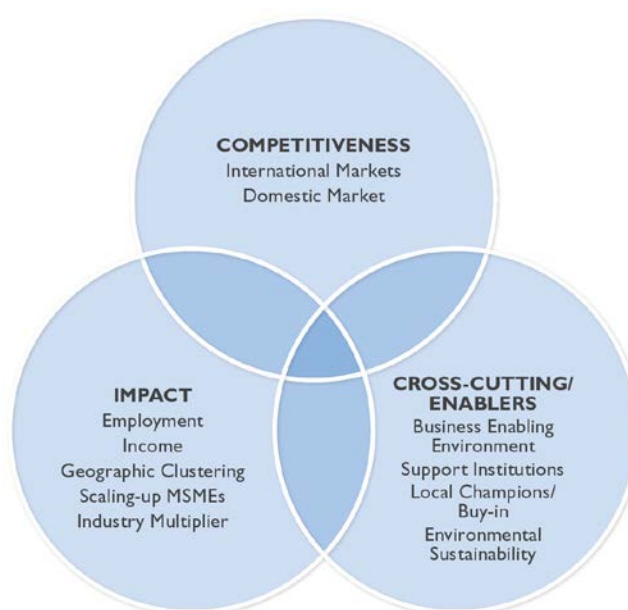
The broader business environment is central to a firm’s ability to perform in the market. To contextualize the technical analysis, this study also examines the economic, administrative, and regulatory environments in which firms operate. The result is a blend of detailed micro-analysis embedded in a broader macro-analysis.

B. METHODOLOGY

Value chain selection is the process of prioritizing industries or value chains based on criteria such as potential for growth and competitiveness, impact, and contribution to other development objectives; for example, natural resource management, women’s empowerment, and food security. The goal of the selection process is to minimize subjectivity. USAID’s value chain approach applies a combination of quantitative (competitiveness and impact) and qualitative indicators (crosscutting/enablers) to identify viable value chains.

USAID/Pakistan asked the AMEG team to use several indicators, proposed within this broader framework, shown in Exhibit 1, in the selection of the Pakistan value chains.

Exhibit 1. Methodology



Competitiveness potential. In essence, trade competitiveness and potential exemplify the ability of Pakistani exporters to achieve and maintain a competitive edge through an optimal combination of efficiency, product differentiation, and access to new or niche markets. Conversely, trade competitiveness also conveys the comparative advantage of Pakistani industry, domestically and internationally, and the prospects of sustaining industry in the medium and long term.

Impact potential. Significant and sustainable increases in income and employment occur as a result of growth. Growth in industries with high rates of participation by micro-, small-, and medium-sized enterprises (MSMEs) will have an impact on poverty — reducing it — more than growth in industries with low employment and minimal MSME participation. Assessing potential impact at the firm and industry

levels is critical to understanding how to increase or optimize equitable growth. Another aspect of impact is the multiplier effect of growth in a particular industry. Determining how and where to invest marginal increases in revenue in the local and national economies is an important element of impact.

Crosscutting/enablers. Four key enablers have been identified. First, improving the business environment by lifting constraints and filling gaps in the regulatory and administrative support mechanisms is central to any comprehensive competitiveness strategy for a targeted value chain. Specifically, the study team assessed the time, cost, and level of difficulty involved in improving the business enabling environment for each value chain. When specific value chains face constraints in the business enabling environment that cannot be addressed with USAID assistance (i.e., for political or other reasons), the assessment team selected alternative value chains. Support institutions are crucial in sustaining growth in any industry by providing financial and technical assistance. Similarly, the concept of industry leadership is an important criterion—the willingness of one or more lead firms to invest time and resources (including non-economic resources such as political and social influence and intellectual contributions) to increasing value chain competitiveness in a way that enhances benefits to producers. The study team also assessed how a value chain’s growth may positively or negatively impact the environment.

B1. COMPETITIVENESS AND IMPACT CRITERIA

The AMEG project team used the following data types to screen possible value chains for further assessment:

Revealed comparative advantage index. As a proxy indicator to determine a value chain’s ‘trade competitiveness’, RCA shows whether a country has a comparative advantage in the manufacturing of a specific product. Please see box below.

Trade Competitiveness

The RCA index is widely used to capture a nation’s comparative advantage; RCA is calculated using trade statistics to show whether a country has a comparative advantage in the manufacture of a product. The RCA index is defined as:

$$(2)IRCA_{ij} = \frac{X_{ij} / X_{wj}}{\sum X_{ij} / \sum X_{wj}}$$

where $IRCA_{ij}$ is the index of revealed comparative advantage of country i in commodity j ; X_{ij} is country i ’s export of commodity j ; X_{wj} is world exports of commodity j ; $\sum X_{ij}$ is total exports of country i ; and $\sum X_w$ is total world exports.

The RCA of country i for product j is measured by the product share in the country’s exports, relative to the share in world trade. For products in which the index is unity or greater, the country is deemed to have a comparative advantage; for products in which the index is less than unity, it may be determined that the country does not have a comparative advantage. The source for trade data is the COMTRADE database, available via World Bank’s World Integrated Trade Solution (WITS) database. The obvious disadvantage of using RCA is the lack of data on services. We propose to use broad aggregates using United Nations services data.

Employment potential. An intuitive proxy for employment potential is labor force participation. Labor force participation data is available through the Pakistan Bureau of Statistics (PBS), and is classified into provinces.

The Pakistan Bureau of Statistics is the principle source of socioeconomic data in Pakistan. PBS provides manufacturing data at ISIC four-digit classification at provincial and national levels. The last survey was undertaken in 2011, although PBS has yet to publish this data. In all, PBS provides a frame of 138 sectors.

Income potential. Income potential is referred to as nominal economic value generated for a specified period within a sector. It may be approximated through gross output/value-added data, published by the PBS.

Geographic location. Proximity to the main market is an important determinant of an industry's success. Domestic industries clustered around Punjab and Sindh tend to situate favorably in national markets, but major industries in Pakistan are geared toward the international market. As such, the notion of clustering industries tends to be more important. Some industries tend to cluster and others tend to disperse across national boundaries. A reasonable proxy for clustering is the density of enterprises in Sindh and Punjab provinces, available at PBS.

Scaling up and growth potential for MSMEs. The existence of an undistorted environment or field of support industries is conducive to the development of small- and medium-scale businesses. The existing industry clusters within small- and medium- scale industries for a given sector is a reasonable approximation that can capture both these issues and the growth potential of small- and medium-sized businesses. The PBS database houses this information.

Multiplier effects, forward and backward linkages. An appropriate proxy that captures forward and backward linkages (and was adopted by the USAID/Pakistan FIRMS project in 2010) is “input-output” data. Input-output analysis is used to understand the economic structure of a country at the industry level. First developed by Wassily Leontief in 1936, an input-output matrix depicts the inter-industry relations of an economy. It shows how the output of one industry is an input to other industries. It considers different economic sectors as a series of inputs of source materials (or services) and outputs as finished or semi-finished goods (or services). The Global Trade Analysis Project (GTAP) publishes countrywide input-output data, including for Pakistan, which will be used to measure U.S. dollar amounts of forward and backward linkages.

B2. WEIGHTING AND SCREENING

The first step in the selection process is weighting the agreed-upon criteria. Each criterion is assigned a weight according to its importance. Although each factor is important to consider, policy or programmatic considerations may suggest that some criteria are more important than others in prioritizing sectors. The AMEG team's proposed weighting is presented in Exhibit 2 below.

Exhibit 2. Weighting Quantitative Indicators

Criteria	Weight	Justification	Data Sources/Proxy
Revealed Comparative Advantage (Competitiveness)	25%	The ability of a country to export a product or service signifies its relative competitiveness. The ability to capture international market share signals the degree of comparative advantage that a country holds, based on its factors of production. This is captured by the RCA index. Given its central role in identifying competitiveness, the RCA index is assigned a relatively high weight.	Import and export data from United Nations COMTRADE
Income (Impact)	15%	GDP contribution is empirically important in the context of the potential scope for the impact of sector interventions, though is less important than competitiveness.	Sector level output data from Pakistan Bureau of Statistics
Employment (Impact)	20%	Employment generation for marginalized populations and poverty reduction are key objectives of the donor program. Identifying sectors that can contribute the most to households, through the generation of low-skilled employment which is abundant in Pakistan, is therefore important. A medium-high weight is therefore assigned to reinforce the development dimension.	Employment data from Pakistan Bureau of Statistics
Geographic (Impact)	10%	A reasonable proxy for clustering is the density of enterprises in Sindh and Punjab provinces, available at PBS.	Pakistan Bureau of Statistics
Domestic Forward and Backward Linkages (Impact)	15%	This helps us to quantify overall returns to the domestic economy (through linkages) and to identify strengths and weaknesses of a sector, new opportunities for upgrading, and potential threats — all this with a focus on vertical integration into national and global markets. While important, the required data is available only at an aggregated level.	Input-output data from GTAP global database from GTAP
Scaling Up MSMEs (Impact)	15%	Existing industry clusters in small- and medium-scale industry for a given sector are a reasonable approximation that can capture the subsidiary issues and MSME growth potential.	Pakistan Bureau of Statistics database

Exhibit 3 shows the narrowed list of 23 ranked value chains, based on the quantitative screening shown in Exhibit 2. Not surprisingly, the textile and garment sectors emerge as the economically strongest sectors for Pakistan. The textile value chain appears to dominate national value. Textile-related activities belonging to a number of four-digit national product classifications are numerous; spinning (1711), finishing, fabrics (1712), and textile articles (aggregated as textiles) ranks at No. 1. Ranked second is apparel representing knitted (1721) and crocheted (1730) apparel. Leather, dimension stones, plastic products, building material, and ceramics also feature among the top 10. Overall, USAID's preferred sectors (in bold) are among the top 20, but a few (such as fans, electric generators, and furniture) ranked much lower.

Exhibit 3. Ranking of Sectors by Competitiveness and Impact Criteria

ISIC	Value Chain	Trade	Income	Employment	Geo	F/B Link	MSME	Weighted Score	Rank
1713	Textiles	144	136	142	98	112	40	117.4	1
1730	Garments	138	127	138	93	107	30	111	2
1911	Leather	140	107	111	79	104	69	107.1	3
2696	Cutting and Shaping Stones	132	108	83	88	66	110	101	4
1920	Footwear	123	114	127	75	102	19	98.9	5
2520	Plastics Products (Plastic Pipes)	87	129	116	97	73	88	98.15	6
2423	Pharmaceuticals	75	140	141	100	79	39	95.65	7
2694	Cement, Lime	118	148	132	64	68	6	95.6	8
2691	Ceramic-ware (Sanitary)	106	91	92	96	71	105	94.55	9
2411	Basic Chemicals	88	134	114	82	84	54	93.8	10
3311	Medical and Surgical	128	106	113	90	30	65	93.75	11
1722	Carpets and Rugs	142	101	68	19	110	67	92.7	12
3430	Auto Parts and Accessories	61	124	130	189	23	56	90.6	13
2899	Other Fabricated Metal	81	122	112	92	56	76	89.95	14
2101	Pulp and Paper	67	138	128	76	96	25	88.8	15
2102	Corrugated Paper	62	116	93	83	95	98	88.75	16
1912	Luggage, Handbags	124	85	72	62	103	58	88.5	17
2930	Domestic Appliances (Fans)	70	119	126	99	41	77	88.15	18
2424	Soap and Detergents	58	133	123	86	78	55	87.6	19
1723	Cordage, Rope, Twine	127	83	80	33	109	47	86.9	20
3110	Electric Motors	38	128	117	103	39	9	69.6	71
3610	Furniture	72	81	66	68	15	106	68.3	74
3691	Jewelry and Related	99	48	31	72	14	112	64.25	87
2022	Builders' Carpentry	30	19	95	0	99	73	55.15	100
2813	Steam Generators	101	14	15	0	58		39.05	126

The services sector lacks comprehensive and sufficiently detailed data to undertake the same degree of rigorous analysis; however, it warrants attention due to its relative importance in the economy, potential links to priority districts, and potential economic and socioeconomic spillover effects from IT, construction, and medical services. (Anecdotal evidence on the latter points to a growing and potentially large impact in high-priority districts.)

For the services sector, only three quantitative data sets are available: RCA (based on World Ranking of Comparative Advantage of Services, Fourie and Fintel, 2009); export data for 2007 and 2009 from the State Bank of Pakistan; and the GTAP input-output data for services. Exhibit 4 provides a rudimentary ranking of the services sectors based on the above noted measures. The value chain in bold was recommended by USAID.

Exhibit 4. Ranking of Service Sectors

Rank	Broad Sector	RCA	Sector Size	RCA	F/B Linkage
1	Transportation services	7	8	4	3
2	Communications services	8	4	3	2
3	Insurance	6	3	7	1
4	Computer and information technology	5	5	6	5
5	Business services (BPO)	4	7	5	6
6	Financial services	2	2	8	8
7	Travel/tourism	1	6	1	4
8	Construction	3	1	2	7

B3. CROSSCUTTING CRITERIA

This section summarizes each of the three enabling environment factors. These have been examined to identify issues that may preclude any of the top-ranked sectors from being considered for a full value chain analysis. The enabling environment factors were explored in greater detail during the value chain assessments.

Business enabling environment. Pakistan's business enabling environment poses a number of significant challenges for the private sector. Pakistan ranks 96th overall in the World Bank's 2012 Doing Business rankings and 124th in the World Economic Forum; barriers to doing business are generally high. By and large, these constraints affect all sectors and potential value chains in Pakistan. A number of sectors are also affected by sector-specific policies and regulations. Of those featured in the quantitative assessment above, the IT and energy sectors face regulatory regimes that can have an impact on the potential success of any value chain activities.

Recent efforts to deregulate and liberalize these two markets have removed substantial barriers to investment. For IT, the cost of telecommunications is a significant industry driver, liberalization of the broadband telecommunications market, which began in 2004 in Pakistan, has enabled the growth of the IT sector by removing a key constraint. In the energy sector, the government of Pakistan has made significant efforts to enable and incentivize independent power producers

through guaranteed power purchase and fiscal incentives. The government is also considering an increase in feed-in tariffs to further incentivize the production of renewable energy. Specific business enabling environment constraints will be studied further during the assessment, through identifying policies, laws, and regulatory changes needed to support increased growth and positive impact.

Environmental sustainability. Most of the top sectors, which fall under light manufacturing, pose few environmental risks that would preclude them from consideration for USAID support. Potential exceptions include leather (tanning), metal finishing (fans and surgical instruments), certain garment segments (such as denim), and some segments of the energy sector. Historically, leather tanning has been a significant source of water and air pollution in Pakistan. The metal finishing industries are, likewise, a significant source of pollution. Recent efforts in the tanning industry in Sialkot (for example, the Cleaner Production Center), have helped reduce the level of pollution in the tanning sector. Given that these sectors are expected to grow with continued support from the government of Pakistan, USAID assistance to the value chain could play a positive role in reducing negative environmental impacts. In energy, for example, coal-fueled power generation and associated mining pose significant environmental risks.

Support institutions. The majority of major sectors in Pakistan have well-established business associations, and certain sectors receive direct assistance from the government through fiscal and other incentives. The field team explored how these support institutions can further the growth of identified value chains through their activities. Examples of the types of institutions the AMEG team interviewed include:

- *Textiles.* All Pakistan Textile Mills Association, Pakistan Cotton Ginners Association, and Pakistan Carpet Manufacturers and Exporters Association
- *Garments.* Pakistan Cotton Fashion Apparel Manufacturers and Exporters Association and Pakistan Readymade Garments Manufacturers and Exporters Association

C. VALUE CHAIN ASSESSMENT

C1. REVIEW AND APPROVAL OF VALUE CHAINS

Based on the value chain selection process presented above, Exhibit 5 (below) summarizes the top 11 value chains from the sector ranking, adding the value chains requested by USAID. These are presented in summary for further discussion with USAID. The study team proposed to narrow this list to a final 10 value chains for field investigation.

Exhibit 5. Proposed Value Chains

Sector	Ranking
Textiles	1
Garments	2
Leather	3
Cutting and shaping stones	4
Footwear	5
Plastics/plastic pipes	6
Pharmaceuticals	7
Cement	8
Ceramic-ware (sanitary)	9
Chemicals	10
Information technology*	11
Medical and surgical instruments	12
Auto parts	13
Domestic appliances (fans)	18
Electric motors	71
Furniture	74
Jewelry	87
Building and carpentry	100
Steam generators	126

*Source: Due to the lack of IT-related data at the ISIC level, the IT sector is imposed based on qualitative evaluation

These sectors were further refined during field work. Based on input from USAID, the AMEG team completed a comprehensive desk review of secondary data and literature on the selected value chains. This drew on the many existing analyses of the economic potential of specific value chains done with donor funding such as FIRMS, Entrepreneurs, PISDAC, the Competitiveness Support Fund, International Financial Institutions, multilateral and bilateral organizations, and Pakistani organizations such as SMEDA, AHAN, and others, as well as NGOs and sector development companies. The literature review focused on identifying the opportunities and constraints in Pakistan regarding the following:

- Business enabling environment
- Labor force
- Technological
- Financial
- Marketing
- Infrastructure
- Management

The literature review provided further insight to narrow the selected value chains to the final six: garments, marble, information technology, herbal medicines, leather, and surgical instruments.

C2. FIELDWORK

Based on USAID’s review and approval of these selected value chains, the AMEG team carried out an in-depth review process in Pakistan to gather additional data. Data was gathered through the following:

- Key informant interviews with stakeholders
- Focus group discussions
- Direct observation
- Mini survey

The field team conducted a survey to gather qualitative and quantitative data through stakeholder interviews (see Annex B). The survey provided valuable data related to backward and forward linkages, sector impact, and firm-level constraints to each sector. The survey produced a value chain map for each value chain, depicting areas of constraint and opportunity for intervention.

The field team also interviewed stakeholders from small and medium enterprises (SMEs), chambers of commerce, business support organizations, academia, banks, and the public sector in the target value chains to inform the team on the following issues:

- What are the major policies, laws, and regulations hindering the development of the selected value chains?
- What are the missing legal and institutional support mechanisms necessary for the development of the selected value chains? For example, what is the role being played by business support organizations to address the business enabling environment impediments to economic growth of the selected value chains and what support can be provided to these institutions to improve service delivery?
- What role are business support organizations (and other institutions including the government) playing to engage and support the selected value chains?
- Who are the potential sector champions — whether an organization, group, or individual — that will support the upgrading of the selected value chains?
- What are the limitations in Pakistan’s infrastructure that constrain growth in the targeted value chains?
- What are the major financial and marketing issues which limit competitiveness?
- What, if any, role is being played by academia in the growth of enterprises in the targeted value chains?
- What initiatives are being undertaken in specific value chains to address the business enabling environment impediments to economic growth and how can entrepreneurs be supported in their efforts?

- At the firm level, the team explored: (1) how up-to-date is the equipment being used in targeted value chains; (2) whether the businesses in the value chains are operating according to international best practices of management and production; and (3) do the labor forces in the value chains have the skills required to be internationally competitive?

Where appropriate, the field team also conducted observation visits to field sites. Information was gathered that enlightened the field team on the most robust opportunities to upgrade the targeted value chains. Key findings were verified through secondary and/or primary data, ensuring USAID is presented with evidence-based recommendations to further its work in the value chains under consideration.

The AMEG team conducted this field work in Islamabad, Lahore, and Karachi over a seven-week period. A draft of this study was presented to USAID while the Team Leader was in-country to allow time for discussion and further refinement of the final product. This study makes recommendations for an implementation strategy to resolve the business enabling environment, management, technological, infrastructure, financial, marketing, and labor force constraints to the development of the selected value chains.

SECTION II

VALUE CHAIN SUMMARIES

A. GARMENTS VALUE CHAIN

The textile and garment sector is the largest manufacturing sector in Pakistan, accounting for 46 percent of the total manufacturing output in 2011, more than 11 percent of GDP, and providing employment to 38 percent of the manufacturing labor force (Government of Pakistan, Ministry of Finance, 2011). Pakistan's exports are also dominated by the sector, comprising around 66 percent of merchandise exports (State Bank of Pakistan, 2012). Since the phase-out of the Multi-Fibre Agreement in 2005, which greatly influenced trade and production patterns globally and created assured quotas, Pakistan's sector has had to realign to maintain its competitiveness in an increasingly open world market. Still in process, the realignment has highlighted the growing importance of off-balance-sheet transaction costs such as worker skills, infrastructure, productivity, the costs of doing business, and corruption (USAID, 2010) that add significantly to otherwise relatively low production costs.

“One of the key characteristics of the garment segment of the textile VC is that the employment generation per rupee of investment is much higher in the garments sector compared to any of the other textile sub-sectors with SME's playing a critical role”

—*Pakistan Value Chain Assessment, World Bank, 2006*

Pakistan's garment value chain is vast, with complex linkages and sub-linkages in its different stages, from cotton growing to garment and made-up textile production and marketing. This diversity and complexity presents an analytical challenge in assessing the sector's constraints and prospects. This assessment, focusing on Punjab and Sindh provinces, examines the challenges and prospects of SMEs. These firms account for some 80 percent of employment in the sector. In particular, this analysis examines the constraints and opportunities faced by several sub-sectors: woven and knitted garments and other made-up articles, including denim products, one of Pakistan's premier exports. Although oriented toward the export sector, this assessment also reviews the local market, where the branded market offers encouraging domestic demand trends — an aspect that has not been addressed by other value chain assessments in this sector. The constraints highlighted here are based on selected products; however, many are relevant to the garment sector as a whole.

A1. VALUE CHAIN ASSESSMENT

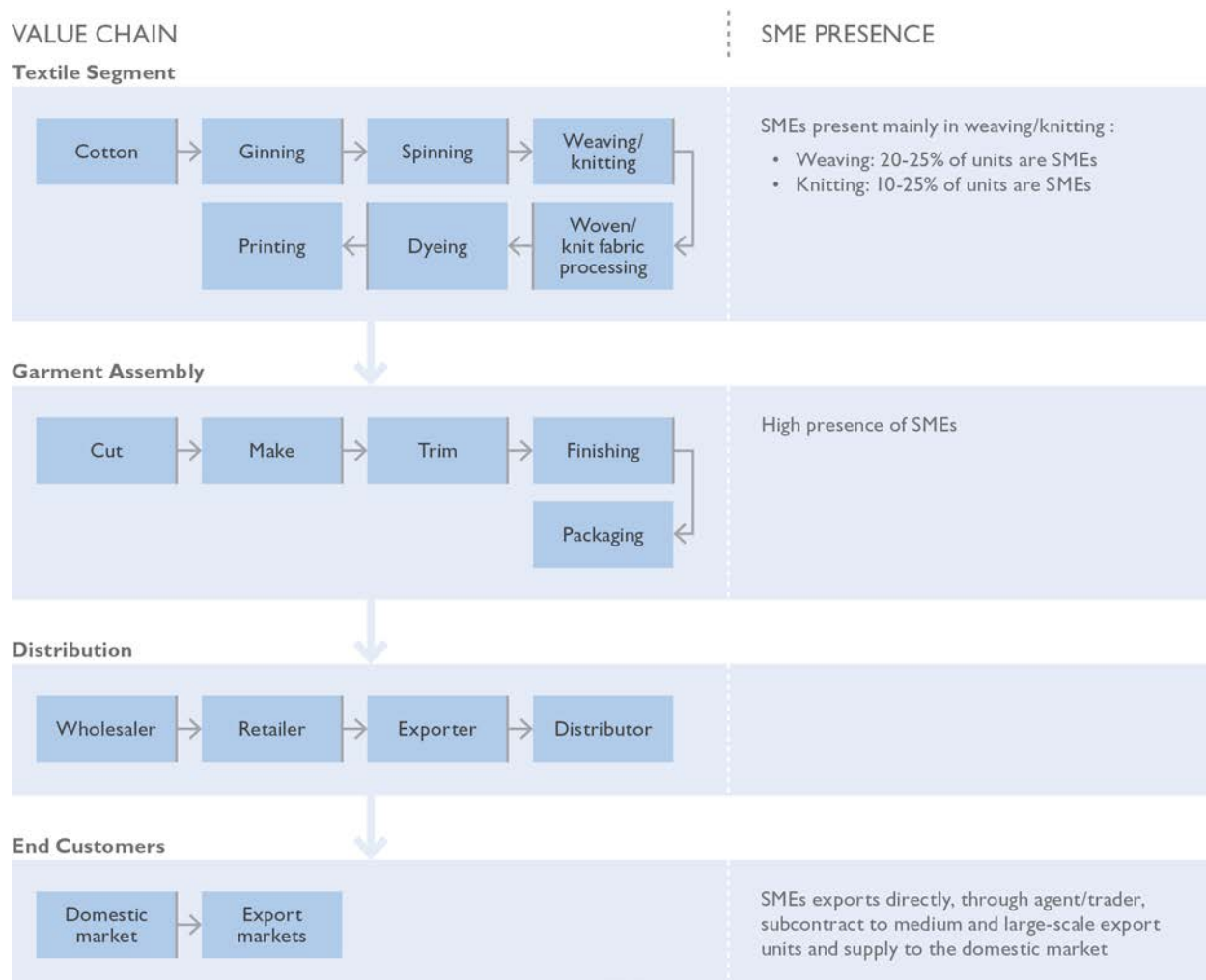
A1a. Industry Characteristics

There are 39,033 small and cottage industrial units in Punjab, of which 11,820 focus on the garment sector. SMEs are virtually absent in the upstream textile portion of the value chain (cotton production, ginning, and spinning), where economies of scale are important for efficiency. Large landholdings in cotton necessitate large-scale operations, as does the use of an integrated manufacturing process requiring greater use of machinery. Exhibit 7 illustrates the presence of SMEs along the chain. SMEs are primarily associated with the production of woven

and knitted ready-made garments, primarily in stitching, making entry and exit relatively easy. In Pakistan, the knitwear industry includes about 3,500 units, 85 percent of which are small enterprises, 10 percent are medium ventures, and the rest are large, integrated factories. The industry for ready-made woven garments includes about 4,500 units; of these, 80 percent are small and 20 percent are large-scale enterprises. Most SME manufacturing units are in Karachi, Lahore, Faisalabad, Gujranwala, Rawalpindi, Quetta, and Sialkot, spanning Punjab and Sindh provinces (SMEDA, 2006).

At the wholesale/retail market stage, most SMEs are oriented toward the domestic market. For exports, local and international buying agents play a key role in providing access to markets. This puts them in a position of power, particularly the larger, more established buying houses that also monitor production quality. Poor access to buyers, the demands of “just-in-time” production, and large volumes that dictate the retail garment industry in the United States and European Union (EU) place smaller firms at a disadvantage in accessing export markets directly. However, increasing numbers of small producers are subcontracting with medium- and large-scale enterprises.

Exhibit 7. SME Presence Along the Value Chain



A1b. End-Market Characteristics

End-market dynamics have a strong impact on the textile and garment sector's prospects as a conduit for growth and employment creation. Pakistan's garment exports are highly concentrated in U.S. and EU markets (see Exhibit 8), which together account for almost 83 percent of Pakistan's exports. This over-reliance on traditional markets has come at the cost of new market development in the BRIC countries (Brazil, Russia, India, and China) and other fast-growing emerging markets, where garment imports grew at an astounding 40 percent per year between 2005 and 2011.

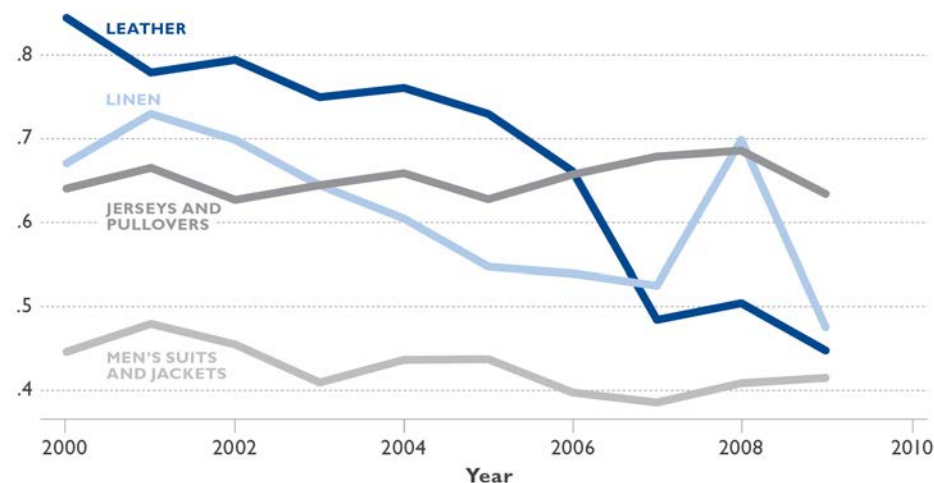
Exhibit 8. Pakistan's Market Shares in Traditional and Emerging Markets

Market	2011		2005		Import Growth	
	\$ Value (million)	Share %	\$ Value (millions)	Share %	From Pakistan	From World
United States	3,234.5	39.6	2,528.9	51.2	4.2	1.9
United Kingdom	857.8	10.5	482.4	9.8	10.1	3.7
Germany	906.0	11.1	376.7	7.6	15.7	7.8
France	559.9	6.9	282.3	5.7	12.1	5.4
Spain	325.5	4.0	156.9	3.2	12.9	9.3
Belgium	242.4	3.0	151.3	3.1	8.2	3.6
Italy	226.1	2.8	141.3	2.9	8.2	7.1
Netherlands	218.4	2.7	129.6	2.6	9.1	10.7
Canada	163.7	2.0	110.4	2.2	9.1	10.7
Australia	102.2	1.3	58.3	1.2	6.8	8.0
BRIC	140.56	0.02	23.5	0.00	34.7	31.3
Emerging Markets	0.0	0.0	0.0	0.0	40.7	20.9

Source: Authors' calculation using COMTRADE data, BRIC.

Although Pakistan is continuing to acquire U.S. and EU market share, it is doing so by depressing value (see Exhibit 9). Unit values are compared to the weighted average of unit values from countries exporting these products, using export value as a weight. The relative unit value has decreased marginally for linens — the most important product in terms of export value — and for knitted or crocheted jerseys.

Exhibit 9. Price Trends in Pakistan's Exports



Source: World Bank (forthcoming)

A1c. Potential Products and Markets

Exhibit 10 summarizes the performance of Pakistan's leading textile and garment exports, comparing national export growth (horizontal axis) with the growth of international demand (vertical axis). The size of each bubble reflects the export value of the product. The exhibit indicates the average growth of world imports in the same period, to identify whether a market is growing faster or slower than average. The diagonal line represents constant market share: to the right, Pakistan is gaining market share; to the left it is losing market share.

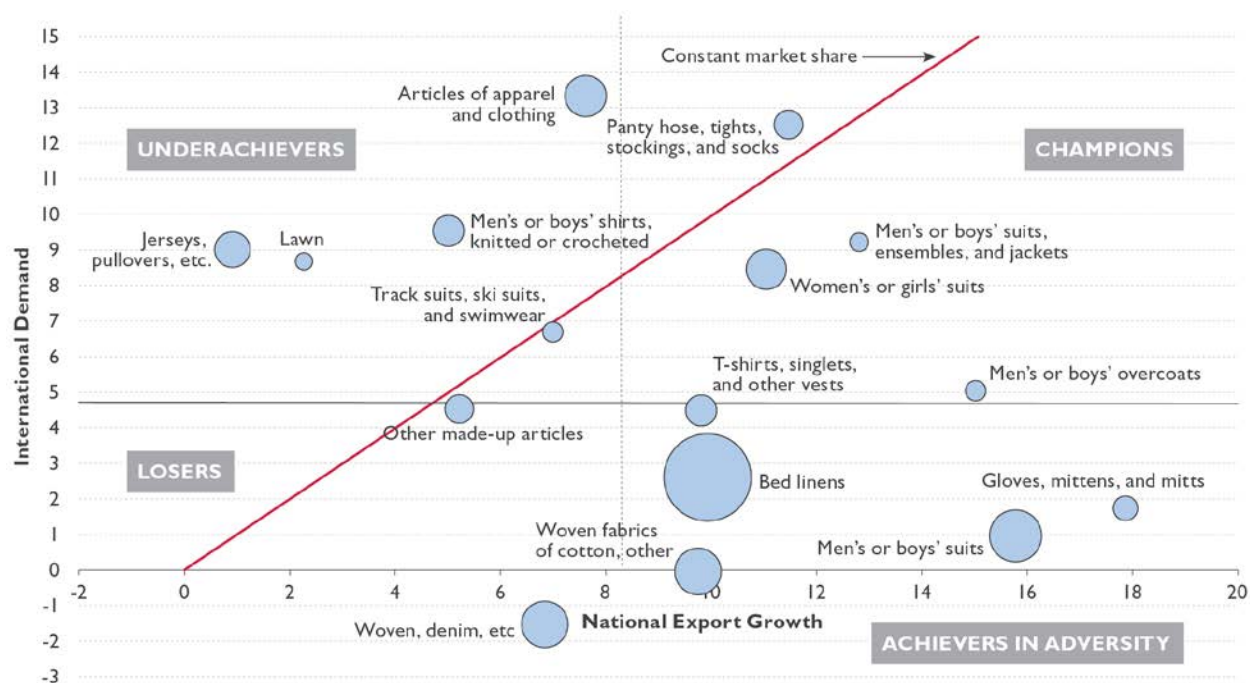
Following is the ranking of sectors based on their competitive positioning vis-à-vis global demand trends:

- *Rank 1: Champions.* Champion sectors (in the upper-right quadrant) comprise dynamic products that are growing faster than world trade in general, and for which Pakistan has been able to out-perform world market growth and increase its share in world imports. Exporters in these sectors have proven their international competitiveness.
- *Rank 2: Achievers in adversity.* Niche opportunities (lower-right quadrant) are characterized by growing shares of Pakistan exporters in slower-growing world import markets. Although world demand is growing slower than average, these products, similar to those of the champion sectors, can readily benefit from any supply-side improvements, including logistics and trade facilitation. These products may be the second tier in the prioritized list of sectors.
- *Rank 3: Underachievers.* (upper-left quadrant) have been losing market share in high-growth markets. Pakistan's exports in these sectors have either declined or grown less dynamically than world trade. These products represent a particular challenge for Pakistan. In general, the bottleneck is not international demand, but rather on the supply side. For these products, it may be essential to identify and remove the specific bottlenecks that impede more dynamic expansion of exports.

- **Rank 4: Losers in declining markets.** From the perspective of market dynamics, the export prospects for these sectors (lower-left quadrant) appear to be weak. World imports have increased at a below-average rate or have declined, while the market share of Pakistan has also declined. Jewelry, ceramic tableware, other black tea, coconuts, and jewelry are among those in the declining category.

Pakistan's most dynamic product groups — the “champions,” where the country is gaining market share in growing markets — include men's and boy's knitted suits, women's and girl's woven suits, men's knitted overcoats, and woven tracksuits. Any intervention in these product segments is likely to provide the largest return on investment. Pakistan's “underachievers,” such as men's and boy's shirts and jerseys, where the country is losing market share despite a growing world market, would require significant efforts to address supply-side and market development constraints. Lawn, small in terms of size of exports but large in the domestic retail segment, shows promise, not only in meeting indigenous demand but also through growing export market opportunities. In bed linens, Pakistan's leading export sector, world demand is growing slower than average and return on investment may be lower due to demand-side constraints.

Exhibit 10. Competitive Positioning of Pakistan's Textile and Garment Exports



A1d. Policy and Regulatory Constraints: Business Enabling Environment

The primary policy areas that affect the sector include industrial policies, trade policy, and the administration of duty drawbacks.

Textile industry policy. Numerous studies (Ul Haq et al., 2007; World Bank, 2009) demonstrate the wide range of incentives that have been offered to the textiles and garment sector over the

years, from subsidies to concessionary financing to cotton price supports. All have aimed to encourage quality improvements and modernization, especially to avoid low quality resulting from contamination of non-lint (Johri and Qazi, 2007). In practice, the incentives have achieved little. In fact, most have resulted in farmers retaining the concessions without investing in methods to upgrade yields or improve quality. The government of Pakistan has set out a vision to increase value-addition in the sector, focusing on the garment segment, but has not yet resolved the upstream constraints that cascade to the garment segment. Moreover, organized garment-industry lobbies, generally large-scale enterprises, have succeeded in skewing incentives in their favor at the expense of SMEs and upstream links in the chain (Ul Haq et al., 2007).

Trade policy has reinforced the overall trend of industrial policy toward the garment segment. The recent Trade Policy Strategy (2011-2012) aimed to create more uniform protection, but implementation of the strategy has been subjugated to the textile policy. The 2011 customs duty structure gives basic chemicals the lowest level of protection (5 percent), increasing incrementally up the value chain at 10 percent for textile fibers, 15 percent for yarn, 20 percent for fabric, and 25 percent for garments. Such a structure protects the domestic market for finished garments at the expense of intermediate goods, contributing to an anti-export bias that means firms find it easier to exploit higher rents in the local market, where prices are artificially escalated, at the expense of increasing added value and making investments to improve their competitiveness in export markets. Such protection — a common practice in many developing countries — has been shown to undermine competitiveness, efficiency, and productivity (Amiti and Kronin, 2007; Jayanthakumaran, 2004), because local firms can earn profits in the protected market without investing in productivity-enhancing measures that would make them competitive in export markets.

Duty drawback. To offset the anti-export bias inherent in the tariff schedule, Pakistan's Central Board of Revenue administers a duty drawback system to refund exporters the duties that have been imposed on imported inputs. Although it is said to have a positive impact on exports (Ul-Haq, 2007), suggesting a short-term positive impact on duty drawback rates on exports, the duty drawback scheme is not as efficient as it could be. There is evidence that firms encounter substantial delays and administrative costs. Numerous anecdotal accounts point to delays in refunds ranging from three to six months. Moreover, the drawback does not apply to available domestically produced goods (produced behind high import barriers or under the Customs General Order, which restricts imports), resulting in further bias. The Duty and Tax Remission for Exports system, a parallel scheme designed to provide duty suspension rather than drawback, is so cumbersome and time-consuming that exporters opt to pay duties and wait for refunds, even though it ties up their money.

Some rebates also come with an expiration date. For example, a regulation for trims (buttons, piping, edging, and so on) allows duty-free import of accessories for registered exporters, who are then given 180 days to use the goods and then export. They can request an extension of 90 days, but they must pay the duty if they do not export within that period. The delays and costs associated with refunds have a direct impact on firms' cash flows, and are particularly detrimental to SMEs, which lack the financial resources to cover such expenses.

A2. FIRM-LEVEL FACTORS

Productivity through technical and allocative efficiency is a key feature of industry competitiveness and the medium for economic growth.

- *Technical efficiency* is the proportional reduction in inputs possible for a given level of output to obtain efficient input use. A firm is said to be technically efficient if it is producing the maximum output from the minimum quantity of inputs, which include labor, capital, and technology.
- *Allocative efficiency* reflects a firm's ability to use the inputs in optimal proportions, given their respective prices.

This section examines a number of factors affecting technical and allocative efficiency, including organizational, management, technology, and supply chain and production methods at key stages of the value chain to discern where improvements may be required to enhance competitiveness.

A2a. Organization and Management

Professional organization and management skills and adoption of industry best practices are relatively weak in the garment sector, particularly among SMEs. Based on field interviews with a cross-section of SMEs (confirmed by survey data), the owners of most SMEs undertake their own production scheduling, stock management, cost accounting, and quality control. Many of these owners have low levels of formal primary education and lack awareness of standard management practices. Their lack of knowledge also affects procurement and production technologies; in some instances, machinery purchases are not aligned with required output levels, leading to greater use of resources than necessary. An example is factories' use of generators beyond the required voltage capacity. Eliminating these types of unnecessary operational costs could, to a large extent, mitigate the energy-related costs that impinge on the SMEs' survival. The low level of education also results in a general apprehension regarding exposure to formality, causing SMEs to lose out on the "public goods" offered through chambers of commerce, associations, and government incentives.

A2b. Technology and Production Techniques

Many SMEs use outdated technology, and most SME producers of woven and knitted garments require a range of machinery. They often use refurbished and second-hand stitching machines, such as manual cutters (to begin production), single needle lockstitch, overlock/safety machines (4/5 threads), and double needle lockstitch machines. The machines are half the price of new machinery, but the costs over time often outweigh the initial savings as they malfunction. In addition to their higher maintenance costs, older machines also tend to consume more power and produce less in a given period. Firms using outdated or secondhand equipment will find it difficult to compete in more lucrative segments of the value chain, where turnaround times are shorter. Here as well, lack of knowledge can lead to the misalignment of equipment with production needs.

Only a few knit and woven garment-producing firms adopt the “modular” production method.³ The modular method improves quality by linking workers’ responsibilities with their specialties and enhancing coordination along the chain of activities. The modular method also reduces changeover times, but it requires more highly skilled workers and longer training cycles, compared with traditional production lines, as well as greater investment in machinery.

Some medium-sized firms display a similar deficiency in production techniques, use of equipment, and factory space, resulting in production inefficiencies and wastage. Interviews revealed material waste of 30 percent to 40 percent, equivalent to about 5 percent to 10 percent of total revenue. These added costs can be detrimental to competitiveness in the international marketplace, where margins can be as small as 2 percent to 5 percent.

Pakistan’s garment industry has displayed a low adaptability to new technological developments, although there are some limited R&D efforts (for example, in non-woven, synthetic fabrics, and filament filling). PCSIR does undertake R&D for the sector, but it has not ventured into higher technology segments within the industry. The Textile Institute of Pakistan has a textile research and innovation fund, focused on technical textiles, but it has not made significant inroads acquiring technology due to lack of know-how and financing. Technical textiles show promise as a segment that fits Pakistan’s comparative advantage (see box).

Technical Textiles: An Option for Moving Up the Technology Ladder

One of the key characteristics that define the garments industry in Pakistan is reflected in its low-tech trade. One strategy is to identify a product of stable international demand in the next tier of technology that could be reached by augmenting R&D and using Pakistan’s existing comparative advantage. Technical textiles, with its multibillion-dollar international market, present one of those opportunities. Technical textiles markets include automotive products, medical textiles (e.g., implants), geo-textiles (for reinforcing embankments), agro-textiles (for crop protection), and protective clothing (e.g., heat and radiation protection for firefighters, bulletproof vests, and spacesuits).

Much development for technical textiles is based on basic textile fiber, cotton, polyester, nylon, and polypropylene. Polyester and nylon can be imported, and Pakistan could use its textile infrastructure (its comparative advantage) to reach the next tier of technology. For products such as bandages, the missing link in Pakistan is sterilization technology. What the country’s industry needs is the know-how on sterilization technique and on standardization.

The Textile Institute of Pakistan’s textile research and innovation center in Karachi could bridge the technology gap by engaging a foreign expert (e.g., from Manchester Textile University) to establish a specialized center and by acquiring necessary lab equipment. This initiative could be launched through a pilot program to develop a prototype for commercialization. The collaboration of a few hand-picked lead companies, backed by USAID-funded technical assistance, is required to develop the prototype. Because industries in Pakistan tend to follow a successful lead industry, this program could have significant spillover effects for the sector and other industries that use these products.

³Operators are able to operate few types of machines with a similar level of efficiency. The teams are self-managed, and all team members are responsible for the quality and quantity of the final output. Modules also perform better than bundles in reducing work-in-process inventory and throughput time. The performance improvements are realized through coordination among team members as a result of their ability to self-regulate work, eliminate bottlenecks, resolve conflicts, help one another solve problems, and make improvements in the production process.

A2c. Capacity to Meet Standards and Other Market Requirements

Garment exporters to U.S. and EU markets need Worldwide Responsible Accredited Production (WRAP), and Supplier Ethical Data Exchange (Sedex), and ISO certification. Some large buyers, such as Walmart, also have specific requirements. These certifications require adherence to labor laws and health and safety requirements (see box).

WRAP 12 Principles

WRAP is an independent, objective, nonprofit team of global social compliance experts dedicated to promoting safe, lawful, humane, and ethical manufacturing around the world through certification and education. A facility receives a six-month or one-year certification, based on compliance with the following 12 WRAP principles.

1. *Compliance with Laws and Workplace Regulations.* Facilities will comply with laws and regulations in all locations where they conduct business.
2. *Prohibition of Forced Labor.* Facilities will not use involuntary, forced, or trafficked labor.
3. *Prohibition of Child Labor.* Facilities will not hire any employee under the age of 14 or under the minimum age established by law for employment, whichever is greater, or any employee whose employment would interfere with compulsory schooling.
4. *Prohibition of Harassment or Abuse.* Facilities will provide a work environment free of supervisory or coworker harassment or abuse, and free of corporal punishment in any form.
5. *Compensation and Benefits.* Facilities will pay at least the minimum total compensation required by local law, including all mandated wages, allowances, and benefits.
6. *Hours of Work.* Hours worked each day, and days worked each week, shall not exceed the limitations of the country's law. Facilities will provide at least one day off in every seven-day period, except as required to meet urgent business needs.
7. *Prohibition of Discrimination.* Facilities will employ, pay, promote, and terminate workers on the basis of their ability to do the job, rather than on the basis of personal characteristics or beliefs.
8. *Health and Safety.* Facilities will provide a safe and healthy work environment. Where residential housing is provided for workers, facilities will provide safe and healthy housing.
9. *Freedom of Association and Collective Bargaining.* Facilities will recognize and respect the right of employees to exercise their lawful rights of free association and collective bargaining.
10. *Environment.* Facilities will comply with environmental rules, regulations, and standards applicable to their operations, and will observe environmentally conscious practices in all locations where they operate.
11. *Customs Compliance.* Facilities will comply with applicable customs laws and, in particular, will establish and maintain programs to comply with customs laws regarding illegal trans-shipment of finished products.
12. *Security.* Facilities will maintain facility security procedures to guard against the introduction of non-manifested cargo into outbound shipments (i.e., drugs, explosives, biohazards, and/or other contraband).

Unlike Walmart, which has one of the most stringent auditing practices, some firms have circumvented WRAP standards by influencing auditors. The potential risk of this anomaly is that it can engulf the entire industry when a hazard occurs, as it did at one WRAP-certified factory in 2012, where a fire led to more than 200 casualties. In the aftermath, leading global brands such

as Disney withdrew from Pakistan, and the publicity impact lasted long after the tragedy. As a result, Pakistan Readymade Garments, Manufacturers, and Exporters Association (PRGMEA) began working to improve compliance on fire, safety, and health standards in member facilities.

In addition to certifications, buyers require each order to be tested for seam strength, pilling, lead-free and nickel-free accessories, child safety, sharp edges, and other quality factors. SGS, Bureau Veritas, ITS, and ITT (which are accredited by ISO, WRAP, and Codex conventions) provide the required testing facilities. The cost of certification is 1 percent to 2 percent of firms' revenues. PCSIR, a government agency, undertakes testing and R&D with a comprehensive testing setup for the garment sector. Although its prices for specific tests are 20 percent lower than private testing facilities, and it takes about the same time as other providers to conduct tests, firms prefer to go through SGS and ITS, because buying agents identify them as preferred providers. However, neither of these institutions has substances-testing capacity, so substances are sent to labs in Hong Kong and Singapore, a step that increases production costs and extends turnaround time by up to two weeks. SGS is in the process of developing its local capacity to undertake all tests. Some U.S. buyers, such as Walmart, still require testing from specific labs in the United States, so firms selling to them will not benefit from this expansion of SGS services.

The lack of domestic standards allows firms selling locally to avoid certifications for chemical or hazard testing. Local health and safety standards are also lax, though producers of higher-end brands adhere to standard health and safety conventions.

A2d. Supply-Chain Management

SMEs source most materials (such as yarn, accessories, and packing material) from the domestic market. Some materials are imported (such as fabric for woven garments and accessories), although they are readily available through local agents. Yarns are often sourced from domestic suppliers, originating from different areas of Punjab, including Lahore, Daska, Jhang, and Multan (Ministry of Finance, 2011).

Many SMEs lack bargaining power. Evidence suggests that agents use their market power by colluding on prices and charging a higher mark-up to smaller enterprises. The inflated prices can be 2 percent to 5 percent higher than those the mills offer to larger firms. Competitive practices are difficult to regulate at the provincial level, and SMEs are also not sufficiently organized to increase their bargaining power.

A2e. Marketing

Marketing is one of the weakest links in the garment value chain. The export learning curve for most SMEs is to first acquire knowledge on quality and standards requirements as subcontractors to larger firms. Even when they do, there is no effective forum that helps SMEs connect to foreign markets. In most cases, firms connect with and market to buyers in two ways. Some use private buying agents, thereby ceding bargaining power to third parties, and some connect directly via e-mail or by visiting prospective buyers, a method that can be costly for SMEs with limited resources to identify potential buyers and finance business trips. Occasionally, the Trade Development Authority of Pakistan (TDAP) provides information on trade shows and subsidizes firms' attendance.

TDAP's export-related assistance appears to have led to no clear conclusion. Some SMEs suggest that TDAP has reached out to them about international fairs and links to buyers, but this outreach has not extended to some of the more capable SMEs. Identifying buyers or agents is a challenge for most SMEs, although the international market is segmented to produce demand in relatively smaller quantities and for low-end retailers.

A3. ACCESS TO FINANCE

Most SME garment manufacturers are self-financed, having launched their businesses with family or personal finances and kept them afloat by reinvesting profits or by getting inputs on credit. The two main reasons for this are that it is difficult to get loans without collateral, and that the return on garments produces a margin of around 6 percent to 8 percent, whereas bank interest rates are as high as 17 percent.

Some garment manufacturers do take bank loans despite the high interest rates. Exporters can take loans against orders if they have collateral. However, banks have ceased lending to the textile and garment industry due to high rates of default in the past few years. Manufacturers selling to the local, unbranded market cannot risk taking loans because they only get payment after goods are sold. If they are having cash-flow problems, they typically procure yarn or dying/weaving on credit, paying when they have the cash.

The issue of finance is particularly critical for smaller enterprises. The State Bank of Pakistan has subdivided its SME definition into small (up to 20 employees) and medium (21 to 250 employees). This will be followed by specific regulations for small firms on loan response times, rates, and scaling of microfinance lending through guarantees. Guarantees for microlending are being provided through the U.K. Department for International Development funding, and will be exhausted soon. The State Bank of Pakistan has also engaged the International Finance Corporation to advise commercial banks on developing products for small enterprises. However, these services are expensive and, because they are provided on a cost-share basis, only two banks (Habib and El Falal) are participating.

A4. INFRASTRUCTURE AND TRANSPORTATION

All garment firms use local transportation companies or trucks to transport goods. Given the railway system's unreliability, trucking is the primary mode of transport. However, delays due to the security environment are common, especially for transporting goods to and from Karachi — transport of goods from Karachi to Lahore takes two to three days. Most SMEs do not insure the goods being transported, assuming the entire risk of items if they are lost, damaged, or stolen. Lack of insurance places major constraints on SMEs and effectively poses a significant entry barrier. Although large logistics companies provide insurance, they are more expensive than other insurers, so only larger, more established firms use them. Large firms are affected primarily by the frequent delays in transport, which make it difficult to meet the short lead-times that are dictated by the seasonal nature and "just-in-time" requirements of the international garment industry.

A5. LABOR MARKET AND WORKFORCE DEVELOPMENT

A5a. Hiring Practices

Most SMEs get their trained labor from the local market. To retain laborers, firms need to place them on their payrolls, pay pensions (Employees Old-Age Benefits Institution, or EOBI), invest in training them, and improve general working conditions. In Karachi, for example, 8 percent to 10 percent of the workforce is contract labor, which most SMEs depend on because of the unpredictability of subcontract orders and the resulting need for a flexible cost structure. Thus, SMEs are less inclined to provide benefits such as social security. And a low-wage approach encourages laborers to move from factory to factory in search of better daily or piece rates, leading to indirect costs in the form of high turnover.

Independent contractors, who fill an intermediary role between labor and industry, are not inclined to encourage labor training. The result is poor quality and SME uncertainty. Training is deemed an expensive proposition that will increase production costs and only be feasible if those costs can be passed on to buyers, often a problematic proposition due to the garment industry's low-end segment orientation. Some larger companies exporting knitwear — and most high-end local brands — have already adopted health and safety policies, improved work environments, and are retaining labor. Survey data revealed that around 90 percent of SMEs have difficulty retaining labor.

A5b. Skills Development

Industry demand is in pre-production services, new fabric finishes, styles, markers, samples, and patterns. Medium and large firms in the garment industry often complain about the scarcity of floor and middle management personnel. Firms report an acute scarcity of line supervisors and floor managers and complain about the lack of production experience of newly hired engineers (with B.A. and B.E. levels of education).

A number of institutions, some of which are discussed in the points below, provide training to the garment sector, although a number of gaps remain.

- The National Textile University in Faisalabad and the Textile Institute of Pakistan in Karachi provide training on all aspects of the textile sector value chain — including spinning, weaving, processing (dyeing and printing), and manufacturing — yet training is deemed to be inadequate, given the demand.
- Design is an integral part of the garment manufacturing process for the high-end local market, and good design schools such as the Pakistan Institute of Fashion Design and Asian Institute of Fashion Design are producing skilled designers. However, because these institutes teach high fashion and most of the faculty members are not from the garment industry, there is a disconnect between the graduates and firms in the garment sector.
- More than a decade ago, associations such as the Pakistan Hosiery Manufacturing Association and PRGMEA used resources from the Export Development Fund to set up training institutes. The institutes have been providing training on different aspects of garment

production since then. For example, the Pakistan Readymade Garments Technical Training Institute (PRGTTI) operates under PRGMEA, training machine operators, merchandisers, quality controllers, technicians, production planners, CAD pattern designers, and fashion designers. Association members contribute to these training institutes; however, the institutes have been working below capacity for some time due to funding limitations and reliance on donor projects.

- In addition to the skills development training being given by the institutes mentioned above, ad hoc training is conducted through TEVTA and other organizations, with limited impact. TEVTA needs to develop a comprehensive training policy with links to institutes already providing training in relevant areas.
- SMEs tend to be stuck in a low-wage/low-productivity equilibrium, because they are not investing in workers and production systems. SMEs need to look at efficient production methods that also require lower investment in equipment. To do this will require training and raising awareness at the management level. Because production methods such as the modular method require more highly skilled workers and longer training times, skills development institutions will need to respond to changing training needs as industry adopts these methods.

A6. CROSSCUTTING ISSUES

A6a. Gender

SMEs in the garment sector employ women primarily for finishing and packing. Women are also involved in stitching, although the requirement for frequent late hours to meet orders makes this impractical. More women can be involved in the sector when firms minimize overtime and provide services such as transportation. Local brands such as Chen One, which provides fixed hours and transportation, employ more women than men in stitching, which requires the highest level of skill in the production process.

A6b. Environment

For Pakistani businesses, environmental compliance is one of the biggest challenges to their ability to benefit from the European Union's upcoming Generalized Scheme of Preferences (GSP) plus duty advantage. Although some firms have or are eligible for ISO 14000 certification for environmental management, this issue requires action at the sector level. For example, if a combined effluent plant is needed, drainage needs to be collected at the firm, multi-firm, and industrial estate levels, after which it needs to be treated and disposed of. Although firms can manage the lower levels, they depend on the government for industrial estate and other, higher levels. Hence, improvements will require efforts at both the firm and government levels.

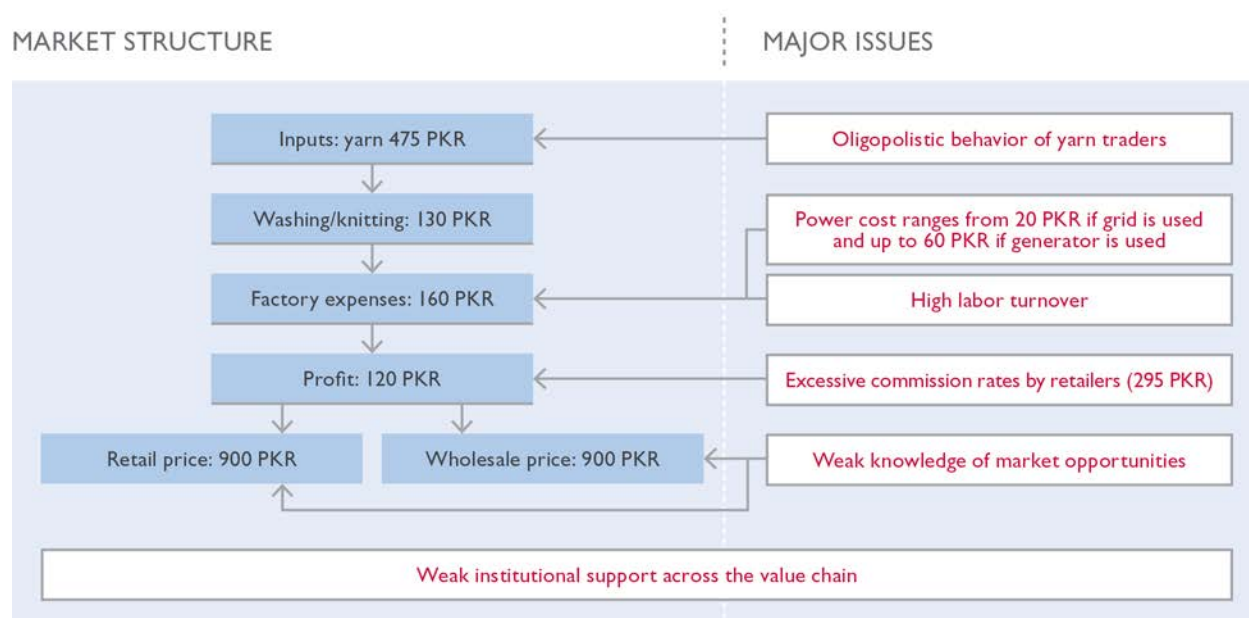
A7. NOORANI: A DOMESTICALLY ORIENTED SMALL FIRM ILLUSTRATES VALUE CHAIN CONSTRAINTS

The team undertook a firm-level SME value chain assessment, mapping each stage of a single woven garment manufacturer, Noorani, established in 1960. The firm produces woven cotton undershirts for local retailers, mainly in Karachi, employing 15 regular waged workers and up to

35 irregular workers. The operation houses a semi-integrated production facility that includes cutting of spinning yarn, bundling fabrics, counting cutting panels, stitching, pressing, final inspection, and packaging.

Noorani's value-added is about 30 percent, typical for a garment manufacturer. As an SME, Noorani is handicapped by weaknesses along the supply chain that keep its profit margin at unsustainably low levels (see Exhibit 11). On the supply-side, above-market prices for yarn increase Noorani's production costs. At the production level, high labor turnover and energy costs further increase the firm's costs. Like other SMEs, Noorani also finds its profit margins squeezed by high commissions from retailers, with which the firm has little bargaining power. The net result is relatively narrow profit margin of 10 rupees (PKR) per unit.

Exhibit 11. Illustrative Value Chain Weaknesses of Noorani



A8. FINDINGS, OPPORTUNITIES, AND RECOMMENDATIONS

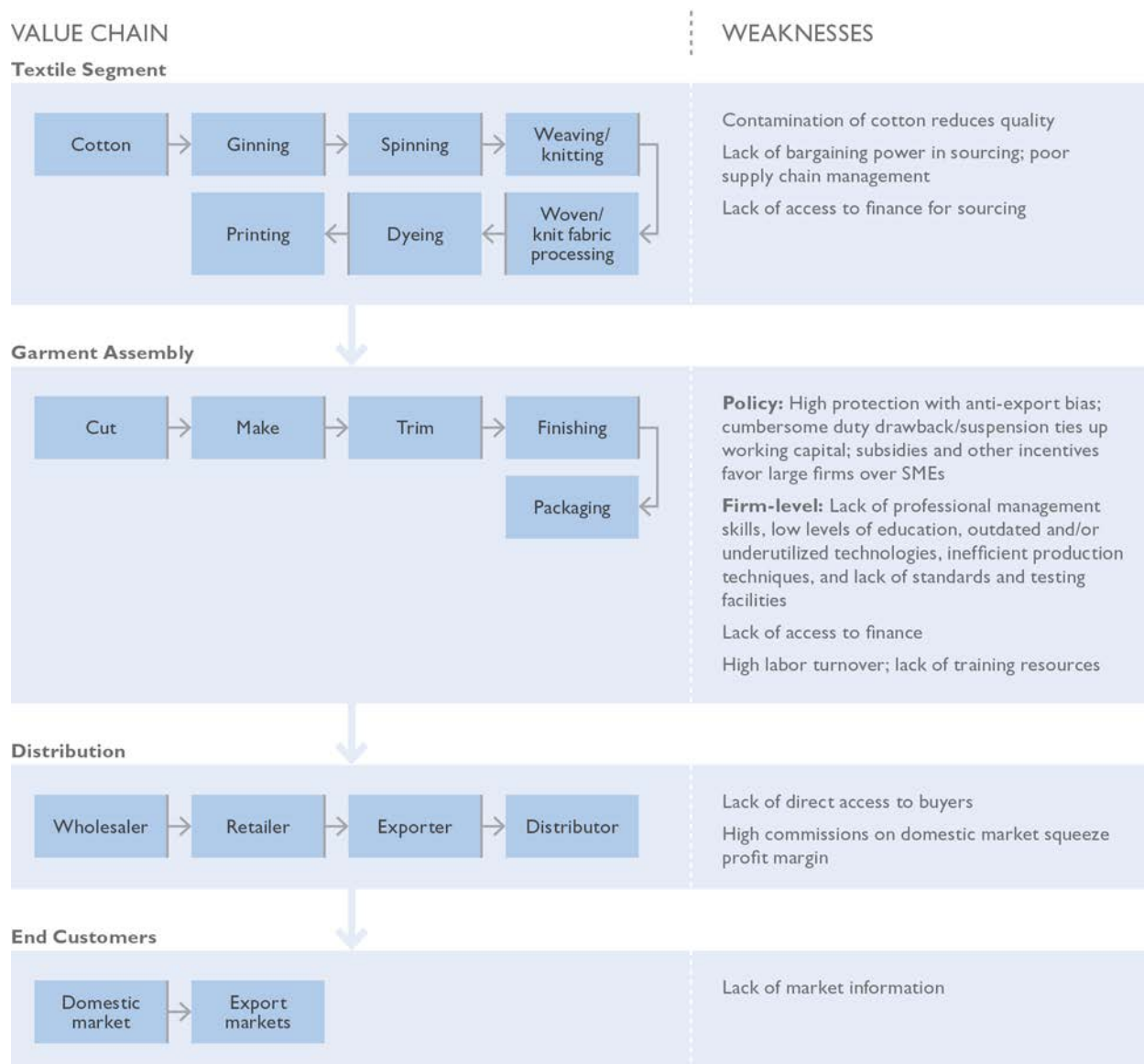
A8a. Key Findings and Opportunities

Exhibit 12 below summarizes key issues and how they affect each link in the garment value chain. Upstream weaknesses (for example, in the textile segments) have a cumulative impact on the downstream industry, placing the brunt of issues with cost, efficiency, and quality on the garment segment.

At the top of the chain, lack of investment in production quality (lint contamination) remains a serious constraint to value addition. Weaknesses in production methods and outdated technologies further erode productivity and quality in the textile segments. These systemic constraints in the upstream segments have deterred certain segments in the garment industry that must source lower-quality domestic inputs or artificially inflated imported inputs. Furthermore, management and operational constraints are often compounded in the garment segment, where

low levels of managerial expertise make it difficult for SMEs to compete even as subcontractors, due to quality, productivity, and cost issues. At the same time, the lack of information about alternative, less stringent markets outside the United States and the European Union further impede SMEs' ability to expand production, scale up, and take advantage of new production methods and technologies that could improve quality and productivity. Finding new markets and incentivizing investment in productivity-enhancing technologies could catalyze the development of SMEs that are otherwise relegated to the low-value-added local market.

Exhibit 12. Key Constraints in the Garment Value Chain



A8b. Recommendations

USAID can play a catalytic role in promoting competitiveness and sustainable growth in the garment sector by focusing on those market segments or product categories that offer the most

promise in growing their markets and addressing those weaknesses that represent binding constraints on building sector competitiveness.

Given the sector's importance to employment, especially women's employment, any interventions along the value chain will have spillover effects to the garment segment, which generates high levels of employment for men and women. Exhibit 13 provides an implementation matrix for high-impact and other recommended interventions, including expected impact and timeframe, sector champions that can be enlisted to support implementation, expected challenges, and resource requirements for implementation. The highlighted recommendations are deemed to be the highest priority, as they are those that can have the largest impact, in terms of generating new and sustainable revenues and employment:

- *Focus on high-value, fast-growing product segments.* While some of the recommendations below can benefit all segments of the garment value chain, Exhibit 10 above provides a value framework for identifying specific product segments that can benefit from more targeted support, such as firm-level assistance. The most promising targets are those product segments in which the market is growing above the world average. The “champion” products—women's and men's suits, men's outerwear, track suits—are low-hanging fruit that can be supported with targeted investment to ramp up production to meet growing market demand. The “underachievers”—men's knitted shirts, jerseys, and the indigenous lawn—need a broader range of assistance to access markets and address supply-side constraints, but the payoff is likely to be large given the market growth.
- *Apply differentiated approach to lead firms and SMEs.* More so than other sectors of the non-agricultural economy, Pakistan's production is largely segregated into two groups: (1) large lead firms that focus almost exclusively on export markets; and (2) SMEs that are largely limited to the domestic market. Large firms will benefit most immediately from marketing efforts that can grow and diversify their export opportunities, offsetting risks that are inherent in the current concentrated (i.e. to US and EU) destination portfolio. Domestically-oriented SMEs, in the short-run, can benefit from upgrading their *quality* and *efficiency* to meet export market requirements, either as direct exporters (for medium-size firms) or indirect exporters as subcontractors to lead export firms. Export-ready SMEs would also benefit from marketing support to penetrate existing and new markets.

Any interventions in the VC should be differentiated based on the above. The specific actions highlighted below are deemed to be the highest priority, as they can have the largest impact in terms of generating new and sustainable revenues and employment:

- *Provide assistance to modernize SME production technologies/methods and management practices.* SMEs are, for the most part, sorely lacking in modern production technologies and management methods, making it difficult for them to meet the requirements necessary to meet export market requirements, either as direct exporters or as subcontractors to lead exporting firms. To enable such firms to expand production, reduce costs, and improve quality, a broad program of assistance to SMEs can dramatically improve operating efficiencies and quality. A number of programs have offered such assistance in the past, with varying degrees of success, but new strategic approaches can have a measurable impact by leveraging the private sector, assuring buy-in and commitment to adopting new practices, and

creating sustainable mechanisms for continuing such interventions. Selected areas of assistance could include developing professional management skills within SMEs, Six Sigma process improvements to reduce waste and improve efficiency, adoption of new technologies such as auto-trimmers and computer-aided design, and enterprise resource planning, which are all essential to promoting greater efficiency and quality in the sector (see box below). Smaller enterprises would also benefit from basic management skills development, including sector practices for hiring and human resource management, financial management and accounting, and procurement and buying.

A number of approaches may be considered and should be coordinated through PHMA and PRGMEA to create a sustainable mechanism for delivering firm-level assistance to SMEs in the sector. One approach is to provide funding for cost-sharing of firm-level audits/assessments and co-funding for the acquisition of new technologies. Another is to leverage private sector resources, through Global Development Alliances or other partnerships, to provide financial or in-kind technical assistance to SMEs in the sector. Large exporting firms have an interest in building a network of local subcontractors, and larger international buyers may be interested in expanding the network of reliable medium- to large-scale suppliers. On the supply side, whatever approach is adopted, USAID should work with the two sector associations and local business service providers to introduce and build capacity in new production methods and technologies—for example, through the development of a certification program for providers that receive training on one or more of the production technologies or methods that would enable the development of a reliable and sustainable pool of consultants with sector-specific expertise.

Illustrative Production Technologies and Methods: Six Sigma

Six Sigma is a set of tools and strategies used for business process improvement, focusing on identifying and removing the causes of defects in the production chain. Six Sigma is a flexible, modular approach that can be applied in small- and medium-scale industries. Effectively implemented in Sri Lanka by a few private providers, Six Sigma has had remarkable success improving SME sector efficiencies.

Use of auto-trimmers and computer-aided design for efficient marker-making substantially reduces costs by decreasing wastage. However, these techniques require expensive machines; cost-sharing/partnership with firms would need to be adopted to incentivize their use.

Enterprise Resource Planning software would considerably help order tracking and quality management and improve productivity. Other software packages (e.g., for point-of-sale or product sales analysis) would be useful for local brands with retail outlets.

- *Promote expansion into new markets.* There is a need to explore new markets to diversify away from the current concentration on the U.S. and EU markets. There should be a concerted effort to provide marketing assistance to firms engaged in export, particularly of women's and men's suits, men's outerwear, track suits, and fleece and denim, in which Pakistan has a comparative advantage over other countries. This sector/product centric focus may be expanded to incorporate “underachieving” products (see Exhibit 10) for which international demand is rapidly expanding. As discussed above, a differentiated approach should be adopted in terms of large firms versus SMEs and include the following:

- The focus for large firms should be on market diversification through support for better targeted export promotion efforts by a private entity and sector associations. It is recommended that USAID provide technical assistance, perhaps through grants, through sector associations to a private entity to identify and promote new market opportunities — particularly in India and East Asia to exploit both proximity and preferential market access and other emerging markets in the Middle East, Indonesia, and South Africa — including the development of market studies in target markets and funding for inward and outward trade missions. This should include capacity building to help associations undertake market studies and prepare for trade missions, building on the efforts of USAID FIRMS.
- This could be complemented at the firm level with “export coaching” to assist export-ready SMEs adapt their products to U.S. and EU market requirements and standards. These SMEs would become familiar with the EU and U.S. markets and business practices, and develop an export marketing strategy conducted in partnership with associations and selected private business service providers to build their capacity to provide this support as a for-fee service. In addition to export marketing, the local market, particularly the higher-end market that competes with imports of branded and higher-end fashion goods, could be exploited further, but this needs to be done based on market imperatives and competitive positioning, rather than under protection
- *Promote the adoption of standards.* Firms’ ability to meet international standards will ultimately determine their ability to export to world markets. Interventions are required on the supply side (standards setting and testing and certification services) and on the demand side (building awareness and promoting adoption in the private sector, particularly among SMEs).

On the supply side, specific interventions include strengthening the capacity of the Pakistan Standards and Quality Control Authority to set mandatory standards (such as those related to safety) and its authority to enforce compliance. Testing should be left to organizations such as PCSIR and private sector bodies such as SGS, ITT, and Bureau Veritas, with a focus on building capacity to meet international standards such as ISO, WRAP, and Sedex.

On the demand side, USAID can assist relevant sector associations to build awareness of the importance of international standards and provide firm-level technical assistance, perhaps through cost-sharing measures, to enable firms to adopt the necessary standards and obtain certification. In the case of production technologies, there may be an opportunity to leverage private sector resources through an alliance with lead firms interested in strengthening their supply chains by assisting SMEs to adopt international standards.

- *Improve links between education and production in the garment and design segments of the value chain.* One of the conditions for upgrading quality and efficiency, particularly among SMEs, is an improvement in the linkages between education and production. In particular, the garment segment of the value chain has no equivalent to the National Textile University, an institution that produces textile engineers trained in the university’s production facilities, or the Textile Institute of Pakistan, which offers degrees in textile engineering and textile management. The University of Management and Technology’s School of Textile and

Design in Lahore is seeking financing to develop a student training facility in a closed textile mill with equipment from weaving to garment finishing. The facility would give the university's students hands-on experience with factory operations and management in the garment industry, equivalent to that of the National Textile University and the Textile Institute of Pakistan. Given the University of Management and Technology's record of excellence, this is a project well worth exploring, in which USAID could link the university with potential donors and investors.

- *Support PRGMEA in establishing modern training facilities in Sialkot.* PRGMEA, the premier employers' association in the ready-made garment industry, has received a grant from the Export Development Fund to establish a training institute in the Sialkot area. Ijaz A. Khokhar, chief coordinator of PRGMEA, and Kamran Yousaf Sandhu, principal of PRGTTI, have developed a project to create a complex facility — with state-of-the-art equipment and gender-segregated dormitories for students — that could have a substantial impact on skills development and female employment in the Sialkot area. To overcome the typical financing constraints for this kind of center, Mr. Khokhar is proposing a scheme by which medium-sized firms in the area would sponsor students for a three-year training program, with the promise of employment at completion. USAID should support this initiative through additional financing and technical assistance to support the adoption of modern training standards.

Exhibit 13: Summary of Recommended Interventions for the Garment Sector Value Chain

Proposed Intervention	Expected Impact	Time Frame to Realize Impact	Key Issues to Implementation	Sector Champion	Geographic Focus	Priority
Promote streamlining of duty drawback and Duty and Tax Remission for Exporters regimes through technical assistance to associations to support advocacy; technical assistance for reforming system and reengineering procedures	Reduce time and cost of process and free up working capital	Short-term	Development of advocacy campaign with exporters	All sector chambers and associations	National	High
Promote collaboration among SMEs to increase bargaining power with local input suppliers through establishment of a cooperative buying house	Improved bargaining power through bulk buying of SMEs vis-à-vis input suppliers	Short-term	Identification of willing SMEs to enter into cooperative arrangement	Lahore Chamber of Commerce	Punjab	Medium

Proposed Intervention	Expected Impact	Time Frame to Realize Impact	Key Issues to Implementation	Sector Champion	Geographic Focus	Priority
Build professional management skills within targeted SMEs through programs such as Six Sigma and the modular method. USAID could leverage private sector resources through Global Development Alliances or other partnerships to provide financial/in-kind technical assistance	Significant improvements in factory-level efficiency and relatively fast response time to downstream sub-contractors	Short-term	Identifying pilot SMEs within the vast industry and willing lead firms	PHMA/PRGMEA	Punjab and Sindh	High
Provide technical assistance to SMEs to adopt standards by leveraging private sector resources through alliance with lead firms interested in strengthening the supply chain	Improved access to high income markets	Medium-term	Identifying the pilot SMEs within the vast industry and willing lead firms	PHMA/PRGMEA	Punjab and Sindh	Medium

Proposed Intervention	Expected Impact	Time Frame to Realize Impact	Key Issues to Implementation	Sector Champion	Geographic Focus	Priority
Promote R&D into technical textiles through a pilot program at the Textile Institute of Pakistan (incl. procurement of lab equipment)	Moving up on the technology and value ladder	Short- to medium-term	Promoting technology transfer to private sector	Textile Institute of Pakistan	Sindh	Medium
Develop capacity of PSQCA to adopt international safety standards for products	Improve general standards environment	Medium-term	Promoting/advocacy through Pakistan Business Council and Chambers	Pakistan Business Council, chambers of commerce	National	High
Promote expansion into nontraditional markets through targeted trade promotion	Improved access to buyers in new export markets	Short-term	Developing market studies and focusing implementation	Pakistan Business Council	TBD	High
Promote facilitation of business visas for foreign buyers, particularly from India	Improved access to buyers in new export markets	Short-term	Supporting advocacy efforts through the sector associations	Ministry of Foreign Affairs	National	Medium

Proposed Intervention	Expected Impact	Time Frame to Realize Impact	Key Issues to Implementation	Sector Champion	Geographic Focus	Priority
Develop export coaching program through sector associations to provide firm-level assistance	Improved access to emerging markets	Short-term	Identifying export-ready SMEs	PHMA/PRGMEA	Punjab and Sindh	High
Explore partnering with University of Management and Technology (Lahore) to develop a training facility for its students at a textile facility with equipment	Reduce skills gap	Medium-term	TBD	University of Management and Technology (Lahore)	Punjab	Medium
Support PRGMEA in the establishment of modern training facilities in Sialkot through additional financing and technical assistance	Reduce skills gap	Medium-term	Developing feasibility study and business plan	PRGMEA, PRGTTI	Punjab	High

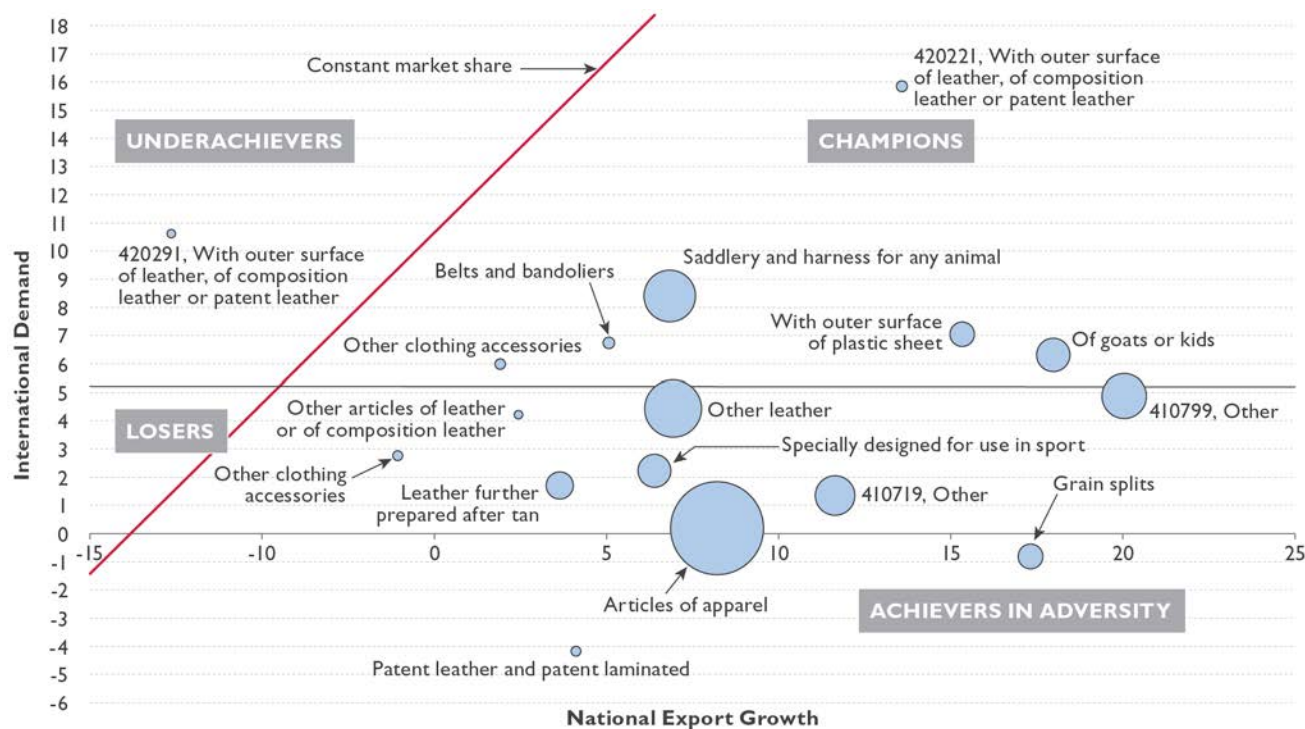
B. LEATHER VALUE CHAIN

As of 2012, the global market for leather products was \$100 billion, with the European Union representing almost 10 percent of this total market share. International demand for leather goods is projected to increase with the expansion of specialty products such as leather footwear, handbags, furniture, and car seat covers.

Of the global leather market, China and Italy are the leading producers and exporters of leather products, with exports reaching \$35 billion and \$19 billion, respectively.⁴ Brazil and India take third and fourth places, with exports at \$3.7 and \$3.2 billion, respectively. Pakistan's export size is aligned with Turkey, Vietnam, and Indonesia, at around \$1.2 billion annually.

Pakistan's leather, manufactured exports have been declining for the past three years. The stall in leather exports is alarming in contrast to its regional competitors' five-year growth rates, with China at 47 percent, India at 40 percent, and Bangladesh at 102 percent. Representatives from the leather sector say that Pakistan has lost 49 percent of its global share, adding that countries such as Italy and Vietnam — with low livestock populations — had 13 percent and 6 percent of the global leather market share, whereas Pakistan, with 160 million livestock, has less than a 1 percent share of the global market.⁵ The country's leather manufacturing sector is primarily in Karachi, Lahore, Sialkot, and Kasure, although *chappal* sandals are manufactured in Chardassa.

Exhibit 14. Competitive Positioning of Pakistan's Leather Exports



⁴United Nations Statistics Division, UNIDO, 2008.

⁵*Business Recorder*, Pakistan's daily financial newspaper and website, December 2012.

The leather prospects graph (Exhibit 14 above) underscores Pakistan’s weak international performance. Its premier export, leather garments, and some of the other top exports are growing, but in a declining world market (world demand is growing slower than average). These products, similar to the “Champions,” can benefit from any supply-side improvements, including logistics and trade facilitation, but substantial efforts are necessary. Any intervention to upgrade the leather industry would have a significant positive impact on employment creation and increased income.

B1. INDUSTRY CHARACTERISTICS

The Pakistan leather sector’s performance has been disappointing over the past three years since the USAID-funded sector assessment in 2010. The 2010 report noted that “the leather sector has failed to achieve its export potential in leather products

Falling Profits

Key informants reported that profit margins are now about 2 percent, compared to 7 percent five years ago.

because of an inability to understand and meet the quality requirements of export markets, its low productivity, poor environmental compliance and limited product diversification.”⁶ The sector seems complacent to continue at its current pace and key informants showed little inclination to adapt or change to meet market conditions and requirements. This 2013 survey indicates that little has changed in terms of testing, addressing environmental issues, or upgrading technology and equipment. According to the SME survey, no new leather factories have been established in Pakistan in the past decade.

Exhibit 15 presents a snapshot of the current leather sector, the number of firms operating, and an estimated number of employees the sector supports. Direct employment is estimated at approximately 400,000 — including slaughterhouses, traders/wholesalers, tanners, manufactures, and distributors — slightly down from 2010 figures (500,000); this is attributed to the closure of some leather factories and tanneries due to the global economic recession⁷. Women represent about 1 percent of leather sector employees. These total employment figures do not include the dairy farming and individual households raising cattle,⁸ although these are an important link in the value chain.

Exhibit 15. Leather Sector

Type of Firm/Individual	Number of Firms	Number of Employees
Dairy farmers and household farmers raising cattle	30+ million (includes smallholder farmers)	90+ million
Traders and middlemen	100,000	150,000

⁶Suggestions from the 2010 study— for example, SGS’s laboratory’s collaboration with the Leather Products Development Institute’s , LPDI (part of the Ministry of Commerce) testing facility in Sialkot has not occurred.

⁷According to the 2010 Leather Sector of Pakistan Study produced by JE Austin, 35 percent of leather industrial units were in the process of closing down and the overall value of sales has declined by around 20 percent. This data was verified by our 2013 survey in which key informants estimated that as many as 30 percent of smaller leather firms have closed in the last three years.

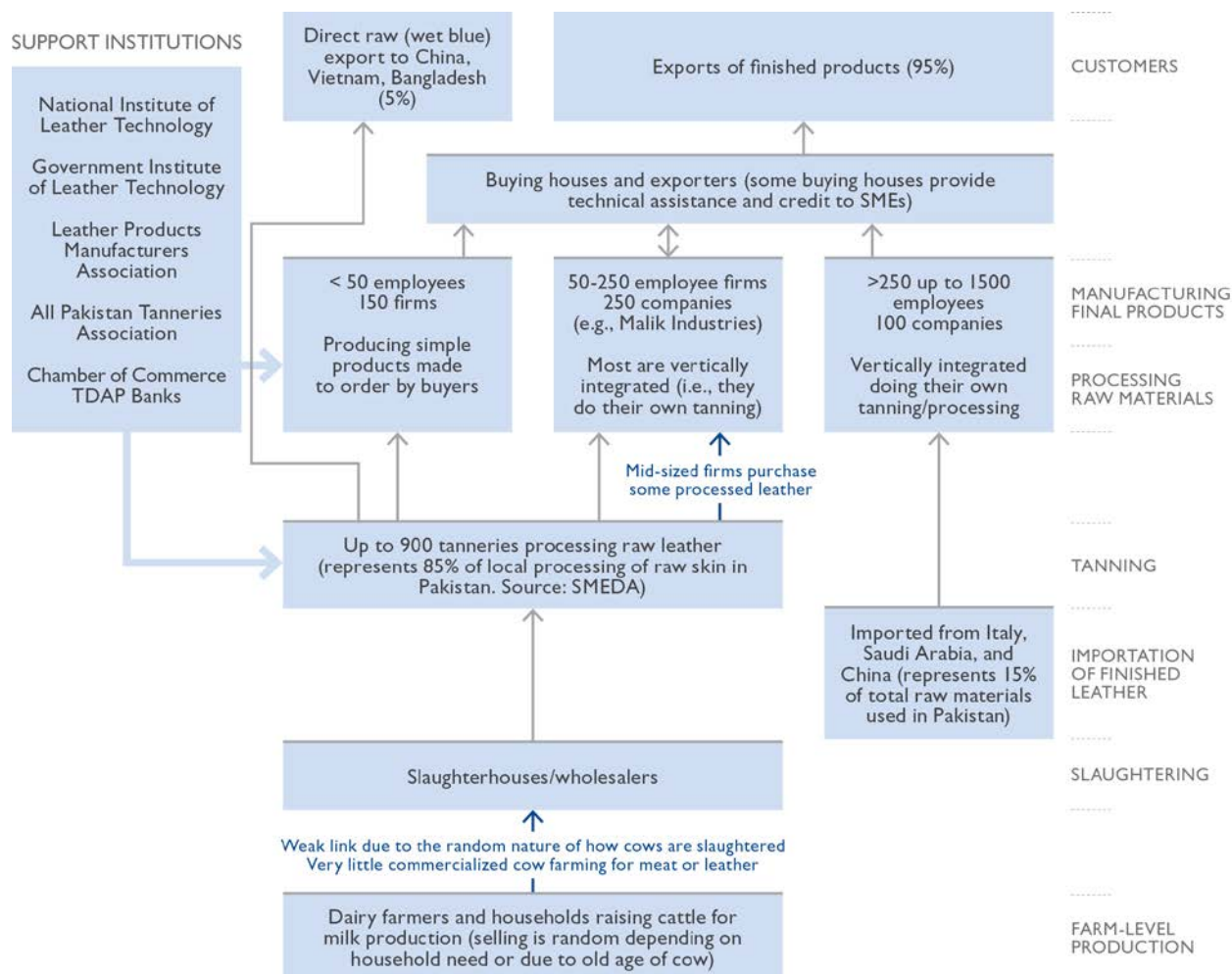
⁸This is due to the difficulty in verifying the accuracy of these numbers.

Slaughterhouses ⁹	10+	1,000+
Tanners (exclusively tanning)	900	15,000+
Manufacturers		
Chappal sandals (Chardassa)	500	2,500
Small (manufacturing only)	150	7,500
Medium (vertically integrated)	250	50,000
Large (vertically integrated)	100	200,000
Buying Houses Exporters	50	1,000

Source: Grant Thornton Survey, 2013.

Pakistan's finished leather exports have remained in price-sensitive markets (low cost), and there have been limited attempts to move into higher-quality, less price-sensitive markets. As a result, it has been a "rush to the bottom," with a focus on Pakistan's ability to produce the cheapest products for buyers such as Walmart and T.J. Maxx. Exhibit 16 illustrates the leather value chain.

Exhibit 16. Leather Products Manufacturing Sector Value Chain



⁹Two of the largest and more modern slaughterhouses are in Karachi and Islamabad.

There may be opportunities to turn Pakistan's leather sector around. Several key informants noted a growing international interest in moving their leather orders to Pakistan. The marketing manager at Hansa Leather¹⁰ anticipates 35 percent growth this year as buyers recognize Pakistan's pricing to be about 40 percent below China and 20 percent below Vietnam. This price differential was verified by a Russian buyer, Mr. Rustom, interviewed at C&A Leather Buying House; he independently quoted the same price differentials among Pakistan, China, and Vietnam. Such market changes could be a positive signal for Pakistan to address systemic constraints in its productivity, quality, and environmental stewardship practices to increase its international competitiveness.

Lahore is the home of Pakistan's footwear production industry, and Karachi is primarily characterized by tanners and leather garments companies selling to European retail chains and European brands, mainly producing products for private label leather jackets. Lahore and Sialkot also boast their own tannery sectors and leather garments factories.

Pakistan supplies only 60 percent of its local requirements for raw leather. Its input market for raw leather is unorganized, due almost no commercialized animal farming. Dairy farming and household-level farming are presented in one box on our simplified map in Exhibit 16 above. Dairy farmers sell their cows when they are too old to produce; households sell animals when in need of cash. Another complication to the input sector is that supply is not consistent. For example, during the religious festival Eid el-Adha, supply may double, whereas there may be a shortage of animals or leather available during other seasons.¹¹ Most animal husbandry occurs in Punjab and Sindh.

About 95 percent of the leather and value-added goods are exported in finished form. The product profile of the leather sector is dominated by the garments subsector, which has the largest share at 43 percent; raw finished and unfinished leather at 34 percent; the gloves subsector at 13 percent; footwear at 9 percent; and other leather products (including saddles, belts, bags, and other clothing accessories) at 1 percent.¹² Importantly, the Pakistan leather sector's two smallest subsectors — footwear and leather goods (e.g., upholstery, bags, and gloves) are the world's largest markets. This phenomenon and the opportunity it offers are discussed below. Forty percent of Pakistan's leather is imported, often used for shoe soles and higher-end specialty leathers. Large manufacturers import raw materials directly, but small and medium manufacturers rely on local markets and wholesalers for raw materials.

India's exports of leather footwear are growing by 20 percent each year.

A stakeholders' workshop held for this assessment with the Pakistan Leather Garment's Manufacturer and Exporter's Association (PLGMEA) highlighted the following systemic constraints, discussed in the following sections:

¹⁰Hansa leather is a employee firm; they have recently been approached by a Japanese buyer to launch a lean manufacturing production line and are currently pilot testing this in their factory.

¹¹As a result of this glut, manufacturers often stockpile large quantities of raw hides to ensure their factories had a consistent supply.

¹²*Leather Sector of Pakistan*, JE Austin, 2010.

- Tanneries are not producing the quality or quantity the industry needs to meet growing international demand for higher-quality finished products.
- Increasing costs of raw leather (due to cost of feed for livestock, imported chemicals for tanning, and illegal smuggling) is reducing profit margins.
- A dearth of locally-based laboratories that can undertake the international chemical tests required for export.
- Environmental wastewater and solid waste, in particular from tanneries.
- Lack of local designers for the leather garments market.
- General lack of law and order.
- Lack of consistent energy supply.
- Changing government policies (for example, the new sales tax in March 2013).

B1a. End-Market Characteristics

Export market trends suggest that the key drivers of growth in almost all leather trading economies are leather footwear — with its strong and consistent growth rates and significance as a generator of employment — and other goods (including automotive products, upholstery, bags, and other leather value-addition articles).¹³ China, Italy, and other major leather exporters all have “winning” subsectors that drive the sector’s expansion. For example, footwear and other value addition products (e.g., bags, upholstery, and seat covers for cars) represent 67 percent of the global leather market and have been the key drivers of leather sector growth in China, Brazil, India, Vietnam, Indonesia, and Bangladesh.¹⁴ Pakistan’s leather sector exports mostly raw leather, clothing, and gloves and, as a result, it has the lowest market share in the growth sectors.

In interviews with leather shoe manufacturers supplying the domestic market, company representatives remarked on the growing demand for quality leather shoes. Competition from Chinese products is steep, but these producers considered their products highly competitive in terms of price and quality. One firm in Lahore plans to open a new factory in 2013 to start a lean manufacturing production line, staffed completely by women, to meet projected domestic demand.

B1b. Product Diversification

Larger leather firms have started applying some innovation to seize the subsector opportunities noted above. For example, Leather Fields, one of Pakistan’s largest leather exporters, is diversifying its traditional product range and has started producing leather car seat covers for Hyundai and manufacturing leather for IKEA to use for its leather furniture product lines.

Some production-level innovation is being introduced in terms of new product design. Several manufacturers interviewed for this study are experimenting with lightweight fashion garments produced from stretchable leather. Key informants also discussed the increased creativity of Pakistan’s leather handbag sector for the domestic and international markets. (Key informants also noted there were only four leather handbag manufacturers in Pakistan.)

¹³Ibid.

¹⁴*Leather Sector of Pakistan*, JE Austin, 2010.

B2. POLICY AND BUSINESS ENABLING ENVIRONMENT

In general, the SME survey indicated that the leather sector needs much stronger government support to enhance its competitiveness with China, India, Vietnam, and others. Several key informants described government policies in South Korea, Thailand, Indonesia, and Vietnam that support the footwear industries in these countries through tax holidays and incentives to attract foreign direct investment. Leather manufacturers are demanding similar incentives from the Pakistani government to encourage foreign investment in the sector, modernize manufacturing processes, bring in new technical expertise, and develop international market linkages.

The leather industry is also demanding greater consistency in the government's taxation and policies for this sector. Key informants reported that continuously changing policies create a significant disincentive for foreign investors to enter Pakistan. One key informant noted the success of the government of Bangladesh in maintaining a consistent and aggressive policy to attract investment into its local footwear industry during the past 10 years. For example, the Bangladeshi government prioritized footwear as a target market and has worked with importing countries to secure preferential trade treatment.

Efforts by the Pakistan Tanner's Association and PLGMEA to lobby for change have been paying off. A recent case in point is the government's decision to support the leather sector under its new trade policy.

Export Promotion Leather Council. In December 2012, Prime Minister Raja Pervez Ashraf approved the formation of the Export Promotion Leather Council under the Strategic Trade Policy Framework 2012-2015, and gave the leather sector a 'priority status' with a view to enhance leather sector exports to \$3 billion in the next three years. The Leather Council was established with the patronage of the Indian Leather Council. This is being viewed by Pakistan's leather sector as an important step for the industry to receive the support it requires to become more competitive. India's competitive standing in the global leather industry has been attributed to a similar export council, established in India in 1984, which advocates using more modern equipment, environmental compliance, and trade support.

Export Development Surcharge. Under the new three-year Strategic Trade Framework the Ministry of Commerce will take over control of Export Development Surcharge, which is controlled by the Ministry of Finance. This was considered to be extremely relevant to all exporters, who note that the Export Development Surcharge was not being properly used to support industries' participation in international industry fairs and other important activities.

Implementation of environmental policies. One of the most critical policy issues for the leather sector is implementation of environmental regulations. Existing regulations are considered adequate, but Pakistan's Environmental Protection Agency (EPA) has been

unable to require manufacturers and tanners to follow these protocols. The agency did create a voluntary Self-Monitoring and Reporting Tool (SMART) for leather firms to report on their standard operating procedures and treatment of effluent and solid waste; however, this program

None of the SMEs interviewed had ever been visited by an EPA official to randomly test their effluent, chemical use, or health and safety standards.

is no longer operational. The Japanese International Cooperation Agency also supported the EPA to establish a series of environmental monitoring stations for air and water pollution, equipped with modern testing and monitoring equipment and mobile laboratories. Transfer of this program to the government of Pakistan is seeing limited success due to a lack of continued funding.

The need to mandate environmental compliance from leather factories is increasingly important to retain and expand Pakistan's global market share. International buyers are requiring leather factories to acquire "no objection" certificates from the EPA that stipulate compliance with local environmental requirements. However, without a system to ensure transparency and rigor in this system the procurement of these certificates will be meaningless.

The industry considers it the government's responsibility to establish effluent treatment plants in Sialkot and other locations to properly treat the sector's wastewater and comply with waste removal protocols. The government's willingness to overlook this critical environmental issue has resulted in alarming water and solid-waste pollution. The Korangi treatment plant, funded through a public-private partnership, is a testament to the private sector's recognition of this significant problem, although the plant is working well below international norms.

B3. SUPPORT INSTITUTIONS

B3a. Testing

All key informants mentioned product testing as a constraint to the sector's ability to supply international markets. Most key informants are selling to European markets that require a series of chemical tests called Registration, Evaluation, Authorization, and Restriction of Chemicals (REACH, see box). The 2010 "Leather Sector for Pakistan" report noted the importance of having locally available labs to test and validate locally made products. In Textile Testing International's survey of leather firms in Sialkot, 100 percent noted the need for better access to timely and low-cost REACH testing.

REACH

A 2006 EU regulation, REACH, addresses the production and use of chemical substances and their potential impact on human health and environment. REACH came into effect in June 2007, with a phased implementation through 2017.

Manufacturers are able to secure these tests, mainly through SGS laboratories, but the tests are expensive and take up to three weeks to process. This delay is because SGS lacks the equipment to undertake REACH testing in its labs, so it must ship samples to Hong Kong and other locations. The average cost of the REACH series of tests for one sample is \$3,000. The process takes six to eight weeks. NOVA Leather's chief executive officer (CEO) reported that the firm spends some \$50,000 a year on testing for various chemical and REACH compliance tests. Such costs result from the fact that no local laboratories have the equipment to conduct the full range of REACH and other internationally required chemical tests. This constraint increases end costs, extends production time, and impedes attempts to streamline manufacturing processes at all stages of the value chain.

B3b. Financing

Ninety-five percent of leather sector respondents were not borrowing for any purpose, citing high interest rates, lack of collateral, and the Islamic restriction on paying interest. Respondents noted this as a key constraint to upgrade their machinery and facilities to increase productivity and efficiency. Leather Field was the only firm currently borrowing for working capital and equipment needs. Due to the relatively high cost of new machinery and the need to import it, many factories use refurbished machinery from the United Kingdom and Germany. These arrangements can sometimes be coordinated through a manufacturer's buyers, who facilitate introductions and guarantee payments.

B3c. Market Access

Most smaller leather firms have almost no international market access and work with known buyers to provide them with regular designs and annual orders. Lack of access to market intelligence is a defining constraint in Pakistan's leather sector. Firms rely on historical connections, and SMEs rarely travel abroad to seek market intelligence. This results in a disconnect between local production (which is using the same equipment, relying on the same contacts, employing the same skilled labor pool) and the constantly changing requirements of the international market.

Export trade data indicates that the largest and growing market segments are footwear and other products (e.g., leather for furniture, handbags, and car seats), but Pakistan's exports in these categories are extremely small. This phenomenon is partially a result of family-owned SMEs run by individuals with little or no leather skills training and limited business acumen. They seek no external market intelligence that might guide the modernization of their operations or catalyze an interest in designing their own product lines.

Larger firms work more closely with the buying houses that tend to audit factories to comply with international health, safety, and environmental requirements. Those with connections and resources look to TDAP for assistance to travel to trade fairs, or they attend trade fairs on their own. Larger firms have their own marketing departments that maintain and develop contacts with international buyers and are often members of the Pakistan Tanneries Association, a powerful lobbying body. The association also provides members with market information, access to support for international exhibition attendance, and introductions to buyers.

SMEDA does not provide any specific trade support to the leather sector, but offers general business consulting services and facilitates access to finance. SMEDA also says that leather is one of its high-priority sectors for 2013.

B4. LABOR MARKET AND TECHNICAL SKILLS

There is an adequate supply of skilled leather workers to support current production levels. Workforce-related constraints include limited experience in good manufacturing practices, understanding of health and safety guidelines required by international buyers (i.e., the restriction on using chrome in any part of the supply chain), lack of design skills, an inability to

use computerized production equipment, and no knowledge of EPA environmental compliance regulations.

Two technical training facilities offer classes in Sialkot and Karachi. Unfortunately, the demand for these programs is low, and industry experts consider the programs to be sub-par.

- *Leather Product Development Institute and Development Program (LPDI)*. Launched in 2001 as a public-private partnership, LPDI works under the Ministry of Industries, and has received funding from the United Nations Industrial Development Organization (UNIDO) and a few other international donors. It conducts a range of training related to four themes: leather gloves; leather garments; leather footwear; and knitwear. LPDI trains about 125 students a year and claims that trainers are practitioners; still, it does not recover its training program costs and the quality is questionable. LPDI boasts a small laboratory, but it is stocked with outdated equipment and its staff are untrained (see box). LPDI also started a “clean production facility” and conducted training sessions on the use of chrome and other chemicals and ISO 9000 certification, but this facility closed in 2006 due to lack of support.
- *The National Institute of Leather Technology (NILT)* remains in a poor state, as was noted in the 2010 study on Pakistan’s leather sector. The institute has limited demand from potential students and very limited funding. Unable to secure interest in its other programs, NILT has launched two new degree programs: a three-year engineering diploma, and a one-year diploma related to leather technology. In 2012, the institute graduated 65 students from its three-year program, and 20 individuals in a new executive-level training program for leather sector senior managers. NILT claims to have a high graduate placement rate, although their degrees and certifications do not appear to leverage a premium in terms of salary.¹⁵ NILT also has a common facility for tanning, but has almost no demand for these services. NILT is operationally sustainable due to an endowment fund of PKR 10 million, established through TDAP; the institute operates on the interest. (The institute claims that it costs about PKR 12,000 per student per year, but charges PKR 7,000 per student per year.) NILT has limited capacity to address the technical workforce development constraints of the sector.

Better Labs, Better Leather

Textile Testing International, a private testing laboratory in Lahore, has signed a memorandum of understanding with the LPDI laboratory to support its staff in the proper use of its laboratory equipment, and has begun to use this facility as a base to reach out to the leather sector in Sialkot.

With the exception of the new agreement between Textile Testing International and LPDI’s laboratory, both institutions lack collaborative partnerships with the private sector. To be truly effective, these training centers need to understand and teach state-of-the art programs that are relevant to today’s leather sector. One demonstration model is the ongoing partnership between PLGMEA and the Pakistan Fashion Institute. Recognizing the need for more designers for the sector, in 2012 PLGMEA began working with the Pakistan Fashion Institute to develop a

¹⁵NILT noted that graduates from their programs receive the same starting salaries as those of unskilled workers. This may be more a reflection of the factories unwillingness to pay for skilled labor than the quality of the training itself. The result, however, is continued diminished demand for NILT’s services.

curriculum that aligns with the needs of the leather sector; the first class will graduate in 2013. PLGMEA has pledged to place every graduate from the program in the leather industry.

B5. FIRM-LEVEL CONSTRAINTS

The leather value chain uses mostly traditional (un-automated) practices for animal husbandry, slaughtering, tanning, and manufacture. As a result, the following losses occur at each stage of the chain¹⁶:

- 25 percent value lost due to animal skin diseases;
- 15 percent value lost due to poor slaughtering techniques;
- 2 percent value lost due to poor transportation facilities;
- 10 percent value lost due to poor collection processes.

These losses contribute to continued increases in raw leather and final prices: One major slaughterhouse quoted a 70 percent increase in skin prices in the past 12 months. Key informants reported decreasing profit margins and increasing challenges to remain price competitive domestically and internationally.

B5b. Management Skills

Eighty percent of the leather industry is represented by family-owned and run SMEs. Most factory managers have no technical degree or training in leather and only a handful have business diplomas. These factors have contributed to a series of interconnected organizational, managerial, and technological mismatches. Most key informants were content to complain about the price of their unskilled and skilled labor as a key constraint to their global competitiveness, with little understanding of issues that are much more critical to their overall productivity and competitiveness. The majority of leather SMEs interviewed for this survey:

- Maintained few factory protocols to comply with international or domestic environmental regulations.
- Had limited knowledge of modern machinery and its benefits (i.e., improved productivity, quality and energy efficiency).
- Kept huge amounts of skins/stock on-hand due to concerns of lack of consistent supply.
- Were unaware of the importance of digitizing their financial and other management systems (i.e., enabling management to make time-sensitive decisions about buying inputs, traceability, and accessing real-time profits/losses).
- Did not hire professional marketing or distribution firms that could better represent their interests with international buyers.

¹⁶*Leather Sector of Pakistan*, JE Austin, 2010.

B5c. Technology

Unlike China, Italy, and France, Pakistan's leather industry lags in the use of modern tanning and production technology. Little has changed in the past three years, and the majority of the industry still uses antiquated technology and processes. Production is done by piece — one factory worker makes a complete product, which is then quality checked — and workers are paid by the number of “pieces” they produce each day. This outdated production method lowers product quality and uniformity and hinders a firm's ability to expand. As a result, buyers slot Pakistani leather products into the low-end category, and Pakistani companies fail to make a sustained effort to improve their image.¹⁷

Gradual changes are occurring among forward-looking managers who have engaged with international buyers willing to support technological and production changes to increase quality and factory-level productivity. These types of linkages with international buyers will drive Pakistan's future competitiveness in the international market. The box below presents the case of Hansa Leather in Sialkot.

Hansa Leather: Increasing Productivity Through Good Manufacturing Practices

With about 200 employees, Hansa Leather produces motorcycle jackets and gloves on order, with no design requirements, for export to the United Kingdom. In the CEO's opinion, Pakistan's leather sector is growing and can be competitive with China and Vietnam. His buyers have told him that his pricing is 40 percent below China's and 20 percent below Vietnam's.

Hansa's main buyer is Alpine Star, which was producing in China and Vietnam, and is moving its production to Pakistan through Hansa. Alpine Star is pushing Hansa to start “lean manufacturing” techniques that require the firm to be more efficient and produce more uniform, high-quality products. Hansa plans to hire more female workers to support this more time-sensitive type of operation. The change will require a significant investment to build separate female work stations, toilets, and a prayer area. Developing a lean manufacturing process will also require Hansa to maintain less inventory and keep its line production functioning in efficiently, producing X amount of high-quality products per minute.

There are three main challenges to Hansa's strategy: (1) the requirement for more highly skilled workers who do not require a great deal of on-the-job training; (2) Pakistan-based laboratory testing that is timely, inexpensive, and accurate; and (3) higher-quality leather that Hansa can secure in smaller quantities to keep inventories low.

B6. BACKWARD LINKAGES: INPUTS

B6a. Skins and Livestock

Although Pakistan has huge livestock holdings, poor husbandry and slaughtering result in up to 25 percent losses at these two stages of the value chain. These inefficiencies are coupled with the seasonality of animals available to slaughter, increases in feedstock prices, and increased smuggling of animals, often to Afghanistan. The lack of true commercialized animal breeding for meat production adds to the lack of consistent supplies of raw materials throughout the year.

¹⁷Leather Sector Three-Year Strategy, USAID, 2010.

Most slaughtered animals are drawn from dairy farmers, who dispose of older cows that way, and from smallholder farmers who raise small lots of animals.

According to key informants from the slaughterhouse, the price of a cow has increased from PKR 1,000 in 2012 to PKR 1,700 in 2013 — a 70 percent increase in a 12-month period. The slaughterhouses claim that 90 percent of their leather comes from dairy farms and 10 percent from smallholder farmers. Exhibit 17 presents a summary of the type and amounts of animals procured by slaughterhouses.

Exhibit 17. Slaughterhouse Procurement

Sales	Animal Type
80%	Cows/Heifers – 60%
	Buffalo – 30%
20%	Goat – 70%
	Sheep – 30%

B6b. Tanneries

Some of the larger tanneries and integrated manufacturers produce high-quality leather, but the majority of tanneries use antiquated machinery. The lack of investment in modern drying or conditioning equipment or drums to tan leather results in poorer-quality tanned leather. Tannery owners are unaware of the benefits modern machines could bring; for example, newer tanning machinery can be considerably more efficient in terms of energy, water, and chemical use. Few tanners recognize the financial benefits of upgrading their production processes.

About 40 percent of leather used in Pakistan is imported, partly as a result of the low-quality hides being produced and tanned locally, increasing prices for raw leather, and lack of local capacity to produce specialized (stamped or printed) leathers. This trend may continue if tanneries do not begin to upgrade their facilities.

Tanners could also become more efficient by digitizing; for example, using computers to calculate chemical use and monitor quality will lower production costs while improving efficiencies. The SME survey indicated little innovation and few forward-looking attitudes to be found in the tannery sector. Tanners seemed reluctant to spend money on new equipment given the rising costs of raw leather and narrowing profit margins. However, if the sector is to regain its competitiveness and grow, it must modernize its processes to produce higher-quality products, higher volumes, and uniform leather that can compete with imported leather.

B7. CROSSCUTTING ISSUES

B7a. Gender

In the factories of China, Vietnam, and Indonesia, which compete in the same market segment as Pakistan, female workers constitute almost 90 percent of the leather sector labor force. In Pakistan, women represent about 1 percent of leather sector employment.

The 2010 Leather Sector 3-Year Strategy states: “Even in the world’s most modern tanneries, the production of leather is a laboriously intensive job for workers, requiring strength instead of dexterity and arduous working conditions not deemed suitable for women (damp conditions, toxic chemicals, omnipresent noxious odors, etc.).” However, leather firms across the board agree that women work better in line assemblies than men. Several indicated that they will develop new systems and infrastructure to support more women in the workforce, a change that will have profound and positive impacts on sector productivity. One example is Hansa Leather, which is adding an entirely new line of female workers to support its new lean manufacturing process.

B7b. Environment

Lack of environmental compliance poses a significant threat to sustained growth in the leather industry. Still, 90 percent of smaller-scale companies are completely unaware of environmental quality standards. Leather tanneries in Pakistan produce all three categories of environmental pollution: wastewater, solid waste, and air emissions.¹⁸

- *Wastewater.* Discharged wastewater is by far the most important environmental challenge faced by Pakistan's tanneries. For the most part, the current practice is to discharge this highly polluted water into the local environment without any treatment.
- *Solid waste.* In processing hides into leather, about 20 percent of the material results in solid wastes, consisting of leather scraps, hair, soluble proteins, curing salts, and fleshing (animal fats, collagen fibers).¹⁹
- *Emissions.* There are two sources of air pollution from tanneries: emissions from generators (diesel-based and operated only during power breakdowns); and ammonia and hydrogen sulfide emissions produced during processing and washing of drums.

Karachi’s Korgani tannery treatment plant, a seemingly positive development jointly funded by the public and private sector, is not functioning effectively. For this study, a team member inspected the treatment plant and walked along the trenches feeding into the plant throughout Korangi Industrial Park; many of these open trenches were full of dirt and garbage, calling into question the reliability of the system that carries effluent to be treated. In addition, a common practice at Korangi is to use chemicals in the treatment of raw skins that cannot be processed by the treatment plant. As in Sialkot and other locations where tanneries work, there are issues with improper management of solid waste disposal.

On a positive note, some firms are managing the waste process, given that the government is not providing necessary support for cleanup. Image Leather is selling its leather waste to Afghans, and firms such as Leather Field (see box below) are beginning to comply with international environmental requirements due to pressure from buyers.

¹⁸Responding to the Environmental Challenge: Pakistan’s Leather Industry, unknown author, undated.

¹⁹*Environmental Impacts of Tanning and Leather Products Manufacturing Industry in NWFP (Pakistan)*, Mahmood A. Khwaja, Working Paper Series # 55, 2000.

Buyers Demand Environmental Compliance

Leather Field has 2,200 employees and was approached by IKEA in 2011 to begin producing leather for its furniture line. Upon inspection of Leather Field's facilities, IKEA asked the firm to build its own treatment plant, which it did, at a cost of PKR 50 million. Leather Field considers this an important long-term investment for competitiveness in international markets.

NOVA Leather, based in Karachi, has made the following changes in the past three years in response to buyers' requirements: revised its supply chains and eliminated suppliers that did not have REACH certification; worked with suppliers to develop digitized traceability systems; and upgraded conditions and standards for the storage of chemicals used in tanning.

International environmental certification. Given the government's inability to address and control the leather sector's environmental emissions, some firms are turning to international bodies to gain credibility with buyers regarding their firm-level environmental protocols. A handful of Pakistani leather manufacturers are joining the international Leather Working Group to improve their standing with international buyers concerned with environmental compliance issues (see box). NOVA Leather is working on earning a bronze medal from the working group. Gaining internationally recognized certifications of environmental compliance can be an important avenue for Pakistani leather firms to gain confidence within the global leather market.

International Certification

Formed in April 2005, the Leather Working Group has a protocol for assessing compliance and environmental stewardship practices of leather manufacturers. The group also promotes improvements in tanning, generates alignment on environmental priorities by bringing visibility to best practices and offers guidance for continual improvement.

The working group's creative environmental assessment tool encourages compliance and improvement through benchmarking across the global leather industry. The tool provides a scoring structure that rewards good environmental practices and enables leather manufacturers to self-assess against best practices.

B8. FINDINGS, OPPORTUNITIES, AND RECOMMENDATIONS

B8a. Expand Pakistani-Owned Testing Capacity Through a Global Development Alliance

Textile Testing International, a privately managed, Pakistani-owned laboratory in Lahore, is an up-and-coming player in Pakistan's leather testing market. Already established in the garment sector, Textile Testing International has recognized the need to fill Pakistan's vacuum for REACH and other U.S. and EU tests. As one of the only private ISO/IEC 17025-accredited Testing Labs in Pakistan, Textile Testing International is poised to meet local demand for internationally certified testing, and is interested in establishing a GDA with USAID. Textile Testing International plans to purchase the equipment it needs to conduct the full range of REACH testing by 2014, estimating the cost of the equipment at about \$1 million. However, the equipment requires sophisticated technical skills that are not yet available in Pakistan.

A GDA with Textile Testing International to support the procurement of equipment and bring in the needed testing skills would generate a leverage of 4:1. Textile Testing International is enthusiastic about beginning discussions with USAID, which would bring new skills to their

team and help address a key systemic constraint to the growth of Pakistan's leather industry: sophisticated laboratory testing that can be performed in Pakistan in a timely and cost effective manner.

B8b. Catalyze International Market Linkages

Foreign buyers are bringing new standards and supporting Pakistan's leather industry to become more efficient. These buyers also bring prospects for increased orders as the leather industry comes online with the environmental regulatory and quality compliance of European and U.S. markets. USAID has an opportunity to catalyze buyer-seller relationships that will bring technical assistance, financing, and increased environmental and quality requirements, such as supporting buying house marketing assistance to tanneries and leather manufacturers.

Leather buying houses such as C&A Buying House (see box) have in-house programs for technical assistance to their suppliers. C&A has one of the most stringent quality standards (e.g., use of modern technologies, good manufacturing processes) in leather and claims to work only with 10 leather manufacturers. C&A is interested in increasing its supplier base through a partnership with USAID to support more intensive technical assistance to the leather sector and to expand its exposure to international buyers' requirements. The selection criteria for these suppliers could be done by C&A and other buying houses, and USAID could provide international leather experts to work with manufacturers and through the NILT and LPDI to upgrade their curriculum offerings on international buyer requirements.

C&A Buying House

C&A works with an exclusive group of 10 leather manufacturers. They claim to work only with factories that treat their effluent and have a compliance department that visits every factory before a partnership begins to assess: (1) fair employment practices; (2) proper use and treatment of chemicals and effluent (for tanneries); and (3) adherence to safety codes.

C&A recently signed an agreement with Greenpeace, promising to make its supply chain free of chemicals by 2020. As a start, in May 2013 C&A will begin buying only "chromium-free" leather skins.

B8c. Increase Digitization of Buyer-Seller Relationships Through Demonstration Models

An interesting crossover from the IT sector is the work being done by HomeTown, which links small leather shoe manufacturers to international markets; after piloting its approach with handcrafted shoes, HomeTown is exporting to Italy. HomeTown's business model includes intensive technical assistance on quality control, pricing, and environmental issues. HomeTown is poised to grow its model, but is stymied by lack of financing. With orders from buyers to reach 200 SME leather craftsmen in 2013, HomeTown critically needs investment to develop economies of scale that will enable financial sustainability. HomeTown's use of IT can provide a useful demonstration model of reaching new markets through social media and improved websites and expanding buyer confidence through the digitization of manufacturing processes.

B8d. Promote Workforce Development

Pakistan's leather industry will be held back without more skills in modern manufacturing processes, the use of computerized technologies for production and back office management,

domestic and international environmental standards, and product design and development. USAID support could develop:

- *Training of trainers program.* Formalize a relationship with the BLC Leather Technology Center, which runs regular leather training courses on practical, industry identified issues that include hands-on workshops and physical testing (www.blcleathertec.com) or another internationally recognized specialized leather training body to certify a group of Pakistani master trainers for a series of technical training programs. Master trainers would be selected from recognized leather training providers, (e.g., NILT, LPDI, consulting firms, and the Pakistan Institute of Fashion) and leading industrialists from PLGMEA, the Pakistan Tanner's Association, and other key associations. The priorities for this series will be established through an industry survey to identify the most urgent technical gaps in Pakistan. Master trainers will be qualified to offer certificates of completion and offer auditing or technical assistance advice to tanneries and leather factories on an on-demand basis. A tentative series recommended for Pakistan includes: (1) product design on shoes, handbags, and footwear; (2) use of modern technology and its associated energy efficiencies and improvements in product quality; (3) leather finishing; (5) digitization of product design and delivery. Master trainers would be required to hold at least one free annual seminar to industry specialists, competitors, and academics to deepen understanding of the need for increased efficiency, design, and market competitiveness. Consulting firms, NILT, LPDI, the Institute of Fashion, and others would offer these courses on a fee-for-service basis.
- *Student loan programs.* Youths who consider the leather sector for employment are often from poor, working-class families and cannot afford to pay for the training offered by NILT, LPDI, or the Institute of Fashion. One possible solution would be to introduce student loan programs through MFIs, MFI banks, commercial banks, or non-bank financial institutions. Discussions with key informants indicate that student loan programs are nonexistent; awareness-raising would be required among consumers and loan suppliers. Developing student loan programs is a crosscutting opportunity that could address many of the workforce development gaps identified in this report.

B8e. Environment

As one of the key systemic issues in the leather sector, the environmental impact of leather production will hold the sector back from achieving its true potential if it is not addressed. USAID can support the following:

- *International certification and the Leather Working Group.* Provide an industry-wide train-the-trainer program through PGLMEA or NILT to inform the industry of the benefits of registering with the working group, undergoing an environmental audit, and receiving a certification of compliance. This could be done as a standalone AMEG initiative.
- *Regulatory implementation.* The EPA has regulations that guide the treatment of tannery effluent and solid waste management of the leather sector. USAID could launch a public-private dialogue on improving compliance with EPA regulations in the leather sector, including bringing U.S. leather regulatory policy experts to Pakistan to facilitate this

dialogue. (Such an activity might have a link with the formation of the new Leather Export Council.)

- *Sialkot Tannery Zone.* An effort to develop a tannery village has been ongoing for seven years in Sialkot, where the Chamber of Commerce has already secured land for the project. The idea is to place all the tanneries in the zone, with its own water and waste management systems, energy system, and security. However, without a government mandate to ensure that tanneries move, and to support the infrastructure, success is unlikely. An opportunity does exist to work with the Punjab government to support the initiative and push for its full development, but such work would be a multimillion dollar effort. A proposal has been submitted to UNIDO to facilitate the establishment of a treatment plant.
- *Public-private partnerships to establish new treatment plants.* Similar to the Korangi model, USAID could catalyze private sector funding to establish new effluent treatment plants in selected locations. According to the Pakistan Tannery Association, four effluent treatment plant feasibility studies have been undertaken for Karachi (a cost of PKR 8 billion). According to the association, a proposal has already been sent to the government to build these plants through 50 percent provincial and 50 percent federal government funding; approval has been pending for one year.
- *Development of a master's training course on environmental safety, occupational health, and modern practices of tanning leather and chemical handling and storage.* SGS already has an environmental consulting group that provides advisory services to the leather, textile and other industries on REACH, environment and safety issues. SGS could be contracted to develop a master trainer's program to be delivered to universities,²⁰ NILT, LPDI, environmental NGOs, consulting firms, the government (federal and provincial levels of the EPA) and possibly the future Cleaner Production Center²¹ to create an environmental certification program for trainers (see box). The estimated cost of \$1 million would include curriculum development and delivery of 25 training programs in Lahore, Sialkot, Karachi, and other locations.

SGS Environmental Advisory Services

SGS provides advisory services to the public and private sectors on environmental compliance and health and safety standards. For example, SGS specialists can assist in the management and use of hazardous waste, conducting environmental risk assessments, and impact assessments. The team also has the capacity to help firms develop and implement environmental risk strategies. SGS specialists are trained in developing effluent treatment protocols that comply with Pakistan's EPA standards.

²⁰A more academic curriculum could be developed with universities offering related programs in agriculture and engineering.

²¹UNIDO is working to establish a private Cleaner Production Center that would provide training, technical assistance and energy efficiency support to all industries across Pakistan. The Center will be a financially independent, privately managed organization.

Exhibit 18. Priority Recommended Interventions for the Leather Sector Value Chain

Proposed Intervention	Expected Impact	Time Frame to Realize Impact	Key Issues to Implementation	Sector Champion	Geographic Focus	Priority
REACH testing facility	Locally available testing for EU and U.S. export market	Short-term	Facilitation of a GDA	Textile Testing International	Sindh and Punjab	High
Master trainer's course	Improved product design on shoes, handbags, and footwear; use of modern technology and its associated energy efficiencies and improvements in product quality; improved leather finishing; digitization of product design and delivery	Medium-term	Selection of lead training firm and Master trainers	BLC Leather Technology Center (or other)	Sindh and Punjab	Medium
Develop master's training course on environmental protocols	Improve environmental safety, occupational health, and modern practices of tanning leather and chemical handling and storage	Medium-term	Developing a 'network' of master trainers committed to carrying out the courses across the country	SGS Laboratories	Sindh and Punjab	High
Environmental certification program	Increase international recognition in following environmental protocols	Long-term	Identification of local organization to take lead (e.g., NILT, LIDP)	Leather Working Group	Sindh and Punjab	Medium
Public-private dialogue with EPA	Increase awareness of domestic protocols and strengthen EPA enforcement	Long-term	Collaboration with EPA	USAID and EPA	Sindh and Punjab	Medium
Buying house Support to SMEs	Increased use of technology and productivity	Medium-term	Coordination with multiple buying houses and distributors	Buying Houses and Distributors	Sindh and Punjab	Medium
Establish new treatment plant in Sialkot	Decrease effluent impact in Sialkot	Long-term	Complications related to the movement of tanneries from current locations to the new "Tannery Zone"	PLEGMEA and Sialkot Chamber of Commerce	Punjab	Low

C. MARBLE VALUE CHAIN

Pakistan has been endowed with extensive reserves of marble and granite (M&G), including rare marble varieties such as Ziarut white and Burma teak that are world renowned. More than 40 types of natural colored marble, comprising 160 million tons of (known) marble reserves, and 414 million tons of (known) granite reserves, are spread throughout the Khyber Pakhtunkhwa, Baluchistan, Sindh, and Punjab provinces (SMEDA-UNIDO, 2008).

Although the marble industry accounts for a small fraction of the country's GDP, less than 1 percent of current exports, and about 100,000 skilled and semi-skilled workers, the potential to raise income and create employment, including for women, throughout its value chain is well documented (SMEDA, 2008; World Bank 2009).

"Improvements and adoption of higher value added standards in marble mining and processing can help increase the national marble industry's revenues from about PKR 3 billion in 2005 to approx. PKR 160 billion (1.5 billion US\$) by 2015; i.e., more than 50-fold."

— World Bank, 2009

Furthermore, in 2011 marble accounted for just 3 percent of Pakistan's total exports, or \$139 million. The unit value of exports is more than 25 times that of domestic sales (World Bank, 2009), underscoring the importance of the marble value chain in generating higher incomes in Punjab and Sindh provinces as well as Khyber Pakhtunkhwa and Baluchistan.

Punjab and Sindh add significantly to the geographical diversity of mineral reserves, with rich deposits of limestone from Gandbo and Orangi, the rocks of the Morana hills, mainly whites, pinks, and gray marble, and granite from Nagarparker. Once finished, these have good prospects for export and domestic uses. The economic exploitation of these decorative stones is promising, because most of the areas in question are easily accessible by road from Karachi. Marble is processed (polished, etc.) predominantly in either Peshawar or Karachi, the latter having most of the skilled workers, better machinery, and higher quality products. As the focus of the assessment is mostly about the regions of Punjab and Sindh, the efficiency of the marble value chain dictates that upstream segments beyond Punjab and Sindh not be overlooked, because they impact the effectiveness of the downstream industry, especially in Karachi.

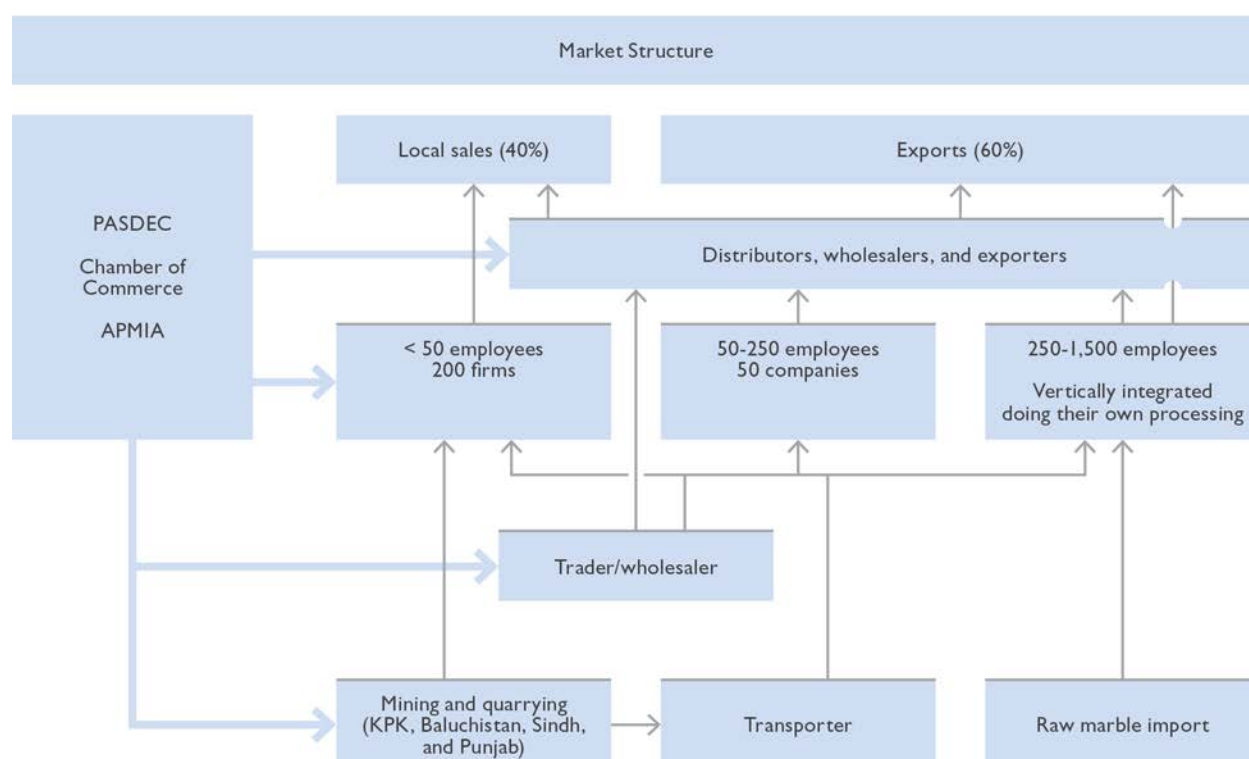
C1. INDUSTRY CHARACTERISTICS

The marble value chain begins with quarrying at the mine. About 85 percent of mining operations are micro-sized, extracting 3 tons to 5 tons daily. Another 10 percent of mines are small enterprises, extracting 5 tons to 20 tons daily, and only a few mining operations have the capacity to produce up to 100 tons per day. Most SMEs in the mining industry sell the stone to a local wholesaler/distributor or directly transport it to a processor in Peshawar or Karachi. Processors procure the marble by directly contacting the mines or through traders. The bargaining prices depend on the marble quality and color. The marble extracted from micro mines is mostly limestone grade, unsuitable for high-value items such as slabs and furniture, and is sold in the domestic market. Small processors making handicrafts and jewelry generally buy marble from traders and often outsource cutting to larger factories. Mid-sized and larger mining units constitute the large processing industry, which in turn converts the stone to tiles and valuable slabs or sells it directly to foreign buyers or through traders, who in turn sell domestically and to foreign buyers.

Transport (trucking) plays a critical role in the marble industry, given its value chain's geographical dispersion across several provinces and cities. Transportation takes up a significant share of the industry's costs (see the tile example in the next section), especially in transporting from the mines to distribution units in Peshawar and onward to processing units in Islamabad and Karachi.

Of the 450 processing plants located in Karachi, more than 70 percent are micro- and small industries. A few dozen SMEs exist in the informal sector, catering mostly to the domestic market. Karachi's processing industry is supported by about 500 traders. The role of the trader as an intermediary, linking markets upstream and the downstream, especially facilitating the SMEs, is often overlooked in recent analyses of Pakistan's marble value chain. Traders act as information providers on markets and buy marble auctioned at large markets or directly from the mines. They then sell it to processing firms, thereby reducing the search costs of upstream and downstream producers and improving efficiency of the marble value chain.

Exhibit 19. Marble Value Chain of the Processing Sector

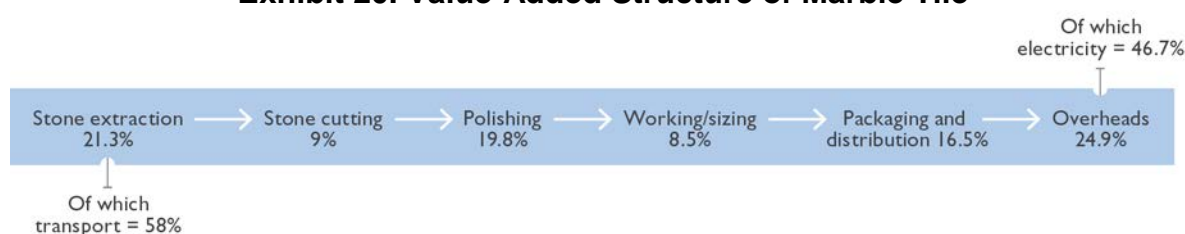


C1a. Typical Value-Added in the Marble Value Chain

To understand the typical value-added and cost structures of Pakistan's marble industry, we refer to the total cost per square foot of polished marble tile. As shown in the value-added map in Exhibit 20 below, overhead accounts for the highest margin, around 25 percent, half of which (about 12 percent of the total) is attributed to electricity. The cost of power in the marble value chain is therefore very important. Stone extraction accounts for around 21.3 percent of the overhead and transportation costs for roughly 11 percent (FIAS, 2006). Based on our own

research, a typical processing unit estimated to retain a profit margin of around 12 percent to 20 percent. This value chain example, however, does not account for an additional finishing stage, generally undertaken by the importing country industry, where it is believed the most value is added. Unlike most marble-producing countries (e.g., Italy, Turkey, and India), which sell finished product (tiles or slab), Pakistan exports almost only unpolished marble tiles (see next section). This conclusion provides the cornerstone for the assessment to follow; what are the main business enabling environment and other impediments preventing the industry undertaking what is required by the market? What are the support networks available to feed the information from the market to the industry? What products are likely to succeed in the world market, given the demand and supply dynamics? And, what programs can be introduced to eliminate or mitigate some of the constraints?

Exhibit 20. Value-Added Structure of Marble Tile



C1b. Exports and End-Market Dynamics

The overall exports of Pakistan in marble (excluding granite) increased from \$17 million in 2005 to \$70 million by 2011, showing a remarkable 300 percent increase in six years. Partially finished stone, merely cut and sawn and square blocks of a rectangular shape, constituted almost 80 percent of Pakistan's exports. Despite some rare and valuable varieties of marble, the Pakistani industry is not acquiring full potential in exports. To summarize this assertion we show below (Exhibit 21) the extent to which the prices between Pakistan and a few of its competitors diverge. The difference in price ranges between 50 percent to more than 500 percent.

Exhibit 21. Processed Marble Valuation Gap

	Volume (MT)*	Price (\$ MT)**	Price Discount of Pakistani Processed Marble (\$/MT)
Pakistan	2,219	360	N/A
Italy	328,019	780	420
Spain	59,494	880	520
Turkey	153,206	410	50

Source: UN statistics.

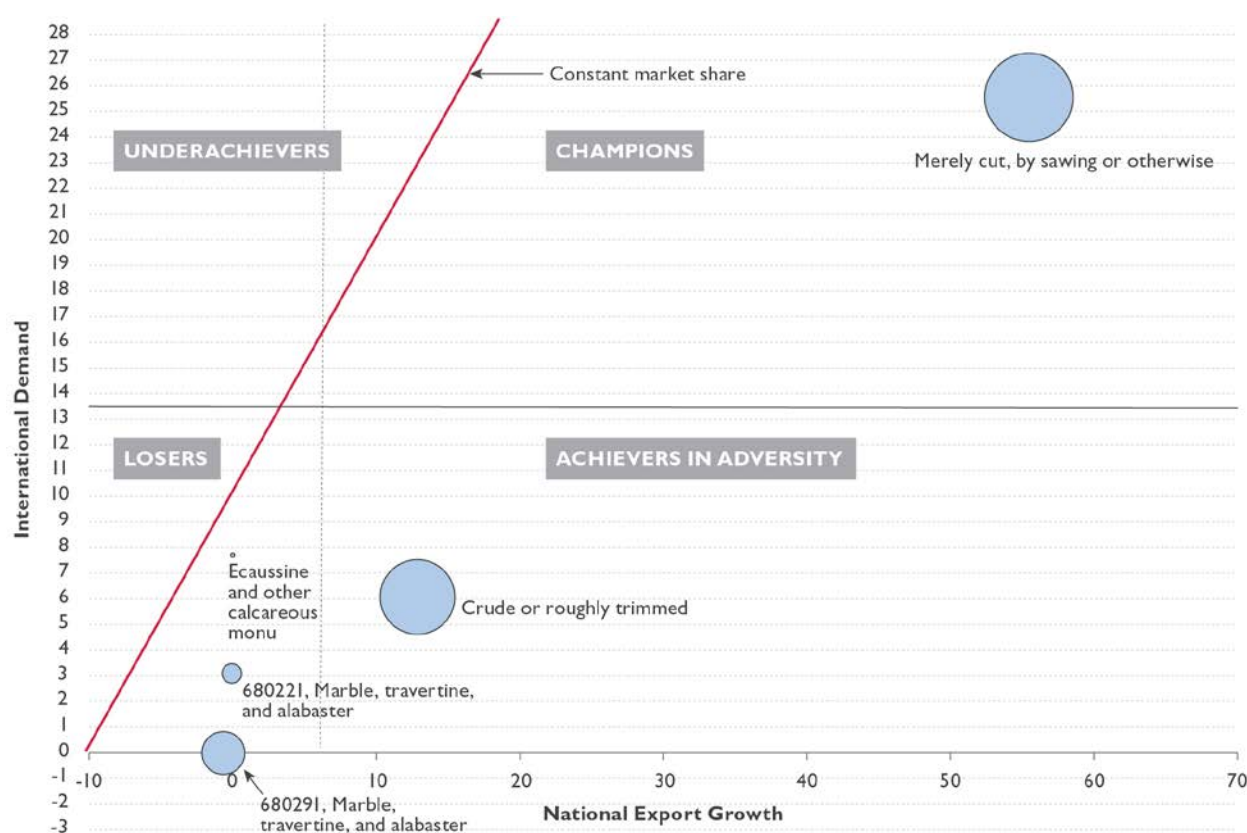
* 2003 to 2004 average annual export volume of monumental/building stone and arts of marble, travertine, and alabaster, simply cut/sawn, with a flat/even surface

** Average price for 2003 and 2004 exports. For Italy, average for period 2002-2003

The export performance of Pakistani marble is further summed up by demand and supply dynamics (Exhibit 22). Pakistan performance in the merely cut or sawn (Harmonized System

[HS] code 251512) seems to show unrivaled position in the world marketplace, unsurpassed by any other competitor. The snag is the foregone potential value added. Based on the price gap between the major competitors, the potential value added loss in raw marble could be in the range between 50 percent to above 100 percent. Perhaps value added could be much higher for rare varieties such as black onyx, Ziarut White, and Burma Teak. In contrast, for the tile and slabs denoted as HS 680221, marble, travertine, and alabaster, world demand is growing slower than average. For these products, Pakistan is increasing its share in world markets, which are declining or growing below average. This classification of export products into four groups can be a useful preliminary analytical step. For concrete policy applications and product-specific trade promotion strategies and measures, the approach needs to be refined and additional product-specific information taken into account. As far as intervention, in addition to addressing the underlying enabling environment issues, niche-marketing strategies are required to isolate positive trade performance from the overall decline in these markets.

Exhibit 22. Competitive Positioning of Pakistan's Marble Exports



Pakistan also needs to move beyond the export of marble blocks and tiles and into slabs and decorative items such as tabletops to obtain higher margins. Such improvements would greatly increase the industry's returns. For example, slabs for tabletops and decorative items have much more value added than tiles: In the international market, on a square-foot basis, the price of a slab is as much as 50 percent higher than a comparable quantity of tile, without the extra labor involved to cut each individual tile.

As far as end market characteristics for marble are concerned, prices on the main global markets have been relatively constant over the years, confirming a long-term trend caused by rapid technological development and easier trade. At the same time, the global construction boom has increased the demand for building materials in the emerging markets, especially China, as seen in the recent push in Pakistan's marble exports. Europe, the United States, and Australia continue to have great demand for marble and other high-value added materials. The buying patterns suggest the Chinese are more inclined to purchase raw marble in square block shape and add significant value converting them into slabs and other products.

C2. POLICY AND REGULATORY CONSTRAINTS

The following two major policy issues surfaced from our research and impinge on the efficiency of the marble value chain.

- *Mining rights.* A frequent concern in Pakistan, a regulatory framework is largely lacking in the sector. At the upstream level, land is owned and regulated by provincial governments, which lease quarries to investors. Leases can be and are canceled without notice. This lack of stable property rights and contract enforcement constrains quarry management and investment. Due to a combination of uncertainty about property rights, leading to quick-and-dirty blasting techniques, and ignorance of modern efficient extraction techniques, there is substantial wastage, with 85 percent of the stone quarried lost in the conversion to finished tiles. The main source of waste involves the inappropriate extraction techniques currently used.
- *Taxation and duties.* While export-oriented industries are under zero duty rate provisions, import duties on stone polishing equipment—such as blades, blade tips, polishing creams, and related substances—are a hindrance to the industry in general and a problem for 60 percent of SMEs, according to the Grant Thornton survey findings. A processor pays import duties of 15 percent, as well as the generally applicable 15 percent general sales tax and a 6 percent advanced income tax. While sales tax is imported on the domestic oriented sector, both customs duty and general sales tax are reimbursable for exporters upon completion of the transaction. However, these refunds often take more than six months, impinging on firms' operational costs and presenting a disincentive to add value and export.

Strategy Working Group. The work of the M&G Strategy Working Group (SWOG) has notably improved public-private dialog and coordination in the sector. The SWOG has successfully advocated policy changes, reducing barriers to the acquisition of and investment in advanced machinery and equipment to upgrade production and processing facilities, while simultaneously reducing indiscriminate blasting practices. However, the group's focus has been mostly on the upstream M&G sector. In this context, it is important to remember that if the regulatory and duty regime issues are not resolved, the impact of the SWOG's interventions to refine the off-balance-sheet transaction environment is unlikely to generate the desired impact.

“Pakistan’s exports fall well below its potential. Insecure and uncertain mineral extraction, uncertainty about on-going access to the resources encourages “quick and dirty” and inefficient extraction methods resulting in substantial waste as well as inhibiting longer-term investment in modern and more efficient extraction techniques. The use of antiquated machines and skill shortages result in additional waste and an inferior finished product. Inefficiencies in the transport system (mines are a distance from the processors) compound the waste. As there is no obvious short-term solution for the security of extraction rights, the focus lies in improving skills in both extraction and finishing, and reducing wastage.”

— World Bank, 2009

C3. FIRM-LEVEL FACTORS

C3a. Technology and Production Techniques

Upstream. Numerous issues characterize the technology deficit of Pakistan’s marble industry. It is estimated that 74 percent to 85 percent of the stone quarried in Pakistan is lost in the conversion to finished tiles. The main source of this wastage is inappropriate extraction techniques, compounded by losses during processing done on dilapidated equipment. Such wastage is generally not unusual in the marble industry (see Exhibit 23 below), but Pakistan’s wastage far exceeds other countries’.

Exhibit 23. Wastage

Country	Total Waste
Pakistan	74-85%
Egypt	45-80%
Australia	45-80%
India	45-75%
Jordan	35-75%
Italy	25-50%

Source: Global Development Solutions, LLC, Master Marble (Pvt) Ltd.

The main reasons for Pakistan’s high level of waste are as follows. First, the main source of this waste is the use of low-productivity extraction techniques (blasting) instead of modern, more efficient techniques. One reason why this is the case is artisanal mining operations are too small to have the technical and financial capacity to improve performance (i.e., mining efficiency). The Pakistan Council of Scientific & Industrial Research (PCSIR) is currently facilitating the introduction of a non-explosive demolition agent for mining and quarrying in the marble and granite sector. In this method, holes are drilled into the base rock, as in conventional blasting. A slurry mixture of non-explosive demolition agents and water is then poured into the holes, which cracks the rock over a few hours. This is a technically suitable and cost-effective solution that causes less cracking and does not harm nearby rock structures. Going forward, the council must conduct further experiments on a larger scale.

Second, industry’s productivity is constrained by the insufficient dissemination of information and knowledge by provincial authorities (e.g., training courses for small-scale miners). The Pakistan Stone Development Company (PASDEC) is engaged in workforce development that includes mining and extraction but has not reached out to the mining community. Most small and

medium-sized enterprises, which dominate the provincial mining sector, have little exposure to the trends in forward markets, especially the export markets, since there is no formal market information dissemination network in Pakistan to assist these companies. Thus, mining companies do not stay abreast of better mining techniques, product diversification options, market demand for different kinds of stones, and so forth. These deficiencies in dissemination reflect the fact that industry participants do not coordinate with each other and effective associations are lacking at the cluster level (see box).

The market “pull” is based on integrated transactions and information. Consumers purchase products that are produced according to their preferences. The miners constitute a core link in producing the products that the consumers desire. Information flows from the demand to origin is one of the key missing ingredients in the marble value chain in Pakistan.

Downstream. In terms of finishing marble, there are few gang saws in Pakistan and those in use are not very accurate and break down regularly.²² Gang saws, a staple of the marble industry, are machines with multiple blades that make several simultaneous parallel cuts. A modern, competitive marble industry cannot be developed without sufficient gang saws for the downstream value chain. Hydraulic gang saws would improve accuracy; however, there are only a few present in the Khyber Pakhtunkhwa and most are not good brands or in good condition, resulting in irregularly shaped blocks.

Exhibit 24. Number of Gang Saws in Operation, Major Dimension Stone Producers

Country	Gang Saws in Operation	Gang Saws/ Million Tons of Stone Quarry Produced (2000)*
Italy	1,880	229
Brazil	1,520	723
India	1,100	239
Pakistan	136	113

Source: Milanez & Milanese and Global Development Solutions, Marble and Granite SWOG.

The downstream value chain also requires expensive laser-cutting and vacuum block equipment to improve finishing and reduce wastage. The PASDEC is in the process of developing marble cities near main M&G clusters to facilitate firms involved in marble processing. CFTCs for cutting and polishing are needed by the downstream value chain, since equipment is too expensive for individual firms to purchase. In addition, the sector requires machinery pools so that individual firms can rent equipment when needed. The PASDEC has been involved in this area but is constrained by financial issues.

Finally, the process used in Pakistan for polished marble is labor intensive because firms do not use much machinery. Further, the machinery employed is old, of low efficiency, and requires high electrical consumption, thereby encouraging more manual techniques. However, these

²² Although international buyers allow variations of 0.5 mm for tiles and 1.0 mm for slabs, prevailing industry average variations are too high and do not conform to international standards. Many processors are cutting with variations in thickness as high as 3-4 mm within the same slabs.

manual techniques have not improved competitiveness, because China and Turkey have been extensively using modern machinery, which provides greater control and precision of the final product and the ability to produce larger quantities more quickly. Going forward, it is clear that the price of electricity constrains any meaningful technological industry upgrades.

Investment in R&D is required for the sector to evolve from current techniques and technologies in mining and polishing, but no institute in Pakistan comprehensively meets the sector's R&D needs. Through the Dimensions Stone Evaluation Center (DSEC) in Peshawar, PCSIR is involved in a few projects, mainly to develop alternatives to blasting and uses for marble slurry. However, DSEC needs more resources to test these alternatives and carry out other important projects for the sector.

C3b. Capacity to Meet Standards and Other Market Requirements

Most firms in Pakistan have limited knowledge about international standards other than that pertaining to the equipment used to cut the marble. The standardization of marble by quality and thickness is important, as it would enhance the quality of manufactured goods. For example, international buyers allow variations of 0.5 mm for tiles and 1.0 mm for slabs. Prevailing industry variations in Pakistan are too high and do not conform to international standards, with many processors cutting with variations in thickness as high as 3-4 mm in the same slabs. Once specified, thickness standards could be easily followed by using simple calibration techniques on local machines. The PSQCA is ill equipped to provide such guidance, but is it within any private entity's scope to provide such a service? As stated by the American Society for Testing and Materials (ASTM):

In today's construction and environment, the emphasis is on safe, permanent, low maintenance products. In this environment, decorative stones lead the list in the minds of architects, designers, and consumers worldwide as a safe, durable and aesthetic building and decorative material. Standards are important tools to help protect end users, individual companies, and the industry from damaging effects related to product failures (ASTM, 2012).

Most international architectural specifications require that decorative stones meet certain ASTM or other standards before they are accepted for use. Most marble products in Pakistan have not been tested against required quality standards. Even the PCSIR, the premier material testing agency in Pakistan, does not test marble. The marble testing regime and culture in Pakistan needs review. However, certain quarry operators and their representatives do not embrace this idea, because they market their products to homeowners and residential projects without the need for product verification. This deficit affects the export-oriented industry, from which the most value could be extracted.

The introduction of marble standards would have to be preceded by comprehensive information on M&G reserves in terms of Pakistan's stone types and specifications through geological mapping and other scientific assessment methods. Research on international demand trends and different appropriate uses of stones would also have to be conducted, followed by standards setting by the PSQCA and the establishment of testing facilities by the PCSIR or private providers.

C3c. Marketing

Our survey and the assessment of the business enabling environment suggest that marketing is one of the weakest ingredients in exploiting between demand and existing excess stocks accumulated by industries (see box). Accurate market channel selection and execution can benefit dimension stone companies greatly as they seek to open international markets to their products. Contemporary trends relating to stone color and design are evolving quickly. The ability to deliver the right product through the right channel can create new markets and either maintain or increase gross margins.

The Marketing Challenge of a Typical Established Marble Manufacturer

Barbados is a fully integrated (from mining to exports) marble manufacturer, based in Karachi, with mines in the Baluchistan and Fata regions. Its upstream mining and quarrying operations are mechanized, using wire-cut methods and excavators with large cranes, with a transport operator to ship them to its factory in Karachi. Barbados has accumulated a large stock (several thousand tons) in slabs and raw form black and gold, coffee, teakwood (popular in the United States), and petra brown, the colors that are in demand in the international market. This stock is accumulated based on anticipated demand. Barbados markets products primarily through personal connections established with diaspora Pakistanis living in the United States and Europe, but the firm is encountering difficulties locating enough buyers to dispose of the stocks. Barbados represents a typical case of failure to link search methods and costs with the market demand, which the TDAP and USAID could potentially fulfill.

The participation in trade shows and exhibitions is the principle medium through which building material trade is promoted. Relative to industry engaged in exports, our research suggests only a few Pakistani producers attend trade shows facilitated by TDAP. As exhibiting at trade shows is one of the most important ways to market products internationally, a proactive institutional effort by SIMPAP supported by USAID needs to be explored.

In the emerging marble mosaic industry, although training initiatives have helped hundreds of women develop skills and produce mosaic pieces, it has been difficult to sell the products and to get additional orders. This problem highlights the need to comprehensively consider the potential for the marble mosaic subsector, with an emphasis on connecting trainees with local and international markets and upgrading designs and technology where needed.

The domestic market which the SMEs cater to is based on traditional ethos; market information is static, buyers produce what local markets deem required. The quality of the marble may in fact be superior to local market demand. Or it is secondary to an operation since the information flows from qualified assessors is absent in the value chain. Most SMEs sell to the local market for housing construction and related purposes. They do so through their own outlets. Some also supply retailers, who then sell to customers. The sheer lack of the standards and informality within the SMEs perhaps suggests that some products that end up in domestic household markets, if standardized, could potentially fetch multiple times that price if geared toward the export market. Lack of standards is a crucial missing link, but, it is one of the symptoms of a lack of a cohesive organizational framework to guide the marble value chain in Pakistan.

C3d. Access to Finance

The high capital cost of marble mining and processing machinery and the reluctance of financial institutions to provide loans to mine operators and processors seriously constrain the development of the value chain. Banks are reluctant to invest in the marble sector due to security. The survey results suggest that the majority of businesses (90 percent) are financed by equity and rely on cash flow from business and their own savings. As far as operations are concerned, the credit-cash ratio is 50 percent. However, for the procurement of raw material, 90 percent must be paid in cash upon receipt (SMEDA, Marble and Granite Diagnostic Study — Punjab, Rawalpindi, and Islamabad).

For the marble value chain as a whole, the establishment of secure extraction rights combined with the necessary training will justify the use of modern extraction methods and associated new investments. The increased supply of regularly dimensioned rocks will in turn require additional investments in modern processing equipment. All of these investments will require credit, which the current system is not well equipped to deliver.

Currently, at the upstream value chain level, M&G-rich areas lack financial support due to lack of security and other concerns. The downstream value chain level is constrained by the lack of available credit on good terms to meet orders or to purchase expensive equipment. With no external sources of finance, growth must be financed internally and, with no options to quickly take advantage of market opportunities (not even the State Bank of Pakistan's export refinancing at 9 percent is available to the sector), large orders go unfilled.

C3e. Transport

The use of wasteful stone extraction methods leads to losses incurred during the transportation of raw block from the mine to the processor and then of the semi-finished tile to a second processor. Mine operators transport marble blocks and processors send semi-finished slabs/tiles through their own delivery systems, which consists mainly of trucks. Almost 20 percent of the trucks are hijacked en route by other marble processors if the raw stone they are carrying is in good shape; during material shortages, processors give rewards to truck drivers for obtaining raw material.

Furthermore, high transportation costs are a particular burden for exports that require sea freight (i.e., exports to non-contiguous countries), for the mines and processors in KPK are 1,300 km from Karachi, which is not only the nearest sea port but also the major location of processors capable of meeting international standards.

Exhibit 25. Cost per Metric Ton of Transporting a 20-Foot Container of Tiles

Route	PKR per Metric Ton
Peshawar-Karachi, via truck	1,842
Peshawar-Karachi, via rail	842
Dry port-Karachi port, via rail	368

Source: Pakistan Rail and interviews conducted by Global Development Solutions, LLC, in February and March 2005.

Furthermore, the route from Baluchistan to Karachi is in poor shape, as are many of the trucks, resulting in long trips, regular breakdowns, and damaged cargo. Frequent transportation strikes also cause delays. Several companies that send tiles from KPK to Karachi for finishing or direct export have complained about the shortage of containers in the market. This problem results in shippers having to load small lots onto smaller trucks for shipment to the dry port or other central shipping point, where the goods are off-loaded onto a waiting container. This procedure is repeated until the container is full and ready to leave for Karachi. Not only is this exercise labor intensive, but it also leads to more damaged tiles and longer lead times for orders. Further transport to, say, Karachi, where 85 percent of raw marble exports are sent, has its own issues, as the lead time for orders from Karachi to China is 22 days.

C3f. Packaging

In addition, processors use very little packaging material when transporting or delivering the intermediate or final product, resulting in cracked and chipped tiles. Some processors that ship goods to Karachi for export cut the tiles 20 percent to 25 percent larger than the final product; after the trip from KPK, the tiles are refinished in Karachi before being shipped, further increasing costs.

C3g. Power

Electrical power affects M&G SMEs even more than SMEs in other sectors. At the upstream value chain level, the remote locations of the marble mines practically necessitate self-generation, an expensive proposition. At the downstream level, the machines used to cut and polish marble at the processing facilities in and around Karachi are heavy users of electricity. The finishing techniques currently in use are labor intensive, but the modern mechanized processes needed to meet international standards require the intensive use of electricity. Hence their adoption will be hindered by high electricity prices.

C3h. Labor Market and Workforce Development

The sector provides direct employment to 100,000 skilled and semi-skilled workers in the entire value chain. The average number of laborers per machine ranges between two and three. Large units also have helpers, crane operators, and so forth. The scarcity of skilled labor is leading to problems in worker retention, because they tend to switch to competitors offering greater salaries. When compared to major marble producers such as Spain, for example, the labor productivity of Pakistanis in the marble processing sector is three times lower. When compared to top producers such as those in Italy, the difference is as high as five times.

Exhibit 26. Labor Productivity

Country	m ² /person/year
France	1,593
Italy	2,096
Spain	1394
Pakistan	463

Source: Global Development Solutions, LLC, and CEPI Briefs, Tunisia.

Furthermore, skills are unevenly distributed throughout Pakistan. Although there is skilled labor in Karachi, with its large marble processing industry, very few workers want to move from there to Peshawar's marble factories.

The productivity of labor is low in the mining and marble processing industries mainly due to a lack of skilled labor and the continued use of manual processes. Even in areas where there is de facto security of extraction rights, a lack of knowledge of modern, efficient extraction methods is perpetuating the use of inefficient blasting techniques and subsequent waste (there are currently no qualified quarry masters in Pakistan). In addition, many stone-cutting machine operators are not well qualified, resulting in slow and uneven cutting. In short, a lack of skills combined with outdated cutting and polishing machinery hinders the sector's ability to reposition itself into higher value-added segments and to compete successfully in international markets.

In terms of skills development, the PASDEC has sponsored numerous workshops and seminars to enhance the ability of master trainers to develop local capacity in delivering training programs, including marble mosaic training. In addition, the PCSIR has been organizing training on basic cutting and polishing through DSEC in Peshawar. However, these initiatives have not made an impact and a comprehensive approach for skills development for the upstream and downstream value chain is required.

C4. CROSSCUTTING ISSUES

Gender. Mosaic is the main area where women can play a role in the sector, since mining and processing are traditional trades that require long hours while mosaic and inlay work is mostly home based. Mosaic handicrafts are a successful and ubiquitous high-end product made from marble waste. The main entry barrier involved is a skilled labor force to design and produce the items. The trend for mosaic training has been growing among women due to the PASDEC's efforts and training organized by International Labor Organization (ILO), United Nations Industrial Development Organization, UNIDO, and government programs such as AHAN. Consequently many NGOs have linked women with training programs or use master trainers from donor programs to provide training. These NGOs are also making efforts to market the products made during training to supplement the household incomes of the trainees.

Environment. Waste is generated when cutting blocks and slabs: 30 percent of the stone goes to scrap because of small size and/or irregular shape. Such stone is normally sold to chip manufacturers. The second form of waste is slurry, which is water containing marble powder.

Firms reuse water until it becomes thick enough to be insoluble to marble powder. The waste is typically disposed of haphazardly and ultimately has a negative impact on the environment.

Waste adds to the cost of the final product and also represents an environmental hazard and a missed opportunity to take advantage of secondary uses for the waste. There is no organized system for disposing of industrial waste in the quarry and processing areas. Waste from the mines and processing plants can be utilized as follows: 1) by using stones too small for processing for marble mosaic; 2) by using chips to create agglomerated tiles or for landscaping purposes; 3) by using marble slurry to make door panels and bricks or by using marble dust as a replacement for lime; 4) by mixing marble dust with certain types of soil to use in road embankments; and 5) by mixing marble dust and jute fiber bound with resin to manufacture floor tiles. In Pakistan some waste is absorbed for marble mosaic, but this is a miniscule amount compared to the sector's total wastage. Hence other uses need to be encouraged as well.

C5. RECOMMENDATIONS

USAID can play a catalytic role in promoting competitiveness and sustainable growth in the marble sector through a wide array of interventions (see Exhibit 27). However, there are a few key interventions likely to generate returns in the short run, such as marketing assistance, workforce development initiatives, and establishing and operationalizing Common Facility Centers as shown below.

Fund market research and follow-up. To exploit the existing international demand and corresponding supply capability, USAID can provide technical assistance to the PASDEC for a study to assess demand trends in different markets, beyond the United States and Europe, especially emerging markets (BRICS) and the Middle East. This study should entail a detailed demand assessment of market profiles and product segments, that is, marble blocks, slabs, decorative items, and mosaic. The study could be followed up by the development of a targeted marketing program for each of the different product segments and target markets in collaboration with PASDEC and APMIA. Funding for participation in trade fairs with support for travel, stalls, and freight expenses should be an important part of the marketing program, as these international fairs have proven to be a viable forum for expanding marble sales. In addition, USAID should consider the development of an export showroom in the more accessible parts of the city of Karachi, where visiting buyers can come and see samples.

Fund firm-level export coaching. In parallel, to promote the broad-based market presence of the M&G sector in the United States, the European Union and the Middle East, USAID could support an export coaching program to target export-ready medium-sized firms. The Center for Promotion of Imports from Developing Countries has such a four-year program for the surgical sector (total cost \$15 million) that has been successful in increasing exports. The marble mosaic subsector could specifically benefit from such a program to access markets.

Support PASDEC efforts to train operators and maintenance personnel in connection with the development of machinery pools for the mining sub-segment. Support in this area should cover two main aspects. On the one hand, the model of financing (leasing of equipment to quarry owners) should be reviewed to ensure financial sustainability and reproduction. On the other hand, the on-site training operations currently being undertaken by PASDEC should evolve

toward the creation of a more formal training facility. This would imply a complete financial assessment of the machinery pool model, as well as a needs assessment for the different training programs required in the mining sub-segment.

Support to TUSDEC for creation of a Karachi Common Facility Training Center (CFTC) for the factory sub segment training. Currently, no institute serves the marble processing cluster in Karachi, which requires laborers with specific skills and knowledge of certain machines. The availability of better inputs in the form of square blocks (as opposed to the traditional “potatoes”) creates the opportunity to increase productivity at the factory level if the workforce acquires proper training. That training could be provided at a CFTC, organized and initially managed by TUSDEC in Karachi, close to the location of the local marble cluster. USAID could support this center through funding to APMIA and TUSDEC to conduct market surveys to assess need and developing curricula for training programs, as well as funding for the equipment.

Train women on mosaic production. Mosaic handicrafts are considered a ubiquitous, high-end product, with great potential. The main entry-barrier is the skilled labor force in craft production, design, and entrepreneurship. The work can be done effectively either at a factory or from home, making it a good business opportunity for women. USAID could leverage the earlier SWOG training with the aid of PASDEC by preparing a proposal, identifying the appropriate degree of technical assistance in designing the courses (modules), as well as the machinery needed. The project should include methods of product exhibition, support to attend trade shows and other marketing efforts to link the production effort to local and international markets.

USAID support to TUSDEC to set up CFCs. As the equipment required for the sector is exorbitantly expensive for SMEs, CFCs need to be set up at both the upstream and downstream value chain level to provide access to required equipment to improve efficiency. For the downstream processing sector, a CFC could be set up in Karachi with the help of TUSDEC, which has expertise in setting up common facilities for training and technology upgrading. USAID could provide technical and financial resources to TUSDEC to set up the CFC, including the cost of equipment with an aim of eventually transferring the CFC to private ownership.

USAID support to the DSEC for R&D. There is scope for USAID engagement to enhance R&D capability by funding a few pilot projects among DSEC and private companies to support low-cost alternatives to blasting that would improve the quality of blocks mined and increase the efficient use of marble waste in local settings, including the adoption of technology required to minimize waste. USAID could assess the performance of these pilot projects and enhance support based on their success.

Duties. There is no domestic competition for key inputs such as blades, tips for blades and polishing crèmes for the marble industry. Therefore, the traditional justification for using high customs duty to support infant industries does not exist in this case. USAID should leverage its position along with other donors, such as the World Bank, to persuade the FBR to reduce the existing customs duty of 15 percent to the general applicable rates for most inputs, which is around 5 percent, specifically, on polishing equipment and related substances, as well as artificial diamonds that are used for blade tips.

Exhibit 27. Summary of Recommended Interventions for the Marble Sector Value Chain

Proposed Intervention	Expected Impact	Time Frame to Realize Impact	Key issues to Implementation	Sector Champion	Geographic Focus	Priority
Policy Issues						
Introduce a regulatory framework on mining techniques (ban explosive use)	Reduce wastage by 30 to 40%	Immediate	Promote advocacy efforts and cost-benefit analysis	PASDEC and key firms with integrated value chain	National	Medium
Strengthen contract frameworks through assistance to PASDEC for advocacy efforts, including funding for white papers	Improve property rights in sector	Short-term	Promote advocacy efforts	PASDEC	National	Medium
Promote reduction in tariff duties for equipment and materials	Increase value-added production	Short-term	Promote advocacy efforts	PASDEC	National	High
Support SWOG to develop policy framework for downstream segment of value chain through technical assistance	Strengthen downstream segment of value chain	Short-term	Assistance for studies, analysis	SWOG	National	Medium
Standards and Technology						
Provide funding and technical assistance to TUSDEC to set up a common facility center (CFC)	Improved access to technology for SMEs	Medium-term	Determination of the scope of CFC	TUSDEC	Sindh/FATA	High
Provide funding to DSEC to conduct R&D in partnership with the private sector for alternatives to blasting and efficient use of marble waste	Enhance value-added in sector, reduce costs	Medium-term		DSEC	Khyber Pakhtunkhwa/Baluchistan	High

Proposed Intervention	Expected Impact	Time Frame to Realize Impact	Key issues to Implementation	Sector Champion	Geographic Focus	Priority
Provide firm-level technical assistance to SMEs to adopt new technologies and practices through cost-sharing and capacity building of PASDEC and APMIA to provide services on sustainable basis	Improved productivity of SMEs	Short-term	Identifying lead firms among SMEs	PASDEC, APMIA	Sindh/ Khyber Pakthukwa	Medium
Provide support to strengthen standards framework through technical assistance and funding for procurement for PSQCA, PNAC, PCSIR, and private labs	Increased adoption of standards	Medium-term	Upgrade management/ technical capacity at PSQCA, PNAC, PCSIR	PSQCA/PN AC/PCSIR/private labs	Sindh/ Punjab/ Khyber Pakthukwa	Medium
Provide funding to geological institutes to conduct testing on stone specifications and develop database	Enhance market information for buyers	Short-term		Geological institutes	Sindh	Medium/L T
Marketing						
Promote expansion into non-traditional markets through targeted trade promotion, including market research and trade show participation	Improved access to buyers in new export markets	Short-term	Identification/selection of SMEs	PASDEC/APMIA	Sindh	High
Develop export coaching program to provide firm-level assistance	Improved access to buyers in new export markets	Short-term	Identification/selection of SMEs	PASDEC/APMIA	Sindh	High
Develop capacity of geological institutes in valuation through technical assistance	Increase investment through improved valuation	Medium-term	Recruitment of valuation experts	Geological institutes	Sindh	Medium
Workforce Development						
Enhance the process of establishing model mining facilities	Increase value added production	Medium-term	Collaboration between mine owners and local administration	PASDEC	Khyber Pakthukwa	Medium

Proposed Intervention	Expected Impact	Time Frame to Realize Impact	Key issues to Implementation	Sector Champion	Geographic Focus	Priority
Support PASDEC efforts to train operators and maintenance personal in connection to the development of Machinery Pools for the mining sub-segment	Strengthen workforce skills	Short-term	Financing	PASDEC	Khyber Pakthukwa	Medium
Provide funding to TUSDEC-run CFC to provide training for workers at the downstream value chain level	Strengthen workforce skills	Medium-term	Finance	TUSDEC/PASDEC	Sindh/Khyber Pakthukwa	High
Develop skills for marble mosaic including those needed for marketing products	Strengthen workforce skills	Medium-term	Identification of target womens organizations	PASDEC	Sindh/Baluchistan/Khyber Pakthukwa	High

D. HERBS AND BOTANICAL MEDICINES VALUE CHAIN

The global medicinal health sector is dynamic and growing rapidly. According to the World Health Organization (WHO), the global market for herbal medicines was \$19.6 billion in 1996 and \$24 billion in 2002, and is projected to reach \$5 trillion by 2050. As health-conscious consumers interest in natural health remedies grows, the demand for these products will only continue to increase. WHO estimates that about 80 percent of the world population uses traditional or alternative medicines for some aspect of primary health care.²³

India, Malaysia, and China have developed competitive herbal medicine industries, supported by strong government policies to develop internationally recognized standards and incentivize the public and private sectors to research and develop new product lines, cultivate indigenous herbal species, and modernize herbal extraction processes. The box below describes a major strategic endeavor by the Malaysian government to commercialize its herbal manufacturing sector.

Malaysia Herbal Growth Strategy

The government of Malaysia has identified the herbal cultivation, extraction, and export industry as a strategic priority for the country's growth. The government has developed an international investor campaign to attract investment to this sector, bringing modern practices and extraction technology, creating jobs, and increasing farmers' incomes through herbal cultivation. In conjunction with these efforts, the government has identified a list of herbs that can be cultivated indigenously and are in global demand. Key elements of the Malaysia model include (1) research and development on innovative herbal products; (2) support for cultivation of indigenous herbs; (3) funding to catalyze extraction and processing; and (4) assistance in marketing and branding of Malaysian herbal products.

Pakistan has an opportunity to increase its competitiveness in the region, create jobs, and increase incomes through the commercialization of its herbal medicinal value chain. This would include advancing the cultivation of herbs, developing internationally accepted manufacturing standards, expanding awareness of the impact of using herbal extracts for processing, catalyzing R&D of indigenous herbs and new products, and financing for value-added processing of raw herbs.

Pakistan's Growing Herbal Sector

Mr. Dorrani began in organics, but he is switching to herbals due to local and international demand. His factory sorts, grades, and undertakes semi-processing of raw herbs. His business, Hunza, provides forward contracts and advances to more than 100 farmers to grow different herbal products. Hunza has more than 100 employees, mostly female sorters and graders who make 30 to 40 rupees a day. Hunza is building a new plant that will double production. Mr. Dorrani projects strong demand in the coming years; herbals now represent 50 percent of his business.

²³“Traditional Medicines Policy and Regulations: Pakistan,” WHO, 2003.

D1. VALUE CHAIN CHARACTERISTICS

In Pakistan, herbal and homeopathic remedies are widely used and accepted. This is a reflection of tradition, the low cost of herbal medicines relative to pharmaceutical products, and a growing middle-class interest in high-quality herbal products for health and beauty.

Based on research by the Pakistan Tibbi Pharmaceutical Manufacturers Association (PTPMA), the traditional/alternative medicine market in Pakistan was estimated at around 45 billion rupees in 2010.²⁴ Pakistan has sustained an average 10 percent growth in its domestic herbal manufacturing and trade sector in the past three years, and anticipates 25 percent growth in exports in the next three years.²⁵ Based on this assessment, there are about 172,000 individuals directly employed in the sector — collectors, cultivators, extractors, and manufacturers²⁶—in addition to 200,000 indirect employees (see Exhibit 28). This includes 600 small, medium, and large-scale herbal manufacturers mostly producing for the local market.

Exhibit 28. Herbal Sector

Type of Firm/Individual	Number of Employees
Collectors	10,000
Farmers	100,000
Manufacturers	4,000
Extractors	1,000
Traders, including middlemen	5,000
Exporters/Importers	2,000
<i>Hakeems</i> *	50,000
Retail shops	200,000 (indirect employment)

**Hakeems* are private “doctors” who specialize in herbal and homeopathic remedies. They make their own mixes of herbs and provide them directly to clients; they are not regulated or certified by any government body.

Those surveyed characterized Pakistan as the “gateway” for herbs in the region. Millions of dollars’ worth of raw herbs passes through Pakistan each month, on their way to and from China, India, Iran, and Afghanistan. Pakistan’s Ministry of Agriculture estimates the country’s exports of herbs at \$34 million annually in 2010, an estimated 30 tons of herbs each year. Key informants were adamant that this number is much higher — even double — reporting that much of the trade passes through informal channels (for example, there is a great deal of informal trade between Afghanistan and Pakistan selling/buying licorice root).

Exports of Pakistan’s raw herbs to China and India are processed (into oils and extracts) and re-exported to higher-end markets for manufacture into medicines and cosmetics. Potential export markets for Pakistan’s processed herbs include the United Arab Emirates, Central Asia, Russia, North America, and Europe.

²⁴According to the National Institute of Health, *Good Manufacturing Practices for Traditional Medicines*.

²⁵“Medicinal and Aromatic Plants Value Chain Assessment,” USAID Entrepreneurs Project, 2013.

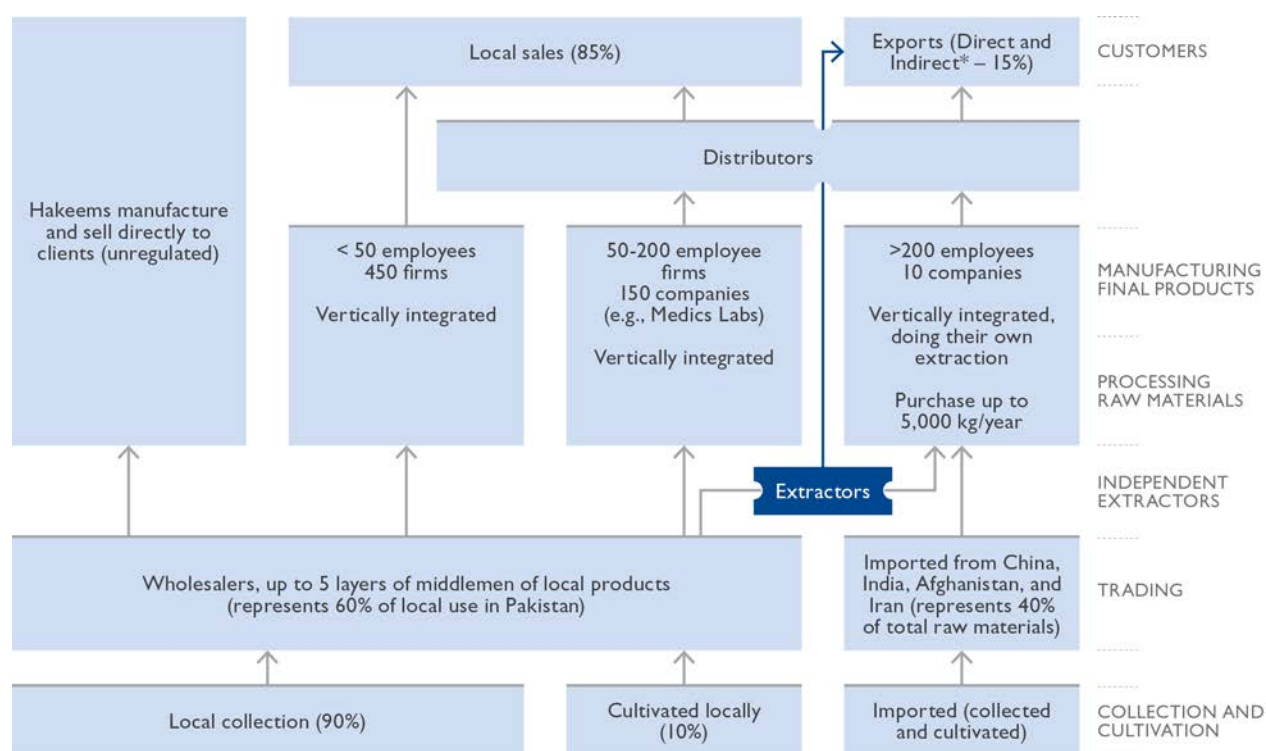
²⁶“Traditional Complementary and Alternative Medicine in Pakistan,” Muhammed Abdul Qayyum, Medics Laboratories Private Ltd. March 2012.

Annually, Pakistan imports \$130 million in unprocessed herbs to meet larger herbal manufacturers' requirements for consistency and quality of inputs. According to the USAID Entrepreneurs study, most of these imported species are produced locally, but do not meet the quality requirements of larger manufacturers.

Ninety percent of Pakistan's herbs are collected from the wild; 10 percent are cultivated. Collection occurs in regions across the country including Swat, Chitral, Bannu, Dir, Buner, Sindh, and Punjab, with the majority of collection done by women. Herbs grown and cultivated in Pakistan include seeds, leaves and stems, flowers, buds, roots, bark, wood, and resins.²⁷

Key herbal products produced in Pakistan include cosmetics (10 percent); medicinal products (70 percent); homeopathic medicines (15 percent); and *hakeems* (5 percent). Almost all Pakistani herbal manufacturers are producing for local market consumption; the exception is Herbion, which produces almost exclusively for the export market. According to key informants, up to 10 percent of locally produced manufactured herbal medicines end up in international markets from individuals hand carrying these products and reselling them in overseas markets.

Exhibit 29. Herbal Medicine Manufacturing Sector Value Chain



* Indirect means that local manufacturers are selling locally and people are hand-carrying their products and reselling in international markets mostly to Diaspora

²⁷"Medicinal and Aromatic Plants Value Chain Assessment", USAID Entrepreneurs Project, 2013.

In general, the herbal value chain (Exhibit 29 above) has fairly low levels of cooperation and information sharing. Most collectors are unaware of proper harvesting techniques, leading to poor and unsustainable harvesting practices. Except for the 10 largest manufacturers, there is little innovation or R&D, resulting in limited product innovation.

Key informants noted that although profit margins for the export and local markets both stand at about 25 percent, the size of the export market makes it much more attractive. To meet the global market opportunity —estimated at \$5 trillion by 2050 — Pakistan must address its key systemic constraints in this sector. The policy environment and the need to establish recognized standards are foundational to increasing Pakistan’s competitiveness in the herbal medicine value chain.

D2. POLICY AND BUSINESS ENABLING ENVIRONMENT

A key constraint to the growth of Pakistan’s herbal export manufacturing sector has been a lack of standards and regulations. This changed recently with the formation of the Drug and Regulatory Authority of

“Export potential will be driven by new standards of quality control.”

— DRAP official

Pakistan (DRAP) in November 2012. (DRAP’s current CEO was appointed on an “acting” basis and will likely be replaced with a technical expert in 2013.) DRAP works as an autonomous federal government body, with an organizational structure based on international models (such as WHO). In addition to its oversight of the pharmaceutical drug industry, DRAP will develop guidelines and standards for traditional alternative medicines, including homeopathic and herbal medicines, and food supplements. This is seen across the herbal manufacturing industry as a positive development to catalyze its competitiveness. In fact, 80 percent of survey respondents indicated that the lack of proper regulation and standardization in the herbal sector means they are unable to gain access to international markets.

DRAP’s approach to managing this sector includes the following steps:

- Conducting a sector assessment.
- Developing rules and guidelines for the sector (anticipating a different set of rules for manufacturers selling only domestically and those that are exporting).
- Drafting and implementing an enlistment, registration, and licensing process for all manufacturers.
- Monitoring quality control of manufacturers.

DRAP’s mandate is to issue guidelines and monitor the enforcement of licensing and registration; provide drug specification and inspect laboratory practices; inspect any premises where herbal medicines are manufactured; and promote ethical marketing in line with international standards. However, 70 percent of key informants for this assessment did not know of the creation of DRAP or its new mandate. DRAP’s approach to regulating the sector is to “first educate, then regulate.” As such, it is holding awareness meetings throughout the country with private sector stakeholders to increase understanding of its mandate. The sessions are also

being used as a mechanism for DRAP to gain insights into the sector's constraints and opportunities.

While these processes move forward, it is imperative that DRAP receive technical assistance and guidance on international best practices. According to DRAP's Health and OTC Production Director, Abdul Samad Khan, DRAP has requested technical assistance from the WHO and the U.S. Food and Drug Authority. Mr. Khan cited an interest in drawing on WHO's 1991 guidelines for the assessment of herbal medicines that includes basic criteria for quality, safety, and efficacy of herbal medicines.²⁸

Aligned with the need for stronger standards and higher safety standards in Pakistan, M. Iqbal Choudry's landmark report, "Protocols on Safety, Efficacy, Standardization, and Documentation of Herbal Medicine," notes:

The risks associated with the use of herbal substances in Pakistan have resulted in a number of fatalities and are considered highly significant and are related to problems associated with failure of good handling and manufacturing standards. As such, there is a danger to the public without proper evaluation and regulation of these herbal products.²⁹

According to this SME survey, 90 percent of respondents' herbal products are not tested; manufacturers are producing and selling to the local market where there are basically no checks on authenticity. DRAP's work in the coming year will be instrumental in addressing these issues and ensuring Pakistan's global competitiveness in the herbal medicine sector.

D3. SUPPORT INSTITUTIONS

The herbal sector lacks coordination and cooperation among its value chain actors. Policy regulations are not understood, collectors have limited awareness of sustainable harvesting practices, SME manufacturers have no knowledge of international market requirements, and there is almost no commercialized R&D for product development.

Given MEDA's work to address issues at the collection level under the Entrepreneurship program, this report focuses on the most pressing constraints to expand manufacturing: advocating with the government to design and implement internationally recognized standards and guidelines and improve awareness, financing, and research.

D3a. Advocacy and Awareness

Several associations support the sector, but the Pakistan Tibbi Pharmaceutical Manufacturers Association (PTPMA) is the largest and most recognized. PTPMA has 70 members, representing all of the country's leading quality herbal manufacturers, such as Hamdard, Qarshi, Marhaba, and Herbion. PTPMA serves its members as a government advocacy body and is working with DRAP as it explores how to proceed with its regulation of the traditional *tibb-e-unani* (based on

²⁸““Protocols on Safety, Efficacy, Standardization, and Documentation of Herbal Medicine,” International Union of Pure and Applied Chemistry, Dr. M. Iqbal Choudhary, 2008.

²⁹ Ibid.

ancient Greek medical principles), alternative, and herbal medicine sector. PTPMA also acts as a bridge to the Pakistan Tibbi community to improve technical knowledge and cooperation.

PTPMA could also increase consumer awareness and demand for herbal drugs with proven efficacy. Recent surveys reported in the U.S. news media indicate that a large percentage of the public would like to see products supported by science (i.e., in clinical research trials³⁰), indicating that consumers are increasingly demanding products of known quality. PTPMA is positioned to design and conduct this type of outreach campaign in Pakistan to increase awareness and drive consumer demand for similar changes.

D3b. Financing

Financing support is needed in the herbal manufacturing sector to enable the procurement of modern extraction and processing equipment. Ethnic Ltd Oils, one of the few extractors using modern machinery, reports that it spent \$180,000 on cold press Italian extraction equipment (purchased with cash because Mr. Waqas was unable to secure a bank loan). Only one firm in the AMEG survey had secured a loan to expand its business operations: Herbion borrowed PKR 1 million from Bank Al-Falah to procure Chinese equipment to launch its extraction activities.

Extraction Manufacturing

In 2012, Ethnic Ltd Oils was launched to manufacture natural oils using a cold extraction process, which retains the natural properties of herbs more than traditional hot extraction. Ethnic claims to have the only cold extraction press in Pakistan. Its two extraction machines cost 126,000 euros (paid in cash). Ethnic has already secured domestic and international orders and anticipates expanding its business quickly to meet the growing demand.

Herbion has started to build a \$5 million extraction plant in Lahore to support its own manufacturing needs, and will eventually sell surplus supply to domestic manufacturers. This plan will employ 100 people. According to the Supply Chain Manager, Syed Kamran, Herbion is beginning to use extracts in production to: add value; make stronger health claims (i.e., efficacy of the product's health impact); and diversify product lines.

The sector also urgently needs funding for developing feasibility studies to launch extraction and herbal processing lines. Large exporters of raw herbs interviewed for this study indicated a desire to explore manufacturing extracts, but need guidance to clearly assess the financial viability of this activity. Offsetting their risk by funding feasibility studies will catalyze private sector entry into this sector.

In general, banks are not aware of herbal medicines as a viable industry. When funding is provided to this sector, it is included as part of a bank's agricultural portfolio.

D3c. Research, Testing, and New Product Development

Herbal research is being conducted at a wide range of universities such as Hamdard and Qarshi, government facilities such as Pakistan Council of Scientific and Industrial Research (PCISR),

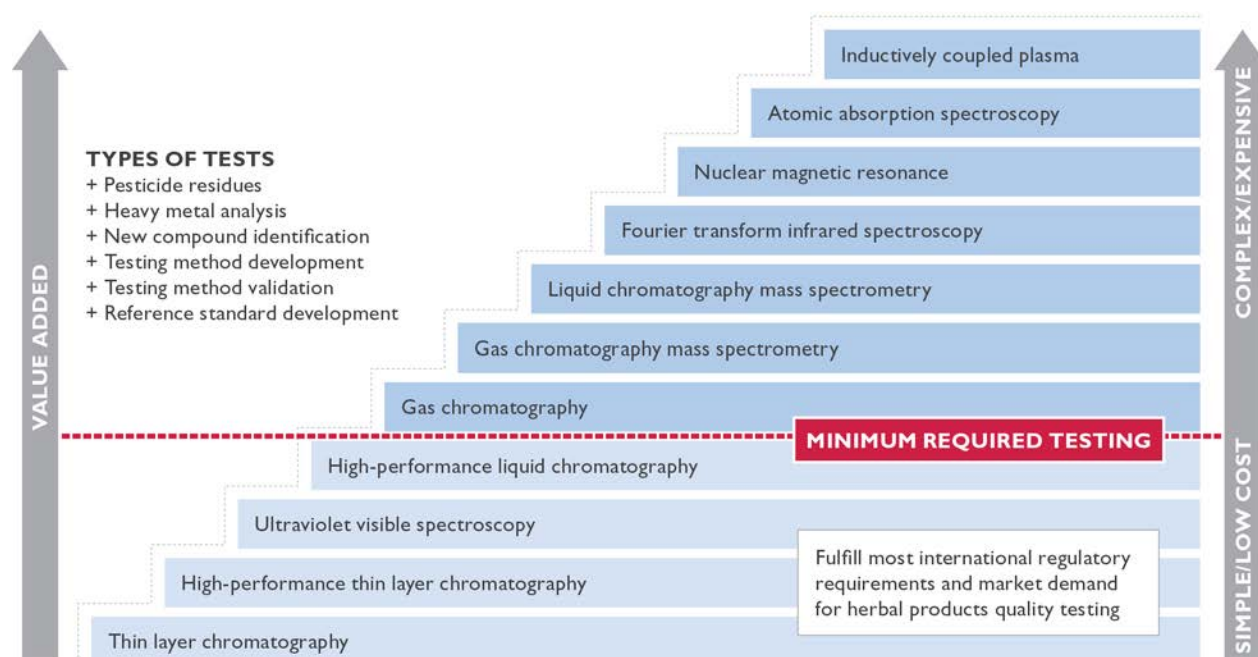
³⁰Ibid.

and private factories such as Herbion and Medics Laboratories. However, none of these efforts has addressed the basic constraints facing Pakistan’s herbal sector: the identification and extraction of “active” ingredients in known herbs, research into the properties and efficacy of products, and the commercialization of new and innovative indigenous products.

The Industrial Analytical Center at the University of Karachi is the only qualified lab in the country to undertake this type of research. Part of the Hussein Ebrahim Jamal complex, this facility stands out as the preeminent research organization to advance R&D for new indigenously grown herbal products. The center is completely funded by the private sector, is autonomous from the university, holds ISO 17025 and 9001 certifications, and houses one of Pakistan’s best equipped laboratories. The center performs around 200 tests a month, and its clients include many of the largest manufacturers, including Herbion, Qarshi, Medics Laboratories, and Marhaba. The center also maintains the only “common facility” for herb processing, which can also be used for product development testing.

The Industrial Analytical Center has a memorandum of understanding in place the U.S. National Center for Natural Product Research (NCNPR, part of the University of Mississippi) to share research findings and protocols. The NCNPR was created to bring together an alliance of academia, government, and the pharmaceutical and agrochemical industries to integrate research, development, and commercialization of potentially useful natural products. This collaboration, coupled with trained staff and equipment, position the Industrial Analytical Center to lead a program of research, efficacy testing, and new product development initiatives in Pakistan.

Exhibit 30. Standardized Testing of Herbal Products



D4. INFRASTRUCTURE

Some of the infrastructure constraints faced by the sector include transportation of raw materials from northern regions of Pakistan, across borders, through middlemen, and distribution at wholesale markets. Energy is a crosscutting constraint for all manufacturers. These constraints have been verified by the 2013 Entrepreneurs Study on Herbal and Aromatic Plants. The Entrepreneurs study also thoroughly summarizes a wide range of systemic constraints at the collection level: unsustainable harvesting practices, poor storage conditions, and limited sorting or quality control.

One interesting link between the herbal sector and the IT sector is the need for digital infrastructure to support global competitiveness. For the herbal sector, this comes in the form of accessible data on definitions, property interactions, and efficacy. In addition, standards must be developed on authentic analytical methods to reliably profile the composition, including quantitative analysis of the marker/bioactive compounds and other major constituents.³¹

Digital infrastructure could fill this vacuum in Pakistan's herbal value chain sector. As noted in the World Economic Forum's 2013 "Information Technology Report":

ICTs could improve healthcare, reduce medical errors, cut administrative costs and keep patients better informed. Adverse drug reactions, for example, are among the leading causes of death in the United States. Electronic drug prescription systems could check for adverse drug reactions and warn patients who have allergies or take multiple drugs. IT could also improve coordination of care for patients with complex chronic diseases and increase the uptake of preventive screening services. However, despite their tremendous promise, incorporating these technologies into daily use in healthcare has proven difficult, partly because of the significant upfront investments required, as well as the complex coordination between different players.

In a step to partially address this digital infrastructure constraint, DRAP is supporting the new Pharmacopoeial Vigilance System, an online database developed by a local research and IT firm in Karachi. This database is currently in beta testing and being used voluntarily. However, DRAP wants to make the use of the database mandatory and offer the government's recognition of its operation. DRAP is working to have the database eventually used to report all testing and side effects of new drugs (including herbal). Raising awareness of this database and its use is important for the expansion and development of the herbal medicine sector.

D5. LABOR MARKET

Most respondents did not note access to trained professionals as a constraint. However, none of the herbal sector respondents from our survey had a *tibia* degree, although 2 percent to 5 percent held a professional degree not related to herbs.

A range of universities offer specialized programs in herbal, *unami*, homeopathic, and other alternative medicines. In addition, specialized councils support curriculum development:

³¹"Protocols on Safety, Efficacy, Standardization, and Documentation of Herbal Medicine," International Union of Pure and Applied Chemistry, Dr. M. Iqbal Choudhary, 2008.

- The National Council for Tibb Medicine develops educational curriculum and testing of tibb graduates. The council recognizes 28 registered Tibbia colleges.
- The National Council for Homeopathy develops curriculum, education and examination within the homeopathy system of education. The council recognizes 27 homeopathic colleges.
- Several recognized universities provide five-year bachelor's degree programs in Eastern medicine and surgery: Bahawalpur University in Punjab, the University of Khohat in KPK, the University of Punjab, Faisal Tibb O Jirat University, and the University of Karachi (which is just launching its program).
- Hamdard and Qarshi and other accredited universities have specialized programs on *tibb-e-unani*, homeopathy, and herbal medicines. Hamdard and Qarshi are unique examples in the market because their business model directs all profit streams from the sale of herbal products either into their universities, corporate social responsibility programs, R&D, or expansion efforts.

Informants suggested a need for accreditation of new and existing specialized colleges. One interesting request from key informants was for more specialized curricula on international standards, herbal manufacturing techniques (i.e., the identification and extraction of active ingredients in herbs), and herbal cosmetics manufacturing. This may be occurring in agricultural curricula, but this issue needs further exploration to determine which university may be in the best position to offer such degrees or training programs.

D6. FIRM-LEVEL CONSTRAINTS

D6a. Modern Technology

There are a variety of procedures to process and extract herbs to manufacture medicines or cosmetics. Much of the processing in Pakistan is being done through traditional, water-based processes (e.g., decoction) that do not retain all of the natural properties in herbal ingredients and can alter the pharmacological properties of the active ingredients. This process is also done on mostly old and inefficient equipment.

"Pakistan can compete with India and China and should be processing its own herbal extracts."

— Mr. Qayyum, CEO, Medics Laboratories

Part of the issue with this procedure is that it does not enable the processor to clearly "mark" the active ingredients in its final products (markers are required for sales to international markets). In addition, "separation" of individual ingredients from the herbal material is a key step to enable proper identification and bioactivity evaluation.³² In other words, the more precisely the "active" ingredients can be identified and then used in the manufacture of herbal medicines, the

³²"Protocols on Safety, Efficacy, Standardization, and Documentation of Herbal Medicine," International Union of Pure and Applied Chemistry, Dr. M. Iqbal Choudhary, 2008.

stronger the health claims that can be made. There are more sophisticated processes available that enable the manufacturer to clearly identify and separate an herb's active ingredients, using solvents and other methods (including the use of microwave-assisted extraction, accelerated solvent extraction, and pressurized liquid extraction); however, these are still largely untested in Pakistan. The availability of "standardized extracts" in Pakistan is critical to unlocking the potential to reach U.S. and European markets.

According to this assessment, 90 percent of manufacturers have had no formal training in the herbal medicine manufacturing processes. Most CEOs and senior staff had had no training in the technical procedures or processes of manufacturing herbal medicines. The exceptions were the largest manufacturers that process their own herbs (Herbion, Qarshi, Medics Laboratories, and Marhaba). Still, all of these firms use simple water decoction processes.

Based on discussions with key stakeholders, it was found that much of the industry lacks understanding of the difference between using water based processing and refined extracts. This awareness is gradually changing due to international market pressures (as more multinationals using extracts in their herbal product lines enter the local herbal manufacturing market) and as extracts become more widely available. According to the CEO of Herbasian, one new herbal extractor, the firm had a 30 percent increase in extract sales demand in 2012.³³ Availability of extracts and processed herbs will offer local manufacturers the ability to make superior products, add value (i.e., increase efficacy), and diversify their product lines. It is estimated that 5,000 jobs could be created through the launching of herbal extraction and processing plants to meet local and international demand.³⁴

Industry leaders have identified the lack of appropriate modern technology and technical capacity to upgrade Pakistan's herbal processing.³⁵ According to stakeholders, the country needs an immediate influx of new technology and technical assistance to help the private sector address this critical issue. Manufacturers need access to new machinery and training to upgrade their processing techniques to "extract" herbs using internationally recognized methods and meet quality standards. At present, there are only a handful of extractors in Pakistan that are pioneering in this field.

Purchasing Extracts

Medics Laboratories is producing several herbal "branded" products under contract from well-known firms such as Hilton Pharma, the country's largest national pharmaceutical company. To ensure the quality of cough syrup for Hilton, Medics Laboratories must import the ivy leaf (its main "active" ingredient) because of the lack of proper processing, testing, and standardization of locally available ivy leaf.

³³ Dr. Farooq was the only key informant who had borrowed funds (1 million rupees from El Falal Bank) to purchase his Chinese made extraction machinery.

³⁴ This figure is based on estimates by key informants that up to 100 factories of 50 employees/each are needed to process the raw herbs being transported in and out of Pakistan. This is supported by Herbion's ongoing building of an extraction facility in Lahore which will employ 50 people.

³⁵ Processing includes washing, drying, chipping, grinding, essential oil distillation and production of standardized extracts.

D6b. Organizational Capacity, Standards, and Traceability

Most herbal manufacturers have inherited their businesses from fathers/parents and have limited business acumen or management training. The lack of regulations in the herbal sector has also resulted in producers making spurious claims and using low-quality manufacturing processes.

Exceptions to these general practices include a handful of larger and medium-sized companies that recognize the growth potential of targeting international market segments. One such case is a medium-sized firm, Medics Laboratories, which almost closed in 1997 after the owner's father died. Over a 10-year period, as a son took over the practice, decisions were taken to (1) borrow 125 million rupees to procure new, modern processing equipment; (2) hire a professional management team with business and technical skills; (3) install and implement an ERP system that enables real-time access to sales and profits and tracks the traceability of all inputs; (4) change existing marketing practices; and (5) hire a professional marketing and distribution firm, which now manages the majority of Medics Laboratories' sales. As of 2013, Medics Laboratories has expanded to almost 200 employees and is building a new factory to meet growing demand. The owner is exploring a long-term partnership with a German firm to locally produce under a branded name.

As Pakistan begins to compete in the global marketplace for herbal products, the types of organizational and management changes adopted by Medics Laboratories need to occur across the sector. This will require education, time, and resources to enable the SME herbal sector to commercialize in a manner that creates sustainable jobs and increases incomes for all segments of the value chain.

D6c. Backward and Forward Linkages

Many of the backward constraints in this sector stem from the quality of herbs being collected and grown. These are well-documented in the Entrepreneurs study, which discusses some constraints at the collector and sales/wholesale level (see box). Some constraints identified through the Entrepreneurs 2013 study include:

Collector/cultivation level. Collectors are untrained on proper harvesting procedures, and there is a tendency to over-collect: As trade has become market-oriented and international, collectors are outstripping natural production. Collectors use poor storage with unhygienic conditions, poor ventilation, and there are infestations by micro-organisms. Good agricultural, collection, and processing practices are almost entirely lacking in the sector.

Sales and exports. The industry and market sector of medicinal herbs exploit collectors and farmers and provide very low prices. Adulteration to increase raw bulk sales is common, devaluing end products. Trade in herbal materials is monopolized by wholesale dealers, who

USAID Entrepreneurs Project

- Improve knowledge and skills on proper collection, handling and storage of raw materials
- Promoting backward linkages to improve market access to collectors and traders
- Developing an inventory report
- Pilot testing the cultivation of prioritized herbs
- Establishing collection centers that will include primary processing equipment
- Launching a pilot processing plant in KPK

control prices and make the highest profit margins; manufacturers and shopkeepers rely almost exclusively on wholesalers for their supplies.

Manufacturers require uniform, steady, high-quality raw materials for processing. This will become increasingly important with the new DRAP regulations and the trend to develop products for export markets. To facilitate the drive toward increasing quality, processors hold the key to moving this sector forward as they seek a steady supply of medicinal herbs and require supplies to adhere to international quality standards, the timely delivery of shipments, proper packaging, and consistency in raw products.³⁶ This is an opportunity for processors to more fully investigate avenues to collaborate with farmers to educate them about herbal plant cultivation.

There are examples of processors exploring how to establish corporate farms and work with independent farmers to cultivate species they need for manufacturing. The box at right describes how Herbion is working with local farmers in Sindh to cultivate *Althaea officinalis* (marshmallow), which has medicinal properties and can be cultivated in different parts of Sindh. Qarshi Industries is attempting something similar near Islamabad, and is interested in guidance and technical support to expand herbal cultivation. As the sector expands, working with cultivators may be the best means for processors to gain access to the quality of herbs they need that to meet international buyer requirements.

Cultivating Marshmallow in Sindh

About 12 months ago, Herbion (Pakistan's largest exporter of herbal medicines) launched a pilot project with a group of wheat farmers. The objective was to gain their confidence and demonstrate that marshmallow can be cultivated successfully. Herbion wrote forward contracts with a handful of farmers (about 25 acres) and provided seeds and technical assistance. After one growing season, the farmers are raising the marshmallow and earning an additional 30 percent in profits.

Most larger manufacturers that export rely on large distributors to manage the sales inside and outside Pakistan. These distributors are used to market the products, educate pharmacies and doctors on the use of herbal medicines, and manage the physical distribution of these products to retail outlets. Key informants for this study noted several reputable firms working in this space that they considered to be professional agents. Distributors will play an increasingly important role providing up-and-coming exporters with market intelligence and market segmentation advice to guide product development and manufacturing. No suggestions were offered regarding the need to support changes in ongoing approaches with respect to forward market linkages.

D7. CROSSCUTTING CONSIDERATIONS

Gender. Women perform the majority of herb collection, which produces 90 percent of available raw materials for this value chain. Although women collect the herbs, they are largely excluded from the sales or profits generated from these activities. Women's knowledge of proper sustainable harvesting, storage, and sorting is very low. Women also work in all the large herbal factories, serving in roles of quality control, accounting, and marketing; they represent about 5 percent of these firms' workforce.

³⁶"Medicinal and Aromatic Plants Value Chain Assessment," USAID Entrepreneurs Project, 2013.

Environment. Over-collection and exploitation of medicinal plants in KPK and other areas of Pakistan has resulted in the scarcity of a number of valuable medicinal plant species.³⁷ In northern areas, agreements were made through provincial forest departments and community groups to designate some protected areas where no extraction of medicinal plants is permitted for six years. NGOs are also working in KPK to support community-based approaches to raise awareness and teach sustainable harvesting practices. There is a need to promote cultivation, preservation, propagation, and collection of medicinal plants on a sustainable basis by adopting good agriculture and field collection practices that encourage and contribute to the quality assurance of medicinal plant materials as a source for the herbal medicine industry, which aims to improve the quality, safety, and efficacy of finished products.³⁸

D8. FINDINGS, OPPORTUNITIES, AND RECOMMENDATIONS

Pakistan's regional competitors have recognized the role the herbal sector can play in their country's economic development and job creation, and the country's unique demographics provide a platform for the advancement of herbal cultivation, extraction, processing, and exportation of herbal medicines. This section offers several recommended areas for USAID investment that could further catalyze this sector's development.

Policy guidelines and standards. As a new organization, DRAP needs assistance to develop guidelines and standards for the herbal manufacturing sector that meet international protocols. (In the United States, it took 13 years for the Food and Drug Administration to propose guidelines, approve them, and then implement them in 2010.) Potential interventions include technical advisory support to DRAP to:

- Design and implement new herbal medicine guidelines and standards.
- Adopt internationally accepted protocols related to herbal medicine testing and manufacture.
- Following successful examples such as that of the Malaysian government, which established an Herbal Medicinal Research Centre, develop a "Top-10" indigenous herbal plants strategy with DRAP's permanent Technical Advisory Committee for *unani*, Ayurvedic, nutraceutical, and food supplement products,³⁹ to include key representatives from industry and government. Assistance to the Technical Advisory Committee will ensure that product development, market testing, and commercialization remain relevant to local and international industry demands.⁴⁰ In total, this could be packaged as three years of intermittent technical assistance for a cost of \$1 million.

Catalyzing herbal extraction, processing, and manufacturing. There is a unique opportunity to build synergies in this sector, including with current USAID projects, and leverage the Pakistan

³⁷ *Good Agricultural and Field Collection Practices for Medicinal Plants*, Drug Control and Traditional Medicine Division of the National Institute of Health, 2010.

³⁸ *Ibid.*

³⁹ PTPMA submitted an official request to DRAP for the formation of this permanent committee.

⁴⁰ This work can be done collaboratively with MEDA in their development of a top 10 list; however, their selection criteria may be somewhat different, focusing on growing seasons and self-replication. The strategic top 10 list will focus on uniqueness, ability to cultivate indigenously, and market demand.

government's interest in the herbal manufacturing sector. MEDA's work on herbals and botanicals under the Pakistan Entrepreneurs project is supporting collectors to improve overall quality and uniformity and is launching a small pilot project to subsidize equipment to start an extraction plant in KPK. (MEDA will likely contribute \$35,000 to subsidize the equipment for this factory, which will employ about 10 people to manufacture herbal extract.) The Pakistani government, through DRAP, is interested in supporting the extraction sector and will be sending a team to India in the near future to assess their use of equipment and opportunities for collaboration. This growing support dovetails with interest in Pakistan's herbal industry to explore the viability of developing extraction industries to support the manufacturing of herbal medicines for domestic and export sale. Potential USAID interventions include:

- Allocate a portion of USAID's funding to the Agricultural Support Fund (ASF) through its Agribusiness Project, to support the financing of feasibility studies on herbal processing and for the procurement of herbal extraction equipment (\$1 million).
- Fund feasibility studies to launch an extraction or herbal processing business. Large exporters of raw herbs (such as Jaffari⁴¹) have already begun to explore manufacturing extract, but need guidance to assess the financial viability of this activity; offsetting their risk through feasibility studies will catalyze private sector entry into this sector (about \$500,000 for four to five studies).
- A Global Development Alliance (GDA) with Jaffari or other interested private sector investors to launch a new herb processing or extraction facility (approximately \$250,000 to \$500,000).
- Support increased access to financing to procure needed equipment to develop this sector.⁴² This could be done through a direct partnership with major commercial banks (such as Habib Bank, the largest commercial bank, which has a portfolio of 70 billion rupees in the SME sector; or the Islamic banking sector) to expand their understanding of how the sector works and its potential. A package of intermittent technical assistance to the banks could cost around \$500,000 over a two-year period.

7 Candidates for the Top 10 List

These herbs can be cultivated in Pakistan and maintain significant market demand:

- Guggule
- Ginseng
- Aloe vera
- Basil
- Lemongrass
- Saffron
- Psyllium

Testing, product development, and digitization.

Traditional herbal medicines in many countries are not regulated, nor does their production require testing if the active ingredients have historical or traditionally proven properties. The upcoming DRAP guidelines and standards may change this practice in Pakistan. The need for higher-quality testing will become increasingly relevant as DRAP's manufacturing guidelines and standards are gradually adopted. The only facility in the

⁴¹One of the largest exporters of herbs (Jaffari, Ltd) noted ongoing efforts to start a processing facility.

⁴² According to Ethnic Ltd, this equipment and technical assistance must be imported; the firm spent about \$180,000 on its Italian equipment.

country with adequate equipment and qualified staff to meet this demand is the Industrial Analytical Center of the University of Karachi.

If Pakistan is to remain relevant in the international medicinal market, it needs to conduct its own research to design new and innovative herbal medicinal product lines; this should correspond to the Technical Advisory Committee strategy that prioritizes the development, cultivation, and testing of 10 indigenous herbs (see box above for potential candidates). For example, Herbion reports that it imports psyllium from India because it needs more than it can get in the local market, so it is trying to work with local farmers and making progress.

USAID can support these areas through:

- Technical assistance and capacity building to the Industrial and Analytical Center on the range of testing that will be required with new DRAP guidelines, standards, and protocols. The range of equipment needed will depend on the type of testing which, in turn, will impact the final cost of this intervention. (See Exhibit 30.)
- Capacity building to the Industrial and Analytical Center, in collaboration with the National Institutes of Health (NIH),⁴³ to support a technical training campaign for laboratories, herbal extraction, processors and manufacturers on the changes that will be required in factory-level production and testing as a result of the new DRAP guidelines and protocols. This will include assistance on physical maintenance of factory premises, hygiene, packaging, quality control and traceability. This training could also be used as a tool to raise interest in herbal processing and extraction and attract further investment into the sector (approximately \$500,000).
- Funding for research to develop new herbal products based on the list of 10 prioritized herbs developed by the Technical Advisory Committee (approximately \$5 million). This should be done as a partnership with leading university and research centers, such as Hamdard University, Qarshi Research and Development Institute (attached to Qarshi Industries, based in the Hattar Industrial Complex in Punjab), Quaid E Azam University Islamabad, the International Center for Chemical and Biological Sciences' Industrial Analytical Center at the University of Karachi, and the Traditional Medicine Division at the National Institute of Health. As part of this research, funding should be earmarked to:
 - Test an initial sample of 20 to 30 ingredients to identify the Top 10 list (guided by their unique properties, potential to meet international demand, and quality).
 - Buy the required “reference standards” (primary reference standards are used in the quality control process and stability testing of herbal medicinal products) for the 10 prioritized herbs (approximately 20 to 30 reference standards that will need to be purchased depending on which herbs are prioritized).

⁴³The NIH held a series of technical training sessions three years ago on quality control and good manufacturing practices, which can be drawn on to develop these new training sessions. A booklet was published (*Good Manufacturing Practices for Traditional Medicines*). The training was delivered through academics (e.g., Hamdard University and HEJ) and industry leaders (e.g., Qarshi and Herbion), which could be drawn on to develop a group of master trainers.

- Undertake the primary research and testing.
- Publish the findings widely and partner with the private sector to pilot test.
- Provide technical assistance to DRAP to roll out the new Pharmacopoeial Vigilance System (www.ehp.net), an online database developed by a local research and IT firm in Karachi. This database is in beta testing and being used voluntarily. DRAP is working toward having the database eventually used to report all testing and side effects of new drugs (including herbal medicines). Raising awareness of this database and its use is important for the expansion and development of the herbal medicine sector (approximately \$50,000).
- *Awareness raising and consumer protection.* International consumer demand is an integral factor of European and American herbal manufacturers' increased transparency in labeling and efficacy claims. PTPMA is positioned to design and conduct this type of outreach campaign in Pakistan to catalyze public awareness and demand for higher-quality herbal products.
- Fund the PTPMA to shore up its overall capacity, support an awareness campaign, and establish an inter-industrial collaborative commission, similar to the U.S. Pharmacopeial Convention, to work with laboratories, manufacturers, and traders to institutionalize the support of industry standards development. The U.S. Pharmacopeial Convention is a nonprofit organization that sets standards for the identity, strength, quality, and purity of medicines, food ingredients, and dietary supplements manufactured, distributed, and consumed worldwide. Its drug standards are enforceable in the United States by the Food and Drug Administration, and are developed and relied on in more than 140 countries (approximate funding: \$200,000).

Exhibit 31. Priority Recommended Interventions for the Herbs and Botanical Medicines Value Chain

Proposed Intervention	Expected Impact	Time Frame to Realize Impact	Key Issues to Implementation	Sector Champion	Geographic Focus	Priority
Allocate funding through the Agribusiness Project to the ASF for herbal extraction	Increase herbal extraction through modern machinery	Short-term	Coordination with the Agricultural Support Fund	USAID and ASF	Sindh and Punjab	High
Fund multiple feasibility studies on establishing herbal extraction facilities	Increase herbal extraction through modern machinery	Short-term	Awareness raising of the program; collaboration with industry stakeholders	USAID Entrepreneurs Program	Sindh and Punjab	High
TA to the HEJ Industrial and Analytical Center to establish a national training campaign	Increase laboratories, herbal extraction, processors and manufacturers on the changes that will be required in factory-level production and testing as a result of the new DRAP guidelines and protocols	Short-term	Design and implementation of the campaign and replication across the country	HEJ's Industrial and Analytical Center and the Ministry of Health	National	High
GDA to establish a herbal extraction facility	Increase herbal extraction through modern machinery	Medium-term	Identification of appropriate private sector partner	PTPMA	Sindh and Punjab	Medium
Funding to an umbrella of partner institutions to conduct R&D on the top 10 priority list of indigenous herbs	Improve international competitiveness through the product design of unique and indigenously grown herbal medicines	Long-term	Selection and coordination of the umbrella group (including universities, laboratories, the government and leading manufacturers)	HEJ's Industrial and Analytical Center & the Ministry of Health	National	High

Proposed Intervention	Expected Impact	Time Frame to Realize Impact	Key Issues to Implementation	Sector Champion	Geographic Focus	Priority
Support to DRAP	Establish international guidelines and protocols	Medium-term	Collaboration and development of working guidelines with DRAP	PTPMA and Permanent Technical Advisory Group	National	
Establish a Top 10 list of herbs	Catalyze research in these areas	Medium-term	Will require collaborative inquiry across academic, government and industry stakeholders	PTPMA and Permanent Technical Advisory Group	National	
Technical assistance to DRAP to roll out is Pharmacopoeia Vigilance System	Increase transparency of drug use and interaction	Medium-term	Coordination with DRAP and original platform design firm	DRAP	National	
Raise consumer awareness on the standards of herbal medicines	Place pressure on herbal manufacturers to be more transparent with efficacy statements	Medium-term	Coordination with PTPMA	PTPMA	National	

E. SURGICAL AND MEDICAL INSTRUMENTS VALUE CHAIN

E1. BACKGROUND

The surgical and medical instrument (SMI) industry in Pakistan has evolved into a cluster since the British first planted the seeds for the industry in Sialkot around 1940. Since then, industrial agglomeration has gradually attracted input and output service providers, as well as a dry port to facilitate trade logistics. SMI value chains are a nearly self-contained cluster in Sialkot, comprising 2300 registered firms, with an output around PKR 22 billion in 2009 (TDAP Roadmap 2011). Of the cluster's total output, 60 percent is accounted for by about 30 large-scale enterprises, with the remainder consisting of around 200 SMEs and around 2,000 vendors, supported by 800 to 1,000 traders providing valuable intermediary services to all downstream industries. Although the SMI cluster contributes less than 1 percent to the national output and only 1.24 percent of Pakistan's exports, it employs an estimated half a million people, both directly and indirectly, in Punjab province. A unique feature of the SMI is that, unlike other industries in Pakistan, it is mostly export oriented, exporting roughly 95 percent of the output. With adequate human, capital, technological, and capacity upgrades, the industry in Punjab has the potential to become a key employment and foreign revenue generator in this thriving global market, which is estimated to reach \$7 billion by 2016 (GBI Research 2010).

Exhibit 32. Contribution of the SMI to the National Economy

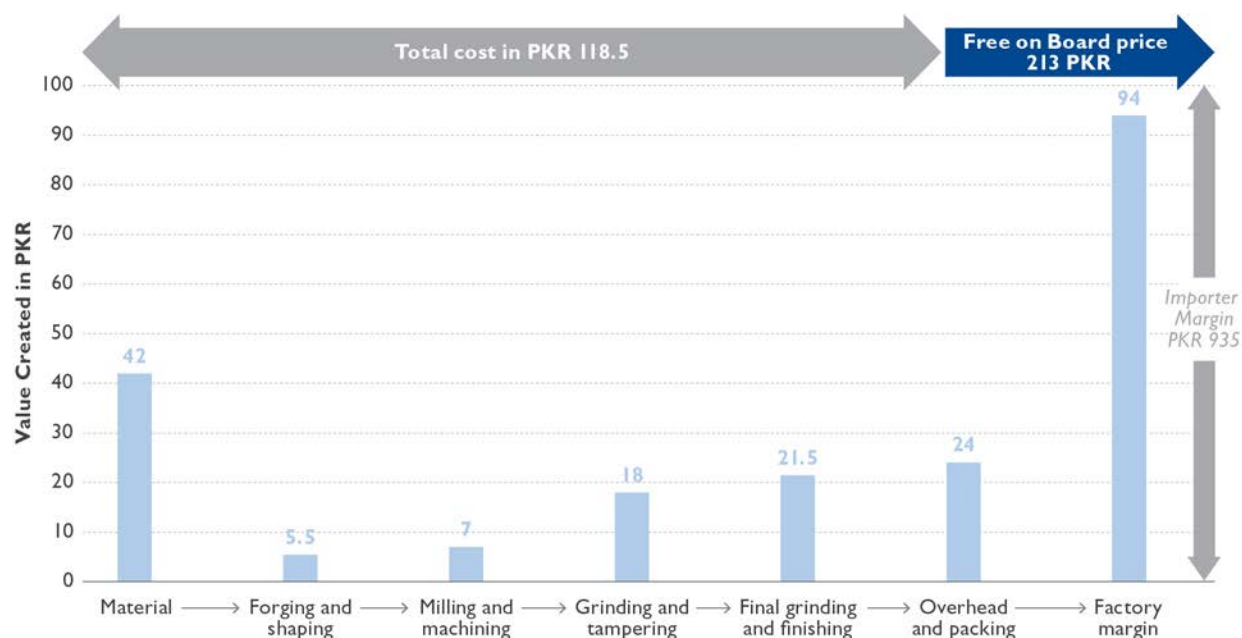
Indicator	Value
To GDP (percent)	0.42%
To direct employment (numbers)	100,000-150,000
To indirect employment (numbers)	400,000-450,000
To exports (percent)	1.21%
Capital/labor ratio	10 workers/PKR million

E2. INDUSTRY CHARACTERISTICS

E2a. Value-Added Prospects of SMI: A Forceps Value Chain Example

The potential value generation of a value chain is demonstrated through the example of forceps, a typical product. The example suggests that the SMI typically adds roughly 80 percent of the ex-factory sale price of 160 PKR per forceps, one of the highest ratios of value added among all manufacturing value chains, with the exception of perhaps a few garment sector products. Of the total value added stream, the material cost value added of forceps ranges between 11 percent and 20 percent, accounting for variations in the use of local and imported steel and trader margins. The largest share of value created is at the factory, 94 PKR (roughly 45 percent of the total value added). Survey and anecdotal evidence further suggest that a factory's margin is between 20 percent and 30 percent of "free on board" and the rest (freight and transport are 10 percent and 20 percent, respectively). As can be seen in Exhibit 33, upon reaching the final consumer in Europe, the forceps have accrued almost four times their value.

Exhibit 33. Illustrated Value Added of 5.5" Forceps



Source: TRTA Pakistan (2010)

E2b. Industry Value Chain Cluster Characteristics

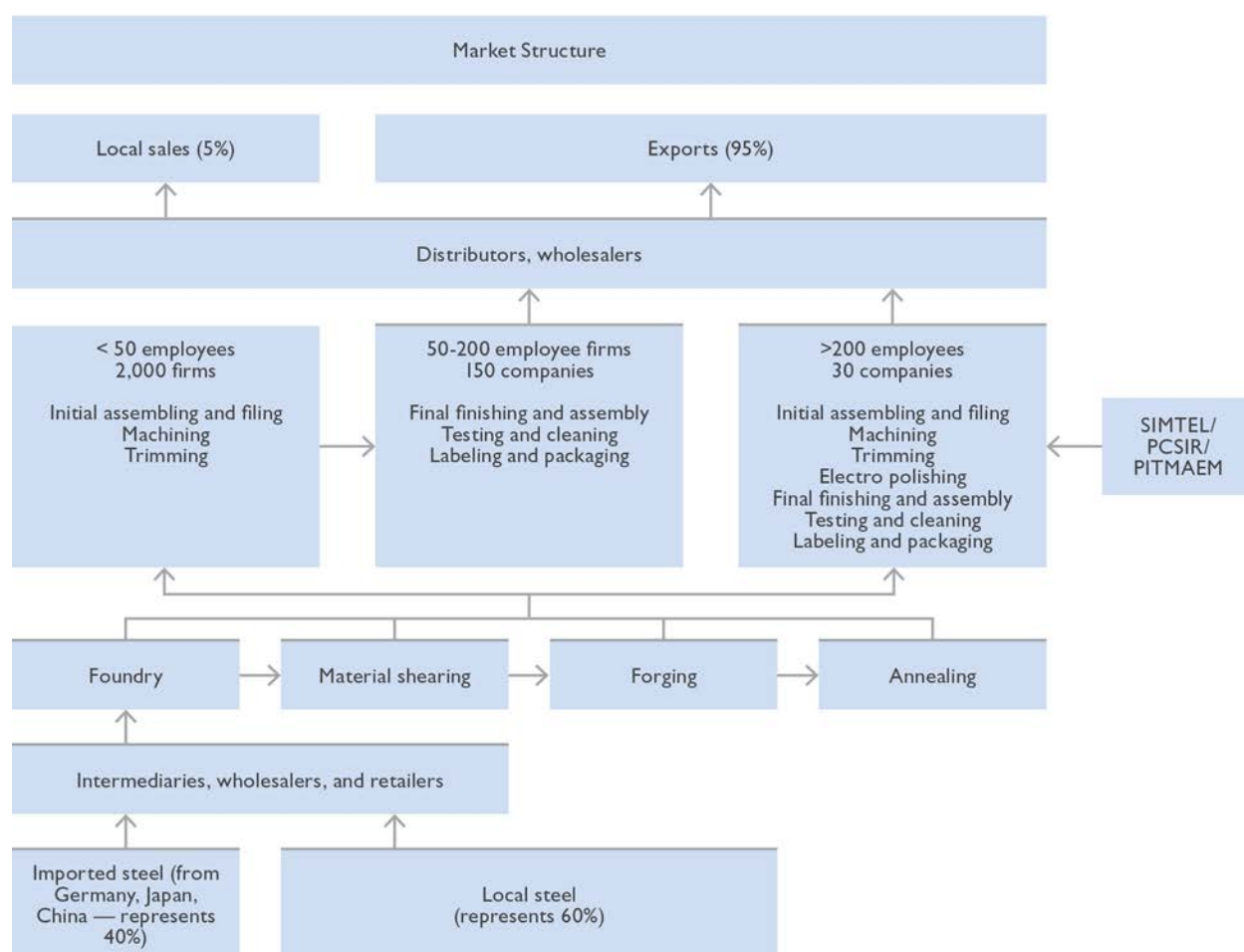
The value-added structure of forceps reflects an aggregation of different stages of the value chain. The Sialkot value chain cluster spans 14 major stages (Exhibit 34 below), and 40 sub-stages depending on the nature of the instrument produced. The first stage of the detailed value chain is the procurement of steel, the primary raw material for making surgical instruments. Depending on the market where the instruments are sold, the buyer profile steel is sourced locally or imported. Value is added in Sialkot through die making, forging, annealing, initial assembly, machining, trimming, and final assembly, packaging, and shipping.

Larger units, in excess of 200 employees, such as Hillsboro (the largest exporter of the SMI in Pakistan), have more integrated production chains. Hillsboro purchases its own material for final finishing and exporting (Trade Development Authority of Pakistan, or TDAP, 2010). Only around 30 industries have such an integrated production system. Most small- and medium-sized industries tend to outsource the initial stages, from steel to shearing and machining. This is explained by the structure of Sialkot's SMI value chain. The presence of numerous small vendors (around 2,000) in Sialkot ensures that the markets at upstream stages operate competitively, with near normal profits,⁴⁴ thus minimizing costs for the downstream industry. It should be noted that the forceps example points to low value added in forging and machining. This structure is not without negative consequences, especially poor working environment, in building image, improving worker welfare, and adding.

⁴⁴ Normal profit refers to a situation in which industry profits are driven to zero (theoretically) or minimal in practice.

The Surgical Instrument Manufacturers Association of Pakistan (SIMAP) is the sole representative association of surgical manufacturers. It tracks domestic and global SMI trends, provides statistical data, undertakes various promotions, and provides guidance on trade shows. The SIMAP also runs a formal training institute in Sialkot that supports the SMI cluster. Sialkot Chamber provides market information, industry news etc. The industry is supported by PHITMEAM/SIMTEL and PCSIR for testing material and instruments and providing R&D.

Exhibit 34. The SMI Value Chain in Sialkot

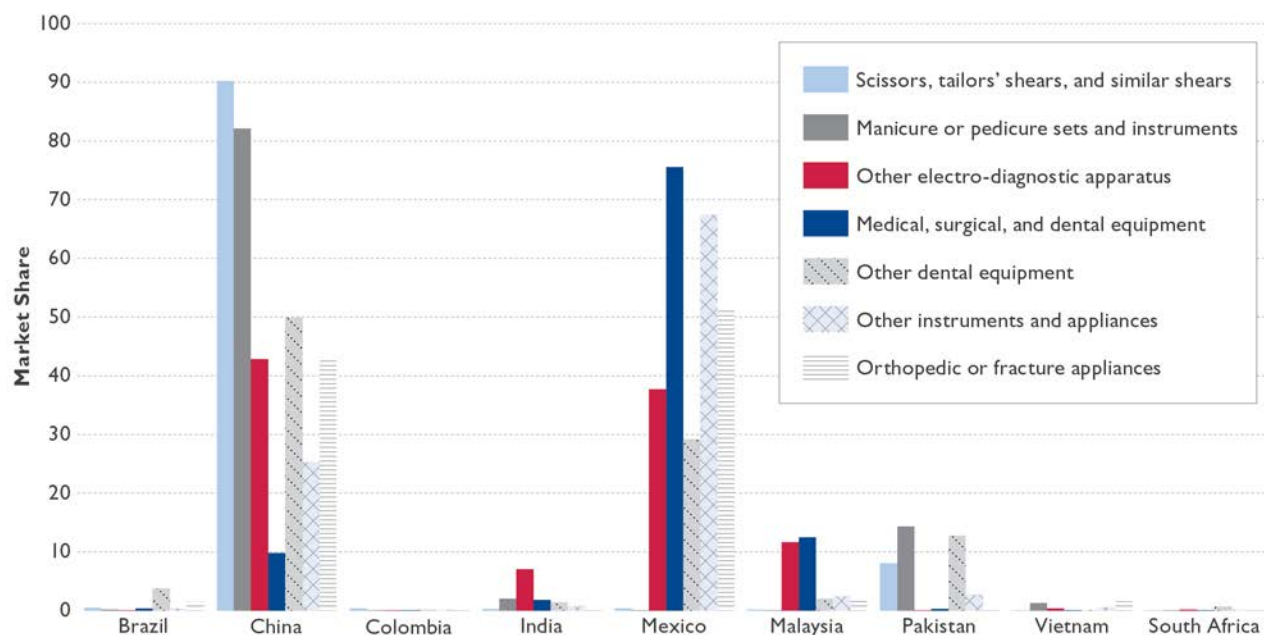


E2c. SMI Export Profile and Dynamics

Despite the success of Pakistan's SMI exports, their diversification is limited. Exports are concentrated around 20 products of significance (more than \$1 million in exports) in a market with a product range that exceeds 300. The industry is mostly engaged in producing and exporting syringes, parts, and accessories (HS Code 901831); medical, surgical, dental, and veterinary instruments and appliances (9018 90); dental instruments and appliances (901849); ophthalmic instruments (901850); orthopedic appliances, bone plates/screws/nails, and pacemakers (9021); medical, surgical, and dental furniture and similar chairs, operating tables, hospital beds, and dentists' chairs (9402 90), tailor, barber, and stationary scissors, and so forth (8213), and manicure and pedicure instruments (8214 20).

The market share among the major buyers of Pakistan export products is dominated by China. However, China's GDP is 60 times that of Pakistan's. Therefore, Pakistan is performing better than could be expected given its size. Pakistan's world market share within this narrow range of exports is in manicure and pedicure products (14 percent) and dental products (12 percent).

Exhibit 35. Pakistan's Market Share Vis-à-Vis Its Main Competitors



Source: Authors' calculations using UN COMTRADE data.

Despite low product diversification, market diversification has taken place during recent years. While the United States and the European Union remain Pakistan's main markets, emerging markets have revealed very promising import trends (see entries in bold in Exhibit 36 below). The most significant growth in exports has been to India, the Russian Federation, and Brazil and it has outpaced that to industrialized countries. While some of the emerging markets are competitors, product differentiation and pricing allow them to conduct two-way trades. These gains are driven solely by individual firms rather than industry-level cohesive strategy to promote exports.

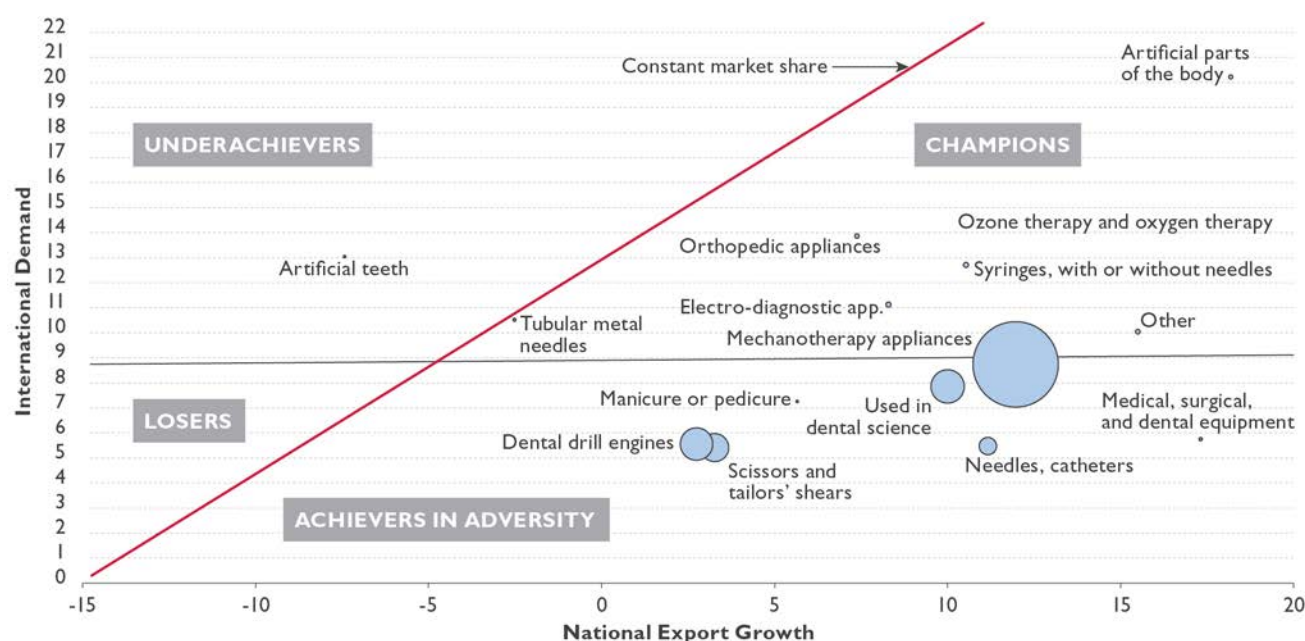
Emerging economies such as India and China are forecast to grow more than 8 percent per annum for the next two years. Brazil, which had muted growth in 2009, expected to grow at 9 percent in 2013 (Global Business Intelligence, GBI, 2012). Strong economic growth forecasts in emerging economies such as India and China are expected to lead to increased investments in their healthcare infrastructure; patients are increasingly able to easily afford health services, expansion of healthcare insurance and improvements in healthcare services. In addition, China and India are the world's most populated countries, which should provide significant growth opportunities for years to come.

Exhibit 36. Export Performance of SMI

	Value (\$ millions)		Share of Exports		Growth (2005-2011)
	2005	2011	2005	2011	
United States	17.0	15.9	0.25	0.23	-1.1
Germany	6.4	11.3	0.09	0.17	9.8
United Kingdom	4.1	10.2	0.06	0.15	16.3
Italy	7.1	7.9	0.10	0.12	1.8
MEXICO	3.6	5.5	0.05	0.08	7.1
BRAZIL	1.0	4.4	0.01	0.06	28.6
France	4.2	3.8	0.06	0.06	-1.6
Netherlands	1.1	2.7	0.02	0.04	15.9
Canada	1.1	2.4	0.02	0.03	13.5
RUSSIAN FEDERATION	0.5	2.3	0.01	0.03	28.6
Iran, Islamic Rep.	0.5	2.0	0.01	0.03	25.3
TURKEY	0.6	1.8	0.01	0.03	19.8
Japan	0.9	1.5	0.01	0.02	10.1
Spain	1.9	1.5	0.03	0.02	-3.5
Korea, Rep.	1.7	1.5	0.03	0.02	-2.8
Poland	0.9	1.4	0.01	0.02	6.9
China	0.7	1.3	0.01	0.02	9.9
THAILAND	0.6	1.2	0.01	0.02	13.3
Australia	0.8	1.0	0.01	0.01	3.1
Saudi Arabia	0.7	0.9	0.01	0.01	4.8
Argentina	0.5	0.9	0.01	0.01	12.7
Belgium	0.4	0.9	0.01	0.01	11.9
Singapore	0.8	0.8	0.01	0.01	0.5
INDIA	0.1	0.8	0.00	0.01	33.0

It seems Pakistan's largest export, medical and surgery equipment, is increasing its market share in the import market, which is declining or growing marginally below average. Given the relative importance, and the comparative advantage (RCA index of 34), the interventions that may pay-off are perhaps upgrading technology and thereby differentiating the product from its competitors. Such efforts are likely to pay off because it is almost at the threshold of being a Champion. To an extent, the same may be applied to dental instruments (HS: 941849) but the immediate pay-offs are likely to be greater from a niche-market point of view—products such as artificial body parts (HS: 902139), ozone therapy equipment (HS: 901920), and elector diagnostic appliances (HS: 901819) on which the international demand is buoyant but Pakistan exports have not kept up with the corresponding level of growth. Though the values are small in comparison to medical and surgery equipment, these product groups have potential to succeed.

Exhibit 37. Competitive Positioning of Pakistan's SMI Exports



E3. BUSINESS ENABLING ENVIRONMENT

E3a. Policy and Regulatory Constraints

Taxation and duties. Imposition of the recent 2 percent sales tax is posing challenges as it takes four to nine months to obtain a sales tax refund. It is faster if the refund process is conducted at the Sialkot dry port, since the process can take much longer at other ports. A 16 percent sales tax is already paid on steel sheets, the main input for the sector. Because sales tax refunds take time to process, they tie up significant levels of working capital.

Corruption continues to affect manufacturing. For minor certifications and customs procedures, for example, manufacturers have to bribe government officials for clearances and legal work.

SMI is considered one of the most promising of Pakistan's exports. SMI exports contributions to the Export Development Fund are to be used for the sector's development, especially market development and research and development (R&D). To date the government has returned back to SMI related services only 1.5 million PKR of the nearly 5 million PKR collected from SMI export proceeds, over the past five years. The delay is apparently due to unsettlement between the Ministry of Commerce and the Ministry of Textile on how funds are allocated.

E3b. Firm-Level Factors

Organization and management. As highlighted by the garment value chain, professional organization and management skills and the adoption of industry best practices are relatively weak among SMEs, particularly among vendors. Research notes that the level of education among vendors is even lower than among SMEs in the textile industry. There is a lack of

management training, even at basic levels, and such businesses mostly operate on low standards of their own making, which leads to, among other things, poor working conditions, low pay, and low efficiency within vendor segment of the industry. However, delivering business development services (BDS) to support supply-led training courses or subsidized business advice tends to cost a lot, serves only few firms, and is unsuitable for poor or unskilled participants. In addition, donors frequently supported BDS providers with full subsidies, thereby creating no incentive for demand-driven services (through willingness to pay) or any sustainable strategy. Being donor dependent, such services are apt to disappear as soon as donor funding dries up. The private sector must assist in providing BDSs to small enterprises and governments and donors must act as facilitators to ensure effective market conditions. Subsidies and financial assistance should be provided only on a short-term basis.

Technology and production techniques: Challenges in moving up the technology/value ladder. Pakistan's SMI has evolved such that certain producers in Sialkot are the principal original equipment manufacturers (OEMs) for the German SMI in Tullingen, which has resulted in technology transfer to the industry in Sialkot. The challenge in a wider industry adopting this technology is not as difficult as often perceived by the SMI. On the basis of the Sialkot-Tullingen experience, certain machinery and tools can be purchased to reach the first step in the technological ladder, including computer numerical control (CNC) machine tools in a wide range of processes, such as grinding and milling, laser cut welding, and die making, resulting in superior products. Sialkot's larger firms have acquired numerical control and CNC machine tools, as well as superior forging, heat treatment, and die making machines. These improvements have enabled several industries to raise their quality and reduce their rejection rates from 7 percent to around 3 percent.

A few specialized forging subcontractors have acquired numerical control die machines and hammer forges, while higher-quality vacuum furnaces for heat treatment are now used by cluster specialists through the use of subcontractors. However, these few forging contractors apparently acquire significant rent and CNC machines are unattainable by large segments of small industries. The SMEs, especially vendors, therefore continue to use old, manual techniques, heating instruments until red hot and then quenching them in oil. This process often results in variations in instrument hardness and cannot be used for mass production.

Most SMEs still use copy milling machines to manufacture a master, based on drawings, which is then used to create die impressions to be reproduced by forging. In the case of CNC machines, the exact impression of the drawing is copied and input into the machine based on the type of forging. This process is less time-consuming and much more precise, leaving little or no room for error.

Besides numerical control and CNC machinery, physical vapor deposition coating machines are required to make manicure/pedicure instruments, for surgical instruments, and to scratch proof orthopedic implants (a bioactive coating on metallic implants facilitates tissue adhesion and improves their long-term stability and integrity). A physical vapor deposition-coating machine is available at the Pakistan Institute of Technology for Minerals and Advanced Engineering Materials (PITMAEM) of the PCSIR in Lahore. The industry uses this machine when necessary, but the distance to Lahore limits its frequent use.

Having recognized the unevenness of the marketplace and the need to make high-technology equipment accessible to SMEs, the Metal Industry Development Center (MIDC), and an agency set up under the Ministry of Industries, procured the following equipment in 2012:

- A physical vapor deposition machine.
- Vacuum heat treatment furnaces: These produce good hardness but are still not capable of mass production, processing only 200 to 300 pieces an hour.
- The conveyer belt heat treatment furnaces that can process up to 30,000 pieces at uniform hardness at a time, or 8,000 to 10,000 pieces an hour, as opposed to the furnaces owned by a few subcontractors that process 200 to 300 pieces an hour.
- CNC machines for laser marking: These machines are used to mark logos on surgical and beauty instruments. Currently SMEs use chemical etching to do so, a longer procedure.
- CNC machines for die production: These machines are precision oriented and improve the quality of surgical instruments.

The MIDC, however, is a defunct government agency, nonfunctional for the last 15 consecutive years. The machinery and equipment acquired has been idle, without a program to operationalize their use, due to the MIDC officials' lack of management and administrative capacity. Operationalizing such a facility could offer immediate relief to the marketplace, in terms of improving the final product and reducing the rent acquired by a few select subcontractors.

R&D. As in any knowledge-based business, the barriers to entering the sophisticated segment of surgical instrument markets are significant. Companies must often incur huge start-up costs to cover research and product development. Furthermore, high-level technical expertise is typically needed to develop the proprietary knowledge necessary to differentiate products from the rest of the marketplace and to obtain licenses and patents. The Sialkot SMI has limited indigenous capability to design, test, and experiment on new machines and tools. The government of Pakistan established the PITMAEM in Lahore in 2003. This institute is equipped with high-tech equipment for metallurgy and advanced engineering materials testing for the light engineering industry, including the SMI.⁴⁵ Although the PITMAEM offers technical support and consultancy services to the industry, it lacks funding and high-level expertise to be an effective partner to serve in an industry targeting the international market. Best practices of an industry's research-based efforts are generally a combined effort of government and the private sector. There is scope for USAID engagement, principally using a public-private partnership (PPP) approach, to enhance R&D capability, know-how, and equipment at the PITMAEM. In addition, The PITMAEM's capacity could be improved through educational exchanges/learning opportunities in material technology with international R&D institutes.

Capacity to meet standards and other market requirements. Surgical instrument manufacturers follow strict international manufacturing standards that conform to WHO standards. More than

⁴⁵ The PITMAEM includes the Centre of Industrial Coatings; the Foundry Technology Centre; nano-coating, powder, industrial/advanced composite manufacturing facilities; heat treatment and rolling facilities; complete powder metallurgy facilities; complete nano-destructive evaluation facilities; and complete facilities for assaying and hallmarking jewelry and gem testing.

300 SMI companies in Pakistan have ISO 9002 certification and about 250 have a certification of good manufacturing practice (GMP). To export to the EU and the United States, firms need to be ISO 9000-certified and U.S. Food and Drug Administration- and GMP-certified, respectively. Companies such as Moody's are hired for the initial certification, with subsequent yearly audits.

In addition, each order needs to be tested for what is called a "seven elements" test that includes corrosion, and so forth. Currently either the Sialkot Material Testing Laboratory (SMTEL) or the PITMAEM of the PCSIR in Lahore is used to test instruments. The SMTEL charges PKR 400, while the PCSIR charges 3000 PKR for the same service; however, while SMTEL takes a few hours to provide test results, it takes a week to obtain them from the PCSIR in Lahore. Firms prefer PCSIR, despite the delay, because their tests are more reliable, in contrast with SMTEL, a government entity that has not been able to provide reliable services due to inadequate equipment and a lack of rigor in the environment in which these test are undertaken.

Under new WHO regulations, the industry will soon have to change their polishing and cleaning techniques, shifting from chemical- to water-based systems. This shift will increase costs and change the testing and certification requirements; for example, it will require a laboratory that can test for sterilization and the presence of certain chemicals. The SIMA is interested in managing SMTEL as a private entity to ensure that its instrument testing meets evolving standards. Initially using the Export Development Fund and other donor contributions to acquire lab equipment, could help make it a self-sustaining entity through the following measures (see box).

Improving SI Testing Capability in Sialkot

- Since its establishment, SMTEL has been currently running a single, old spectrometer. An argon purifier, oil vacuum pump, sine-wave uninterruptible power supply, and so forth, need to be procured while the old spectrometer is under maintenance. A new spectrometer will be procured and installed.
- New testing apparatus will be installed in SMTEL that will play a key role when surgical industries require technical consultancy or details from SMTEL to solve their instrument manufacturing problems.
- In addition, metallographic examination of material will provide further details about heat treatment faults and steel quality through internal structure analysis. Internal cracks present in raw material or instruments will be studied with crack detection apparatus.
- The chemical composition of steel will also be determined by wet chemical analysis. This process requires standard analysis chemicals. Since imported reference samples are necessary for the calibration of testing procedures and chemicals, SIMAP plans to procure such samples to improve the wet analysis technique to countercheck and further verify spectrometric results. The accuracy of the results of chemical testing can thus be authenticated.
- SMTEL needs to be accredited by the Pakistan National Accreditation Council in Islamabad to increase its credibility and technical validity. Although the initial work was started, SIMAP will now accelerate the process to get SMTEL certified and will provide all necessary assistance to SMTEL, such as with apparatus calibration and other needs. SIMAP also intends to affiliate this laboratory with other internationally recognized labs.
- The SMTEL offices and working areas need to be improved as part of its image-building exercise. Building maintenance, including furnishing offices and laboratories, is critically needed.

Supply chain management. Most surgical instruments are made from stainless steel, although other metals—such as titanium, chromium, radium, and molybdenum—are also used. Stainless steel sheets of different qualities are purchased on the market. Steel is made locally in foundries but as 50 percent of the industry requirements are imported, based on the end client’s request, and the quality of Japanese and Taiwanese steel is much better than Pakistani steel, many buyers request that imported steel be used. Imported steel is easily available in the local market.

Hammer shops buy steel and convert it into the shape of the instrument to be made through cutting and forging (by heat treatment and tampering). The forged steel is then bought by vendors who undertake four to five of the main steps required for the production of the instrument in question. Surgical instrument firms then buy the unfinished instruments from the vendors to finish them and then pack and ship them. Vendors in the formal sector often use domestic steel due to the large price difference, often three times cheaper than imported, and therefore tend to experience slightly higher rejection and fault rates, as demonstrated by AMEG survey results. An effort to expand social responsibility within the vendor industry would entail raising the awareness of the benefits of using higher-quality material to secure new and higher-income markets.

Marketing is one of the most important challenges confronting the SMI’s growth strategy, as revealed by field work and survey results. Current marketing practices of the SMI in Sialkot vary by size of industry. Large-scale enterprises such as Hillsboro sell their products to Tullingen, Germany, based on traditional OEM arrangements. The remainder of the Sialkot industries supplies wholesalers, distributors, and Pakistani expatriates living in the United States and Europe, who in turn sell the instruments to hospitals or product retailers, as highlighted in the forceps example above. The instruments are usually sold under the vendors’ own brands.

The Sialkot Chamber of Commerce and the SIMAP provide their members with trade-related information from the Lahore Chamber of Commerce. Functions of these associations include lobbying, joint participation in exhibitions, and operation of common facility centers. Yet, in AMEG’s survey 65 percent of SME manufacturers said they generally relied on their own intelligence and marketing efforts. However, the SMI needs to create a broad-based market presence in the United States, EU, and high-income countries such as Japan. In the former, Pakistan has an incumbent advantage, benefits from the technological thrust that a high-income market requires, and thereby uses it as a conduit to augment the value of the exported instruments. A modular export coaching program targeted at a more dynamic segment of SMEs is likely to reap an immediate payoff. Empirical evidence (Lederman, 2010) reinforces this assertion, that if a program is to deliver high export growth, it is more likely to do so by targeting successful exporters and products than by becoming more broad based and thus reducing the efficiency of the modular approach. Such an export coaching program will entail the following:

- Adapting companies and products to EU market requirements and standards
- Becoming familiar with the EU markets and business practices
- Developing an export marketing strategy
- Exporting to the EU market
- Consolidating an export position in the EU.

Most SMEs' market diversification efforts are based primarily on web searches. Some have succeeded in receiving inquiries and successfully entered the growing African and South Asian markets, especially in hospital furniture and equipment. A more cohesive market diversification effort, however, is forthcoming at the industry level. It may involve a two-pronged initiative, a) assessing demand trends at the micro level and the associated trading regimes of emerging and developing country markets and b) supplementing the demand assessments with a programmatic marketing approach to any efforts that may be undertaken by SIMAP.

Building Brand Image of SMI

Branding is a key missing part of the SMI chain that deprives firms of higher value for their instruments. Building brands require a more cooperative approach within the more established industries backed by R&D. Positive national image is an essential ingredient for building a brand image, and also for investment promotion. SMI could still explore the feasibility of branding a targeted group of products. But this should be considered and sequenced in a way that domestic negative image is first and foremost resolved through proposed interventions recommended in this report.

E3c. Access to Financing

As with other SMEs, AMEG survey results suggests, most SMEs in the SMI, about 70 percent, use either personal or family financing to start their business. Commercial loans are expensive and even the export refinance rate is now more than 9 percent, substantially higher than the 3.5 percent it was in 2003. In addition, collateral is required and loans to SMEs in the sector require more than 30 days to get processed.

E3d. Infrastructure and Transportation

At present, 90 percent of the SMI products are exported by air, through the Sialkot airport. Exporting by air is expedient but not cost effective, especially for slightly bulky items such as hospital equipment. Producers of equipment that is not time sensitive could explore sea freight transportation to distant markets. Road transportation, especially trucking, is deemed unreliable and time-consuming and therefore not a feasible proposition to reduce costs. Improvements in transportation and trucking, through implementation of the National Logistic Cell's trucking policy, are likely to significantly aid industries such as the SMI. Linking the Sialkot dry port with the railway system also has large spillover benefits, as recent studies indicate that rail transportation can be up to 50 percent less expensive than trucking.

E3e. Labor Market and Workforce Development

There is an acute shortage of labor in the SMI, especially in the upstream stages, where vendors dominate. The poor image projected by the SMI's hazardous working conditions have made it difficult for SMI to hire labor despite the prospect of earning between 8,000 to 20,000 PKR per month (see the box above). The industry still operates on a traditional ethos, where first-generation workers introduce their offspring or relatives to the work to follow in their footsteps. Although Sialkot and its vicinity have a large pool of unemployed youth, they are reluctant to work in the SMI due to its poor image and would rather remain unemployed. As a result the industry's workforce is aging. According to the AMEG survey, around 80 percent of the SMEs face various forms of employee challenges, such as in employee retention. There is therefore an

urgent programmatic need to improve working conditions and implement a public relations effort to project a positive image of the industry as whole.

Firms in the sector face fluctuating demand, which forces them to maintain a flexible cost structure. This flexibility translates into high workforce turnover, which in turn discourages firms from undertaking serious training efforts. Lately, this problem has been compounded by electricity shortages that have forced the industry to operate at low levels of installed capacity.

Regarding training at various stages of the value chain, the highest demand is for polishing skills. Acquiring polishing skills requires longer and sustained training before the task can be fully undertaken by a worker. The SMI in Sialkot requires an organized training institute that is capable of delivering skills training for sustained periods. The MIDC has plans to provide training in key surgical instrument manufacturing skills, such as polishing, machining, general fitting (dye making), drafting/AutoCAD, inspection and quality control, material testing and heat treatment, forging, and TUSDEC involvement (see the proposal below).

The Centre for Promotion of Imports from Developing Countries (CPI) has an ongoing initiative under which it sends trainers to the Sialkot Surgical Association to teach management-level representatives how to access the market and improve quality, as well as transition to manufacturing value-adding items.

An apprenticeship school for electrical skills and grinding for children above 14 also exists in Sialkot. Skills relevant to the surgical instruments sector can also be introduced at the school. The Sialkot Surgical Association has plans to design a two-year course to teach basic literacy and sector skills to school dropouts. In the longer run, working standards would need to be improved to attract more people to the industry.

E4. CROSSCUTTING ISSUES

Gender. Women are only employed in packaging or in office management in the SMI sector, and more than 80 percent of SMEs surveyed did not employ women in any capacity. In general, traditional metal-related trades are less appealing to women and attitudes of male owners, mostly traditional, do not allow for increased participation of women.

Environment. A life cycle assessment of the environmental impact of different types of surgical scissors was carried out. It assessed overall environmental impact by looking at: global supply chains (resulting in long transport distances); production standards in developing countries (with weak environmental legislation); and the use of disposable instead of reusable products. The study compared 1) reusable scissors made of stainless steel and manufactured in Malaysia in a German-owned factory; 2) disposable scissors made of plastic and manufactured in Malaysia in a German-owned factory; and 3) disposable scissors made of stainless steel and

The Industry's Social and Image Problem

The industry is dominated by small and medium-sized businesses, most of which are vendors supplying the downstream industry that typically operate informally and have poor factory safety and employment conditions. In the absence of basic health and safety in the upstream stages, the industry has propagated a culture of racing to the bottom to stay competitive, at substantial social costs not internalized by the market. SMI's poor image has prevented the industry from attracting workers to meet its demand at the upstream stages.

manufactured in Pakistan. The results show that the manufacture of stainless steel scissors in the German-owned factory led to the highest emission of greenhouse gases. Stainless steel scissors from Pakistan caused 40 percent fewer emissions. However, from a life cycle perspective, the environmental burden caused by disposable scissors far exceeded that of reusable scissors, as the latter can be used over 3,000 times, whereas a new disposable scissor is for single use. The PITMAEM of the PCSIR in Lahore provides the surgical sector with information/guidance on environmental concerns such as treatments for toxins. However, such assistance is limited and focuses only on factories and not vendors, who are not following basic sanitary and phytosanitary standards.

E5. RECOMMENDATIONS

Exhibit 38 provides an implementation matrix for high-impact and other recommended interventions, including expected impact and time frame, sector champions that can be enlisted to support implementation, expected challenges, and resource requirements for implementation. The specific recommendations highlighted are deemed to be the highest priority, as they are those that can have the largest impact, in terms of generating new and sustainable revenues and employment. In terms of products/sectors, given the relative importance and the comparative advantage of medical and surgery equipment, this product segment should receive USAID intervention especially upgrading technology to differentiate the product from its competitors. Though the values are small in comparison to medical and surgery equipment, assistance can also benefit artificial body parts (HS: 902139), ozone therapy (HS: 901920), elector diagnostic appliances (HS:901819) on which the international demand is buoyant but Pakistan exports have not kept up with corresponding levels of growth. The following summarizes the recommended interventions that are deemed priorities:

E5c. Technology and R&D

Use TUSDEC organizational and managerial skills to re-launch the Metal Industries Development Center. TUSDEC has a successful record of setting up common facilities for training and technology upgrading. USAID should explore the promotion of an association between TUSDEC (that has the experience of setting up common facilities such as the Karachi Tools, Dies, and Molds Centre (KTDMC) in Karachi) and TEVTA (that has invested heavily in technology, equipment, and classroom space in the MIDC in Sialkot) to set up a state-of-the-art training facility that can also serve as a mechanism for technology upgrading for the surgical and medical instruments industry. There is a new administration at TEVTA/Punjab that has showed interest in this kind of associative mechanism to enhance the impact of its activities.

Operationalizing the common facility at MIDC is likely to provide immediate relief to the SMEs in Sialkot. A USAID-backed market analysis followed by an operational mechanism to use the equipment at MIDC should be developed. USAID could bring in TUSDEC which is a government body with experience in operationalizing Common Facility Centers and then transferring management to the private sector. Initially TUSDEC could run the CFC in collaboration with SIMAP.

Build an awareness campaign for better working conditions and industry norms. The SMI cluster appears to be suffering from a poor image that hinders the industry from attracting

workers to meet the demand. USAID should, in collaboration with SIMAP, develop a program to improve working conditions in the sector. This would include an audit of vendors to assess the internal working conditions and practices, possibly with the collaboration of ILO/Pakistan, followed by a program of technical assistance to the vendors to adopt improved practices. This should be complemented by an awareness program to promote the benefits of improving working conditions—a previous program on corporate social responsibility was previously carried out by CBI (Center for Promotion of Imports from Developing Countries and should be extended by USAID to cover a broader base.

USAID should also support the integration of vendors into SIMAP and the development of a code of conduct manual that will be monitored and administered by SIMAP. Part of the code should entail confirmation by SIMAP members that they will avoid buying practices that encourage cost cutting over the social welfare of workers. Recognizing the industry's image, medium- and large-scale enterprises have expressed a willingness to compensate the sub-contracted vendors, provided they upgrade working conditions.

Support the apprentice program the Association is planning to introduce by supporting training costs as well as stipends for students to give them an incentive to complete the course. Students who complete the program would then be eligible for placement in a SIMAP member firm. USAID can leverage the Hunar Foundation model by providing funding and technical assistance to set up a vocational training institute in Sialkot. The Hunar Foundation initiates work through a market survey which is used to specify the trades to be taught in a certain institute. It costs \$1 million to set up a Hunar Foundation Institute with annual operating costs of \$250,000. The Association could provide the land while USAID could provide funding for the set up and costs to begin operations.

Promote targeting export promotion in new markets. To diversify in to emerging and developing country markets, USAID can provide technical assistance to SIMAP for a study to assess demand trends at micro-level and the associated trading regimes of emerging and developing country markets. This should entail a detailed demand assessment of emerging market profiles and product segments of the selected markets. This could then be followed by the development of targeted marketing program centered at SIMAP.

Fund firm-level export coaching. In parallel, to promote a broad-based market presence of SMI in the United States and the EU, the EU can support an export coaching program for targeted, export-ready, medium-sized firms. The export coaching program should consist at a minimum of six tailor-made modules focusing on the key elements for successful exporting to the target markets: Business auditing, action planning, business development, export capacity building, (voluntary) certification, and market entry. The CBI has already developed such a program focusing on the EU market, targeting a selected number of firms. USAID could provide funding to roll this out to a wider range of firms and broaden it to cover the U.S. market.

Exhibit 38. Summary of Recommended Interventions to SMI Value Chain

Proposed Intervention	Expected Impact	Timeframe to Realize Impact	Key issues to Implementation	Geographic Focus	Priority
Image-building					
Undertake an audit of vendors to assess the internal working conditions and practices, followed by a program of technical assistance targeting vendors to adopt GMPs	Improved working conditions/ improved appeal to unemployed youth	Short-term	Selection of vendors	Sialkot	Medium
A program on corporate social responsibility awareness to be provided by USAID to cover a broader segment of Vendors	Improve working conditions/reduce health risk/improves the image	Short-term	Selection of vendors	Sialkot	Medium
In collaboration with SIMAP, build a PR campaign for better working conditions and industry norms	Make the SMI attractive to unemployed youth	Medium-term		Greater Sialkot	Medium
Training and Workforce					
Leverage the Hunar Foundation model through an alliance with USAID providing funding and technical assistance to set up a vocational training institute in Sialkot	Improved efficiency and development of higher value products	Medium-term	Accessibility of a physical facility	Sialkot	High
Organization and Management					
Build management capacities within the SME vendor sector through a local business service provider certification program, with USAID providing train-the-trainers and co-funding initial rounds of assistance to vendors	Improved efficiency, profitability, bargaining powers and improved working conditions	Short- to medium-term	Selection of vendors and business service providers	Sialkot	Medium

Proposed Intervention	Expected Impact	Timeframe to Realize Impact	Key issues to Implementation	Geographic Focus	Priority
Technology and R&D					
Promote partnership between TUSDEC and TEVTA to operationalize services of MIDC to set up a state-of-the-art training facility, with TUSDEC as the operator	Provide competition and improve vendor access to markets through better technology	Short-term	Persuading the MIDC/ government	Sialkot	High
Promote PPP to enhance the R&D capability, know-how and equipment at PITMAEM through seed funding for applied research through joint projects with the private sector	Improve technology; reduce waste	Medium-term	Financing	Lahore	Medium
Standards					
Assist SIMAP to accelerate the process to get SIMTEL management transferred to it, followed by certification, and development of a business plan with the aim of getting the lab affiliated with internationally recognized labs	Reduce costs and time in the certification process	Short-term	Approval of PCSIR/ government	Sialkot	Medium
Infrastructure					
Support a technical and financial feasibility study for setting up a captive power producing plant for the sector in Sialkot	Reduce costs across SMI	Short- to medium-term	Government regulation	Sialkot	High

Proposed Intervention	Expected Impact	Timeframe to Realize Impact	Key issues to Implementation	Geographic Focus	Priority
Marketing					
Provide technical assistance to private entity for a study to assess demand trends at micro-level and the associated trading regimes of the emerging and developing country markets	Capture a share of growing emerging markets and reduce vulnerability of market concentration on U.S. and EU	Short-term	Financing	Sialkot	High
Provide funding to roll out firm-level export coaching to a wider range of firms and broaden the current CBI initiative to cover the U.S. market	Improved market access	Short-term	Selection of firms	Sialkot	High
Support a brand image building campaign for SMI exports in targeted markets	Promotion of higher value-added currently lost through OEM practices	Medium-term	Identification of target markets	Sialkot	Medium

F. INFORMATION TECHNOLOGY VALUE CHAIN

According to the World Economic Forum’s 2013 report on global information technology, digitization has a measurable positive effect on economic growth and job creation. In fact, the report concludes, “In emerging markets, a comprehensive digital boost could help lift over half a billion people out of poverty over the next decade.”

Many of the recommendations in the report are relevant to Pakistan in terms of: (1) creating digitization plans and policies for targeted sectors to maximize the impact of digitization; (2) encouraging the development of capabilities and enablers to achieve the digitization plans; and (3) encouraging policymakers to work with industry and consumers to establish an inclusive information and communication technology (ICT) framework that encourages greater uptake and usage of digital services.⁴⁶

Another conclusion from the report is that digitization’s greatest employment effect is in constrained and emerging digitized economies. East Asia, South Asia, and Latin America experienced the most employment growth of all regions, with more than 4 million jobs created as a result of digitization improvements. The report also claims that digitization has emerged as a key driver and enabler of socioeconomic benefits.⁴⁷

The World Economic Forum’s assessment of the IT sector’s economic impact compared 144 countries. In one of its rankings that asked industry experts to rank their country’s support in creating new business models, services, and products, Pakistan ranked 105th, lower than Kazakhstan, Ghana, and Vietnam, but higher than Greece, Lebanon, and the Russian Federation.

F1. INDUSTRY CHARACTERISTICS

The IT sector plays a critical role in the development and advancement of Pakistan’s economy. Annual revenues from the sector are \$2.8 billion, about 1.5 percent of GDP, according to the Pakistan Software Export Development Board. Exhibit 39 summarizes the number and staffing levels of IT firms operating in Pakistan — some 2,440 firms, the vast majority of which are SMEs.

Exhibit 39. IT Firm Landscape

Number of Firms	Number of Employees
1	2,500
10	1,000+
30	500+
150	150+
350	50+
400	10+
Freelance providers	5,000

There is a dearth of accurate statistics in this sector, which is mostly under-represented in official statistics. The IT sector directly supports some 110,000

⁴⁶Global Information Technology, World Economic Forum, 2013.

⁴⁷ Ibid.

employees,⁴⁸ a figure that does not include approximately 5,000 freelance providers of IT products and services (see Exhibit 40 below). Pakistan's IT sector has been growing at 20 percent to 25 percent each year for the past three years, a trend that is expected to continue, with 39 percent of the growth coming from foreign, software, and high-end services products.⁴⁹

The IT sector has significant untapped potential. Its fuller realization across the SME sector will also lead to economic and social benefits for the entire country. This is corroborated by the U.K. Department for International Development's 2008 report, "The ICT Landscape in Pakistan":

Pakistan's IT sector has grown rapidly in the last decade. In 2007, Gartner released a report titled, "Analysis of Pakistan as an offshore service Location" and placed Pakistan in the 'first category' destinations and also acknowledged Pakistan's labor costs to be percent30percent lower than India's with Telecom costs the lowest of any outsourcing destination. The IT sector is maturing which is evident from the innovation in product development, development of mobile-based solutions, Apple iPhone/iPod applications, local financial solutions to banks and software development for international customers.

Mobile banking is beginning to take off in the country and offers an upcoming investment opportunity. The World Bank's Consultative Group to Assist the Poor (CGAP) deemed this sector a "laboratory of innovation" in Pakistan. The branchless banking sector includes Tameer Bank's 'Easypaisa', United Bank Limited's (UBL) 'Omni' service, and Waseela Bank's Mobilinks. Tameer Bank was the first and largest microfinance bank to be registered in Pakistan and was the first bank to be given permission by the State Bank of Pakistan to start branchless banking operations. Tameer markets Easypaisa as a new form of community level banking managed through 'corner shop' micro franchises. UBL announced its service in 2010 under the name of UBL Omni. In 2011, Orascom Telecom paid 1 billion rupees to purchase a license for a microfinance bank to offer branchless mobile banking services in Pakistan under the brand name of Mobilink Waseela. The First Microfinance Bank and Dubai Islamic Bank have also recently begun mobile banking offerings. Monet (funded by the Abu Dhabi Group) is currently developing an m-commerce platform which connects mobile phones and financial services across devices, carriers, and banks. Monet is unique in that it will enable transactions between banks, operators and merchants, giving end-customers a unified interface to interact with various merchants to purchase goods and services.

Based on a survey of domestic and international demand, P@SHA estimates that Pakistan's IT sector has the ability to create 150,000 jobs in the coming three years and will exceed \$11 billion in revenues within the next five years.

SMEDA has identified IT as a leading growth sector and as its only "priority" service sector industry for 2013. SMEDA is holding IT stakeholder workshops to ascertain industry concerns and opportunities, and expects to have a draft IT strategy by mid-

⁴⁸PSEB". "Pakistan IT Industry Overview." http://www.pseb.org.pk/item/industry_overview (24-May-2010).

⁴⁹P@SHA was established in 1993 and is the leading IT association in Pakistan, with some 500 members.

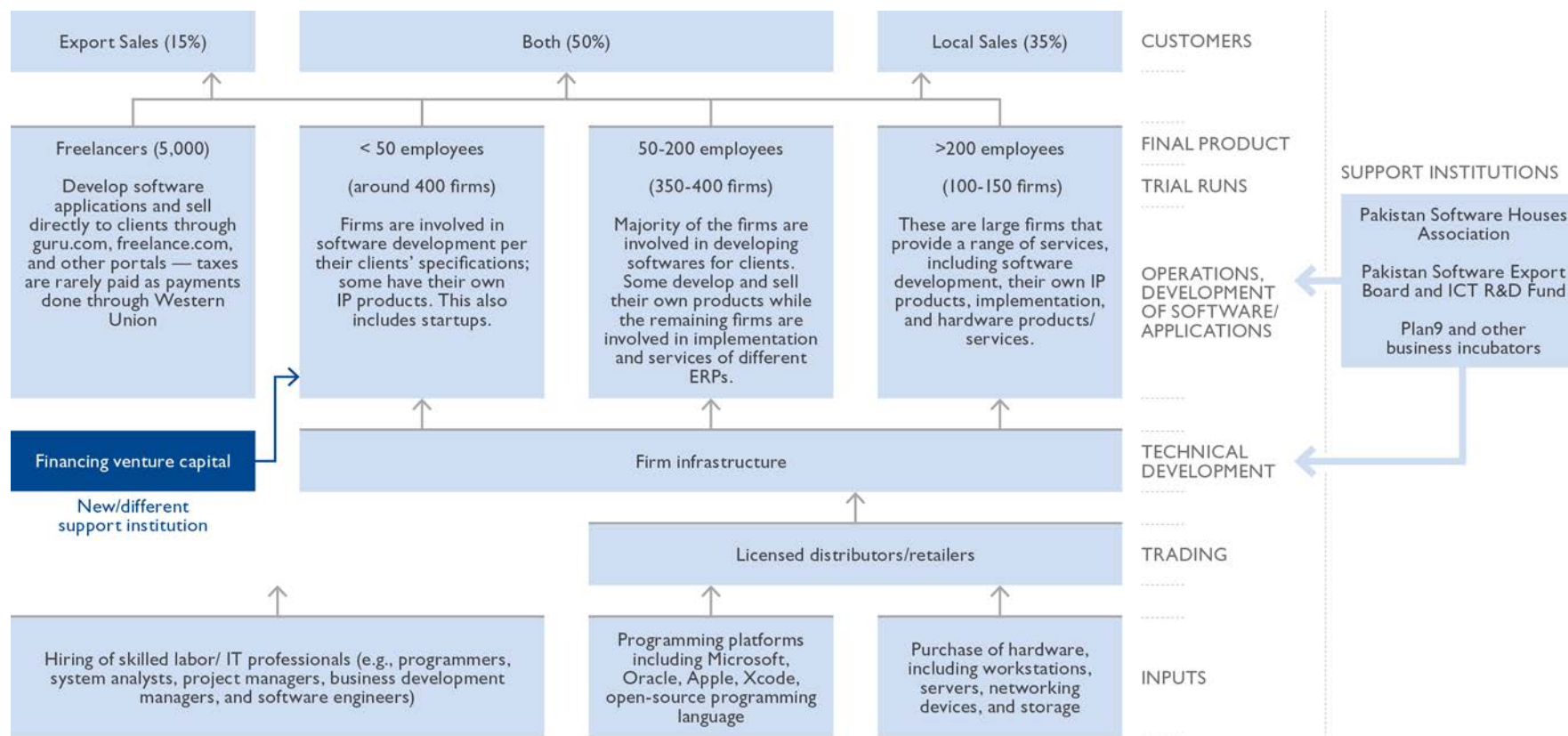
2013 and a conference in the summer to present and discuss this strategy with the donor community.

The IT sector has a fairly straightforward value chain, with backward linkages mostly dealing with access to human capital. Firms of all sizes are attempting to reach export and domestic markets, although only 15 percent of IT firms exclusively serve export markets. Most of the country's IT industry is concentrated in larger cities, with 38 percent in Karachi, 28 percent in Lahore, 33 percent in Rawalpindi/Islamabad, and 1 percent dispersed in other cities, according to the Pakistan Software Export Board (PSEB).

One growing characteristic of the market is the number of youth and women working as freelancers directly for international entities through services such as guru.com and e-freelance.com. These individuals enter these kinds of spaces due to their inability to secure domestic employment. Women seek these opportunities to supplement their families' incomes while working from home.

Key constraints in the enabling environment are an antiquated IT policy and the lack of a cyber-crime law. Access to working capital and investment financing is also a cross-sector constraint. A majority of interviewees noted that universities' lack of understanding about industry needs produces graduates who are unprepared to provide the technical skills today's IT industry needs. The IT value chain is illustrated in Exhibit 40 below.

Exhibit 40. IT Sector Value Chain



F1a. End-Market Characteristics

About 50 percent of IT firms surveyed are producing software and services for both domestic and international markets. An additional 35 percent produce only for the domestic market, and 15 percent produce exclusively for export market opportunities. Given this configuration, some \$1.6 billion of the sector's total revenues (\$2.8 billion) are generated through the export market.⁵⁰

The local IT market consists of several subcategories, including commercial and social sectors. The commercial sector offers prospects of increasing productivity across industries and catalyzing the use of social media and IT services (such as the use of Enterprise Resource Planning (ERP) systems to manage accounting, human resources, and traceability for herbal medicine manufacturers) for SMEs. Examples of some services and products firms are producing for the domestic commercial market include: consumer asset management systems (CAMS) and financial integration systems. Customers in the domestic market include banks (such as Silk Bank, Allied Bank, National Bank, Bank AL Habib) and export-oriented firms.

The social sector (health and education) offers prospects of reducing the costs of these services while increasing access. A few firms are working on these endeavors, such as ComSept's teaming with local hospitals to provide online diagnostics to rural communities through real-time video links. Other socially oriented IT products include school management systems and hospital management information systems. See the box for Pakistan's use of IT in the education sector.

Pakistan's Virtual University

The Virtual University, which opened in 2002, is the country's first university based entirely on ICT. Its goal is to provide affordable education to students all over Pakistan. Courses are delivered on free-to-air satellite televisions and through the Internet.

Pakistan's IT market remains mostly untouched. For SMEs in particular, there is a large, untapped potential. The approach to this market will require increased awareness and understanding of IT's impact on increasing productivity, efficiency, and links to customers. The PSEB has made some efforts in this regard, but it has not made enough headway (see box in Section F6). SMEs reported that PSEB's assistance with Capability Maturity Model certifications was not useful and was limited to a handful of firms.

According to those surveyed for this assessment, 65 percent of Pakistan's IT firms provide services to the international market. Many have done very well in that market. The country's IT industry boasts a wide range of firms providing software solutions to multinationals, including TerraData, which has made a name for itself creating data storage solutions, and NetSol — NetSol is a leading Pakistani-owned firm and one of only two Capability Maturity Model Integration Level 5 certified IT firms in Pakistan — which employs more than 1,000 experts developing software solutions for international clients.

⁵⁰ Source: Key informant discussions with leading IT firms.

While much of the country's IT community continues to seek international market opportunities, there is a real growth opportunity to develop innovative commercial and social/health solutions to address Pakistan's productivity, health, and education problems. A significant opportunity exists to catalyze Pakistan's entire economy through increased digitalization.

F1b. Potential Products and Markets

There is also potential for Pakistan to grow its nascent intellectual property (IP) community, and these products represent a significant market opportunity. The Punjab government has developed a unique approach to supporting its burgeoning IT community by creating a business incubator for IT startups within the Punjab Information Technology Board (PITB). This incubator, Plan9, provides IP startups with office space, mentoring, funding, and a supportive ecosystem. Although it is only completing its first round of 10 startups, Plan9 has an important demonstration effect for future investment in Pakistan's IP development.

Innovative IP Solutions

Hybrid Signals is an IT startup which currently employs seven people. They have recently created and are beta testing a tool to measure the return on investment on a company's social media marketing. Unilever is using the beta version as a trial. Hybrid Signals claims this to be the only ROI social media assessment tool on the market.

Pakistan's challenge is to more effectively support and then market IP (see textbox on Hybrid Signals' work to assess the financial impact of social media marketing). Startups are increasingly entering this growing field, which also has government and private sector support. The recommendations section, below, describes ongoing public and private sector business incubator initiatives.

F2. POLICY AND REGULATORY CONSTRAINTS: BUSINESS ENABLING ENVIRONMENT

The legal and policy frameworks for IT are dated and weak, and the lack of a permanent IT minister means that the PSEB and the ICT R&D Fund are not functioning well. Key issues that need to be addressed include:

Outdated IT policy. The IT policy has not been updated since 2002 and is not aligned with Pakistan's telecommunications strategy. This has caused confusion and delays, for new investors entering or investing in the sector and for existing firms in planning future project implementation. For example, most firms do not apply for a patent for IP products; this should be mandated by the IT policy, thereby protecting firms and their intellectual property.

"I have worked in the Ministry of IT and I believe that the decision-makers in this country do not understand the transformative power of IT for societal benefits."

— Zia Imran, former board member,
ICT R&D Fund

No permanent IT minister in five years. This gap has left the PSEB and ICT R&D Fund without a leader or a forward-looking approach. As a result, the sector has lacked a coherent policy, strategy, and priorities. The incoming government must

nominate an IT minister to establish a forward-looking IT strategy for the coming five years. This should be coupled with an evidence-based approach to documenting IT's positive impact on GDP, employment, and economic productivity.

Lack of a cyber-crime bill. Hacking and cyber security breaches affect Pakistan's business community and the entire IT sector. According to Cyber Secure Pakistan, the country is "experiencing poor cyber security at the national, local, and personal level." Cyber Secure Pakistan's mission is to establish a multi-stakeholder consortium for national cyber security, which will bring together individuals, business leaders, and local, state, and federal government to address threats. To re-emphasize to government officials the need to address this issue through strong laws and regulations, Cyber Secure Pakistan organized a cybercrime conference on April 22, 2013. In February 2013, P@SHA presented the draft Prevention of Electronic Crime Ordinance to the National Assembly Select Committee. The cabinet was ready to approve the bill, but it will likely be stalled until a new government is elected.

Need for government-wide support for e-governance. Although pockets of innovation exist in Pakistan's government, such as the registration program of the National Database and Registration Authority (NADRA), the government needs to develop a standardized policy to incentivize the use of IT across government ministries and require the acquisition of these services from the domestic IT market (see box).

NADRA: An IT Success Story

NADRA is a government success story of using IT solutions in the global identification sector. NADRA provides solutions for identification, e-governance, and document securitization. In Pakistan, NADRA implemented the multi-biometric national identity card and multi-biometric e-passport. NADRA has developed a passport issuing system for Kenya, a high-security driver's license for Bangladesh, and a civil registration management system for Sudan.

F3. SUPPORT INSTITUTIONS AND FINANCING

The following key constraints need to be addressed through existing institutional structures for supporting IT.

Policy advocacy, awareness, education, and mentoring. Significant policy issues, lack of youth awareness, a disconnect between industry and academic needs, and lack of IT funding and mentorship all require attention. Many of these issues are already being addressed by the sector's leading association, P@SHA. At the policy level, P@SHA needs to continue its advocacy for a new IT policy and cyber-crime law; as well, efforts are needed to increase youth (and female) interest in the computer science programs the sector is demanding; and IT startups need funding, mentorship, and models to help them excel in this competitive landscape. P@SHA has a wide range of programs addressing many of these areas (see box below), but it is in dire need of funding and capacity building.

P@SHA Case Study

Policy. P@SHA has been active in working on policy level initiatives to support industry growth. In 2011, it hired a consultant to draft a new IT policy for Pakistan and held stakeholder workshops to garner input from the industry. The policy was presented to the government in 2013, but no decision was taken. P@ASHA hired another consultant to draft a new cyber-crime law — the Prevention of Electronic Crime Ordinance — again holding stakeholder workshops and presenting a final draft law to the government in 2012. P@ASHA is hopeful that the newly elected government will review and pass this law and adopt a new IT policy.

Entrepreneurship. P@SHA organizes programs to support student and new IT start-ups through a competition for seed funding and mentorship. P@SHA also manages a social innovation fund with seed capital from Google, conducts an entrepreneurship training to new graduates (which it wants to expand, a la Khan Academy), and organizes an IT awards program to recognize innovation and showcase it domestically and internationally. These awards, and the participation of winners at the regional Asia Pacific ICT Awards, help benchmark Pakistan's IT products with the region's best.

Youth and Women. P@SHA holds IT career fairs in Islamabad, Karachi, and Lahore, and it could play a much more catalytic role in the sector by expanding its career days to secondary cities and through outreach to female students.

Commercialization of IT research and improved knowledge on IT's economic and social impact. The IT sector is constrained by lack of funding for R&D of new IP products and services. This type of research is paramount to showcasing Pakistan's capacity to commercial and socially-oriented businesses and highlighting the country's local skills and talent. The organization most suited to address this issue is the Ministry of IT's ICT R&D Fund (see box below) whose mandate is to support innovation and research in the ICT sector. However, the fund lacks direction, has an outdated strategic plan, and does not prioritize its funding; funds often go to research endeavors with no commercial application. All key informants interviewed for this study considered the fund to be "salvageable" and indicated that strengthening the fund would be critical for sector growth.

ICT R&D Fund 2013 Studies

The ICT R&D Fund was established in 2006 to focus on ICT human resource development and ICT-related R&D activities. The fund is sponsored by telecom operators, who contribute 0.05 percent of their gross annual revenues to the fund. It is managed by a board of directors comprising IT specialists from the public and private sectors.

The fund provides grants for ICT-based R&D projects; however, it does not fully use its grant funds. It also operates apprenticeship and scholarship programs. No funding is provided to IT startups, and no technical assistance is provided to awardees.

In 2013, the ICT R&D Fund will fund three important studies: (1) a general overview of the ICT sector, including employment data; 2) research into e-payment gateways; and (3) IT human resource constraints and workforce development needs.

Lack of financing for expansion and IT startups. There is a dearth of funding for IT start-ups and firms seeking to expand and diversify; 90 percent of our survey respondents had no access to borrowing or equity investment as banks were reluctant to lend to this target group due to their lack of fixed assets. The inability of firms to secure working capital loans and/or equity investments is a significant constraint to this sector's expansion. While there are several donor and private initiatives underway, such as the U.S.-funded Pakistan Private Investment Initiatives (see box), there still needs to be much more capital and equity available for the IT sector to blossom.

Private Investment in IT

The Pakistan Private Investment Initiative is being funded by the U.S. government to launch three new investment funds. The initiative seeks private or other qualified sources of capital for matching investments and fund-management services. The funds will make equity investments into promising Pakistani companies that are underserved by existing sources of capital.

PITB launched Plan9 in 2012 as a business incubator to support IT startups develop their own products. This model is providing an important demonstration effect for the IT community. Plan9 hosts 10 startups and is providing some limited equity funding through its Angel Investor's Club.⁵¹ NUST and the Massachusetts Institute of Technology Enterprise Forum have small incubator programs that are exclusive to university-affiliated staff, although neither program has enabled the contacts, funding, or working environment to support the commercialization of student-led startup efforts. The recommendations section describes several nascent incubator initiatives that could partly fill this void and need additional resources.

F4. INFRASTRUCTURE

Lack of a global e-payments platform is one of the single most significant constraints to the expansion of the IT sector; this issue also has crosscutting implications for the improved productivity and competitiveness of Pakistan's SME sector.

Global e-payment platform. Pakistani firms that launch e-payment services are forced to work through "cash and delivery" systems.⁵² Other options include registering the business in the United States or elsewhere to enable the use of PayPal, or using Western Union or other wire transfer options. Although several initiatives are underway to launch Pakistan-based e-payment systems (e.g., Monet and a joint venture between UBL Bank and Etisalat), these will not address the broader issue of enabling a *global* e-payment transaction platform that is critically needed for IT firms and the broader SME community. There is a Pakistani-led campaign to convince Paypal.com to open its service to the knowledge workers of Pakistan; according to its leader, Faisal Abbas, an annual letter is sent to PayPal from the IT industry to encourage PayPal to reconsider its decision.⁵³

⁵¹The Angel Investor's Club is composed of leading Pakistani IT innovators committed to mentoring startups and providing capital to accelerate the business. Initial financial commitments are low (about \$5,000 per Angel Investor). The five investors have agreed to pool their individual commitments and have placed \$25,000 in one of Plan9's startups.

⁵²As a result, some big firms are getting into the delivery space (e.g., Korean firm TCS Express and Logistics).

⁵³Based on discussions with key informants, PayPal is going through a restructuring and will be re-launching its services across Asia. India will likely be the first target market with its more unified platform, but Pakistan will likely be considered as a viable new market given its size.

Lack of 3G services. Many key informants mentioned the lack of 3G services in Pakistan as a constraint to their operations that results in low productivity and decreases their international competitiveness. It was estimated by telecommunication experts that 3G will not come online in Pakistan for another 18 months. This is a result of the government's unsuccessful attempt (due to technical issues) in 2012 to auction 3G licenses. However, given that 3G is now 10 years old and most countries are switching to LTE, it is

anticipated that Pakistan's new government will attempt to license LTE services to the telecom sector by 2014. One of the constraints to LTE or 3G being rolled out across the country is the physical infrastructure that will be required to support its use. There are 45,000 towers that will require upgrading to provide 3G or LTE, an effort that will require massive funding by the five telecom operators in Pakistan. The box above provides an example of how access to broadband services and 3G can directly impact positive economic growth.

3G Fuels Economic Growth

According to the World Economic Forum's "Global Information Technology" report, 3G and broadband can revitalize economic growth. The report notes the important role governments can play in supporting this development, from funding broadband networks to addressing privacy and security issues. The report states, "An economy as a whole will eventually reap the benefits as remote rural areas are tied into the national network, resulting in new jobs and broader educational opportunities."

F5. LABOR MARKET

Thirty-six percent of entrepreneurs interviewed for this study complained of a disconnect between university programs and the general lack of business acumen of computer science and IT graduates. As noted by Ali Syed, the CEO from 7Wals, "the inability to recruit highly technical graduates is one of our biggest problems in the IT sector." These perceptions were confirmed by senior level individuals such as Dr. Saif, the chairman of PITB, who noted that although demand is growing, there is a supply-side constraint in terms of trained youth. AMEG's SME survey corroborated these statements; the survey indicates that 75 percent of firms rely on on-the-job training with new staff. On a positive note, Oracle, Microsoft, and other firms are delivering a variety of technical computer science classes that provide certifications for skills that are needed in the market.

TerraData

TerraData started its own training-of-trainers program at major universities in 2005 to create a curriculum on data warehousing/storage. Their staff developed a semester course on data warehousing including hands-on labs. TerraData still supports these universities and its staff does guest speaking. In 2013, TerraData wants to expand these efforts to colleges and universities in secondary cities.

Improved collaboration between industry and academia. Most firms interviewed complained that universities lack a sense of the technical skills the private sector needs. For example, there has been no significant expansion of computer science courses in the past three years despite, a major industry shift toward mobile computing. As a result, industry spends too much time training entry-level employees, making the sector less competitive. The private sector is undertaking some initiatives to address this issue (see box). Industry-led collaboration with the academic

community needs to continue and be further catalyzed. Several other examples are highlighted in the recommendations section.

F6. FIRM-LEVEL CONSTRAINTS

The SME survey indicates that the IT industry is divided about its competitiveness in the international market. Of interviewed firms, 38 percent noted that their prices were competitive with international competitors, but another 38 percent believe Pakistan is overpriced and under-productive compared to its competitors. Firm-level key informant interviews confirmed that internationally recognized management and standardized processes are one of the main firm-level constraints to the IT sector's export-led growth. Standardization and certification will also become increasingly important in the domestic market, as new internationally recognized brands enter and compete with Pakistani IT firms. And although PSEB has offered a Capability Maturity Model Integration (CMMI) certification process (see box), 64 percent of firms interviewed reported that they had never received support from PSEB.

PSEB CMMI Program

- Conducted three workshops introducing the CMMI certification process.
- Provided CMMI Level 2-4 consultancy and appraisal to five IT companies, with financial support to achieve CMMI certifications.

Internationally recognized standards. To tap the growing international market for IT services, Pakistani firms need to obtain recognized international certifications such as CMMI (see box). According to P@SHA, of the 2,441 IT firms in Pakistan, only 32 companies have ISO certification and only about 25 have CMMI. PSEB funded a certification effort that was largely ineffective in securing additional certifications. This issue needs more funding and technical assistance to keep Pakistan competitive in international and domestic markets.

Capability Maturity Model Integration

CMMI manages a process improvement training and certification program and service administered by Carnegie Mellon University. CMMI certification programs are recognized international standards throughout the industry and are used as a guide to process improvement across a project, division, or organization.

F7. BACKWARD AND FORWARD LINKAGES

As a service sector, the IT industry has two components to its forward and backward linkages. The main input for its operations is access to a qualified workforce. Seventy-five percent of firms reported that they have no problem accessing international markets. Innovation can improve these linkages organically (see the HomeTown case study below), but these types of initiatives need seed funding and technical assistance to capitalize on existing market conditions and increase the IT penetration into domestic and international markets.

There are several significant constraints in the domestic market, including the lack of computers at many SMEs; lack of awareness of how IT, social media, and other innovations can expand and improve their businesses; and the unwillingness to pay for IT support services such as ERP systems. The case study in the box below provides an example of a company that has addressed these issues with technical

assistance and guidance to small firms. HomeTown received funding through the Google grant fund (administered through P@SHA), and this model has the potential to be replicated and expanded. It is a unique demonstration model for the IT sector about the positive impact IT can have on a local firm's productivity, sales, and profit.

HomeTown Case Study

HomeTown is a social enterprise. Its founder, Mr. Waqas, is from a rural community and began a movement to teach and support small-scale shoe producers (one firm has 11 employees; the other has 15) to use the Internet and social media to reach new markets. Mr. Waqas took it upon himself to educate and update these small businesses, buying them laptop computers and setting up Facebook accounts, and is helping them upgrade production to export standards and create new designs based on international trends. With seed funding through the Google Fund managed by P@SHA, Mr. Waqas kick-started his company and is now working in the Plan9 incubator. HomeTown is also looking into how to help small companies use solar power.

HomeTown gives back a share of its revenue to the factories to help them buy equipment and upgrade production, and hopes eventually to work in other crafts (belts, handbags, wallets, and key chains). The HomeTown 2013 goal is to work with 200 small businesses.

After registering in the United States (at a cost of \$5,000), HomeTown will be allowed to use PayPal and open a U.S. bank account. A key remaining issue is the need for a payment system and access to finance: HomeTown needs to borrow \$100,000 to reach its 2013 goal. Lack of financing "may crush their business."

F8. CROSSCUTTING ISSUES

According to a 2010 USAID-funded study, "Pakistan's IT Sector: Increasing Women's Economic Participation," most female students in Pakistan have limited exposure to female role models from the IT sector. As a result, few have a vision for careers in this field. AMEG's survey revealed that women comprise about 20 percent of the IT sector, typically in design and programming (50 percent), although some are employed as assistants to programmers and skilled workers (40 percent). Another 10 percent of women in IT are employed as business analysts and in business development.

In the AMEG survey, reasons women did not chose the IT sector for employment included security, cultural inhibitions, issues with transportation, and scheduling (late hours are the norm in IT).

Upcoming trend. In the domestic market, there is a trend for youth and women computer science graduates to work through online IT platforms such as guru.com and e-freelance.com. These platforms offer youth and women the opportunity to work from home using their acquired skills, essentially becoming self-employed. Women and youth see these sites as opportunities to use their technical skills and earn an income; most receive payment through personal bank accounts or Western Union, due to the unavailability of PayPal or other online payment options. Key informants estimated that more than 5,000 new graduates are earning a living through such means.

F9. FINDINGS, OPPORTUNITIES, AND RECOMMENDATIONS

There are several opportunities for USAID to unleash cross-sector potential and catalyze growth in the industry.

Cross-sector impact: e-payment systems. Lack of access to a global e-payments platform restricts IT payment transactions across Pakistan's SME sector. Around 10 percent of the world's Internet transactions are processed by PayPal, and Pakistan is one of only five countries in the world that does not use a PayPal system. According to Inayat Hussein, director of payment services at the State Bank of Pakistan, there are no regulatory

Business-to-Business

Alibaba.com claims to be the world's largest online business-to-business trading platform for small businesses. The company's English language international marketplace brings together importers and exporters from more than 240 countries and regions. In addition, Alibaba.com offers a transaction-based wholesale platform, AliExpress, which allows smaller buyers to buy small quantities of goods at wholesale prices. The company claims that together these marketplaces have more than 79 million registered users.

restrictions for a PayPal or other global e-payment systems such as Alibaba to entering the country (see box). However, a significant gap remains in understanding and awareness of the importance of e-payment systems to industry and overall SME growth. There are also issues regarding the legal form through which new payment service providers may enter the country (i.e., to legally operate as a bank). Opportunities for USAID include the following:

Develop a program to offset the risk of a PayPal type company entering Pakistan. This activity, which could be funded through AMEG, could include

- Holding an international conference in Islamabad or Karachi to highlight the establishment of new e-payment platforms in Pakistan, discuss international best practices, and bring keynote speakers (including from PayPal and Alibaba) to discuss Pakistan's potential.
- Before the conference is held, writing a white paper on Pakistan's current e-payment systems and opportunities for future investment, in conjunction with the research being procured and undertaken under the ICT R&D Fund.
- Establishing a three- to five-year guarantee fund to support possible defaults from the initial implementation; this announcement could be made at the conference.
- Offer a Global Development Alliance (GDA) arrangement for a global e-payment provider to enter Pakistan, offsetting some of the risk of working in this market. In this arrangement, USAID could provide assistance in facilitating discussions with the State Bank of Pakistan for initial application into the country, as well as co-financing the setup of local offices.

Policy initiatives. The legal and policy regulations for IT are dated and weak, and there has not been a permanent IT minister in five years. USAID could support the advancement of this sector while working with the newly elected government in the following initiatives:

- The Prevention of Electronic Crime Ordinance was on the cusp of approval by the cabinet, but it is likely to be stalled until a new government is elected. (P@SHA presented the draft bill to a National Assembly Select Committee in February 2013.) This law will provide the stable foundation that is needed to advance a new global e-payment system. USAID could provide support and advice to the new government on the importance of this law and ensure its enactment.
- To encourage the government to nominate an IT minister to establish a forward looking IT strategy for the coming five years, a policy paper could be written that points to positive gains quantified in terms of increased GDP and economic productivity and reduced poverty. This paper should be shared, perhaps through a conference, with senior bureaucrats in federal and provincial governments and with elected members of federal and provincial assemblies. This could be funded as a standalone AMEG pilot activity.
- Support P@SHA to re-ignite its discussions with the government on approving a new unified IT and telecommunications policy to provide greater clarity to the private sector regarding investment into the IT sector. The Pakistan Electronic Media Regulatory Authority (PEDRA) will likely need to be involved in this process. In addition, provide funding to enable public-private dialogue and conclusion to this pending issue.
- Provide guidance and advisory assistance to the government to develop a nation-wide e-governance policy that would incentivize the use of IT across all government ministries and require the acquisition of these services from the Pakistani IT market.

Investment funding. Funding to support IT startups and “accelerate” successful models exist for USAID, such as:

- Holding a series of awareness and outreach meetings tailored to the IT sector (in major and secondary cities) to introduce opportunities to apply for funding under USAID’s Development Innovations Ventures model, which invests small amounts in untested areas and provides additional funding to those ideas proven to work. The workshops could be organized as two-day sessions, with the first day introducing Development Innovations Ventures and the second providing hands-on guidance for potential applicants. This activity could be funded through AMEG.
- Replicating successful newly formed incubator models such as Plug N Play, which operates as a nonprofit. This model is similar to PITB’s Plan9, but there will be a greater emphasis on mentoring and equity investment. Plug N Play has kick-started its efforts in Karachi and will host 40 to 50 IT firms in its premier space; its target market is new graduates, startups, and IT firms that are expanding and need adequate office space. Plug N Play will host training and mentoring events on skills development, legal advice, and financial management of the business. International and Pakistani equity investors will be introduced to participants and encouraged to take long-term positions in the new companies to help them accelerate. The founders of this initiative are interested in replicating

their model in smaller secondary cities (Sukkar and Multan), and estimate that they will need \$75,000 for each replication to break even. USAID could also provide technical assistance and training to support trainings and in-house events.

- Offering seed funding to new business accelerator programs, such as the Pakistani diaspora-founded Cloud9 incubator in Lahore. Cloud9 takes a unique approach to providing international linkages, mentorship, marketing and capital funding to IT startups. It plans to launch its incubator by mid-2013, hosting three graduates from Plan9. Cloud9 has a three-year business plan that includes three startup success stories by the end of 2013, and has invited HomeTown to participate. This model could be catalyzed with additional funding and marketing support to expand its impact across the IT sector into secondary cities.
- Providing three years of funding to P@SHA's LaunchPad initiative to expand into secondary cities. P@SHA holds LaunchPad events in Karachi, Islamabad, and Lahore, where young IT startups and aspiring IT entrepreneurs pitch an idea or new product. A panel of judges select the winning ideas or products; winners each receive a cash award of \$2,000 and are attached to mentors. Expanding LaunchPad would cost around \$75,000 to run it in six additional secondary cities for three years.
- Launching a Pakistan Diaspora Network as part of USAID's GDA Diaspora Network.
- Supporting the government's ICT R&D Fund, which needs a strong expert advisor to identify priorities in the sector, develop a three-year strategy, and establish commercially oriented selection criteria. Guidance will also be provided to guide the ICT R&D Fund in providing technical assistance to its applicants to enable the commercialization of their ideas. USAID could provide the fund with a long-term advisor with the knowledge and capacity to lead the Fund to alter and shape the future growth of Pakistan's ICT industry (see box). The ICT R&D Fund suggested this to be an ICT expert from the Pakistani diaspora.

International certifications. To tap the growing international market for IT services, Pakistani firms need to obtain recognized international certifications such as CMMI. Of the 2,441 IT firms working in Pakistan, only 32 have ISO certification, and about 25 have CMMI. PSEB has an ongoing but insufficient effort on CMMI certification (see box, next page). USAID interventions in this sector could include:

- Consulting support to P@SHA to develop a training of trainers to accredit CMMI auditors throughout Pakistan. Training of trainer events for consulting firms and industry leaders to further support the acquisition of CMMI certificates in Pakistan's IT sector.
- Establish a long-term partnership agreement with the Carnegie Mellon University and P@SHA to institutionalize the offering of CMMI certifications throughout Pakistan.

Helping the Ministry of IT

Part of support to the Ministry of IT — in conjunction with work with the ICT R&D Fund — could be to assist the PSEB. Both departments need to be led by a professional management team and board of directors. This would mean inducting more members from the private sector representing different segments of the IT industry, including consumers (i.e., representatives of education, health and business community). Boards of directors must be empowered to run these divisions independently, with little day-to-day interference by the government, in line with the mandate of these organizations (i.e., created as section 42, nonprofit government companies with independent management to enable more efficient and effective service delivery).

Workforce development. Considered of paramount importance for the IT sector's growth, several opportunities for USAID investment include the following:

- Replicating the Massachusetts Institute of Technology Enterprise Forum's business planning training in secondary cities. Support could include a grant of \$250,000 to expand the business planning training model to 20 secondary cities.
- Provide direct funding to help P@SHA institutionalize its Entrepreneurship Training and Mentoring program, which is being offered to aspiring entrepreneurs and companies. P@SHA is seeking to institutionalize the program through an online training program on entrepreneurship like that at the Khan Academy. P@SHA has already identified a Pakistani expert who holds an M.B.A. from Columbia University and has been teaching entrepreneurship in several Asian countries. Female voiceovers and female trainers will be used whenever possible, as one means of encouraging women to enter the IT sector for their careers. The cost of developing this program would be \$100,000.
- Provide \$200,000 to expand P@SHA's Career Expo into secondary cities and tailor outreach to female students. The Career Expo is a well-established program in Karachi, Lahore, and Islamabad; it includes a job fair, workshops on communication skills and interviewing, career counseling from leading CEOs, and brainstorming and pitching sessions for those interested in starting companies. Funding is needed to develop specialized promotional materials to showcase IT sector employment opportunities for women, and to expand the Career Expo to 10 secondary cities. P@SHA hopes to expand this activity to include placing students in IT firms as apprentices.
- Develop GDAs to facilitate links between industry and academia and specifically encourage the private sector to work with a group of secondary colleges to develop curricula, designed and led by industry experts. One example of this could be to support the newly established Karachi Institute of Technology and Entrepreneurship (www.kite.edu.pk), an initiative that is driven by IT industry veteran Afaq Ahmed to bridge the gap between industry and academics and integrate IT use throughout all curriculum and degree programs.
- Organize an annual conference to bring together relevant stakeholders (such as the Higher Education Council, industry, universities, and provincial education departments) to discuss developments in the IT industry. The conference could serve as a platform for sharing information across the industry and academic fields and address the chasm that exists between the two sectors in terms of providing

relevant and qualified students for the IT sector. A summary paper from this conference could further advance learning and knowledge sharing among academics, students, and the IT sector. This could include multiple parts:

- An advance survey of academics, students, and industry leaders to get firsthand input regarding industry priorities (carried out by P@SHA).
- A day devoted to industry leaders working side-by-side with academics to update current curriculum. This activity could be funded through AMEG.
- A portion of the conference could be used to invite students to attend and learn more about current and future technical requirements in the field, to address the gap in knowledge about the kinds of jobs that are available in computer science.

Awareness raising and networks. Yusuf Jan, a leading Pakistani IT entrepreneur, reported that Pakistan “does not think big enough, and that’s due to a lack of awareness of what can be done as an industry.” There is a unique opportunity for USAID to address the issue of lack of awareness and catalyzing networks in the IT sector through, in particular through funding to re-launch P@SHA’s online program, “P@SHA Unplugged.” This would cost about \$75,000. The show, previously titled “In the Line of Wire” showcased innovators from Pakistan’s IT sector as well as diaspora success stories. Sixty “In the Line of Wire” episodes already exist. Funding is needed to undertake research, conduct interviews, and edit and upload programs to the website. Specific funding requirements include the need to hire researchers, buy equipment, hire a local IT professional to design a website, undertake post-production work, and travel to different cities to conduct interviews. The documentation and promotion of these stories will provide role models for the sector; segments will be devoted to female entrepreneurs whenever possible.

Exhibit 41. Priority Recommended Interventions for the IT Sector Value Chain

Proposed Intervention	Expected Impact	Time Frame to Realize Impact	Key issues to Implementation	Sector Champion	Geographic Focus	Priority
Support upcoming business incubators	Create new support platforms for start ups	Short-term	Coordination with private sector actors	Plug and Play and Cloud9	Sindh and Punjab rural locations	High
Provide TA to the ICT R&D Fund	Expand R&D in the IT sector	Medium-term	Collaboration with the Ministry of IT and ICT R&D fund	Ministry of IT	National	High
Hold conference on global e-payment platform	PayPal or other provider to offer services in Pakistan	Medium-term	Conference organization and securing speaker on e-payment systems	P@SHA	National	High
Hold a series of awareness and outreach meetings tailored to the IT sector (in major and secondary cities) to introduce the funding opportunities to apply to USAID's Development Innovations Ventures	Create new opportunities for investment in the IT Sector	Medium-term	None	USAID	National	High
Organize conference to bring together industry stakeholders, academics, students on the need for strong industry-oriented curriculum program development	More practical, well trained IT professionals entering the market	Medium-term	None	TBD	National	High
Support the approval of an updated IT Policy	Create a more synchronized IT and telecommunications market	Medium-term	Address government issues regarding passage of the bill	P@SHA, Parliament, Ministry of IT	National	High
Institutionalize P@SHA's Entrepreneurship and Mentoring training program	Emphasize women's employment opportunities	Short-term	Provide grant funding and support	P@SHA	National	Medium

Proposed Intervention	Expected Impact	Time Frame to Realize Impact	Key issues to Implementation	Sector Champion	Geographic Focus	Priority
Build capacity of P@SHA to train CMM auditors	Expand international certifications of IT firms	Medium-term	Collaboration with Carnegie Mellon to provide TA	P@SHA	National	Medium
Establish a guarantee fund to offset the risk of a global e-payment provider	Encourage PayPal or other provider to offer services in Pakistan	Medium-term	Overcome the perceived risks and complications of working in Pakistan	P@SHA	National	Medium
Support the passing of the Prevention of Electronic Crime Ordinance (PECO)	Create a more stable and transparent digital operating environment	Medium-term	Address government issues regarding passage of the bill	P@SHA, Parliament, Ministry of IT	National	Medium
Re-Launch P@SHA's "Unplugged" series showing local IT innovators	Showcase women and other pioneers in IT sector	Medium-term	None	P@SHA	National	Low
Replicate MIT Enterprise Forum's Business Planning Training in secondary cities	Expand business acumen within student bodies of secondary cities	Medium-term	Negotiate with the MIT Enterprise Forum	MIT Enterprise Forum	Punjab and Sindh rural locations	Medium
Fund P@SHA's LaunchPad in secondary cities	Offer young IT professionals an opportunities to learn about sector developments	Short-term	None	P@SHA	Punjab and Sindh rural locations	Low

SECTION III

CROSSCUTTING ISSUES

A number of cross-cutting issues also affect the performance of the different value chains, including the business enabling environment, access to finance, and the availability and quality of infrastructure, particularly energy. While each of the specific value chains highlighted issues specific to its respective sector, this section provides a more comprehensive overview of these cross-cutting issues. The following sub-sections address the business enabling environment, finance, energy, and logistics. Annex E provides a comprehensive summary of findings related to energy and infrastructure. This section concludes with some recommendations on enhancing the framework for private sector coordination and public-private dialogue on such cross-cutting issues.

A. BUSINESS ENABLING ENVIRONMENT

Because many of the selected value chains have a strong external orientation, it is useful to first examine some overall policy issues affecting Pakistan's manufacturing sector, particularly the operation of SMEs. The country's trade performance and underlying policy issues, such as zoning and rental laws, are critical in this examination. Shedding light on these structural and policy issues, particularly on trade policy, reveals a pervasive incentives environment that could undermine any growth-promoting interventions to the selected value chains.

A1. Tax and Tariff Distortions

Large macroeconomic imbalances, domestic political instability, domestic security concerns, and regional tensions have hampered Pakistan's ability to realize greater gains from its trade reforms. This performance is attributed partly to Pakistan's arguably heavily distorted tax and tariff system. In particular, it has been demonstrated⁵⁴ that cascading principles — whereby relatively low tariffs are set for upstream industries and higher tariffs for downstream industries — are used in granting protection for industries (Pitigala, 2012). The unintended consequence is that the production of high value-added products is discouraged.

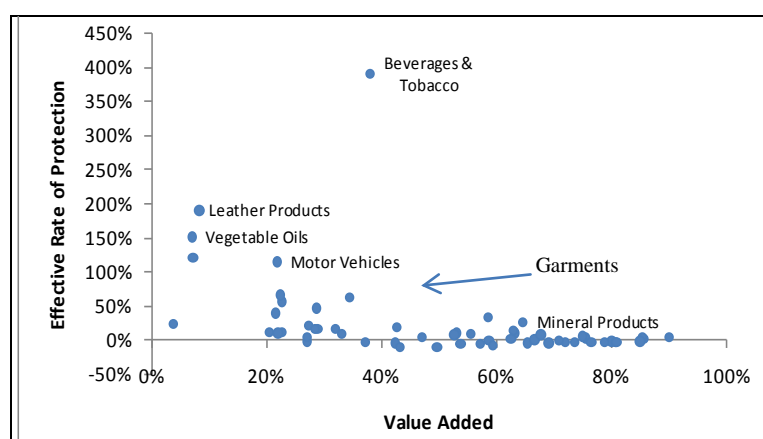
Effective rates protection, (taking into account protection on downstream and upstream industries) is typically exaggerated with low value added activities such that even quite low tariffs on final goods can lead to increased returns. As a result (as illustrated in Exhibit 42 below), sectors with high effective rates of protection tend to encourage low value-addition or, conversely, there is a higher incentive to produce goods with low value-addition. The fact that sectors with higher effective protection tend to be domestically oriented demonstrates an inherent bias against export sectors.

A good practice of domestic and export competitiveness and initiative underscores myriad policy tools and approaches employed around the world on trade,

⁵⁴Background paper for the forthcoming Pakistan Country Economic Memorandum.

macroeconomic policy, customs and logistics, and direct enterprise support (proactive measures that try to correct market failures and develop public goods e.g., technology creation and adaptation, product standards and certifications, export promotion, environmental and social standards). The assessment below is an attempt to highlight some of these systemic constraints across the value chains at both micro-and macro level and programmatic interventions that can spur private investment, growth, and employment generation.

Exhibit 42. Effective Rates of Protection and Value Added



A2. Zoning and Rental Policy

Pakistan has two zoning categories: residential, which allows only single-family housing; and commercial, which includes everything else. Zoning laws favor residential areas at the expense of commercial zones. Commercial development is discouraged by punitive taxation and obsolete rental laws. There is limited conversion of residential areas, as commercialization is on a plot-by-plot basis and comes with a large fee. Rental laws are unfavorable to landlords: rented properties are liable for multiple taxes (including stamp duty), which owners must pay, leading to a dysfunctional rental market characterized by few rental properties and high prices.

Building regulations are also stringent, prohibiting high-rise, dense, and mixed-use development, leading to excess demand for schools, offices, shops, warehouses, and the like. This is evident in these kinds of developments operating illegally in residential properties.

Such laws hinder entrepreneurship with their unfriendliness to new entrants and to commercial uses such as retail and warehousing. New entrants in other countries rent factory, warehouse, or retail space, but they do not do so in Pakistan. The explanation is threefold:

- Few rentals are available, particularly for factory space
- Available rentals are expensive
- There is a cultural tendency to own business space

These factors lead to the buying of land/space before operations begin, increasing the level of investment and risk for startup. Because of the challenge in accessing

finance, particularly for SMEs (see detailed discussion below), these costs substantially reduce the number of entrants to the market, and those who enter are overcapitalized, losing out on potential opportunities because of their limited liquidity.

A3. Doing Business

There are a number of cross-cutting business enabling issues that disincentives starting and operating a business in Pakistan, particularly for SMEs that bear a disproportionate share of costs relative to their revenues. The World Bank's *Doing Business Index*, which analyzes a number of the most common procedures and benchmarks Pakistan against other countries, provides some insight into these issues.

The most recent 2013 index ranks Pakistan 107 out of 185 countries, decline from 2012 when it was ranked at 104. Exhibit 43 provides a snapshot of Pakistan's Doing Business rankings against comparator economies and relative to the regional average.⁵⁵ A high ranking means that the government has created a regulatory environment conducive to operating a business. Pakistan does better than most of South Asian countries such as India and Bangladesh, but performs poorly among a group of peer countries such as Malaysia (12), Thailand (18) and Sri Lanka (81). The relatively low ranking can be attributed to a number of key areas, including property rights, construction permitting, employing workers, enforcing contracts, and bankruptcy.

Exhibit 43. Doing Business Rankings 2013

Economy	Overall Rank	Starting a Business	Construction Permits	Getting Electricity	Registering Property	Getting Credit	Protecting Investors	Paying Taxes	Trading Across Borders	Enforcing Contracts	Resolving Insolvency
Malaysia	12	54	96	28	33	1	4	15	11	33	49
Thailand	18	85	16	10	26	70	13	96	20	23	58
Sri Lanka	81	33	112	103	143	70	49	169	56	133	51
Pakistan	107	98	105	171	126	70	32	162	85	155	78
Bangladesh	129	95	83	185	175	83	25	97	119	182	119
India	132	173	182	105	94	23	49	152	127	184	116

⁵⁵ The ranking incorporates starting a business, dealing with construction permits, getting electricity, registering property, getting credit, protecting investors, paying taxes, trading across borders, enforcing contracts and resolving insolvency. The ranking on each topic is the simple average of the percentile rankings on its component indicators (see the data notes for more details).

The following sections provide a brief overview of each of these areas in which Pakistan underperforms and recommendations for removing constraints to doing business.

Property rights. The efficacy of formal property rights is one of the major obstacles to economic growth and investment in Pakistan. Effective administration of land is an integral part of property rights. If formal property transfer is too costly or complicated to implement, land transfers are likely to veer toward informality, as is observed in Pakistan. And where property is informal or poorly administered, it increases risk for investors and impedes access to finance if property rights over collateral are not clearly established. In Pakistan, issues of land titles and consolidation and acquiring land are often difficult and time consuming. Over the previous 5 years, Pakistan has actually made property registration more expensive, raising the capital value tax two times (2008 and 2011) to the current 4 percent level. The absence of proper land records impedes the efficient administration of property rights. For instance, the traditional/existing land information system in Pakistan is entirely based on maps and records in paper format, and uses outdated information and no cartographic standards. Commercial development in Pakistan is further discouraged by taxes, such as stamp duties, the uneven application of property tax, and outdated rental laws, as described in the previous section.⁵⁶

Construction permitting. The regulation of construction is critical to protect workers and the public. But it needs to be efficient, to avoid excessive constraints on a sector that has implications on all aspects of an economy. The Doing Business evaluation records the procedures, time, and cost for a business to obtain all the necessary approvals to build a simple commercial warehouse in the economy's largest business city in an economy (World Bank, 2013).⁵⁷ Using Karachi as a benchmark for Pakistan, there are 11 procedures—though small in number, these procedures take as many as 222 days at a cost of 216 percent of income per capita. Furthermore, 21 percent of companies have recorded providing “gifts” to the officials in order to obtain a construction permit in Pakistan. In time, cost, and money spent obtaining a construction permits, Pakistan fares poorly against some of the peer countries, such as Malaysia (37, 120, 37 percent), Sri Lanka (17, 216, 39 percent), and Indonesia (13, 158, 95 percent). Where complying with building regulations is excessively costly in time and money, some builders in Pakistan construct without proper permitting.

Employing workers. While Pakistan ranks fairly well vis-à-vis its peer countries in terms of hiring and firing practices (contract labor, overtime/holiday pay, severance requirements), the devolution of labor administration responsibilities to the provinces produces a very uneven mosaic of effective (i.e. enforced) legislation in each province. Legislation and labor administration systems need to be updated to develop characteristics of a more open economy populated by dynamic SMEs. The present legislation tends to burden SMEs with high and uncertain labor costs. SMEs' recourse to informal labor relations is just a reaction to these regulatory constraints. USAID

⁵⁶ NU Haque, 'Awake the Sleeper Within: Releasing the Energy of Stifled Domestic Commerce', *PIDE Working Papers*

⁵⁷ Ease of dealing with construction permits is the simple average of the percentile rankings on its component indicators: procedures, time and cost.

should promote awareness regarding the impact of labor regulations on employment and productivity, particularly on SMEs.

Access to credit. Absence of transparent legal rights for lenders over collateral and in bankruptcy proceedings and access to credit information on borrowers, can have a negative impact on access to credit financing, particularly for SMEs. When economies strengthen the legal rights of lenders and borrowers under collateral and bankruptcy laws, and increase the scope, coverage, and accessibility of credit information, they can increase SMEs' access to credit. In Pakistan, credit registries are limited in scope. The country performs better than most of the South Asia region, except India (which ranks 23rd). Malaysia ranks first place globally, with strong lender rights, a nationally unified collateral registry, and public and private credit bureaus that cover 56.1 percent and 81.8 percent of the adult population, respectively. Private registries cover only individuals and the public registry currently covers only 12.8 percent of adults, including 100,451 firms (Doing Business, 2013). Pakistan's lenders also have limited rights with respect to secured transactions, with no priority in the event of bankruptcy and are impeded in calculating their associated risks due to the absence of a functioning collateral registry.

Enforcing contracts. In the absence of an effective contract enforcement mechanism and a well-functioning judiciary, firms will prefer to interact only with those whose trust they have gained through past interactions, inevitably reducing the scope of commercial activity. Where contract enforcement is efficient, firms are more likely to engage with new borrowers or customers. Doing Business measures the efficiency of the judicial system in resolving a commercial dispute before local courts. Enforcing a contract in Pakistan takes 976 days, costs 23.8 percent of the value of the claim and requires 46 procedures. Globally, Pakistan stands at 155 in the ranking of 185 economies on the ease of enforcing contracts. Again, while much better than most of the South Asia region, Pakistan compares poorly to Thailand (rank 23, at 440 days) and Malaysia (rank 33, at 425 days), largely due to the drastically shorter length of time for judgments and enforcement.

Bankruptcy. A robust bankruptcy system functions as a filter, ensuring the survival of economically efficient companies and reallocating the resources of inefficient ones. Fast and cheap insolvency proceedings result in the speedy return of businesses to normal and increase returns to creditors. By improving the expectations of creditors and debtors about the outcome of insolvency proceedings, well-functioning insolvency systems can facilitate access to finance, save more viable businesses and thereby improve growth and sustainability in the economy overall. Doing Business studies the time, cost, and outcome of insolvency proceedings involving domestic entities. According to data collected by Doing Business, resolving insolvency takes 2.8 years on average and costs 4 percent of the debtor's estate,⁵⁸ with the most likely outcome being that the company will be sold piecemeal. The average recovery rate is 36.2 cents on the dollar. Globally, Pakistan stands at 78 in the ranking of 185 economies on the ease of resolving insolvency (Doing Business, 2013).

⁵⁸ The ranking on the ease of resolving insolvency is based on the recovery rate, which is recorded as cents on the dollar recouped by creditors through reorganization, liquidation or debt enforcement (foreclosure) proceedings.

A4. Recommendations

The following provides a general set of recommendations regarding areas of the policy and the business enabling environment that USAID could support to enhance the environment, particularly for SMEs, within the targeted value chains and more broadly across the economy. These are supplemented with more specific ideas embedded within each value chain chapter.

Trade policy. Given the high distortion in the incentive environment due to tariff dispersion and escalation, it is recommended that the tariff schedule be rationalized into a three-band structure (25, 10, and 0) with a medium-term target aimed at a uniform 10 percent across the board. Other measures to open the market include the removal of tariffs and quotas on yarn and streamlining duty drawback and suspension schemes to further reduce anti-export bias and free up working capital for more productive uses, particularly for SMEs. Being vested in the status quo of protection and subsidies, many special interests in the industry will resist such liberalization measures. It is therefore recommended that liberalization efforts be taken up in the context of broader tariff reform (across sectors) directly with the highest levels of government to align policies with the vision for trade policy, as articulated in the National Trade Policy Strategy. The Ministry of Commerce, which represents domestic industries, has been resistant to supporting reforms. As in other countries, a more appropriate avenue for undertaking such reforms would be through the Ministry of Finance, where the relationship with industry tends to be more neutral. For the private sector, attaining buy-in and advocacy support from the Pakistan Business Council, a more neutral entity than the private sector associations, in the form of Competitiveness Councils should be targeted. The World Bank has been active in promoting liberalization, and USAID can leverage its work to advocate for reforms and share in the delivery of technical assistance, including empirical analysis of the impact of reforms on sectors and the broader economy

Zoning and rental laws. There is a critical need to relax zoning and building regulations to allow land use to respond to market demand. Enabling dense, mixed-use development and eliminating rental laws that unjustifiably favor tenants would be essential in this context. Specifically, rezoning residential areas near city centers into “mixed-use” zones should be encouraged immediately.

Doing business. The following provides an overview of potential areas of intervention to improve the business enabling environment:

- *Property rights.* Advancement in e-governance could play a major role in streamlining and simplifying procedures and processes. Land cadasters must serve multiple purposes and meet the challenge of a modern GIS and IT environment. The development and implementation of a countrywide, digital cadastral information system is an area that needs urgent attention. The computerization of all land records at the district level can be the first step. After a record is computerized at the district level, it can be linked to the central data bank at the provincial and national level. At

the same time, the time required for land titling can be further reduced by centralizing land title records and creating a one-stop shop that brings under one roof the different steps associated with the process (including SECP, Land Registrar, Revenue Department, Excise Department and the local development authority).

- *Construction permitting.* The Doing Business index provides an indication of some of the key bottlenecks in the process of construction permitting—confirmation of land titling, property tax valuations, completion certificates) that can be reduced through different approaches (eGovernment, business process re-engineering, etc.) that would need to be defined based on a more in-depth analysis of the specific constraints at each step of the process.
- *Employing workers.* The devolution of labor administration can lead to uneven treatment. The development of standardized policies and procedures for labor inspections and other aspects of administration under the Factories Act, backed by effective monitoring, will be critical to ensure that inspections are transparent, consistently-applied, and not overly intrusive.
- *Access to credit.* Significant efforts are required to address the critical market failures that impede access to credit, particularly for SMEs. This includes three specific areas. First, the establishment of a centralized and publicly-accessible collateral registry (or registries) covering both movable and immovable property and any required amendments to secured transaction legislation that may be required to implement, regulate, and enforce such a system. In parallel, efforts to broaden the coverage of the credit bureaus are required to provide lenders with access to up-to-date information on the creditworthiness of potential borrowers.
- *Enforcing contracts.* The long waits associated with enforcing contracts in Pakistan can be attributed, to a great degree, to the large backlog in the Courts. While judicial reforms may be long and arduous to achieve, such delays can be mitigated (and actually reduced) through the promotion of alternative dispute resolution and strengthening of the profession to build credibility in the system, building on the IFC program to support the development of the Karachi Center for Dispute Resolution.
- *Bankruptcy.* A draft Corporate Rehabilitation Act has been drawn up by the Securities and Exchange Commission to make bankruptcy more efficient by approximating the U.S. system. Assistance to finalize the draft and advocate for its passage will be critical to reducing risk and facilitating new market entry.

B. FINANCIAL SECTOR SERVICES

B1 Background: Financial Sector Overview

Financial services are provided to SMEs through Pakistan's two tiered finance sector. Commercial banks, development finance institutions, Islamic banks, and microfinance banks are regulated by the State Bank of Pakistan (SBP). Nonbanking finance

companies⁵⁹ (NBFC), insurance companies, and modarabas⁶⁰ fall under the regulation of the Securities and Exchange Commission of Pakistan (SECP). As of June 2012, the aggregate assets of Pakistan's financial sector were PKR 11.6 trillion; of these assets, 89 percent fall under the domain of the SBP.⁶¹

The majority of Pakistan's population has limited to no access to any of these formal financial institutions' products and services. This is attributed to both supply- and demand-side issues: financial institutions have low risk tolerance, limited product innovation or flexibility, high interest rates, and collateral-based lending approaches while potential borrowers have low levels of financial literacy, inadequate exposure to financial institution's product and service offerings, limited collateral options, and an aversion to paying interest. A World Bank study on access to finance published in 2008 estimated that only 14 percent of Pakistan's population had access to any type of formal financial institution. Our survey findings support this trend, with only 10 percent of SME key informants having any experience borrowing from formal financial institutions.

B1a. Banking Sector

As of June 2011, Pakistan's banking sector consisted of 36 commercial banks (including 25 local private banks, four public sector commercial banks, and seven foreign banks), and four specialized banks with a total of 9,000 branches across the country.⁶² Additionally, Pakistan boasts eight microfinance banks and seven development finance institutions (DFIs). As of June 2010, there were also six Islamic banks operating in Pakistan, with assets reaching PKR 366 billion⁶³. Almost 80 percent of Pakistan's banking assets are held by private sector banks⁶⁴.

Islamic Banking

Islamic banking is guided by sharia law and charges no interest to customers, i.e., investors. In 2011, Islamic banks experienced 17 percent growth in Pakistan, the majority stemming from investing in government securities while overall lending slowed. According to the SBP, Pakistan's Islamic banks are "more solvent, liquid, and profitable than the rest of the banking sector." With PKR 560 billion in assets, Islamic banks hold 7.5 percent of the total banking sector's assets.

Due to Pakistan's ongoing fiscal problems, banks have increasingly lent to the public sector for its budgetary requirements. As of June 2011, 30 percent of banks' interest income came from government securities⁶⁵. This shift has been coupled with a trend to lend to larger corporations and less to SMEs and consumers.

These risk adverse tendencies are solidified by continued increases in banks' non-performing loans over the past five years; as of June 2011, non-performing loans

⁵⁹ NBFC include leasing firms, housing finance services, asset management companies, pension fund managers, real estate investment trusts, private equity fund managers, and investment banks.

⁶⁰ Modarabas offer a wide range of sharia-compliant financial products and services.

⁶¹ Report of Non-Bank Financial Sector Reform Committee: A Way Forward for Pakistan's NBF Sector, 2013.

⁶² Pakistan's Banking Sector, OSEC Business Network Switzerland, February 2011.

⁶³ Ibid.

⁶⁴ Financial Stability Review, State Bank of Pakistan, 2011.

⁶⁵ Ibid.

stood at 15 percent which has resulted in further restricted lending⁶⁶. According to the SBP, credit to SMEs has been consistently receding and in 2011 banks' lending to SMEs further declined by PKR 44 billion⁶⁷. These trends are summarized by the State Bank of Pakistan in its 2011 Financial Stability Review:

These facts underscore banks' growing risk aversion towards private sector credit risk which is ostensible riskier and less attractive when risk free investments offer decent returns. It highlights banks' receding role as financial intermediaries, particularly when viewed in terms of socially and economically desirable allocation of credit.

The textile sector is one of the leading borrowers in Pakistan, with around 18 percent share in the banking sectors' total loans; this sector also maintains significant levels of non-performing loans – standing at 27 percent as of June 2011.⁶⁸ Other significant commercial borrowers of credit include the energy sector and agribusinesses sectors.

Pakistan's official interest rate (discount rate) of 9.5 percent as of April 2013 has also led to uncompetitive SME interest rate offerings by commercial banks. High interest rates of commercial banks are noted as an important constraint by prospective small business borrowers. Businesses interviewed for this study noted commercial bank interest rates as high as 20 percent, which in turn, led to a disinterest in bank lending products. However, other intervening factors do impact SMEs' lack of interest in borrowing including high energy costs, lack of law and order, and poor overall economic performance.

Mobile banking. According to the 2011 report published by the Boston Consulting Group entitled, "The Socio-Economic Impact of Mobile Financial Services: Analysis of Pakistan, Bangladesh, India, Serbia and Malaysia", 71 percent of Pakistan's unbanked population could be served through mobile financial services. Indeed, mobile phones are becoming an important delivery vehicle for financial services in Pakistan. The World Bank's Consultative Group to Assist the Poor (CGAP) has deemed Pakistan's mobile banking sector a "laboratory of innovation".⁶⁹

Pakistan's mobile banking sector offers conventional and branchless banking. The conventional model entails banking services offered via mobile phones by commercial banks to their existing customers. As per the State Bank of Pakistan statistics, up to 11 commercial banks are offering mobile banking facilities to nearly one million mobile banking users in Pakistan as at June 2011.⁷⁰ The branchless banking model seeks to attract some of Pakistan's unbanked population with opening accounts to transfer funds (abroad and throughout Pakistan), as a safe haven for savings, and for small scale lending.

Mobile Insurance

Mobilinks is the only mobile entity in Pakistan offering insurance through its mobile services.

⁶⁶ Ibid.

⁶⁷ Ibid.

⁶⁸ Ibid.

⁶⁹ *Mobile Banking in Pakistan*, Business Recorder, March 2012.

⁷⁰ Ibid.

The branchless banking sector includes Tameer Bank's 'Easypaisa', United Bank Limited's (UBL) 'Omni' service, Mobilinks through Waseela Bank, and MCB. Tameer Bank was the first and largest microfinance bank to be registered in Pakistan and was the first bank to be given permission by the State Bank of Pakistan to start branchless banking operations. Tameer markets Easypaisa as a new form of community-level banking operating through 'corner shop' micro franchises. UBL announced its service in 2010 under the name of UBL Omni. In 2011, Orascom Telecom paid 1 billion rupees to purchase a license for a microfinance bank to offer branchless mobile banking services in Pakistan under the brand name of Mobilink Waseela. The First Microfinance Bank and Dubai Islamic Bank also have small branchless banking product offerings. Other new entrants are expected in the market soon – such as Visa. Monet is also planning to launch a new mobile financial service in mid-2013 which is being funded by the Abu Dhabi Group.

In a short period of time the branchless banking sector has seen considerable growth. As shown in Exhibit 44, the value of branchless transactions has grown by 139 percent in the 18 month period between December 2010 and June 2011.

Exhibit 44. Summary of Branchless Banking (BB) Recent Growth⁷¹

Activity	December 2010	March 2011	June 2011
Number of BB accounts	274	387	600
Volume of BB transactions (millions of rupees)	15	24	37
Value of BB transactions (millions of rupees)	57,160	84,992	136,658
Total number of BB agents	13,866	15,688	18,000
Number of cities covered	500	600	650

Branchless banking may play a key role in increasing financial inclusion in Pakistan. It was estimated in the Boston Consulting Group study noted above that by 2020, up to 600,000 new businesses could be created and a million new jobs generated as a result of expanded mobile financial services with a cumulative increase in GDP of \$3 billion.

For mobile financial services to really take off in Pakistan, existing banking regulations and prudential norms may have to be revised to enable coverage across the country. For example, branchless banking advocates suggest a revision to Pakistan's current legal framework to allow these services to be provided through non-bank financial institutions. Legal guidance on data privacy, money laundering, and consumer protection also need to be developed.

B1b. Non-Banking Finance Sector

Pakistan's non-banking financial sector is fairly weak. There are currently 26 modarabas (offering sharia compliant financing), eight leasing and seven investment finance/mutual funds in Pakistan.

Declining Lending to Leasing firms

Orix Leasing is the largest leasing firm in Pakistan. According to a key informant interview, Habib Bank recently rejected a loan request from Orix Leasing for 200 million rupees that would have significantly expanded its ability to lend to SMEs.

⁷¹ Financial Stability Review, State Bank of Pakistan, 2011.

The entire non-banking financial sector is highly constrained by a lack of liquidity, high cost of funds, and an inability to mobilize deposits⁷². The sector is also characterized by limited branch networks that constrain their ability to serve businesses outside urban areas. Non-bank financial institutions also must compete with commercial banks that offer some of the same services but at relatively lower prices; banks also have significantly larger infrastructure (e.g., branch networks) and a more positive image with the general public.

Non-performing loans in this sector are almost 27 percent, much higher than the banking industry average of 15 percent. According to the SBP, 47 percent of non-performing loans in this sector are from consumer loans. As a result, non-banks have also been faced with shrinking profits largely due to loan loss provisioning.

The leasing sector has been struggling for years, with declining liquidity and shrinking portfolios; leasing firms' total assets have gone from PKR 60 billion in 2009 to 33 billion in 2011⁷³. The number of leasing firms has also been declining due to several mergers with investment and commercial banks. Of the active leasing firms, four companies hold 81 percent of the sector's total assets with 57 percent of this attributed to the largest leasing firm, Orix Leasing. The vast majority of leasing firms are also incurring regular losses due to the high cost of borrowing coupled with high provisioning costs.

Equity Funds

Private equity and venture capital management funds are regulated by the SECP. The minimum capital requirement for a fund management company is 30 million rupees and is limited to a 15 year life. Equity funds can only invest in businesses which are operating as companies under the Companies Ordinance. In addition, minimum investments cannot be less than PKR 10 million and licenses have to be renewed every three years.

Pakistan has less than 200 registered investors in the capital market, insurance penetration – at less than .7 percent – is one of the lowest in the world, and private pension investors are less than 2,000.⁷⁴ Life insurance accounts for 74 percent of all insurance assets in Pakistan, with new companies now entering the market offering innovative and somewhat cheaper products.⁷⁵ Modarabas provide sharia-compliant financing/investment products for trading, import and export, and manufacturing have been relatively unsuccessful even with government sanctioned tax holidays.

There is only one commercially operating private equity fund in Pakistan. Some of the reasons for the inability of equity funds to succeed in Pakistan include various legal restrictions placed on their financial structure and management (see text box). Pakistan's single equity fund will soon be complemented by USAID's new Pakistan Private Investment Initiative (PPII) funds. PPII has been designed to provide capital and management resources to SMEs. Through this project, USAID plans to fund multiple equity investment funds along with management support and technical assistance. Under the PPII, USAID/Pakistan anticipates making several awards of \$24 million each to qualified fund management companies.

⁷² Report of Non-Bank Financial Sector Reform Committee: A Way Forward for Pakistan's NBF Sector, 2013.

⁷³ Report of Non-Bank Financial Sector Reform Committee: A Way Forward for Pakistan's NBF Sector, 2013.

⁷⁴ Pakistan's Banking Sector, OSEC Business Network Switzerland, February 2011.

⁷⁵ Financial Stability Review, State Bank of Pakistan, 2011.

B1c. Policy Environment

Pakistan has a strong policy and regulatory framework that guides the banking and non-banking financial sector's performance. Regulators continue to explore revisions to support financial sector growth and diversification. This includes overtures by the SBP to lower collateral conditions for lending and broaden the definition of lending. Additionally, the SECP has recently released a report with several significant policy reform suggestions.

The SECP's proposed regulatory changes are designed to further diversify Pakistan's financial sector. Specifically, SECP is proposing revisions on how investment advisory services (including equity funds) are licensed and regulated and that leasing and housing finance firms be allowed to mobilize deposits and be regulated by the SBP.⁷⁶ These changes would have the following positive outcomes:

- Lowering the cost of funds for leasing and housing finance institutions through the ability to mobilize savings
- Leasing, housing, and deposit taking finance companies would have access to SBP as a lender of last resort
- Uniformity of monitoring deposit mobilization and lending by SBP, leaving the SECP to monitor capital markets
- Enabling leasing companies' access to SBP's SME guarantee programs (see exhibit 43).

The SBP is also developing new policies to support commercial bank's lending to the small business sector. For example, SBP is proposing the adoption of uncollateralized lending of up to PKR 5 million and speeding up the loan approval process. SBP is exploring how to support banks to adopt credit scoring, cash/flow based lending, and the decentralization of decision-making for loan approvals.

This year, the State Bank of Pakistan also proposed new definitions for small and medium-sized businesses to expand the finance sector's interest in lending to this sector. The new definitions are:

- Small businesses - have employees of not more than 20 and annual sales of less than 75 million rupees
- Medium-sized businesses – have employees in the range of 21 to 250 and annual sales less than 400 million rupees.

These policy changes could have a significant impact in expanding capital to SME lenders and lowering their cost of funds. In turn, Pakistan's small and medium businesses will gain access to much needed credit to support technology upgrading, management training, targeted marketing, and business diversification.

B2 Access to Credit

⁷⁶ For more details on these comprehensive recommendations see: *Report of Non-Bank Financial Sector Reform Committee: A Way Forward for Pakistan's NBF Sector*, 2013.

Lack of access to credit has been recognized as one of the key limiting factors to Pakistan's SME sector growth. Pakistan's banking sector is characterized by limited lending to the private sector and balance sheets dominated by public sector debt.

Mobile Insurance

Mobilinks is the only mobile entity in Pakistan offering insurance through its mobile services.

The share of SME financing to total lending of commercial banks has decreased by 8 percent from 2007 to 2011.⁷⁷ Exhibit 45 confirms this trend, highlighting the banking sector's inability to tap into the State Bank of Pakistan's SME guarantee schemes to advance lending to small- and medium-sized businesses.

This issue has been heavily studied and analyzed with two key findings emerging: 1) SMEs do not have adequate access to credit to modernize their facilities and upgrade production processes and 2) banks are uninterested in lending to smaller firms.⁷⁸ In general, SMEs have limited access to or understanding of the value of financial services beyond simple banking; for example, few obtain financial advisory services or insurance.

Exhibit 45. Underutilization of the State Bank of Pakistan's SME Guarantee Schemes

Name of Facility	Total	Utilization
Credit Guarantee Scheme for Small and Rural Enterprises	PKR 4 million	15%
Scheme for the Revival of SMEs and Agriculture Activities in Flood-Affected Areas	PKR 8.7 million	4%
Refinance Schemes for the Modernization of SMES	PKR 10 million	3%

B2a. Demand for Credit and Advisory Support

Many of these reports' findings support our study's main conclusions: SMEs do not have adequate access to credit across all identified value chains. Specifically, our survey found that less than 10 percent of respondents had ever borrowed funds from a bank, MFI, or other formal financial institution.

According to the 2010 IFC/State Bank of Pakistan survey of SME financing:

Almost 80% of small and medium sized businesses do not borrow for working capital or fixed asset needs. Fifty-six percent of these same businesses noted the use of their businesses' working capital to finance all business activities, followed by

Lending in the Garment Sector

Based on the survey, some garment manufacturers do take loans from banks despite the high interest rates. Exporters can take loans against orders (e.g., factoring), if they have additional collateral to offer. However, banks seem to be ceasing their lending to the textile and garment industry due to high default rate over the last few years.

⁷⁷ NBF Association Statement to the State Bank of Pakistan, February 2012.

⁷⁸ Habib Bank noted that while they have a PKR 70 billion SME portfolio, most of this is for medium-sized firms.

32% financing supported through their own savings and from friends and family. Although 40% noted interest in having better cash management and collection services from banks.

SME owners do not understand or recognize the need to borrow. Based on our survey sample, more than 90 percent of respondents replied “no” when asked if there were any loan products they need from banks that are not currently offered. These answers are a result of a range of intervening factors including SMEs’ lack of awareness of financial product offerings. However, many respondents had approached banks for loans and were rebuffed by the high interest rates; for example, our survey indicated that in the garments sector, where profit margins are around 6-8 percent, bank loans of 17 percent to 24 percent were untenable. SME reluctance to borrow is also due to their perception that bank employees are unapproachable, the Islamic restrictions on paying interest, and the paperwork and bureaucratic complexities of applying for loans — including the opportunity costs of completing the paperwork and associated application fees.

Still, findings from this survey and the IFC review indicate a lack of capital available for SMEs to upgrade technology and expand their production lines. That is, there is a reluctance on the part of banks to lend to SMEs. Of the firms that noted any interest in borrowing, 28 percent needed funding for equipment and fixed assets and 20 percent for working capital.

The key financial services used by SMEs are bank accounts to save, send and receive funds.⁷⁹ The IFC study also indicated that SMEs have limited awareness or interest in commercial bank’s business advisory services. In fact, when asked directly about professional business advisory assistance the majority of those interviewed noted this came from friends, family, and other colleagues; no businesses were paying for professional advisory assistance. Almost half of those interviewed claimed to be unwilling to pay for business advisory services.

B2b. Supply of Credit and Financial Advisory Support

Financial institutions are largely uninterested in lending to a sector mostly represented by family-owned businesses that have no computerized accounting systems, limited collateral, unaudited financial statements, no credit history, and no business planning ability or financial projections. Small business loan size requirements are also unappealing to formal financial institutions. Lenders are also faced with high SME loan losses and daunting prospects of recovering loans when SMEs go bankrupt. According to the NBF 2012 Report on SME Finance, banks’ SME loans represent approximately 12 percent of their total portfolios.

Banks lending to the SME sector have experienced significant losses from lending to smaller businesses; for example, Habib Bank⁸⁰ noted that 20 percent of their SME loan portfolio is nonperforming and that the majority of this stems from small business.⁸¹ In addition, banks consider SMEs to be fairly high risk investment

⁷⁹ Ninety-six percent of those interviewed had bank accounts to manage their business transactions.

⁸⁰ Habib bank’s SME Portfolio is approximately 70 billion rupees.

⁸¹ El Falal Bank claims that much of the underperformance of the small businesses has been due to poor lending procedures that place too much emphasis on collateralization and not enough on projected growth.

opportunities vis-à-vis corporate clients and the risk-free investments in treasury bills.⁸² Pakistan's banking and non-banking sector make significant loans to the state which provides virtually risk-free investments and a 12 percent return. Pakistan's heavy public borrowing does have an impact in terms of crowding out private sector borrowing, especially with respect to SMEs. The lending to government as a percentage of the total lending of commercial banks has increased from 17 percent of their portfolio to 42 percent in the past four years at the expense of credit to the private sector, which as a percentage of GDP is one of the lowest (21.5 percent) in comparable economies.⁸³

Commercial banks in general have a risk adverse approach to SME lending and are guided by SBP's prudential norms requiring fairly strict collateral requirements. Lack of access to appropriate collateral is often cited by banks and SMEs as constraints to accessing financing.

The impact financial advisory services can have on SME development is well recognized by Pakistan's financial regulators. With the aim of addressing this gap in services, the SBP has engaged the IFC to support commercial banks to develop approaches to expand lending and advisory services to small business. The IFC is currently implementing direct programs with Habib Bank and El Falal Banks to develop new programs to serve smaller businesses with finance and advisory services. For example, IFC is working with Habib Bank to develop a new suite of financial services to assist smaller entrepreneurs access finance and expand their businesses. IFC is supporting Habib to develop a new business model for small and medium enterprise banking. They are also working with El Falal bank to change current staff attitudes and approaches to serving SMEs by launching advisory services throughout Pakistan's secondary cities; this will include financial and basic business advisory support to introduce small and medium-sized businesses to its financial service offerings.

B3. Recommendations

A general set of recommendations regarding access to finance and investment is provided below. These are supplemented with more specific ideas embedded within each value chain chapter.

B3a. Demand-Side Interventions

- *Develop an executive certification course on financial and business training through an industry-led partnership with local training institutions and universities.* This would be a very specialized series of sessions, held at night for industry executives, on accessing formal financial services (e.g., loans and business advisory services), the importance and financial impact of digitizing their financial and organizational functions, financial benefits of modernizing equipment (e.g., increased productivity, quality and energy efficiency), health and safety standards, human resource management (the employment process,

⁸² The SECP claimed that 40% of commercial banks' profits are derived from these risk-free investment alternatives.

⁸³ USAID PPII Program Description, 2013.

employee appraisal, incentives, and compensation), and marketing. While some of these basic issues are covered at the university and training centers, they have not had the necessary impact to change SME business owner perceptions and/or use of formal financial services.⁸⁴ An assessment and identification of interested organizations with the capacity to design and implement this program could be funded through AMEG.

- *Financial literacy outreach through value chain associations.* Develop tailored financial literacy training materials for identified value chains; collaborate with association champions to offer courses to its membership base. This course would offer broad knowledge of financial service options (Islamic banking, mobile banking) and the impact of borrowing on business development, expansion, and debt management.

B3b. Supply-Side Interventions

- *Assist banks to develop down-market lending programs.* This would include the development of less risk adverse lending strategies, lower collateral conditions, and new business assessment strategies (e.g., cash/flow based lending versus collateral based lending). The State Bank of Pakistan noted interest from Askari Bank, the National Bank and Aledia Bank to develop down-market SME lending programs; this training and technical assistance program could also be expanded to the Islamic Banking sector.
- *Re-launch interest in DCA in Pakistan⁸⁵.* Several years ago the DCA office conducted an assessment on the viability of launching a DCA in Pakistan. Although a DCA program did not materialize as a result of this effort, the State Bank of Pakistan claims there is renewed interest in a DCA and would like to re-examine the possibility of launching a DCA in Pakistan. This assessment could be supported by technical assistance from AMEG.
- *Conduct a study on innovative loan product offerings.* It has been argued that Pakistan's banks do not offer the range of loan product offerings needed by Pakistan's SMEs; for example, loans with flexible repayment terms or for fixed assets, and almost no equity investments. Banks also consistently use collateral-based methods of loan approval which can be replaced/supported through cash/flow based lending methods, credit scoring, or factoring. An assessment of alternative lending approaches should be conducted that includes documenting international best practices and providing recommendations for value chain specific types of loan/equity products; this study could be done in coordination with interested banks to ensure buy-in and ownership of its findings.

B3c. Policy Interventions

- *Support policy initiatives to expand liquidity options for non-bank financial institutions.* Examples include: (1) Supporting efforts to expand access to SBP's

⁸⁴ This is not just due to course content but the fact that most SME owners do not have degrees in business management.

⁸⁵ Habib Bank claims to be working with the IFC to establish a guarantee fund for its SME lending portfolio but there is a huge demand for this type of program to off-set the risk of lending to smaller businesses.

guarantee funds. Although the SBP and SECP are currently assessing this issue⁸⁶, our findings recognize the positive impact of allowing the SECP's regulated, non-bank financial services sector to have access to donor guarantee programs run through the State Bank of Pakistan. This sector is characterized by leasing firms and mudarabas which are at a disadvantage to commercial banks due to their inability to borrow from the commercial sector or mobilize savings resulting in a higher cost of funds which must be passed on to their clients⁸⁷. (2) Shoring up SECP's proposed revisions on how investment advisory services (including equity funds) are licensed and regulated and that leasing and housing finance firms be allowed to mobilize deposits and be regulated by the SBP.

- *Develop targeted interventions to support more streamlined bankruptcy policies and practices.* Recovering debt from bankrupt SMEs is an important issue for financial institutions with ingrained risk adverse lending strategies. According to data collected by Doing Business Pakistan, resolving insolvency takes 2.8 years with an average debt recovery rate of 36 cents on the dollar. Globally, Pakistan stands at 78 out of 185 economies on the ease of resolving insolvency issues.
- *Conduct an in-depth review of the legal and regulatory framework guiding mobile banking operations.* Experts contend that Pakistan's mobile banking sector could expand with a revision of the existing legal framework to allow these services to be provided through non-banks and new regulations to create greater transparency regarding data privacy and consumer protection.

B3d. Equity Investing

- *Angel/Diaspora investing.* USAID could launch a Pakistan Diaspora Network as part of USAID's GDA Diaspora Network. This would serve to attract Pakistani talent and financial investments into the sectors identified in this study.
- *Equity Investments for Startups.* Replicate successful incubator models such as Plug N Play and the Cloud9 programs (see description in IT section). These models emphasize mentoring and equity investment for IT startups. Plug N Play's target market is new graduates, start-ups, and IT firms that are expanding and need adequate office space. International and Pakistani equity investors will be introduced to participants and encouraged to take long-term positions in the new companies to help them accelerate. The founders of this initiative are interested in replicating their model in secondary cities (e.g., Sukkar and Multan), and estimate that they will need \$75,000 for each replication to break even. USAID could also provide technical assistance and training to support training and in-house events. Cloud9 is a Diaspora-founded incubator in Lahore, which offers seed funding to accelerate expanding startups. Cloud9 takes a unique approach to providing international linkages, mentorship, marketing, and capital funding for start-ups. This model could be catalyzed with additional funding and marketing support to expand its impact into secondary cities.

⁸⁶ See *Report on Non-Bank Financial Sector Reform Committee for Public Comments: A Way Forward for Pakistan's Non-Bank Financial Sector*, Securities and Exchange Commission of Pakistan, 2013.

⁸⁷ Banks are able to on-lend their clients' savings with a much wider profit margin than non-bank financial institutions, which are restricted from collecting savings.

- *Crowd-sourcing.* Explore the viability (e.g., legality) of small firms attracting equity investments through crowd-sourcing.⁸⁸ This is particularly relevant for the IT sector that is already assessing the legal complexities of utilizing this tool to further entice investment in firms seeking to expand and diversify their product offerings. This research could be undertaken through the AMEG mechanism which would require hiring a legal specialist to assess crowd-sourcing's legality and potential implications for SME equity financing.

C. ENERGY SUMMARY

This section summarizes some of the key issues and recommendations provided in Annex E.

C1. Background

Pakistan's energy problems are complex and are mainly based on the lack of a comprehensive and integrated energy strategy, and insufficient fiscal support for energy generation and infrastructure. The National Planning Commission estimates the gap in power availability for 2012/13 to be around 5,000 MW. This gap adversely affects businesses, especially SMEs and is estimated to reduce GDP by 3 percent a year. Lack of reliable and consistent power supply has an impact on the six value chains being considered under this project. Thus there is an immediate and urgent need to increase power generation capacity of Pakistan along with reducing losses (transmission and distribution losses at estimated at 30 percent).

C2. Policy Environment

The policy environment in the power sector and for private investment is well-established and is backed by sufficiently capacitated institutional capacity. The Government of Punjab recently enacted a PPP Law and has set up a PPP Cell in its Planning and Development Board to support its implementation. Similarly, the Government of Sindh has issued a PPP Policy that is supported by a PPP Unit. A Legislative, Institutional, and Regulatory (LIR) framework for private sector participation (domestic or foreign) in the power sector also exists. However, there is lack of private sector interest, especially by foreign independent power producers and captive power producers to invest in the energy sector.

There are important policy and debt constraints within the government repressing investment and production in the energy sector. The USAID-sponsored report titled, "The Causes and Impacts and Power Sector Circular Debt in Pakistan" identifies the causes of Pakistan's 'circular debt' which arises when one party does not have adequate cash flows (due to non-payment of bills by consumers, inefficiencies in operations, power theft) to discharge its obligations to its suppliers (for example, independent power providers) and withholds payments. When it does so, the problem

⁸⁸In a conversation with the SECP, it was indicated that this is a legal form to attract equity, e.g., the establishment of a Fund Management Company. Upon a review of the SECP regulations guiding this legal form, several impediments do appear to exist including the minimum paid up capital of 30 million rupees which may, in fact, defeat the mechanism's intention of gathering small amounts of funds from large numbers of individuals.

affects other entities in the supply chain, each of which withholds its payments, resulting in operational difficulties for the entire sector. As a result, the entire sector operates under capacity. The government of Pakistan has also not delivered on its sovereign guarantee to make these payments.

C3. Cost of Electricity for Consumers

Pakistan needs low cost fuel options to reduce the gap between the cost of power generation and prices end users pay for electricity. Reducing this “subsidy” will also have a direct impact on the country’s circular debt. In the 1980s, when the concept of independent power producers was conceived, 60 percent of the power generation was hydropower (with a much lower per unit cost of production). However, hydropower now accounts for only 28 percent of the country’s energy supply with oil-based generation accounting for 40

USAID Power Distribution Program

This USAID program is replacing old mechanical meters and damaged meters with state-of-the-art electrostatic meters in three government-owned power distribution companies (DISCOs) in Lahore, Faisalabad, and Peshawar. The overall program objective is to improve the commercial viability of DISCOs by improving the accuracy of energy billed to the customers and eliminating the need to estimate. This will improve consumer confidence and is expected to reduce DISCOs’ commercial losses and improve their profitability. (Source: Pakistan Daily Times, March 2013)

percent; at the same time, oil prices have more than doubled in the past ten years. The box (right) describes a recent USAID initiative to instill greater consumer confidence in Pakistan’s energy regulation and pricing.

B4. Captive Power Production

Captive power production (CPP) is gaining traction in Pakistan. It is estimated that at present 5,000 megawatts is being produced as captive power, however, it has been mostly limited to established large scale industrial groups that produce to meet its own requirements. There is an opportunity for captive power producers to produce excess capacity⁸⁹ and provide power to SMEs (currently using inefficient and expensive small-sized generators).

Captive power producers could sell excess capacity to creditworthy DISCOs such as the Lahore Electricity Supply Company (LESCO) to enhance their overall power availability⁹⁰, sell directly to private clients through arrangements with DISCOs, or directly to end users. According to Aamir Qawi - former member, board of directors, GENCO and Power Dispatch Company - DISCOs, as part of their distribution license conditions, are obligated to make their network available for ‘wheeling’ excess capacity of captive power producers to their clients with whom they have direct agreements. The 2006 Renewable Energy Policy also describes the process of

⁸⁹Currently, existing CPPs currently have no incentives to invest in generating surplus energy. This is because the investments in efficiency improvement or capacity expansion are not viable without a user that will buy the surplus electricity from the plants. During our mission, many industrialists expressed that they don’t see a clear and proven business model for selling their surplus.

⁹⁰ However, until now, CPP power is has mostly been more expensive than the power that DISCOs can purchase from the Central Power Purchas Agency/National Transmission and Dispatch Company. Thus DISCOs risk reducing their profit margins (or increase their losses) by buying electricity from CPPPs.

executing wheeling contracts. According to him the problem is not legalistic but procedural and managerial. There is also a lack of expertise in setting up energy sales contracts with private parties, drafting wheeling contracts, and establishing the physical interconnection with private clients via DISCOs. In any case, selling to a private client through a wheeling contract seems to be feasible because:

- The tariff is negotiated between the private actors—and private clients may be willing to pay a higher tariff for receiving a continuous electricity supply. It minimizes the risk that the regulator wouldn't set adequate tariffs as the tariff could be agreed upon contractually between the private parties.
- There is no need to go through NEPRA—electricity would be wheeled from the seller to buyer through the transmission lines owned and operated by the DISCOs. The wheeling charges that the DISCOS will charge would however be set periodically by NEPRA.

B5. Recommendations

Potential interventions for USAID in the energy sector are extensive, including:

- Support the government to establish a Pakistan Infrastructure Financing Facility (PIFF) to attract long-term multi-donor and investors into the energy and infrastructure space. PIFF would develop power and infrastructure business plans to donors and investors on the viability of lending and investing in this sector. IFC has shown interest in participating in such as facility in the past.
- Promote donor and IFI guarantee products to support the government's sovereign debt requirements. For example, an IBRD Partial Risk Guarantee (against risk of Government failing its financial obligations), or IFC's Partial Credit Guarantee that could raise credit rating of IPPs.
- Support and facilitate CPPs that can produce power at around the same benchmark tariff as that being currently provided by DISCOs. Such as funding technical and feasibility studies to establish CPPs. These power production units have the flexibility to switch from one biomass fuel source to another, based on their seasonal availability, as well as using coal.
- Support U.S. firms to enter the CPP market and to offer renewable energy technologies and power production units for CPPs⁹¹. Solar and wind power could be an affordable source of power for businesses that operate during day-light hours.
- Support joint ventures between U.S. and Pakistani businesses to set up facilities in Pakistan to produce smaller (i.e., producing 5 to 20 MW) power generation turbines. This could be a flagship project under the first special economic zone (SEZ) that would be set up under the newly enacted SEZ Act of 2012. As a

⁹¹The Alternate Energy Development Board (AEDB) has registered a non-profit company to operate as a 'fund', called the Alternate Energy Development Fund (AEDF) for supporting renewable energy.

starting point, USAID could undertake a feasibility study to study the viability of such an option.

- Support undertaking a financial and technical feasibility study (incorporating and updating all previous studies) of importing power from India. This study could become a catalyst for negotiating arrangements between the two countries leading to a mutually beneficial arrangement⁹². This initiative could take advantage of newly enhanced commercial and cooperative relationship with India and explore opportunities of importing energy from India. For example, Pakistan's Inter State Gas Systems (Private) Limited (ISGS) and Indian state-owned utility GAIL (India) Limited signed gas sale and purchase agreements with Turkmenistan for the Turkmenistan-Afghanistan-Pakistan-India (TAPI) pipeline.
- Disseminate USAID's findings on the 'economic value of natural gas in various sectors' undertaken under the Energy Policy Project and educate policy makers to promote policies that encourages the best economic use of gas to ensure adequate availability for power generation.⁹³
- USAID could assist the Government in designing, developing and raising financing for a liquid natural gas terminal (with a gasification plant) at Karachi port on a public private partnership basis. The 'private' component of the PPP could have a U.S. port/liquid natural gas terminal operator in partnership with a suitably qualified local private party. An ideal solution would be a joint venture between a U.S. gas company and a local private sector energy firm.

Short on Gas

According to the National Planning Commission, Pakistan witnessing a gas shortage due to the misallocation of natural gas and low growth rate in supplies. Low gas supplies have been replaced with expensive oil imports (oil import bill has increased by about 250 percent since 2005).

D. LOGISTICS SUMMARY

Transport and logistics are important to trade competitiveness as both factors contribute to the cost and quality of goods produced. Improved logistics systems can play a critical role for Pakistan's economic expansion. While logistics primarily serve the private sector to function efficiently they also play a critical role for the public policies of national governments and regional and international organizations.

While Pakistan's transportation sector is functional, the poor quality of roads, insufficient port performance, stagnant rail system, and restricted domestic air transport is estimated to cost the economy 4 percent to 6 percent of GDP each year.⁹⁴ Logistics, which encompasses freight transportation, warehousing, border clearance,

⁹²This study could be undertaken through AMEG.

⁹³This could be undertaken through AMEG.

⁹⁴ Pakistan Transport Sector, World Bank

<http://web.worldbank.org/WBSITE/EXTERNAL/COUNTRIES/SOUTHASIAEXT/EXTSARREGTOPTRANSPORT/0,,contentMDK:20699058~menuPK:869060~pagePK:34004173~piPK:34003707~theSitePK:579598,00.html>

payment systems, and many other functions is important because it facilitates access to markets and can increase competitiveness of goods.

Pakistan ranks 71st on the Logistics Performance Index (LPI) for 2012. The LPI focuses on country performance in the transport/logistics chain areas of: infrastructure, customs, international shipments, quality and competence of logistics services, ability to track and trace shipments, and timeliness. However, Pakistan is a top 10 performer among other lower middle-income countries as seen in Exhibit 46.

Exhibit 46. Top 10 Lower-Middle-Income Performers

Economy	2012 LPI			2010 LPI			2007 LPI		
	LPI rank	LPI Score	% of highest performer	LPI Rank	LPI score	% of highest performer	LPI rank	LPI score	% of highest performer
India	46	3.08	66.4	47	3.12	67.9	39	3.07	64.9
Morocco	50	3.03	65.0	N/A	N/A	N/A	94	2.38	43.4
Philippines	52	3.02	64.8	44	3.14	68.8	65	2.69	52.9
Vietnam	53	3.00	64.1	53	2.96	63.1	53	2.89	59.2
Egypt	57	2.98	63.3	92	2.61	51.8	97	2.37	43.0
Indonesia	59	2.94	62.2	75	2.76	56.5	43	3.01	63.0
Yemen	63	2.89	60.3	101	2.58	50.8	112	2.29	40.4
Ukraine	66	2.85	59.3	102	2.57	50.6	73	2.55	48.7
Pakistan	71	2.83	58.4	110	2.53	49.1	68	2.62	50.7

Regionally, Pakistan is less competitive than India, South Asia's top performer, particularly in the area of timeliness, tracking and tracing, and logistics competence. Pakistan's major export competitors—Malaysia, Vietnam, and Turkey—also display a competitive advantage in these areas. Some of the key trade logistics issues in Pakistan which affect transport costs/time and the cost of logistics services include:

- Age and condition of the transport fleet and serious overloading of trucks
- Congestion in urban areas and in the Lahore-Karachi corridor, and poor rural mobility
- Ineffective state railway monopoly carrying only 3 percent of the total cargo traffic
- Efficient terminal operators, but costly port systems
- Limitations on the range of logistics services available
- Restrictions on the provision of bonded transport.⁹⁵

According to the World Bank, connectivity in Pakistan features great geographical disparities. Outside the system connecting specialized markets Karachi-Lahore-Islamabad-Sialkot-Peshawar, which is relatively well functioning, trade logistics services are generally poor. The national logistics hub in Pakistan is located in the south of the country. As one moves north and west in the country and away from the core national corridor, access to high quality infrastructure and services diminishes. In the relatively lagging regions, plans to grow exports in niche products such as fresh produce for instance, would require that measures are taken to better connect the remote areas to main export gateways. Given the nature of some of the prospective

⁹⁵World Bank, Pakistan Growth and Export Competitiveness, April 25, 2006; pp 135-139

export commodities, which have high volume to weight ratios and the distances involved (e.g., marble), improving domestic connectivity is key to addressing the Pakistan's basic logistical challenges.

D1. Recommendations

- *Enhance Pakistan International Freight Forwarder Association (PIFFA) training programs.* PIFFA was formed in December 2004 and is the sole representative trade body of the Freight Forwarding and Logistics sector of Pakistan. PIFFA established a training institute in 2005 that offers a diploma in international freight forwarding certified by the International Federation of Freight Forwarders (FIATA) and taught by FIATA-certified trainers with industry experience. This eight-month course priced at PKR 30,000 provides both theoretical and practical training in the subject. Approximately 300 people have been trained to date. USAID can provide PIFFA with investment in its institutional capacity to support the running of its vocational training course to promote professional education and experience, essential to providing quality logistics services.

Training covers 14 modules including: Introduction to Freight Forwarding, Maritime Containers, Sea Freight, Multimodal Transport, Air Freight, Road Transportation, Rail Transportation, Logistics Transport, Customs Procedures, Inland Waterways, Insurance, Safety & Security, Dangerous Goods by Air/Sea, and Information & Communication Technology. Areas of possible support include building their IT capabilities, training support, equipment, and business development and fundraising. Karachi freight forwarders could significantly benefit from funding for training, which would invariably help improve logistics performance.

- *Explore dry ports and railway expansion with a logistics cluster based approach to aid the expansion of exports such as marble and leather.* Efficient road and rail services and strategically located cargo consolidation facilities can help SMEs exploit economics of scale. The Sialkot dry port is a good case study and managed by the private sector. The Sialkot area has three major industrial complexes in Pakistan: sports goods, surgical instruments, and tannery industries. In 1984, a common logistics system, or dry port facility, was built by 52 exporters. The facility provides customs clearance services on site and easy access to air, road, and rail. It is one of the most sophisticated and efficient logistics operations in Pakistan. USAID could support the feasibility of similar dry-port facilities closer to the Marble hub in Peshawar or Baluchistan.
- *Lower logistics operational costs.* USAID can support the government to address some of the key challenges noted above and lower SMEs' overall operational costs. The lowering of logistics costs encourages current and new exporters to have economical access to export markets. A sound logistical transport system also fosters the integration of domestic markets (i.e., enabling the expeditious movement of goods internally) — important for the herbal, garments, and marble value chains. By helping reducing trade costs, upgrading the quality of services, and improving connectivity with foreign export terminals Pakistan can offer its SMEs and international firms a reliable infrastructure base from which to transport its goods.

- *Improve port performance.* Pakistan’s stated average clearance time is much higher than the two to three days prevalent in most efficient ports around the world. If trade in time sensitive products such as textile and agriculture products is to grow, clearance times have to be significantly reduced. Improvement of port operations and customs procedures is key to reaching this objective. In particular, it would be beneficial from a trade logistics perspective if a unified and comprehensive customs system was introduced and operational across the country. This would enable the private sector to develop and invest in appropriate interfaces to the system. Critical, but still lacking, is the introduction of the following: an effective risk management system, a formal authorized economic operators’ regime, and an expedited regime for transit shipments. USAID can help through technical assistance to enable more cargo to be cleared inland thereby reducing bottlenecks at the seaports and land borders, and increasing the effectiveness of the clearance procedures and allowing for greater cooperation between shippers and customs officials. As Pakistan is developing trade links to the Central Asian Republics in the north, these systems will be valuable strategic support for economic growth.

E. ENHANCING THE FRAMEWORK FOR PRIVATE SECTOR COORDINATION AND PUBLIC-PRIVATE DIALOGUE

While many of the constraints highlighted in each of the value chain assessments may be resolved directly by key value chain stakeholders, as discussed in this section, there are a number of crosscutting issues that transcend individual value chains and impede the development of competitive and sustainable sectors, and would require action by the government of Pakistan to resolve. Currently, there is no institutionalized framework to promote transparent public-private dialogue on competitiveness. Dialogue tends to be piecemeal and/or limited to traditional private sector bodies, such as chambers and/or the more powerful sector associations.

Many countries have instituted competitiveness councils or similar advisory bodies to provide government with strategic inputs to developing policies to support a competitive private sector. Such councils can also act as a “sounding-board” for major policy initiatives. The merit of a competitiveness council is not just its broader scope—such councils typically comprise prominent members of the business and research community and have access to the highest levels of the decision-making apparatus in a country, typically the prime minister’s or presidential office.

For example, in the Philippines, the National Competitiveness Council was formed by executive decree in 2006 as a public-private task force to address the improvement of the country’s competitiveness. The council is co-chaired by the trade and industry secretary (a minister-level post) and a prominent private sector representative. Its working groups cover a broad range of private sector competitiveness issues, including trade and customs, business licensing, anti-corruption, among others. The council maintains strong links to academia, which plays an important role in providing policy research and analysis to back the policy agenda. Similarly, in Indonesia, the Export Expansion and Investment Promotion (PEPI) council was established to formulate policies and evaluate strategic issues related to export and

investment promotion with a mandate to engage government in regulatory issues at the policy formulation stage. PEPI has been credited with remarkable recent successes in preventing some the punitive regulations that are in violation of WTO obligations.

The activities of such councils include both sector and functional working groups, with some permanent and others ad hoc, as may be deemed necessary. Working groups ensure that the right expertise can be brought to the table to discuss specific policy issues—including academia and technical experts—and can also ensure deeper participation from a wider swath of the private sector.

While there is no single “best” approach to council formation of this type, successful competitiveness councils tend to share a number of characteristics that should be considered in Pakistan:

- Councils are typically of relatively small size (15 to 20 individuals at most) and include representatives from the public sector, the private sector, academia, and labor to encourage multiple perspectives and inclusiveness.
- Councils typically have a bi-partisan, multi-partisan, or non-partisan composition. This helps build consensus in the country around the goal of competitiveness while also allowing it to survive a change of government.
- Councils should be recognized by the government, enabling the council to exert real influence over government policy. This does not always necessitate that government officials formally sit on the council. In Ireland, for example, links between the council and the government come via direct meetings between the council chair and the prime minister, while senior civil servants attend council meetings and participate in deliberations.

The various options should be further evaluated within the Pakistani context, along with an effort to identify potential champions from the public and private sectors. In the case of Pakistan, the country’s Planning Commission, which carries the broadest mandate in terms of private sector-driven economic development, may be the most logical “home” for such an initiative on the public sector side, but broader public sector engagement should include agencies such as the BOI and SMEDA, as well as other line ministries responsible for relevant aspects of the competitiveness agenda.

ANNEX A

SCOPE OF WORK

I. OBJECTIVE

USAID/Pakistan is seeking a thorough assessment of the potential of the development of non-agricultural value chains to create employment and raise incomes. The assessment will look at specific environmental, management, technological, labor force, financial, marketing, and infrastructural constraints hindering the development of non-agricultural value chains.

II. BACKGROUND

Business enabling environment includes norms and customs, laws, regulations, policies, international trade agreements, and public infrastructure that either facilitate or hinder the movement of a product or service along its value chain. Business enabling environment at the national and provincial level encompasses policies, administrative procedures, enacted regulations, and the state of public infrastructure⁹⁶.

USAID/Pakistan defines⁹⁷ “Business Enabling Environment (BEE)” as a short phrase that encapsulates the complex set of factors that support economic, social, democratic, or other sustainable growth and development, more specifically:

Enabling Environment is an overarching concept that includes activities that facilitate improvements in:

- Policies, laws, regulations and dispute resolution mechanisms;
- Support institutions’ service capacity; and
- Public infrastructure

which results in the improved competitiveness of value chains driving economic growth.”

III. ACTIVITIES AND DELIVERABLES

TASKS

Task 1: Identify at least 10 and preferably up to 20 major non-agriculture value chains based on current and potential economic importance. Identify the specific BEE, management, technological, labor force, financial, marketing, and infrastructural issues hindering improvements in the competitiveness in specific value chains.

Substantiate the reason for the selection of the value chain through an analysis of market potential and how constraints to the realization of that potential from the BEE,

⁹⁶ <http://microlinks.kdid.org/good-practice-center/value-chain-wiki/business-enabling-environment>

⁹⁷ Policy Working Group, USAID EGAT Office, Pakistan.

management, technological, labor force, financial, marketing, and infrastructural issues could be resolved or at least mitigated. The economic importance of the value chain shall be based on the value chain's potential contribution to growth in employment and income. The criteria for selection of value chains are as follows:

- Employment potential
- Increase in income potential
- Geographic location
- Trade & competitiveness potential (domestic; regional and international)
- Scaling up and growth potential for micro-, small-, and medium-enterprises
- Time, cost, and level of difficulty involved in improving the BEE
- Multiplier effect, linkages (upstream / downstream), and number of firms and supporting players (associations, academia, public sector departments etc.)
- Environmental sustainability

AMEG will survey the small and medium enterprises (SMEs), chambers, and other business support organizations; academia; banks; and public sector in the target value chains to answer the questions presented in Section VIII. Additionally, the task will be facilitated by the many existing analysis of the economic potential of specific value chains done by donor projects such as FIRMS, Entrepreneurs, PISDAC, the Competitiveness Support Fund, International Financial Institutions, multilateral and bilateral organizations, and Pakistani organization such as SMEDA, TUSDEC, and sector development companies.

Task 2: Make recommendations for an implementation strategy to resolve the BEE, management, technological, infrastructure; financial, marketing and labor force constraints to the development of the selected value chains. This could include:

Macro BEE Issues: Prioritize policies, laws, and regulations for reform based on:

- Potential impact
- Time frame required to show measurable impact
- Ease of reform and implementation
- Resource requirements

Firm-Level Issues:

- Recommend how management of businesses in the value chains needs to be improved through compliance with international standards of management and production.
- Recommend what investments in the means of production are needed to make the value chains domestically, regionally, and internationally competitive.
- Recommend specific capacity building interventions including technical as well as financial support for business support organizations including academia, chambers, associations, etc. for improving their long term capability to deliver services;
- Generate information on potential synergies between proposed and existing programs being undertaken by other stakeholders (donors etc.) in which USAID/Pakistan can become a partner; also look at how interventions by other

USAID projects run by different technical offices can be leveraged for economic growth;

- Identify Public Private Partnership opportunities to improve infrastructure that would remove critical constraints to the development of prioritized economic sectors and value chains;
- Propose a private sector engagement strategy to mobilize private sector resources to address the identified technical and BEE constraints;
- Identify local NGOs, think tanks, universities and other local resources that could be enlisted to remove the identified BEE, management, technological and labor constraints;
- Identify specific opportunities for investment in Pakistani companies by U.S. firms, specifically SMEs; plus what incentives would U.S. firms, especially energy firms would need to invest in Pakistan;
- Identify how the selected value chains will impact the employment and income of women, youth, and vulnerable groups.

DELIVERABLES

1. Inception Report: Evaluation Plan, Work Plan, and Methodology

AMEG will suggest a technical approach that best addresses the goals of the scope of work. USAID's intended uses of data must guide the assessment design and the types of methods that are used. It is anticipated that proposed assessment methods will employ some or all of the commonly used assessment methods such as: statistical data analysis, interviews, direct observation, focus groups, surveys, secondary data collection, and/or group discussions.

AMEG is encouraged to consult and use the sources of data that relate to small and medium enterprise growth, share in the national economies, barriers to doing business, and costs of doing business. These may be available from the Pakistani national and provincial governments, semi-governmental development organizations like SMEDA, TUSDEC, NPO, EDB, NIP, PIDB, PSDF, TEVTA, PVTC, PCSIR, AHAN, and other sector development companies; think tanks and research institutes, the World Bank, the U.K. Department for International Development, the ADB, United Nation's specialized agencies; and USAID projects (past and present).

In particular, the team will consult with the Pakistan FIRMS project initially to review any reports completed through the project on non-agricultural value chains. Any potential synergies between the FIRMS and AMEG work should be identified in this initial stage. In the event that AMEG selects value chains previously assessed by FIRMS, AMEG will build on the existing research identified by FIRMS and update it as appropriate, coordinating with FIRMS during the process

Data may also be available from Pakistani NGOs such as local business associations and the American Chamber of Commerce. It is anticipated that AMEG will cross check the secondary data with primary data collected by the team.

2. Draft Report: A draft version of the final evaluation, to be presented to USAID/Pakistan for comments

3. **Presentation of Final Report:** A power point presentation that briefs USAID on AMEG's findings and facilitates acceptance by USAID of the final document.
4. **Final Report:** the final report incorporating comments by USAID/Pakistan and distributed to final stakeholders.

AMEG will prepare a 100 to 150 page report (exclusive of attachments) that responds to the tasks. The document will include relevant statistics, summaries of discussions with various stakeholders, and AMEG's narratives supporting conclusions drawn as well as recommendations for interventions. The attachments should also include all corollary information supporting the analysis in the main report such as contact details, as well as sample questionnaires, and so on.

Based on its review of the analyses conducted, AMEG will also include in the document any overall recommendations that will enhance prospects for a successful project focused on the development of specific non-agricultural value chains.

IV. ROLES OF PERSONNEL

The evaluation team, consisting of team leader, economic analyst, value chain expert, labor economist, and supporting local technical and administrative staff in addition to at least one local research/survey firm, will collect and analyze local data related to BEE including management, technology, infrastructure, marketing, and finance and labor constraints as it affects the economic potential of selected value chains at the provincial level.

- **Nihal Pitigala, Team Leader:** the team leader/evaluation specialist will be responsible for the overall design of the evaluation and technical management of the evaluation team, as well as for the development of methodological tools and instruments such as interview sheets or questionnaires, data processing sheets, etc. The team leader will also liaise, as necessary, with USAID/Pakistan
- **Janice Stallard, Value Chain Expert:** The value chain expert will provide sector-specific expertise as well as provide input into the methodological / design aspects of the evaluation. He will conduct interviews and work to generate qualitative data, review research, and make recommendations based-upon the existing business enabling environmental constraints.
- **Andrew Batchelor, Veenita Kaushik and Ambreen Gilani, Economic Researchers:** The economic researchers will conduct desk research, provide quantitative data and support to interviews and field surveys. They will review research and data and draft findings for the final report.
- **Aijaz Ahmad, Infrastructure Value Chain Expert:** Due to the particular nature of the infrastructure value chain, an infrastructure expert will conduct a two week assignment to structure and provide input into this particular value chain.
- **Gustavo Marquez, Labor Economist:** A labor economist will be added to the team around week five in order to provide input relating to the labor market constraints facing selected value chains as well as their employment potential.

- **David Fischer, Chief of Party, and Melissa Scudo, Project Director:** The chief of party and project director will provide supervisory and technical input into the reports and additionally to the overall buy-in scoping. Their supervision and technical oversight will be conducted from Washington, D.C. with no anticipated travel to Pakistan.

The team will meet with value chain projects' staff, with federal & provincial line departments and semi-governmental organizations such as SMEDA, TUSDEC, PSDF, TEVTA, PVTC, AHAN, PCSIR, PIDB, EDB and other sector development companies; business associations, donors, SMEs and International Financial Institutions, to understand the main general and sector specific business constraints.

AMEG will also engage up to two (2) local partners support background analysis, provide a local perspective, and carry out surveys, workshops and meetings with businesses, associations and government officials. These organizations may be based in Sindh and/or Punjab.

V. REPORTING

During this assignment, all consultants will report to AMEG Chief of Party David Fischer, or his designee. David Fischer will report to USAID/Washington Activity Manager Bill Baldridge and USAID/Washington Contracting Officer's Representative Dany Khy.

VII. PERIOD OF PERFORMANCE AND LEVEL OF EFFORT (LOE):

This field assignment will take place over nine weeks from on/about January 22, 2013 through on/about March 27, 2013.

Consultants will perform the assignment in Washington, D.C., their places of residence, and in Pakistan. The estimated LOE required for the assignment is detailed in budget (see Section IX). The LOE includes time for in-country work, travel, and writing/desk research/supervisory work from the United States as necessary. A six-day workweek is assumed in this budget.

VIII. QUESTIONS FOR SURVEY

The following issue areas will form the basis of the questions utilized to survey SMEs, chambers and other business support organizations, academia, banks, and public sector target value chains.

MACRO BEE ISSUES

- Identify major policies, laws and regulations hindering the development of the selected value chains
- Identify missing legal and institutional support mechanisms necessary for the development of the selected value chains
 - Identify the role is being played by business support organization including chambers, associations and academia in addressing the BEE

- impediments to economic growth of the selected value chains and what support can be provided to these institutions to improve service delivery
- Identify limitations in infrastructure, which act as a constraint on growth
- Identify the major financial and marketing issues, which limit competitiveness
- What, if any role is being played by academia in the growth of the enterprises
- What initiatives are being undertaken in specific value chains to address the BEE impediments to economic growth and how can the entrepreneurs be supported in their efforts

FIRM LEVEL BEE ISSUES

- Evaluate how up-to-date is equipment being used in the value chains
- Assess whether the businesses in the value chains are operating according to international best practices of management and production
- Determine if the labor force in the value chains have the skills required if that value chains are going to be internationally competitive

IX. PERSONNEL

A. Nihal Pitigala, Team Leader

An international economist, analyst, and practitioner with over 15 years of experience in providing analysis, technical assistance and capacity building to support sustainable trade-led development, especially regional and multilateral trade agreements, export growth and diversification, value chain and vertical production, economic governance, and poverty reduction in developing countries. Currently engaged at the World Bank providing advisory and analytical work on a number of countries in South Asia and the Middle East. Formerly was a consultant at Development Economics Research Group at the World Bank and an economic advisor to the Sri Lanka Board of Investment.

B. Janice Stallard, Value Chain Expert

A value chain expert with over 13 years in the field working on value chain development, access to finance, enterprise development, policy reform and competitiveness, and gender issues. Overseas positions include senior management roles as Chief of Party and Deputy Chief of Party for various USAID-funded projects and in locations such as Bangladesh, Burkina Faso, Ghana, India, Pakistan, Sri Lanka, Egypt, Central Asia, South Africa, and Vietnam. Bringing a solid grounding in the methodological principles of the value chain approach, has implemented value chain assessments and trainings in: Armenia, Ecuador, Egypt, Laos, and Pakistan. Knowledgeable in the analysis of systemic issues pertinent to enterprise development, such as: the business enabling environment (laws, regulations, policies, and public infrastructure), accessing private investment capital and finance, technological considerations, environmental conditions, and gender issues.

C. Veenita Kaushik Economic Analyst

An international development professional with 10 years of project management, contract support, writing and reporting as well as technical research experience in Pakistan, Nigeria, Sudan, South Sudan, Tanzania, Ethiopia, Uganda, Zambia and the

United States. Demonstrated ability to implement research in the field and manage subcontractors. Experience managing all implementation phases of complex projects in economic growth, food security and democracy/governance sectors. Served as in-country director of operations for the DFID-funded Nigeria PrOpCom and presently home-office manager of MARKETS II, USAID's flagship economic growth program in Nigeria Possesses in-depth understanding of USAID value chain and DFID "making markets work for the poor" approaches to development. Well-versed in contracting mechanisms and regulatory framework governing prime contracts, subcontracting, personnel policies, travel, and allowances. Experience reviewing and reporting financial information to the client.

D: Ambreen Gilani, Local Economist

An *international* development professional with over 10 years of experience including staff positions at the World Bank and United Nations. She has worked on development projects as well as development policy in a spectrum of areas ranging from local infrastructure development and governance to crisis recovery and private sector development. She has written on development issues, contributed sections to economic reports and assessments and managed analytical sectoral policy papers at the country level. She has experience working in the South Asia, Middle East and Africa regions. Specifically she was involved in the Pakistan Investment Climate Assessment carried out by the World Bank in 2002. She was also involved in value chain assessments for key agricultural crops.

E. Aijaz Ahmad, Infrastructure Specialist

A private sector specialist with over 20 years of experience in project finance, infrastructure development, public private partnerships (PPPs), privatization and private sector development., focusing on conducting investment needs and options analysis; evaluating project feasibility studies; preparing project procurement documents; evaluating investment proposals and bids; negotiating contracts; drafting standardized contracts; developing enabling policies and strategies; drafting legislation, regulations, guidelines, practice notes and operating-procedures; providing hands-on technical assistance throughout the entire investment project life cycle; developing and running training and capacity development programs; developing communication strategies, and facilitating stakeholder consultations.

F. Gustavo Marquez, Labor Economist

A senior economist with 16 years of experience in labor market analysis and policy. Nine years' experience conducting labor market assessments for USAID and the World Bank. Professor of Economics at the Universidad Argentina de la Empresa (UADE). Acted as Principal Labor Advisor at the Research Department of the Inter-American Development Bank from 1995 until October 2008. Worked on research, development, and execution of projects related to labor market and social security reforms, social policies, and social protection programs in Latin America. Conducted research projects on development and implementation of feasible methodologies for the evaluation of labor market training programs in the region. Worked on the design and implementation of labor market policies. Present research efforts are focused on the issue of social exclusion, about which he directed the 2008 flagship IPES report.

X. NON-AGRICULTURAL VALUE CHAINS

The following represents an initial list of promising non-agricultural value chains to be considered for inclusion in the assessment.

1. Furniture
2. Auto parts
3. Generator engines
4. Surgical instruments
5. Plastic pipes
6. Sanitary fittings
7. Fans
8. Garments
9. IT
10. Energy
11. Minerals (dimension stones, gems, metals)
12. Leather
13. Building supplies

ANNEX B

SURVEY GUIDELINES

This tool provides the AMEG VC assessment team general guidelines when discussing specifics with key informants. It was developed to support interviewers through government, private sector and organizational interview formats.

General/Introduction

What is your knowledge of sector X? What has been your involvement with the sector? What changes have you seen in the last 5 years? What do you attribute these changes to?

End Markets: What are the opportunities of this sector for further growth and development? Where are these end market opportunities?

Policy and BEE

What are the main policy issues that govern this sector? What are policy issues that constrain this sector's growth (export/import duties, customs, trade policies, financial regulations restricting lending to the sector, taxation, access to technology). What suggestions do you have in terms of areas that need to change/improve to support this sector's growth?

Support Institutions— make a distinction between what services are being provided in the formal versus informal market.

What is the range of business development services available to support this sector (accounting, technical assistance, marketing)? Are there services not available in Pakistan that are needed to support this sector's advancement? Do businesses in this sector have access to financial service products? Are there collateral restrictions that inhibit businesses from borrowing (for equipment loans, etc. that are needed to upgrade?) To what extent is additional financing available to support sector upgrading? How do firms in the sector gain access to market intelligence? Are there firms that specialize in this? To what extent are the necessary processing, packaging, export services available to support this industry's production for export? What is lacking?

Infrastructure

What are the key infrastructure constraints to the growth of this sector? Transportation, electricity, airports, telecommunications, port, etc. What are on-going efforts or investments (government or private) to address these constraints? What still needs to be done?

Labor Market

Does the Pakistani university and vocational training programs offer the type of courses needed to support the growth of your industry? Are technical skills lacking in this sector that inhibit growth; what are these?

Organization and Management (firm level constraints)

Who is the manager of your firm and their background? How is your firm organized to maximize efficiency? Do you regularly assess your firm's productivity levels? What changes would you like to make to improve the management of your firm?

Technology

What are the technology related constraints to the advancement of this sector? Does this have to do with hardware/software issues? What are some ongoing efforts or investments (public or private) to address these issues? What still needs to be done?

Forward/Backward linkages

Do firms have difficulties obtaining the needed inputs for their production (e.g., quality of inputs, availability of inputs, costs of inputs)
To what extent is there strong inter-firm cooperation (participation in associations to advocate for policy changes)
What is the role of wholesalers, traders, middlemen in this sector; of international distributors?
Does the private sector have the access it needs to international and/or regional markets to support the growth of this VC? How can this be improved?

Gender

What is the role of women in X sector? Is this an industry that is cultural suitable for women to work in? Do women have the required skills to work in this sector? Do women play a role in the backward or forward linkages of this sector?

Environment

Are there environmental issues of concern with respect to the production of this product or service? What are these? Do you know of studies relevant to this issue?

Champions:

Who are the stakeholders who have the incentives, skills, resources and power to help drive/make the needed investments to upgrade this VC?

Conclusion – please ask the interviewee if they have any additional comments or suggestions they would like to make.

ANNEX C

MINI-SURVEY QUESTIONNAIRE

Introduction and Consent

Good Day,

My name is _____ and I am working for Grant Thornton which is a management consulting firm engaged in conducting management research for policy-makers. We are currently conducting **a survey of selected value chains across Pakistan, with a view to assessing the issues and challenges faced by companies within the value chains.** Your company has also been selected for this survey.

The purpose of this survey is to assess the financial and other issues being faced by the SMEs so that supportive measures may be taken through capacity building and other initiatives aimed at providing financial and technical support to the SMEs for their growth and sustainability. Your views will provide data on where support can be provided and will lead to improvements at the sector level.

Participation in this study is voluntary.

We would appreciate if you could participate in this survey, and give your valuable inputs on your business and sector.

This questionnaire will take around 30 minutes.

Confidentiality:

We assure you that information provided by you will be kept strictly confidential and will be used only for research purposes only.

Name of Interviewer: _____ **Date:** ____ / ____ / ____
(Day) (Month) (Year)

Interview Start Time: _____ **PM/AM**

A. BASIC INFORMATION

1	Name of the firm/establishment:																		
2	Name of Company's owner																		
3	Name of Contact Person(s)/ Respondent(s):																		
4	Designation of Respondent(s): <i>Note: Please take the respondent's visiting card and attach it with the filled questionnaire</i>																		
5	Registered Office Address																		
6	City																		
7	Telephone No(s)																		
8	Fax No(s)																		
9	Email Address																		
10	Please classify your main business under the following sectors?	1. Garments 2. Leather 3. Cutting and shaping stone (Marble) 4. Herbs/Botanical medicines 5. Ceramic ware, sanitary 6. Medical and surgical instruments 7. Furniture 8. Information technology																	
11	When was this business established?	1. < 1 year 2. 1 to 3 years 3. 3 to 5 years 4. 5 to 10 years 5. >10 years																	
12	In 2012, what percentages of your total revenue came from products/services were:	1. Sold Domestically 2. Exported	% %																
13	Do you have easy access to international markets?	1. Yes- (Skip to Q17) 2. No																	
14	If no, why not? <i>List the constraints</i>																		
15	How can these constraints be removed?																		
16	Is there a collaboration of companies within the sector to compete locally or internationally?	1. Yes 2. No																	
17	What are the key raw materials needed for your business? <i>Please denote which ones that are imported (with country in brackets).</i>	<table border="1"> <thead> <tr> <th>Raw material</th> <th>Code</th> <th>Country</th> <th>Code</th> </tr> </thead> <tbody> <tr><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td></tr> </tbody> </table>	Raw material	Code	Country	Code													
Raw material	Code	Country	Code																

Please describe your workforce using the following definitions:

Professionals:		Trained and certified specialists and professionals / degree holders in relevant disciplines. Includes managers (persons making management decisions), but exclude supervisors.				
Skilled worker:		Skilled workers lower than management (such as technicians or supervisors)				
Unskilled worker:		Persons involved in non-technical jobs				
		Total	Contractual	Professionals	Skilled Workers	Unskilled Workers
18. Total number of workers at the end of 2012						
Of which	% of Male					
	% of Female					
19. What are your hiring or firing plans for 2013?						
	Hiring %					
	Firing%					

		Professionals	Skilled Workers	Unskilled Workers
20. What is the MONTHLY average salary (PKR) of your employees for the last two years?				

B. END MARKETS

How much of your sales is made to: <i>(Write percentages)</i>	1. Processors	%
	2. Middle men	%
	3. Wholesalers	%
	4. Retailers	%
	5. Others	%
Where do you sell the majority of your product or service? <i>(Write percentages)</i>	1. Sind	%
	2. Punjab	%
	3. Baluchistan	%
	4. KPK	%
	5. All of the above	100%
Do you trade/sell outside of the country? <i>(Write countries and percentages where applicable)</i>	1. Yes – <i>Where?</i> 2. No	1. Asia 2. Europe 3. North America 4. South America 5. Australia 6. Africa 7. Other (Specify) _____
Do you expect growth in end market demand?	1. Yes 2. No- <i>(Skip to Q6)</i>	
If yes, which segments do you anticipate growth in?	a)	
	b)	
	c)	
Who are your top three competitor(s)?	a)	
	b)	
	c)	
How are your competitor products/services different than yours in terms of: Indicate Comparison by: 1. <i>Better</i> 2. <i>Equally good</i> 3. <i>Worse</i>	Indicator	Comparison Rank
	1. Quality	
	2. Value for Money	
	3. Use of imported or domestic inputs	

C. BACKWARD LINKAGES AND FORWARD LINKAGES

i. Backward Linkages

1	Which service do you rely on to produce your final product or service	Key Areas/Players	Specify sector or sub-sector	Do you have any problems with obtaining access to this services	What impact do these problems have on your business?
				1= no problems 2=Some problems 3=regular problems 4=extremely bad	
		a) Accessibility to alternative suppliers			
		b) Distribution networks (Specify if these are retailers, wholesalers, middlemen or other)			
		c) Government Services			
		d) Other			

ii. Forward Linkages

2	How do you sell your product and to whom, and which other services facilitate this process?	Key Areas / Players	Specify sector or sub-sector	Do you have any problems with obtaining access to this services 1= no problems 2=Some problems 3=regular problems 4=extremely bad	What impact do these problems have on your business?
		a) Distribution networks (Specify if these are retailers, wholesalers, middlemen(traders)or other)			
		b) Freight Forwarders / Transporters			
		c) Exporters			
		d) Government services			
		e) Other			

iii. *Company Value Added Survey*

This part of the survey should obtain value addition at product level. Please provide following data for one or two main product categories **per unit** and **please provide for the main Product manufactured (If known)**.

	Example
Product Name and HS Classification	Leather Jacket
Price of Product (ex factory), per unit of output	PKR 1000
Cost of Imported Material (please list)	Chemicals 40 Thread 20
Cost of local material (please list)	Dye PKR 50

D. POLICY AND BUSINESS ENABLING ENVIRONMENT (BEE)

	Are there policy or regulatory issues that you feel need to be changed?	1. Yes 2. No – (Skip to Section E)	
	If Yes, what kind of changes do you want to see and why (i.e., what would be their impact?)	Changes Needed	Impact
	<i>Labor Policies</i>		
	<i>Technology</i>		
	<i>Regulations, customs duties, Taxes, etc.</i>		
	<i>Land</i>		
	<i>Business/Exit Entry</i>		
	<i>Legal Issues</i>		
	<i>Finance</i>		
	<i>Energy & Fuel</i>		
	<i>Others</i>		

E. SUPPORT INSTITUTIONS

	Are you a member of any of the local business association(s) / trade body?	1. Yes 2. No		
	If Yes, please list the names of Associations your business belongs to:	a)		
b)				
c)				
d)				
	Do you pay for any type of consulting service or business service?	1. Yes 2. No		
	What kind of help / assistance do you receive from the government, sub-government institution (Chambers) or private institutions? If Yes, please indicate: 1. <i>Good</i> , 2. <i>Average</i> 3. <i>Poor</i>	Assistance/Help	1: Private 2: Government	Quality of Assistance
		1. Tariff related support		
		2. Legal Assistance		
		3. Technical Assistance		
		4. Research & Development Support		
		5. Acquiring International Standards		
		6. Export support (for international fairs and exhibitions)		
		7. Packaging services		
		8. Academia, think tanks		
		9. Processing		
		10. Market Intelligence		
		11. Others (specify)		
	What specific assistance do you require to improve sales and profitability?	1. Providing information about domestic policy and regulations		
		2. Providing information about international regulations and agreements		
		3. Providing domestic market information		
		4. Providing overseas market information		
		5. Delivering your industry's collective views on the policy to the government		
		6. Delivering your industry's collective views to improving the service delivery of public institutions (e.g. utilities, vocational training, R&D)		
		7. Arranging business meetings with local business representatives		
		8. Arranging business meetings with overseas business representative		
		9. Others (Specify)		

F. ACCESS TO FINANCE

	What is the average annual turnover for the last three years?	<ol style="list-style-type: none"> 1. <10M 2. 10-50M 3. 51-100M 4. 101-200M 5. 201-300M 	
	What are your primary business funding needs? Select from list	<ol style="list-style-type: none"> 1. Working capital / Overdraft 2. Long term Equipment financing 3. Project financing 4. Trade Finance 5. Business vehicle financing 6. Others. Specify: 	
	What sources do you use to fund your business? Please specify % of funds coming from these sources	<ol style="list-style-type: none"> 1. Banks 2. Finance companies 3. Money lenders 4. Family members/Friends 5. Own savings 6. Cash flow from this business 7. Cash flow from other businesses I own 8. Government programs/NGOs 9. Other. Specify: 	
	What are types of fixed assets that you need to be financed?	<ol style="list-style-type: none"> 1. Buildings 2. Machinery and equipment 3. Furniture and fittings 4. Office and business equipment 5. Vehicles 6. Others. Specify: 	
	And what are the types of working capital finance requirements?	<ol style="list-style-type: none"> 1. Finance of letter of credit (LC) to import raw material 2. Finance of letter of credit (LC) to import finished goods 3. Letter of guarantee (LG) on the purchase of raw materials or finished products 4. Export Financing 5. Others. Specify: 	
	Do you currently (or previously) use(d) a bank for any of your business needs?	<ol style="list-style-type: none"> 1. Yes 2. No 	
	Does your business have a bank account? If not, why not?	<ol style="list-style-type: none"> 1. Yes 2. No, I do not need one 3. No, I have tried but been turned down 4. No, I do not want to try, it is too complicated 5. No, other reason. Specify: 	
	Have you ever obtained a loan facility from a bank for meeting funding requirements of your business?	<ol style="list-style-type: none"> 1. Yes 2. No(reason) 	
	Has the bank ever rejected your loan application? If yes, how many times and why?	<ol style="list-style-type: none"> 1. Yes (reason) 2. No 	
	What loan products have you used in the past for your business?	<ol style="list-style-type: none"> 1. Trade finance services / Letters of Credit 2. Lease 3. Letters of Guarantee 4. Personal loan / overdraft 5. Business loan 6. Business overdraft/Running Finance 	

		7. Equipment purchase financing/ equipment	
		8. Vehicle financing (loans, leasing arrangement)	
		9. Receivables financing (bill discounting, etc.)	
		10. Business Credit Cards	
		11. Others. Specify:	
	<p>What has been the average turnaround time for availing the loan facility?</p> <p><i>(Turnaround time is the number of days taken during the bank loan process. From time of approaching bank first time till disbursement.)</i></p>		
	What was the type of collateral required by the bank?	1. Property 2. Cash 3. Bonds/shares 4. Machinery 5. Stock 6. Land 7. other	
	What type of interest rates were you charged by the bank on your loan facility?	1. Fixed 2. Variable (Please specify percentage)	

G. INFRASTRUCTURE

1	What are the infrastructural constraints that adversely affect your business?	Constraint Description	Degree of Obstacle
	<p>0 = No obstacle 1 = Minor obstacle 2 = Major obstacle 3 = Very Severe Obstacle</p>	1. Law & Order/Political Unrest	
		2. Poor quality of raw materials	
		3. Unstable supply of raw materials	
		4. Unstable supply of electricity	
		5. Unstable supply of water	
		6. Unfavorable traffic conditions/ Public Transport	
		7. Limited skills and education of workers	
		8. High turnover ratio of workers	
		9. Outdated machinery and equipment	
		10. Poor storage facilities	
		11. Limited access to financing	
		12. Regulatory policy uncertainty / Tax Burden	
		13. Others (Specify)	
2	What are the impacts of these constraint(s) on your business and the sector as a whole?	Business Impact	Sector Impact
3	What are the infrastructure investment opportunities available to help this sector grow? Describe.		

H. LABOR MARKETS

1	What are the percentages of your labor force according to the following education levels?	1. Post-graduate degrees			%
		2. Under graduate degree			%
		3. Intermediate FA/FSc			%
		4. 10 th grade			%
		5. Middle			%
		6. Primary			%
		7. Less than the 5th grade			%
2	Do you conduct training for your staff?	1. Yes 2. No- <i>Why not?</i>			
3.	Please answer as per the following:	Which training providers do you engage for training purposes? <i>(list names, accreditation, facility or program, specialization)</i>	Are the programs in your city adequate to meet the needs of your industry? Yes /No	Is there enough skilled labor for your sector? What are the specific types of skills that are lacking? Yes /No	What changes or additions are needed in the current training and academic curriculum to better meet the needs of your industry?
	Formal Training				
	Informal Training (on the job, apprenticeships)				
	Vocational Technical Training Programs				
	Skilled Labor				

I. ORGANIZATION AND MANAGEMENT

1	What level of formal qualification has your key management staff obtained either from a vocational institute or a University?	1. Masters 2. Graduate 3. Diploma 4. Others (Specify):	
2	What are the key organization or management constraints your business faces? <i>(Indicate severity level)</i> 1=Major Issue 2=Minor Issue	Issues/ Constraints 1. Employee issues 2. Administrative issues 3. Sexual Harassment 4. Inefficiencies in production / services 5. Politics 6. Lack of planning 7. Lack of innovation 8. Leadership issues 9. Disciplinary issues 10. Corruption 11. Fraud 12. No strategic direction 13. Lack of trained staff 14. Employee retention issues 15. Salary issues 16. Others	Severity level:
3	What are the key impacts do you foresee with the removal of the constraints highlighted? <i>(Indicate impact level)</i> 1=Major impact 2=Minor Impact	Possible impacts 1. Business expansion 2. Improved efficiency 3. New markets 4. New product development 5. Improved market share 6. Improved quality of products 7. Overall growth leading to greater contribution to national GDP 8. Improved Working environment 9. Others	Impact level:
4	Are there any efforts underway to improve remove the constraints highlighted?	1. Yes 2. No	
5	If yes, what are those efforts?		

J. TECHNOLOGY

1	What new equipment would make your facility/company more efficient?		
2	What are the technology related constraints to the advancement of this sector?	<ol style="list-style-type: none"> 1. Availability of appropriate quality of inputs 2. Pricing 3. Legal restrictions in use of technology 4. Lack of hands-on training 5. Lack of support 6. Financial inability to acquire technology 7. Others (specify) 	
3	<p>What are some ongoing efforts or investments (public or private) to address these issues?</p> <p><i>(List the efforts)</i></p>		
4	What still needs to be done?		

K. WOMEN/YOUTH/VULNERABLE POPULATIONS

1	What is the role of women, youth, or vulnerable populations in this sector?		
2	Do they have a leadership in this sector?	1. Yes 2. No	
3	Do they own businesses in this sector?	1. Yes 2. No	
4	What % of women, youth, or vulnerable workers in this sector (as per total work force).	1. 1-10% 2. 11-20% 3. 21-30% 4. 30% and above	
5	What are the constraints to women, youth, or vulnerable populations increasing their role in this sector?		
6	Do women, youth, or vulnerable populations play a role in forward or backward linkages in this sector (e.g., suppliers, processors, packagers); what are these roles?	1. Yes 2. No If Yes, Specify	
7	Do women, youth, or vulnerable people have a role in the supporting functions, related to this value chain?	1. Yes 2. No	
8	If Yes, where do you see their role?	1. Finance;; 2. Marketing; 3. Market intelligence; 4. Suppliers 5. Distribution 6. R&D; 7. Others	
9	If this sector were to expand in the future, what impact would it have on women, youth and vulnerable populations? Creating new business opportunities (be as specific as possible – through an examination of possible missing links that would be needed to help the sector grow and what role women, youth or vulnerable populations might play)	1. Create new jobs for women 2. Create new jobs for youth 3. Create jobs for everyone 4. Others	

L. ENVIRONMENT

1	What are the possible negative environmental effects of expanding this value chain?		
2	What are the environmental issues of concern with respect to the expanded production of this product or service?	Comments (e.g., discussion of possible solutions; government or donor interventions that have been successful to addressing these existing constraints)	Secondary and Primary Sources of Information

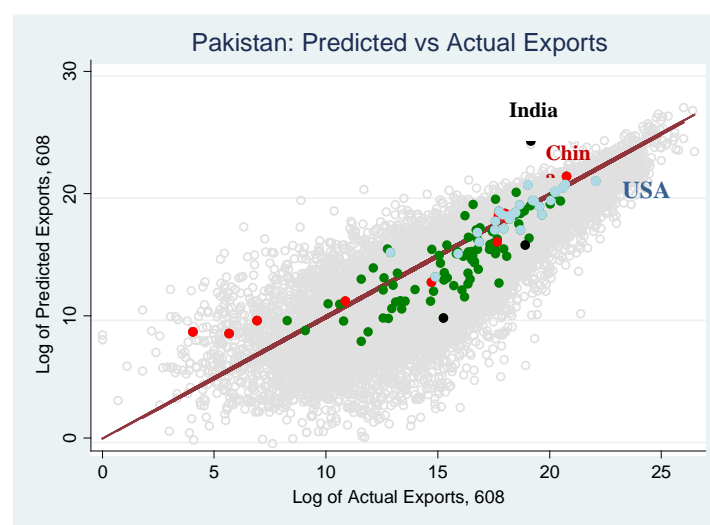
ANNEX D

PAKISTAN'S TRADE PROSPECTS WITH INDIA

BACKGROUND

India and Pakistan, the two largest economies in South Asia, share a common border, culture and history. Despite the benefits of proximity, the two neighbors have scarcely traded with each other. In 2010, trade with Pakistan accounted for less than half a percent of India's total trade, whereas Pakistan's trade with India was 4.7 percent of its total trade (based on UN COMTRADE data 2011). As highlighted in the exhibit below, Pakistan appears to have a great untapped potential for expanding its trade with India. Exports to India are 40% below its predicted potential. There is a large untapped potential in trading within the selected value chains, both as inputs to the upstream industry and final good exports.

Exhibit D-1. Pakistan's Predicted vs. Actual Exports



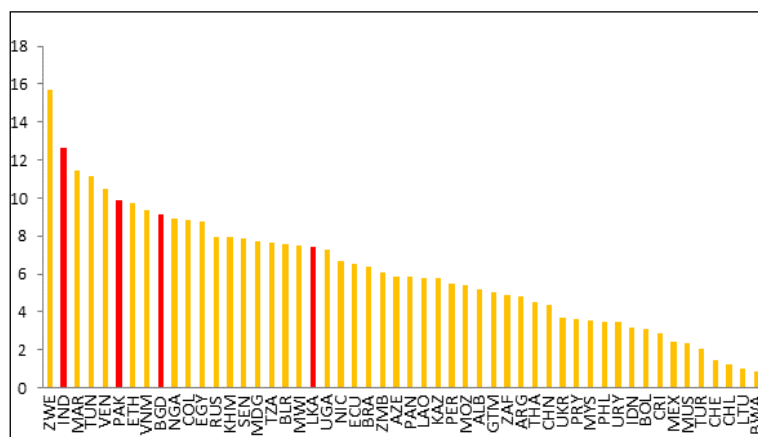
Source: World Bank (Forthcoming)

The main reason for Pakistan and India trading below potential is closed trade regimes overall, and additional specific measures on each other. Pakistan and India have among the most restrictive trade regimes. Bilateral barriers to trade are very complex in nature and “thick” at the India-Pakistan land border. Non-price barriers (e.g., costs on account of documentation and transportation) surpass the price barrier in South Asia trade.⁹⁸ In addition to rationalizing import duties, policy makers could eliminate all sorts of quantitative restrictions, regulatory duties, and other para-tariffs, and several other measures that have been restricting trade in the past. Despite the fall in average tariffs, trade restrictiveness of both India and Pakistan has been heavily

⁹⁸ Refer, De (2009a, 2011), for a general discussion on cost of trade in South Asia.

triggered by the large volume of NTBs which is the major stumbling block in promoting trade between the two countries.

Exhibit D-2 Overall Trade Restrictiveness Index (OTRI)



Source: Ivanic and Pitigala (2011)

SAARC Chamber of Commerce and Industry (SCCI) and several other business groups in Pakistan listed a variety of goods and services traded informally or through third country which could offer considerable potential for trade between the two countries (SCCI, 2011). Indian products that arrive in Pakistan through this process include tires, auto components, pharmaceuticals, engineering products, pans, chemicals and some textiles. These sectors in India will therefore benefit immediately as a result of a changing trading environment. Also, consumers in Pakistan will benefit from reduced prices of these products. Similarly, Pakistan's export to India consisting of cement, fruit and vegetables, cotton, some specialized textiles, and sports items — which also currently arrive via Dubai — are expected to experience a rapid boost.

However, the recent thaw in Indo-Pakistan trade relations could signal a positive change. Pakistan has now set to grant most favored nation (MFN) status to India. India has already granted the MFN status to Pakistan. The results of the general equilibrium simulation by (Ghani et al., 2012) indicate that Pakistan's MFN to India would generate larger benefits if it is supported by improved connectivity and trade facilitation measures. In other words, gains from trade would be small in the absence of improved connectivity and trade facilitation. The idea of trade facilitation is simple-- implement measures to reduce the cost of trading across borders by improving infrastructure, institutions, services, policies, procedures, and market-oriented regulatory systems. The returns can be huge, even with modest resources and limited capacity. The dividends of trade facilitation can be shared by all.

POTENTIAL GAINS WITHIN THE VALUE CHAINS

Since there are a number of studies have evaluated the prospects of reducing trade barriers between Pakistan and India we restrict our analysis to the potential gains for Pakistan within the selected VC. Using the Reveal Comparative Advantage index we show where Pakistan has a comparative advantage over India. For example within the textile sector there is a range of products such as cotton textiles, rice, leather and leather products, and surgical goods. Specifically, Pakistan has an unrivaled

advantage in around 102 (HS 6 digit level) textile and garment products, especially low count cotton yarn, toilet linen, bed linen and other articles of cotton (Exhibit D-3), far exceeding both India's comparative advantage and other major competitors such as Bangladesh. Similarly, on products such as leather bags, leather gloves and clothing accessories Pakistan's comparative advantage exceeds both that of India's and its close rivals. Therefore, the potential for trade diversion by removal or reduction of duty unlikely to cause any welfare effects for India. In marble only Turkey exceeds Pakistan's comparative advantage but not India. Given the proximity and product differentiation (India's marble is mostly limestone variety), Pakistan could potentially benefit from the large expansion of the construction boom in India.

Exhibit D-3. Pakistan's Comparative Advantage with India in Textile and Garments

		China	Bangladesh	Sri Lanka	Turkey	Vietnam	Pakistan	India	Pak>India	Broad Cor
520532	Measuring per single yarn	1.0859	0	0.0203	1.4826	0.0129	324.709	2.8548	321.8542	yes
630210	Bed linen, knitted or crocheted	0.6556	6.0583	0.1956	13.436	2.4842	302.6927	4.4053	298.2874	yes
551341	Of polyester staple fibres,	4.5911	0	0	0.5008	0	237.0891	0.0464	237.0427	yes
520912	Cotton with threads	0.4802	1.4063	0.441	2.6077	0.001	198.05	3.4515	194.5985	yes
520511	Fabrics of yarn	0.5361	0.1019	0	5.777	0.1219	179.7158	14.6876	165.0282	yes
520512	Fabrics of yarn	0.2908	0.211	0	5.4465	0.2205	178.9595	3.4564	175.5031	yes
520919	Other fabrics	2.9147	0.3374	0.0157	6.6976	0.0016	167.4998	4.0759	163.4239	yes
630231	Bed linen, table linen	3.3593	30.8594	0.0189	2.649	2.4384	155.6996	5.2145	150.4851	yes
520522	Fabrics of cotton	0.7039	0.008	0	6.2226	0.2537	122.4053	14.3657	108.0396	yes
630710	Floorcloths, dishcloths, dusters an	3.5264	5.5611	0.0101	0.9651	0.7734	124.7317	3.0496	121.6821	yes
551311	Of polyester staple fibres	4.5631	0.5096	4.8178	0.1121	2.0098	91.5604	0.115	91.4454	yes
520819	Other fabrics	5.8067	0.4662	0.0157	0.7734	0.0318	87.1956	0.7007	86.4949	yes
520812	Plain weave,	4.9168	0.2279	0	1.6001	1.6269	79.3194	2.6138	76.7056	yes
630260	Toilet linen and kitchen linen, of terry tow	3.9811	13.4535	0.107	11.0982	0.6452	83.6024	6.8373	76.7651	yes
520942	Denim	2.1309	0.3813	0	11.4712	0.0715	67.2642	2.852	64.4122	yes

Exhibit D-4. Pakistan's Comparative Advantage with India in Leather

HS Code	Item	China	Bangladesh	Sri Lanka	Turkey	Vietnam	Pakistan	India	Pak>India
420500	Other articles of leather	1.3383	3.5489	0.0127	0.5026	0.8826	1.7865	1.4009	0.3856
420340	Clothing accessories	0.8895	0.0676	0.7284	1.9373	0.086	9.1062	2.6445	6.4617
420329	Other leather products	4.7633	0.2082	2.4613	0.0364	0.2952	54.5566	6.3033	48.2533
420321	Designed for use in sports	1.6508	0.0135	5.1658	0.0366	0.236	135.763	1.7246	134.0384
420310	Articles of apparel	1.5255	0.0569	5.2845	5.7105	0.1047	63.3039	8.353	54.9509
420100	Saddlery and harness	2.8003	0.0283	0	0.1567	29.1986	5.44	5.4256	0.0144
411310	Of goats or kids	0.0343	9.0159	0.0101	0.1687	1.2765	74.1482	13.2276	60.9206
411200	Leather tanning or crustin	0.1145	0.9061	0.1163	3.9274	0	35.3679	5.9401	29.4278
410799	Other	0.1901	14.2667	0.0691	0.0822	0.0193	7.8253	5.7226	2.1027
410792	Grain splits	0.527	6.1914	0	0.0394	0	12.1214	0.0052	12.1162
410719	Other	0.0441	3.7796	0.0283	1.1675	0.0034	31.0189	9.8675	21.1514
410712	Grain splits	0.1198	12.97	0	0.1832	1.4347	7.2888	0.0788	7.21
410622	In the dry state (crust)	0.0123	40.0278	0.0257	0.0183	0.0006	2.6647	0.0108	2.6539
410530	In the dry state (crust)	0.0751	5.5311	0	1.097	0.0211	7.448	0.0223	7.4257
410449	Other	0.0065	18.1159	0	0.4218	0.0118	4.6674	0.0256	4.6418
410441	Full grains, unsplit; grain s	0.0127	22.7669	0.0504	0.1656	0	0.08	0	0.08
410411	Full grains, unsplit; grain s	0.0211	0.9334	0	0.8166	0.0001	0.0161	0.0096	0.0065

Exhibit D-5: Pakistan's Comparative Advantage viz. a viz. India in Marble

		China	Bangladesh	Turkey	Vietnam	Pakistan	India	Pak>India
680291	Marble, travertine and ala	4.3044	0	21.0292	3.0494	0.1306	0.0101	0.1205
251520	Ecaussine , calcareous moi	0.0169	0	46.7555	0.0981	2.601	0.3286	2.2724
251512	Merely cut or sawing into	0.029	0.0039	53.5805	0.042	22.3747	1.7453	20.6294
251511	Crude or roughly trimmed	0.0513	0	30.2709	0.2921	3.0637	0.0088	3.0549

Source: Authors calculations using COMTRADE data.

RECOMMENDATIONS

USAID should, in collaboration with the World Bank, provide infrastructure, (One-Stop-Border-Post) and technical assistance, through studies and other analytical support to the Government of Pakistan to promote the liberalization of trade with India. The most critical aspects of this include:

- USAID could provide technical assistance in assessing the sector-specific impacts within the value chains of the potential liberalization of trade. It should also support analysis of investment policies of both countries to identify opportunities for cross-border investment within the value chains.
- As benefits from trade are contingent upon facilitating trade, A one-stop border post at Wagah-Attari would have a large demonstration effect, as would inland container depots on either side of the border. USAID could explore options providing the feasibility and financial assistance for setting one-stop border post to expedite the transactions between the two countries.
- USAID could also provide technical Assistance to key stakeholders such as Pakistan Business Council in exploring South Asia Free Trade Agreement (SAFTA) modality in phasing out the sensitive list (of items that each country deems important for its economy) over the next few years, as the "sensitive list lists" nullifies all the potential gains of preferential trade access.
- One of the biggest caveats in recent studies on Pakistan India trade lack of value chain approach, i.e. to trade integration, where industries in both countries can benefit from inputs to one another's industry. USAID could provide technical assistance to assist the Pakistani Government. This assessment is to be sector sector-based, for example the automotive sector. There is further scope in undertaking discrete product-level analysis across other key industries. The findings can significantly aid the general product-level negotiations undertaken under SAFTA framework.

ANNEX E

PPPs AND U.S. INVESTMENT OPPORTUNITIES: ENERGY AND INFRASTRUCTURE

OVERVIEW OF THE ENERGY SECTOR

POLICY AND REGULATION

Ministry of Water and Power (MOWP) is a sector line ministry responsible for strategic planning and management of the water and power sectors; including identifying sector gaps, investment barriers, and project opportunities. In doing so, it is also tasked with developing relevant policies, legislation and guidance.

National Electric Power Regulatory Authority (NEPRA) is the regulator for the electric power sector. As a regulator it: sets generation, transmission, and distribution tariffs; issues licenses for generating, transmitting, and distributing power; establishes and enforces quality and safety assurance standards for the operation and supply of power, and reviews and approves utilities' investment and power acquisition programs.

OPERATION AND MANAGEMENT

Water and Power Development Authority (WAPDA) is being restructured from being responsible to develop irrigation schemes, water supply, drainage and flood control, and the generation, transmission, and distribution of power to being only responsible for developing hydropower projects. Other 'unbundled' functions have been transferred to separate distribution companies (DISCOs), generation companies (GENCOs), and the National Transmission and Dispatch Company (NTDC).

Pakistan Electric Power Company (PEPCO) is the government agency in charge of overseeing the companies carved out of WAPDA until they are privatized, including generation companies, distribution companies, and the National Transmission and Dispatch Company (NTDC). NTDC is responsible for power transmission and selling to DISCO the power it purchases from hydro and thermal power generation plants or Generation Companies (GENCOs). DISCOs distribute power throughout Pakistan.

Whereas, captive private sector power generation companies that sell electricity to NTDC are called Independent Power Producers (IPPs). At present there are 28 IPPs with an installed capacity of about 7019 MW operating in Pakistan. In addition, KotAddu Power Company (1650MW) and KESC power plants (1946 MW) are also operating in the private sector after being privatized by the Government.

Captive power producers are generating units that are built, owned and operated by businesses in the Industrial Sector. Captive power producers are established primarily

to meet companies' own power needs. But, by producing surplus power, they can sell electricity back to the grid.

IDENTIFICATION OF DEVELOPMENT OF POWER GENERATION PROJECTS

Alternate Energy Development Board (AEDB) is responsible for developing, promoting, and facilitating the uptake of renewable energy technologies. It also takes the lead in formulating policies and plans to promote the local manufacturing of renewable energy equipment. Finally, AEDB is responsible for ensuring that by 2030 at least five percent of Pakistan's power is generated via renewable energy technologies including wind, solar, and small hydro.

Private Power and Infrastructure Board (PPIB) is a 'one-window' facilitator that promotes private sector engagement in the power sector. PPIB coordinates activities between investors, government agencies, regulatory bodies, and other relevant parties; for instance, it provides support to power purchasers and fuel suppliers during the negotiation of Power Purchase Agreements (PPAs), Fuel Supply Agreements (FSAs), and Gas Supply Agreements (GSAs). In addition, PPIB liaises with local, federal, and international agencies to help implement or troubleshoot private sector power projects.

ENERGY SECTOR RECOMMENDATIONS

Pakistan's energy problems are complex and are mainly based on the lack of a comprehensive and integrated energy strategy, and insufficient fiscal support for energy generation and infrastructure. Resolving Pakistan's energy crisis will thus require political will, additional funding, and new power-generation sources (Kugelman, 2013). As the country lacks significant internal sources of revenue, opportunities exist for international donors and IFIs to finance its energy recovery. Based on the U.S. Enhanced Partnership with Pakistan Act of 2009 the existing strategy calls for developing "infrastructure, particularly in energy and agriculture, to help Pakistan recover from its energy and water crises, improve the daily lives of the Pakistani people, and increase opportunities for economic growth". Given Pakistan's limited fiscal space, its energy sector investment needs will need substantial private sector participation via PPPs and the USAID can be a good catalyst for this. Many Pakistanis talk nostalgically about the days when U.S. assistance efforts were more noticeable, technology-based, and longer-term.

PPPs have been promoted as a key policy tool for service delivery and infrastructure provision by the past several Governments in Pakistan and are expected to continue being a key development policy tool. The policy environment in the power sector (IPP and Alternate Energy) and for private investment is well-established and is backed by sufficiently capacitated institutional capacity (PPIB and AEDB). For PPPs outside the scope of PPIB and AEDB, there is a National PPP Policy (2010) that regulates Federal PPP projects. The Government of Punjab recently enacted a PPP Law and has set up a PPP Cell in its Planning and Development Board for its implementation. Similarly, the Government of Sindh has issued a PPP Policy that is supported by a PPP Unit in its Finance Department.

This section discusses various energy sector issues, as well as potential interventions that can be made, especially by USAID, to address these issues. The section also discusses how USAID interventions can generate opportunities for various U.S. entities.

Enhancing power generation capacity and availability. The National Planning Commission estimates the gap in power availability for 2012/13 to be around 5000MW. This gap adversely affects businesses, especially SMEs and is estimated to eat away over 3 percent of GDP every year. According to the National Planning Commission, large unutilized capacity of industries due to power outage provides no incentive to invest — investments in the country have gone down from 23 percent of GDP in FY2007 to 13 percent in FY2011. Obviously lack of reliable and consistent power supply has an impact on the six value chains being considered under this project. Thus there is an immediate and urgent need to increase power generation capacity of Pakistan along with reducing losses (transmission and distribution losses at estimated at 30 percent). Given the Government's scarce fiscal space, this expansion must be driven by the private sector. The good news is that basic Legislative, Institutional and Regulatory (LIR) framework for private sector participation (domestic or foreign) in the power sector exists. The not so good news is that private sector interest, especially by foreign Independent Power Producers (IPPs) has been weak, and captive power producers are limited to established large scale industries. Presented below are some of the reasons for the weak private sector interest in Pakistan's power generation and how these weaknesses can be addressed to stimulate interest of the private sector - especially by U.S. firms. Also listed below are proposed actions that USAID may take can potentially facilitate this.

IPPs. Additional IPPs can help raise the overall power production capacity in Pakistan that can have a 'trickle-down' effect at value chain firm level.

Key Issues: At present, IPPs are not a viable option due to the circular debt⁹⁹ problem. Power distribution companies (DISCOs) are selling electricity at a price that is lower than the cost of generation. This, combined with high technical losses, has led to a gap that has accumulated over the years and that the Government can no longer afford. As a consequence, the Government hasn't been paying IPPs for the capacity or fuel cost components of the tariffs. IPPs have called on the sovereign guarantees and the Government of Pakistan has defaulted on those guarantees. This makes IPP projects not bankable due to the financial situation of the off-taker and the fact that the

⁹⁹The USAID recently published a report titled, "The Causes and Impacts and Power Sector Circular Debt in Pakistan" The report not only identifies the causes of the circular debt, it also recommends steps that can be taken to reduce it. Circular debt arises when one party (such as a DISCO) not having adequate cash flows (due to non-payment of bills by consumers, inefficiencies in operations, power theft, NEPRA approved tariffs not passing through increase in cost of power production such as rise in oil prices to consumers etc.) to discharge its obligations to its suppliers (such as the NTDC/CPPA that purchases power from IPPs and other GENCOs and resells to DISCOs) withholds payments. When it does so, the problem affects other entities in the supply chain, each of which withholds its payments, resulting in operational difficulties for all (such as the IPPs which don't get paid by NTDC/CPPA) in the sector, none of whom are then able to function at full capacity (since they are not getting paid) – causing less power being produced and the Government that backstops (guarantees) NTDC payment to IPPs defaults on its sovereign guarantee (as its operating on very tight fiscal space and the payables for the NTDC are in Billions of US dollars.).

sovereign guarantees provide no assurance. In addition, the banking sector in Pakistan is overexposed to the energy sector and is unlikely to lend to IPPs¹⁰⁰.

Not only is the Government the sole buyer of power generated by IPPs, it is also the sole (unreliable) supplier of fuel needed to generate power which further complicates the matter and makes the IPPs totally dependent on the Government for key inputs and outputs of their operations.

Potential solutions: In order to address this situation, the USAID could:

- Together with other donor and multilaterals, assist the Government in implementing the recommendations made in the recently published “The Causes and Impacts and the Power Sector Circular Debt in Pakistan.” The issue of Circular Debt needs to be addressed urgently to revive the interest of private sector to invest in IPPs.
- Support creation of a dedicated ‘Pakistan Power Guarantee Fund’ that backstops Governments commitments to IPPs. The Fund could be capitalized with funds transferred from the Ministry of Finance, or power sector publically owned assets, or a current or contingent line of credit from IFIs.
- Promote donor and IFI guarantee products — for instance, MIGA insurance backstopping breach of contract by Government/ non-honoring of sovereign financial commitments, or the IBRD Partial Risk Guarantee (against risk of Government failing to fulfill financial obligations), or IFC’s Partial Credit Guarantee that could raise credit rating of IPPs.

Captive power producers

Key issues: Captive power production is gaining traction in Pakistan. It is estimated that at present 5000 MW is being produced as captive power (Castalia International, 2012), however, it has been mostly limited to established large scale industrial groups that only produce to meet their own requirements (since the opportunity cost of having no power during ‘load shedding’ periods most often exceeds the cost of generating captive power. There is an opportunity for captive power producers to produce excess capacity¹⁰¹ and provide power to other entities, including SMEs that either use inefficient and expensive small-sized generators, or nothing at all to generate power for their consumption during ‘load shedding’ periods. Captive power producers could sell excess capacity to credit worthy DISCOs such as the Lahore Electricity Supply Company (LESCO) to enhance their overall power availability¹⁰², or if they can sell directly to private clients through wheeling arrangement with DISCOs, or through direct connections with the end-users. One of the core issues is the price to the end-user. Again for most SMEs who pay a subsidized rate of around Rs. 12 kWh,

¹⁰⁰ IFC Scoping Report, CPP Investment in Punjab, 2012

¹⁰¹ Currently, existing CPPs currently have no incentives to invest in generating surplus energy. This is because the investments in efficiency improvement or capacity expansion are not viable without a user that will buy the surplus electricity from the plants. During our mission, many industrialists expressed that they don’t see a clear and proven business model for selling their surplus.

¹⁰² However, until now, CPP power is has mostly been more expensive than the power that DISCOs can purchase from the Central Power Purchas Agency/National Transmission and Dispatch Company. Thus DISCOs risk reducing their profit margins (or increase their losses) by buying electricity from CPPs.

anything over this rate is simply not affordable to them (obviously there are those end-user firms that have illegal connections at zero, or very little, cost). In short, expanding the captive power producers' market will only be viable if the costs (capital and operating) are kept low so that they can compete with the subsidized rates of power supplied through DISCOs.

Possible solutions: To promote captive power producers and address the power supply gap, USAID could:

- Support and facilitate captive power producers that can produce power at around the same benchmark tariff as that being currently provided by DISCOs. Nadeem Babur, CEO of Orient Power, besides running a successful IPP, has been working on finding 'indigenous' solutions for captive power producers.¹⁰³ He has partnered with a manufacturer of industrial high pressure boilers (mainly used in the textile industry) to manufacture boilers capable of producing steam sufficient to run turbines producing power between 5MW to 20MW. Since Pakistan does not make power turbines, he imports, new and/ or used turbines from India, China or Europe. Power panels are either imported from the United States or Europe. In order to lower operational cost, he has been using biomass¹⁰⁴ (as fuel source). These power production units have a flexibility to switch from one biomass fuel source to another, based on their seasonal availability, as well as using coal as fuel. Coal for smaller producing units can be viable if instead of using typical high cost EPC type contracts indigenous methods such as the one presented above are used. For now he plans to use imported coal, with which he plans to blend local coal. He has also successfully blended coal with biomass. Finally, Mr. Babar has entered into an agreement with the city of Gujranwala, whereby he is "purchases" municipal waste to produce power with biogas. In short, he is able to produce the lowest cost blends for power production while ensuring that environmental standards are met. His target cost for per kWh of power product is Rs. 9 to Rs. 13. Arrangements like this present many opportunities for USAID, such as:
 - Support local entrepreneurs to undertake technical and financial feasibility studies for undertaking captive power producers. This could be done by providing advisory support directly, or by setting up a dedicated 'ring-fenced' project development fund. Robust business cases attract more sponsor and lender interest.
 - Support U.S. firms (especially involved in producing power with biomass and/ or coal) to enter the captive power producers' market in Pakistan and enter into direct agreements with end-users. In order to make these arrangements viable (by offering competitive and affordable tariffs), USAID could set up some kind of a mechanism (based on a project-to-project basis or through setting up a dedicated 'ring-fenced' 'viability gap fund' through which it can provide capital subsidies to U.S. firms to reduce their cost recovery tariff requirements. Or it can simply make U.S. power production systems available to local entrepreneurs at subsidized costs.

¹⁰³ Mr. Nadeem Babar is open to entering into various arrangements with clients; including producing and commissioning CPPs, or setting up CPPs and sell power under direct contracts.

¹⁰⁴ Including rice husk, cotton stock, corn cobb, and cotton seed shell.

- Supporting firms that are part of the value chains to act collectively as a single client (obviously it would be much easier where firms such as in the surgical instrument producing industry are ‘clustered’ together, or where several Value Chains are located within an industrial city such as Faisalabad) for captive power producers to enter into direct agreements with. These firms could even set up ‘cooperatives’ that pool in resources to set up their captive power producers as well as distribution grids. Again USAID can provide technical assistance and subsidy/ grant support to such ‘clusters’ and turn them into credible end-users that can be potential clients for U.S. firms interested in captive power producers. In any case indigenous solutions such as the one being used by Nadeem Babur in Lahore can be replicated in Sialkot and Faisalabad while keeping the per unit cost of power to Value Chain businesses the same as being provided by local DISCOs.
- Support provincial Governments in developing small scale run-of-the river hydro projects as captive power producers. ADB is assisting the Government of Punjab with some projects.
- Support U.S. firms to offer renewable energy technologies and power production units for captive power producers. Solar PV power without back-up could be an affordable source of power for businesses that operate during day-light hours. Given the price of furnace oil, even thermal solar power could be a cheaper option. The Alternate Energy Development Board (AEDB) has registered a non-profit company to operate as a ‘fund’, called the Alternate Energy Development Fund (AEDF) for supporting renewable energy. According to the Managing Director of AEDB, the ‘fund’ is still not capitalized. AEDB could either be used as a ‘project development fund’ or a ‘viability gap fund. USAID could work with other donors and IFIs to develop a business plan for the
- Support joint ventures between U.S. and Pakistani businesses to set up facilities in Pakistan to produce smaller (capable of producing 5 to 20MW) power generation turbines. At present there is no local capacity in the Pakistan to produce turbines. This could be a flagship project under the first Special Economic Zone (SEZ) that would be set up under the newly enacted SEZ Act of 2012. As a starting point, USAID could undertake a feasibility study to study the viability of such an option. This could be done in collaboration with the Government of Punjab that is keen setting up the first SEZ in terms of the new Law — a project like this could be a good “anchor” project for the SEZ.

Explore the possibilities of importing power from India: Pakistan needs to take advantage of newly enhanced commercial and cooperative relationship with India and explore opportunities of importing energy from India. Also Pakistan's Inter State Gas Systems (Private) Limited (ISGS) and Indian state-owned utility GAIL (India) Limited signed gas sale and purchase agreements with Turkmenistan for the Turkmenistan-Afghanistan-Pakistan-India (TAPI) pipeline. The pipeline will supply up to 90 million cubic meters per day of natural gas. The 1,800km pipeline is estimated to cost \$7.6bn, with the supply of gas through the pipeline to fulfill the increasing energy demand in India and Pakistan (BMI, 2013).

Key issues: Pakistan and India have historically been skeptical of each other's intentions and any act of cooperation between the two countries is a tough sell to the citizens of both the countries.

Possible solutions: USAID could:

- Support undertaking a financial and technical feasibility study (incorporating and updating all previous studies) of importing power from India. This study could become a catalyst for negotiating arrangements between the two countries leading to a mutually beneficial arrangement.

Assisting Pakistan with paying for its investment portion of South Asia Regional Electricity Market (CASAREM): CASAREM is a concept for developing electricity trade among the countries of the two regions through a set of projects and associated investments, underpinned by the relevant institutional arrangements and legal agreements. To pursue this idea, four countries, including the Kyrgyz Republic and Tajikistan in Central Asia and Afghanistan and Pakistan in South Asia, have agreed to develop the first project under CASAREM, with more than two countries involvement. The project aims to establish the necessary transmission and trading infrastructure and systems to enable a trade of about 1300 MW of electricity between Central Asia and South Asia, and is referred to as **CASA-1000 (the World Bank)**.

Key issues: Pakistan's portion for the cost of developing the required infrastructure (transmission and conversion from DC to AC current) is only around \$200 million. Although IFIs have shown interest in funding this component, the MOWP would like this tab to be picked up by the donors. There are many other key issues that need to be addressed in parallel, for instance, ensuring safety of transmission through Afghanistan and ensuring that the power producing countries have their portion of infrastructure completed in time. Obviously all stakeholder countries have to agree on a 'selling' price, 'transit' price and 'buying' price.

Possible solutions: As part of the civilian aid to Pakistan USAID could easily pick up the cost of Pakistan's portion of infrastructure investment. This one action would have a very high impact and definitely contribute towards winning the 'hearts and minds' of Pakistanis. USAID, through its other regional missions, assist in resolving the key outstanding issues. The \$200 million will have a great leveraging impact of having over a 1000 MW of power available.

Reducing the overall cost of power generation: Pakistan needs low cost fuel options so that it can reduce the gap between the cost of power generation and price at which an end user purchases electricity. Reducing this 'subsidy' will also have a direct impact on overall circular debt.

Key Issues: In the 1980s, when the concept of IPPs was being conceived, 60 percent of the power generation was hydropower (with a much lower per unit cost of production). This is now down to about 28 percent; while oil based generation (with oil prices several times more than they were in 1980s) now accounts for 40 percent of the overall power generation.

Possible Solutions: USAID could:

- Work with PPIB and Provincial Governments (for projects under 50MW), while closely coordinating with the existing efforts of other donors and IFIs, assist in developing and promoting opportunities in *hydro-power generation* (from mega water reservoir based projects to smaller run-of-the-river projects). It can promote these projects by encouraging OPIC and U.S. EXIM bank to take the lead by promoting these opportunities to U.S. sponsors and other financiers and structuring suitable financial packages. There are numerous suitable sites that have already been identified — USAID could engage consultants to develop robust feasibility studies for these projects and provide technical assistance during the procurement process.
- Work with OPIC, U.S. EXIM Bank, AEDB and Provincial Governments (for projects under 50 MW), while closely coordinating with the existing efforts of other donors and IFIs, assist in developing and promoting *renewable energy* technologies such as solar and wind that seem much more affordable (almost at par with per unit cost of production from furnace oil) these days, and package opportunities for U.S. firms to come and invest in Pakistan. OPIC credit facility is providing \$95 million to Sapphire Wind Power Plant to help build a 50-megawatt wind power plant using General Electric wind turbines in southeastern Pakistan’s Ghor-Keti Bandar Wind Corridor designed to generate 133 GWh of emission-free electricity annually. According to a press release by OPIC, a recent study funded by the National Renewable Energy Laboratory and the USAID estimates that Pakistan possesses 132,000 MW of potential installed wind capacity — virtually equal to the world’s entire installed wind capacity for 2010. According to U.S. EXIM Bank, it has provided increased financing for American-made renewable energy exports to global markets over the last four years (FY 2009 through FY 2012). This support shows an overall positive trend (\$355.5 million in FY 2012, \$721.4 million in FY 2011, \$332 million in FY 2010 and \$101 million in FY 2009). This support shows an overall positive trend (\$355.5 million in FY 2012, \$721.4 million in FY 2011, \$332 million in FY 2010 and \$101 million in FY 2009).
- Promote cheaper coal based power production in Pakistan that is in line with global and local environmental standards. The United States produces 60 percent of its power from coal - according to Ayub Ali, Director, Structured Finance, OPIC are many companies who have shown interest in coal based power production in projects abroad. Besides “greenfield” coal-based energy projects, a study needs to be undertaken as to how much of the existing thermal power production can be switched to coal-fired production¹⁰⁵. While local ‘cleaner’ coal production is being ramped up, Pakistan could use imported coal (or a blend of imported and local) to use as fuel for power production. In the long-term the substantial coal reserves at Thar¹⁰⁶, Sindh need to be fully exploited. Given the nature of coal, the only viable manner to use it for power production is to locate the power plant right at the mouth of a coal mine. And given the fact that the cost of tariff needs to cover the cost of supporting infrastructure required to produce electricity at such a remote site, only large 1000MW (with cost estimates are as

¹⁰⁵ ADB had made substantial progress in undertaking conversion of Jamshoro Power Plant from oil to coal, but unfortunately the progress was halted due to some bureaucratic hurdles.

¹⁰⁶ Coal reserves were first identified at Thar as a result of a USAID study undertaken in the early 1990s.

high as \$1.5 billion) plus capacity power plants would provide the economies to scale to make such a project viable. Such large investment in the current circumstances would difficult are raise and would need some kind of grant support.

- Disseminate its (USAID's) findings in study undertaken on the 'economic value of natural gas in various sectors' undertaken under the Energy Policy Project and educate policy makers to promote policies that encourages the best economic use of gas to ensure adequate availability for power generation. According to the National Planning Commission, the country is witnessing gas shortage due to misallocation of natural gas and low growth rate in supplies. Low gas supplies have been substituted by expensive oil imports (oil import bill has increased by about 250 percent from FY05). The Government has formulated a Gas Allocation and Management Policy (2005) which highlights a merit order for gas supply. Unfortunately, the gas companies have blatantly violated this Policy and has decreased gas allocation to the power sector (3rd on the priority list), whereas they have increased gas supplies to general industry and CNG (4th on the priority list)¹⁰⁷.
- Pakistan's current credit rating of below investment grade is not conducive for long-term LNG contracts, in which the LNG suppliers require payment securities. Pakistan does not possess LNG import infrastructure and current port conditions are inadequate for large-sized LNG vessels. USAID could assist the Government in designing, developing and raising financing for a LNG terminal (with a gasification plant) at Karachi port on a Public Private Partnership (PPP) basis. The 'private' component of the PPP could have a U.S. port/LNG Terminal operator in partnership with a suitably qualified local private party. An ideal solution would be a joint venture between a U.S. gas company and a local private sector energy firm. The U.S. firm would arrange for the license to export and the local company would provide support in developing the local infrastructure. The project may need some 'viability gap funding'/ capital grant to make it viable — ideally on transport from the United States to Pakistan. The USAID could immediately undertake technical and financial feasibilities for this project. This could be done in collaboration with the PPP Cell in Sindh and the Infrastructure Project Development Facility (IPDF) at the Federal level. The PPP Cell would provide local support, while port operations are a Federal function. Federal Government involvement would also be necessary since donor/ IFI involvement would likely require participation from the Ministry of Finance and the Economic Affairs Division. According to a U.S. port expert, Ron Kopicki, the United States is becoming a net exporter of energy and now has sufficient gas to start exporting. The U.S. LNG terminals that were used for importation of gas are being considered to operate in 'reverse' mode for export. LNG prices are expected to drop in the medium to long-term, according to Nadeem Babar, since the traditional providers of LNG have lost the U.S. market and there are large orders of order for LNG carrying vessels with many shipyards that would be available in

¹⁰⁷ Power sector gas allocation in the regional countries, in contrast to Pakistan, have been on an upward trend. For instance, raised its gas allocation to the power sector from 39% of total gas supply in FY05 to 53% in FY11 (69% of power produced in India is from coal). In Bangladesh from FY05 to FY11, power sector gas allocation has gone up by 42%.

the near to medium term. Currently, a private sector company, Efforts in the past, most recent by a Turkish firm, have not been successful yet — partly due to the inability of the ‘off-taker’ (Pakistani public sector gas companies) enter into viable long term contracts.

- Pakistan desperately needs to exploit its coal reserve¹⁰⁸s — in a manner that minimizes environmentally adverse effects. World average for coal power production is 40 percent, while in Pakistan it is only 7 percent. The Ministry of Water and Power aims to increase this to 18 percent by 2030. Thar coal reserve can play a vital role in resolving the persisting energy crisis in the country and ensure much needed energy security for the country and provide sufficient and affordable energy. According to the Coal and Energy Development Department, Government of Sindh Tharhas lignite coal reserves of 175 billion tons and spread over 9100 sq. km¹⁰⁹. A good pilot would be a ring-fenced mining operation with a power plant at the mouth of the mine. In the past a Chinese firm came close to making this investment, but it fell through on some disagreement on tariff. The USAID could work with the Thar Coal Authority and the Government of Sindh to develop a feasibility study/ business plan. Recently, the Pakistan State Oil (PSO) signed a memorandum of understanding (MOU) with EngroPowergen Limited (EPL) to review the technical and economic feasibility of the Thar Coal for power generation. USAID could support these companies directly with technical assistance in undertaking this study.
- Pakistan’s first hydroelectric Independent Power Project (IPP) — the 84-megawatt New Bong Escape hydropower project — has commenced commercial operations. The project is located about 7.5 kilometers downstream from Mangla Dam. The USAID could work with PPIB in developing feasibility studies for similar projects that can be marketed to U.S. firms. In the long run, USAID, should continue supporting the BashaDaimierBasha Dam project.

Addressing the long term financing issue: Project financing for PPP/energy/infrastructure development requires long-term (preferably local currency) financing.

¹⁰⁸Pakistan’s national oil and gas company, Oil and Gas Development Company Limited (OGDCL), predicts indigenous oil reserves will be exhausted by 2025, and that Pakistan will run out of domestic sources of natural gas by 2030.

¹⁰⁹In order to market Thar, a comprehensive incentive package has been developed by the Government with consultation from all stake holders, including:

1. 20% IRR to firms which achieve Financial Close before December 31, 2015 for power plants based on indigenous coal and an additional half a percentage IRR i.e. 20.5% IRR for firms which achieve financial close by 2014.
2. 30 years Exemption on Corporate Tax and minimum turnover tax to mine & power plant operators from the date of first sale as available to IPPs.
3. All custom duties on import of coal mining projects allowed at zero% to reduce the initial capital investment.
4. Exemption on withholding tax to shareholder on dividend for initial 30 years to improve risk return profile for the initial projects.
5. Exemption for 30 years on withholding tax on procurement of goods and services during project construction and operations to reduce the initial capital investment.
6. Exemption for 30 years on other levies including special excise duty federal excise duty.
7. Thar Coalfield be declared as Special Economic Zone, and shall be declared as ‘Projects of National Security’
8. Coal Based Power Projects and Coal Mining Projects in Sindh shall have the same incentives, concessions, protections and security package as that available to IPPs developed pursuant to Power Generation Policy 2002 (as amended from time to time)

Key issues: Whilst some of the local banks have financed infrastructure transactions in the recent past, their capacity and appetite for long tenor non-recourse or limited recourse project finance may be limited by their balance sheets and the limits placed on infrastructure and long term lending by the regulatory regime (i.e. if the IPP/captive power producers/PPP project pipeline is to grow rapidly, there needs to be sufficient and reliable availability of long-term, preferably local-currency financing available).

Possible Solutions: The USAID could assist with:

- The Ministry of Finance, Ministry of Water and Power, PPIB, AEDB and IPDF have all shown keen interest in promoting the establishment of an entity such as a Pakistan Infrastructure Financing Facility (PIFF). A PIFF, if created, could help Pakistan in ‘crowding in’ the funds available in the local banking sector for infrastructure development. The PIFF could therefore help to bridge the financing gap arising from this. In undertaking the above, it is necessary for PIFF to follow a number of high level operating principles. In order to meet its objectives, the PIFF should: 1) work in conjunction with these established financiers and agencies (including the multilaterals), with the aim to tap the growing financing potential and to ‘crowd in’ additional private capital for infrastructure development; 2) focus on areas of maximum additionality, so that it can augment the existing capacity and appetite of the financiers for infrastructure development, through the provision of long tenor funded products (debt, equity, etc.) initially and once it has credible skills to offer guarantee/ contingent products to extend the current terms of financing; 3) aim to be a self-financing and viable entity with the aim to attract commercial capital (equity, debt) from domestic and international markets into the facility as it grows. PIFF should only finance ‘bankable’ projects, i.e. projects with clear revenue streams structured in which there is an appropriate margin of revenue over costs, it should follow robust investment policy guidelines, including structured investment appraisal and sound portfolio and risk management strategies, and finally it should ‘contain’ costs within its revenue generation capabilities, including the ability to service its debts by ensuring financial prudence and asset liability matching in gearing its own capital structure. OPIC could be a valuable partner in setting up PIFF and many U.S. banks can participate. The USAID could, in collaboration with OPIC, the State Bank of Pakistan, Ministry of Finance and IPDF¹¹⁰ could update previous studies on this concept and prepare an updated business plan that can be presented to other donors and IFI to solicit their participation. IFC has also shown interest in participating in such a facility in the past. Such an ‘investment bank’ could be set up exclusively for the power sector, or for infrastructure development in general, with a ‘ring-fenced’ dedicated amount set aside for the power sector.
- An alternate to setting up a full-fledged investment bank as suggested above, would be to set up a power sector specific financing facility similar to what the World Bank set up for Pakistan’s IPPs in the 1990s (with USAID’s involvement) called the Long Term Capital Fund (LTCF). Although this fund was more or less

¹¹⁰ IPDF has developed a fairly advanced concept of such an idea with the help of the World Bank, and according to Adil Anwar, CEO of IPDF, USAID had shown interest in implementing this concept

successful in its mandate, in hindsight, the overall management and governance of this fund could have been done better¹¹¹. The World Bank contributed about \$400 million to the Fund. Additional \$600 million was raised via donors (including USAID and JEXIM). Although the ‘fund-manager’ was responsible for administration and operation of the fund, including investment appraisal and due diligence, negotiation of lending terms, project monitoring, and management of risk exposure, final project approval was subject to review and approval by the World Bank. LTCF acted as a lead arranger for project finance, aiming to crowd-in commercial project finance among banks that would not have otherwise had the appetite for financing the whole project. This suited its aims as a market catalyst. The central offering by LTCF was subordinated long-term local currency debt to privately sponsored projects. Up until 1994, this involved a combination of fixed nominal interest rates with an eight-year grace period. The typical financing structure for projects involved LTCF providing up to 30 percent of capital costs, with 20 percent equity provided by the sponsor and 50 percent as commercial debt (implying a debt-ratio of 80-20). By 1999, LTCF had lent \$840 million to five projects worth around \$2.9 billion.

Political Support: The interventions/ recommendations provided above can only be effective if there is political support backing it in Washington DC and Islamabad. There is a need for making opportunities in Pakistan’s power sector bankable and to promote these opportunities effectively to U.S. firms. According to the PPIB, one of the reasons why the U.S. firms are not aggressively perusing power projects in Pakistan as they had in the past is that most of these firms have had their own share of problems at home. However, PPIB strongly feels that if the U.S. government proactively promotes Pakistan’s IPP opportunities in Pakistan, they can generate a strong interest in Pakistan’s ‘investor friendly’ Power Sector policy. The example used was when immediately after Pakistan’s first Power Policy was announced in 1994, the U.S. Energy Secretary Hazel O’Leary, as the leader of a U.S. Presidential Mission on Energy Investment in Pakistan, brought a high level business delegation to Pakistan consisting of 90 U.S. energy business, environmental and government delegates representing a broad range of experience in cutting-edge technology, innovative policy making and investment power to meet face-to-face with Pakistani government and industry delegates. As a result 18 Implementation Agreements were signed during this trip, that were part of the Memorandum of Understanding in which U.S. businessmen agreed to invest over 4 billion dollars in Pakistan energy sector.

Pakistan also needs to establish a Power Sector Task Force¹¹² reporting directly to the Prime Minister of Pakistan (similar to the one set up in the 1990s) that can work across all public and private sector stakeholders. This forum would provide

¹¹¹ The Fund was initially managed by a Development Finance Institution (DFI) called the National Development Finance Corporation that went bankrupt in 2002 due to losses in its overall portfolio, and the activities/ payments LTCF of were taken over by the National Bank of Pakistan, a nationalized commercial institution. Donor/ lenders to the fund regarded LTCF as a stand-alone institution that would isolate commitments to project finance, rather than lending on a project-by-project basis through the government. A clause requiring privatization of the fund after 1995 was never invoked.

¹¹² The Task Force should ideally be chaired by a private sector power specialist with project finance background. The Chair should have the status of the Federal Minister and report directly to the Prime Minister. Public sector members of the Task Force could include Secretary Water and Power, Secretary Finance and heads of WAPDA, PEPCO, KESC, PPIB, AEDB etc. Private sector members could include existing IPP operators, investment bankers etc. The donors and IFIs could help set up a technical secretariat to the Task Force.

coordination of efforts and efficient and timely decision making. USAID could also support setting up a joint U.S.-Pakistan Task Force on the power sector with a clear, measurable and time-bound mandate to resolve Pakistan's power crisis.

OVERVIEW OF THE INFRASTRUCTURE SECTOR

According to the State Bank of Pakistan, Pakistan loses up to 6 percent of its GDP due to insufficient infrastructure (including the power sector). Logistical bottlenecks increase the cost of production of our goods by about 30 percent. This has a significant impact as Pakistan is facing stiff competition from regional competitors. Pakistan's needs are massive and its resources are limited. Not only is there limited fiscal space, there are also huge gaps in public sector capacity, therefore, the infrastructure sector needs of Pakistan must be undertaken with private sector participation via PPPs. PPPs have been promoted as a key policy tool for service delivery and infrastructure provision by the past several Governments and are expected to retain its central position in development planning. The Government issued National PPP Policy in 2010 that regulates Federal PPP projects, as well as supports Provincial Governments in undertaking PPP projects. The Government of Punjab recently enacted a PPP Law and has set up a PPP Cell in its Planning and Development Board for its implementation. Similarly, the Government of Sindh has issued a PPP Policy that is supported by a PPP Unit in its Finance Department.

This section discusses various infrastructure provision issues, as well as potential interventions that can be made, especially by USAID, to address these issues. The section also discusses how USAID interventions can generate opportunities for various U.S. entities.

Efficient targeting of infrastructure support: Value chains are as effective as the underlying infrastructure.

Key issues: Infrastructure support for businesses is best targeted when the businesses are not scattered over a vast geographical area. Targeting is more efficient when businesses are 'clustered' in close proximity of each other, or are physically confined in a 'ring-fenced' area such as an Industrial Zone/Export Processing Zone/Special Economic Zone. Such designated areas also address the issue of land availability for setting up businesses. In Pakistan it is not easy to obtain suitable land with a free and clear title for setting up a business.

Possible solutions: The recently enacted special economic zone (SEZ) of 2012 opens up a number of opportunities for the value chains being considered. SEZs can help create the right business enabling environment within its boundaries, reduce cost of doing business, enhance foreign direct investment, create employment opportunities, increase industry competitiveness and develop exports, product/ cluster/ regional development.

Pakistan has had experience with Export Processing Zones (EPZs) and Industrial Estates (IEs) (as well as Reconstruction Opportunity Zones [ROZs]); however, not all has been very successful. Some of the reasons for this include wrong locations, high cost of land/ rent, unreliable supply of utilities and little or no fiscal incentives.

SEZ Law provides several fiscal incentives. Existing EPZs, IEs and ROZs can apply to be designated as SEZs and start enjoying the same fiscal advantages. All the tenants of SEZs will be exempt from custom duties and taxes on imports of capital goods into SEZ and exemption from all taxes on income for a period of ten years starting from the date of the commencement of operations of SEZ. The SEZs are to be developed as PPPs (as is being done in China, India, Thailand, Malaysia, UAE, Vietnam etc. Benefits to PPP developers include; a one-time exemption from all customs duties for all capital goods imported into Pakistan for the development, operation and maintenance of a SEZ and exemption from all taxes on income for a period of ten years starting from the date of signing of the development agreement. According to the Mr. Nadeem Hassan, Vice Chairman, Punjab Board of Investment and Trade, the Government of Punjab is evaluating various sites for setting up the first SEZ under the Law. Similarly the Government of Sindh wants to set up a “Technocity” on a SEZ model.

The Law allows both the Federal and Provincial to conceive and initiate SEZ projects. USAID could provide the much needed technical assistance, with the support of qualified consultants and advisors for:

- Finalizing the by-laws for the SEZ Law
- Setting up Provincial Authorities, in terms of the Law, responsible for the development of SEZs
- Developing Guidelines for planning, structuring and procuring SEZ to be used by the Authorities
- Capacity building of Authorities to plan, structure, procure and oversee SEZs in terms of the Law.
- Develop a mechanism for providing capital grants to SEZ developers, so that the developers can provide land and infrastructure at subsidized rates, especially to SMEs
- Support undertaking of feasibility studies on behalf of the Governments of Punjab and Sindh to develop ‘flagship’ provincial project
- Promote viable SEZ development opportunities, in collaboration with IPDF, to U.S. firms especially in the value chain sectors
- Encourage EXIM Bank, USTDA and OPIC to structure viable SEZ structures and present them to U.S. firms as investment opportunities.

Enhancing transport efficiency. Value chains under study need efficient and affordable transport and logistics support so that they remain competitive and credible.

Key issues: The road freight sector presently caters to about 90 percent of all land freight. Trucking fleet in Pakistan comprises of small/single-owners that are generally cash-strapped and are operating at very low margins (not necessarily lower tariffs) in

a very competitive environment. Also the present truck fleet is not efficient in terms of fuel consumption and operations. In order to lower costs, the trucks are often overloaded and cause road damage, pollution and accidents.

Possible solutions: Rail is usually the cheapest mode (about 50 percent less than road transport) of freight transfer. Pakistan Railway's infrastructure is under-utilized and the Railway is encouraging the private sector to invest in rolling stock and operate freight trains on its tracks on PPP basis. The Railways with the support of IPDF has launched a program whereby private parties would acquire rolling stock and operate it over a predetermined route(s) for the specific product over 20 years (on a Finance, Own, Operate and Maintain basis, as was done in India, Philippines and Europe). At present the routes are being offered to the following product-lines; oil, cargo, rock phosphate, container cargo, coal and cement. According to a potential private operator, his cost of transport is expected to go down to Rs. 22,000/ ton from Rs. 40,000/ ton that he is currently paying. Plus there are many economic benefits, such as reduction in environmental degradation, reduction in traffic congestion and faster delivery (leading to more competitive Value Chains) of freight.

USAID could:\

- Support Pakistan Railway through IPDF to develop Track Access Concession for the Value Chains under consideration with extension of services to areas like Faisalabad. Its support could be used to develop business plans/ feasibility studies that can be marketed to qualified investors and operators in the United States. USTDA, OPIC and U.S. Exim bank can be involved upfront so that they are up to speed on the project structure and can use their 'network' to market these opportunities. According to Afzal Dar, at IPDF, there is at least one potential concessionaire for the current product lines that is going to use U.S. locomotives.
- Promote rail track access for freight from the Wagah border with India to Lahore dry port. There is room for substantial improvement in quality and scale of services being provided by Pakistan Railways on this section. At present, beside fresh produce, there is a substantial amount of leather trade across this border. The support of USAID under this point would be similar to the one proposed in the bullet above.
- Undertake feasibility studies and assist with linking the development Rail Access Concession to suitably located dry ports. The capacity at the current dry port needs to be expanded in any case. Provide support to areas around the dry ports by setting up warehouse and storage facilities. As a first step, feasibility studies could be undertaken to determine the scale and location of these facilities. Working with IPDF, promote any viable opportunities to U.S. firms involved in the business of logistics. All these efforts must link up with the existing/ proposed location of the firms/ SMEs in the proposed Value Chains. Ideally, as per IFC, Pakistan should be assisted with setting up Freight villages are logistics concentration points, developed at strategic locations, which provide various logistics related activities such as warehousing, packing, repacking, break-bulk center, and truck parking. In Europe, freight villages are typically a private sector business, developed by large scale operators that host complimentary services and related operators. Freight villages are often PPPs, where an area is defined as a

freight village by the public sector usually at the intersection of major multimode routes, and then private sector operators develop the facilities.

Rail Access PPPs are financially viable projects — according to IPDF the payback period is 5-6 years and the expected IRR is more than 20 percent— thus, these projects would not need any grant or subsidy support.

Supporting the local information technology market: Pakistan has substantial untapped potential in the IT service market for domestic use, and even more for export.

Key issues: Most IT firms, especially SMEs, lack resources to access foreign markets such as in the United States and they don't have funds to initiate new projects or expand the existing ones. Finally, most IT firms don't have reliable and relevant infrastructure support necessary to provide reliable and timely services.

Potential solutions: USAID could provide support in the following areas:

- Helping undertake a study, with the help of qualified and experienced consultants, on what the local and international market needs are in IT and identifying which of these 'un' or 'under-served' needs can the Pakistani service providers can cater to on commercially viable basis.
- Encouraging U.S. firms to work with local partners to develop clusters (technology eco-systems) comprising of technology based businesses, universities, financial support groups and highly skilled workforce — all connected with high-speed networking.
- Encouraging willing and experienced U.S. professionals to mentor/ coach (hands-on training, developing industry rules of thumb, developing guidelines, etc.). Mentors would also help turn good ideas into business plans that can be used to raise financing.
- Setting up an ICT Venture Capital Fund with initial seed money with further capitalization is provided by established IT firms; as well other donors and multilaterals. The idea is to match investors and entrepreneurs - bringing together those starting a business with those looking for places to invest cash. The ideal candidates for venture capital investment are businesses that are too small or immature to obtain bank financing, yet whose start-up costs are too large to rely on private savings. Venture capital is financial capital provided to early-stage, high-potential, and growth start-up companies. The venture capital works by owning equity.
- Help market and match local ICT firm capabilities that can advance, supplement or compliment capabilities of firms in the United States. This could be done in close collaboration with the national and provincial boards of investment and chambers of commerce and industry.

RECOMMENDATION TABLES

Energy Summary Recommendations

CONSTRAINT	DESCRIPTION	INTERVENTION/RECOMMENDATION
Supply Gap in the Power Sector	<p>Estimated gap in power availability for 2012/13 is around 5000MW.</p> <p>This gap adversely affects businesses, especially SMEs, and is estimated to eat away 2 - 3 percent of GDP every year. Obviously lack of reliable and consistent power supply has an impact on the six value chains being considered under this project.</p> <p>Given the Government's scarce fiscal space, this expansion must be driven by the private sector.</p> <p>However, private sector interest, especially by foreign Independent Power Producers (IPPs) has been weak as the sole public sector 'off-taker' of power is insolvent and the Government has defaulted on their commitments in terms of the sovereign guarantee backstopping payment to IPPs. Due to affordability issues captive power producers are limited to established large scale industries.</p>	<p><i>Support the Government in implementing recommendations made by USAID in the recently published, "The Causes and Impacts and the Power Sector Circular Debt in Pakistan" in order to create a solvent 'off-taker' of power produced by IPPs.</i></p> <p><i>Support creation of a dedicated 'Pakistan Power Guarantee Fund' that backstops Governments commitments to IPPs.</i></p> <p><i>Promote donor and IFI guarantee products that backstop Government's contractual commitments or raise the credit rating of IPPs</i></p> <p><i>Support local entrepreneurs to undertake technical and financial feasibility studies for undertaking captive power producers.</i></p> <p><i>Support U.S. firms (especially involved in producing power with biomass and/or coal) to enter the captive power producers' market in Pakistan and enter into direct agreements with end-users.</i></p> <p><i>Supporting firms that are part of the value chains to act collectively as a single client for captive power producers (obviously, it would be much easier where firms such as in the garment industry are "clustered" together) to enter into direct agreements with.</i></p> <p><i>Support Provincial Governments in developing small scale run-of-the river hydro projects as captive power producers.</i></p> <p><i>Support U.S. firms to offer renewable energy technologies and power production units for captive power producers. Solar PV power without back-up could be an affordable source of power for businesses that operate during day-light hours.</i></p> <p><i>Support joint ventures between U.S. and Pakistani businesses to set up facilities in Pakistan to produce smaller (capable of producing 5 to 20MW) power generation turbines.</i></p>
High Cost of Power Generation	<p>Pakistan needs low cost fuel options so that it can reduce the gap between the cost of power generation and price at which an end user purchases electricity. Reducing this 'subsidy' will also</p>	<p><i>Support coordination between other donors, IFIs, OPIC, U.S. EXIMP Bank, PPIB, IPDF and Provincial Governments in developing and promoting opportunities in hydro-power generation (from mega water reservoir</i></p>

CONSTRAINT	DESCRIPTION	INTERVENTION/RECOMMENDATION
	<p>have a direct impact on overall circular debt.</p> <p>In the 1980s, when the concept of IPPs was being conceived, 60% of the power generation was hydropower (with a much lower per unit cost of production). This is now down to about 28%; while oil based generation (with oil prices several times more than they were in 1980s) now accounts for 40% of the overall power generation.</p>	<p>based projects to smaller run-of-the-river projects).</p> <p><i>Support coordination between other donors, IFIs, OPIC, U.S. EXIM Bank, AEDB and Provincial Governments in promoting renewable energy technologies such as solar and wind that seem much more affordable (almost at par with per unit cost of production from furnace oil) these days.</i></p> <p><i>Support preparation of financial and technical feasibility studies for various opportunities identified for solar and wind generation projects and package these opportunities for U.S. firms to come and invest in Pakistan. Also provide technical assistance to relevant public sector agencies in Pakistan during the procurement process.</i></p> <p><i>Promote cheaper coal based power production in Pakistan that is in line with global and local environmental standards. The United States produces 60% of its power from coal, according to Ayub Ali, Director, Structured Finance, OPIC are many companies who have shown interest in coal based power production in projects abroad.</i></p> <p><i>Support a study needs to be undertaken as to how much of the existing "brownfield" power generation could be switched to coal and how viable this conversion would be (based on short term import of coal and ramping up local production in the future). The study would also indicate how U.S. firms can get involved in this effort.</i></p> <p><i>Support full exploitation of coal reserves at Thar, Sindh in the long-term. Given the nature of coal, and the fact that the cost of tariff needs to cover the cost of supporting infrastructure required to produce electricity at such a remote site, it is estimated that only large 1000MW plus capacity power plants would provide the economies to scale to make such a project viable. Such large investment in Pakistan's current economic scenario would be difficult to raise and would need some kind of grant support.</i></p> <p><i>Disseminate USAID's findings in studies undertaken on the 'economic value of natural gas in various sectors' undertaken under the Energy Policy Project. And encourage Pakistan to follow the gas allocation merit ranking that it formulated as part of the Gas</i></p>

CONSTRAINT	DESCRIPTION	INTERVENTION/RECOMMENDATION
		<p>Allocation and Management Policy (2005).</p> <p><i>Support and promote to U.S. firms to provide LNG to Pakistan.</i> This support is necessary since Pakistan's current credit rating is not conducive for long-term LNG contracts. The price of LNG in the United States is still quite low and it has sufficient reserves to export. U.S. firms would develop the logistics infrastructure necessary to provide LNG in Pakistan, including facilities at ports to off-load and gasify. There may be some grant support required for initial capital works, or for transportation of LNG from U.S. ports to Pakistani ports. A feasibility study, followed by investment packaging with the assistance of OPIC and U.S. EXIM Bank may be required.</p>
Availability of Long Term Financing	<p>Project financing for PPP/ Energy/ infrastructure development requires long term (preferably local currency) financing.</p> <p>Whilst some of the local banks have financed infrastructure transactions in the recent past, their capacity and appetite for long tenor non-recourse or limited recourse project finance may be limited by their balance sheets and the limits placed on infrastructure and long term lending by the regulatory regime (i.e., if the IPP/ captive power producer/PPP project pipeline needs to grow rapidly there needs to be sufficient availability of long-term, preferably local-currency financing available).</p>	<p>Support the development of a long term finance facility. The idea has the support of key Government entities in Pakistan. A similar facility set up in the 1990s with USAID support played an effective catalytic role in 'jump-starting' the IPP program. Such a facility could be set up exclusively for the power sector, or it can be set up broader infrastructure development with a 'ring-fenced' dedicated portion for the power sector. Such a facility would require buy-in and participation from all the key donors and IFIs. And it would need proactive involvement of OPIC for capitalization or credit enhancement.</p>
Political Support'	<p>The interventions/ recommendations provided above can only be effective if there is political support backing it in Washington DC and Islamabad. There is a need for making opportunities in Pakistan's power sector bankable and to promote these opportunities effectively to U.S. firms.</p>	<p>Supporting the establishment of a Power Sector Task Force reporting directly to the Prime Minister of Pakistan (similar to the one set up in the 1990s) that can work across all public and private sector stakeholders. This forum would provide coordination of efforts and efficient and timely decision making.</p> <p>Supporting demonstration of buy-in and dedication from the top in DC to resolve Pakistan's power sector problems, by, for instance, responding the way the United States did in the 1990s, immediately after Pakistan's first Power Policy was announced in 1994, the U.S. Energy Secretary Hazel O'Leary, as the leader of a U.S. Presidential Mission on Energy Investment in Pakistan, brought a high level business delegation to Pakistan consisting of 90 U.S. energy business, environmental and government delegates representing a broad range</p>

CONSTRAINT	DESCRIPTION	INTERVENTION/RECOMMENDATION
		<p>of experience in cutting-edge technology, innovative policy making and investment power to meet face-to-face with Pakistani government and industry delegates. As a result 18 Implementation Agreements were signed during this trip, that were part of the Memorandum of Understanding in which U.S. businessmen agreed to invest over 4 billion dollars in Pakistan energy sector.</p> <p>Supporting the set up a Joint U.S.-Pakistan Task Force on the Power Sector with a clear, measurable and time-bound mandate to resolve Pakistan' power crisis.</p>

INFRASTRUCTURE SUMMARY RECOMMENDATIONS

Constraint	Description	Intervention/Recommendation
Efficient targeting of infrastructure support to the Value Chains is a challenge	<p>Infrastructure support for businesses is best targeted when the businesses are not scattered over a vast geographical area.</p> <p>Targeting is more efficient when businesses are 'clustered' in close proximity of each other, or are physically confined in a 'ring-fenced' area</p>	<p>The recently enacted Special Economic Zone (SEZ) of 2012 opens up a number of opportunities for the value chains being considered. USAID could provide technical assistance, with the support of qualified consultants and advisors to:</p> <ul style="list-style-type: none"> • Support drafting and finalization of SEZ by-laws • <i>Support setting up Provincial Authorities</i> • <i>Support drafting of Guidelines for undertaking SEZ</i> • <i>Support Capacity Building of Authorities to procure SEZs</i> • <i>Develop a mechanism for providing capital grants to SEZ developers, so that the developers can provide land and infrastructure at subsidized rates, especially to SMEs</i> • <i>Undertake feasibility studies on behalf of the Governments of Punjab and Sindh</i> • <i>Promote viable SEZ development opportunities, in collaboration with IPDF, to U.S. firms especially in the value chain sectors</i> • <i>Coordinate with EXIM Bank, USTDA and OPIC to structure viable SEZ structures and present them to U.S. firms as investment opportunities.</i>
Enhancing Transport Efficiency	<p>Value Chains under study need efficient and affordable transport and logistics support so that they remain competitive and credible.</p> <p>Trucking fleet in Pakistan comprises of small/single-owners that are generally cash-strapped and are operating at very low margins (not necessarily lower tariffs) in a very competitive environment.</p> <p>Also the present truck fleet is not efficient in terms of fuel consumption and operations. In order to lower costs, the trucks are often overloaded and cause road damage, pollution and accidents</p> <p>Whereas, rail is usually the cheapest mode (about 50% less than road transport).</p>	<p><i>Provide overall support to Pakistan Railways best utilizing its infrastructure.</i> The Railway is already encouraging the private sector to invest in rolling stock and operate freight trains on its tracks on PPP basis. The Railways with the support of IPDF has launched a program whereby private parties would acquire rolling stock and operate it over a predetermined route(s) for the specific product over 20 years (on a Finance, Own, Operate and Maintain basis — as was done in India, Philippines and Europe).</p> <p><i>Support (business plans/ feasibility studies) Pakistan Railway through IPDF to develop Track Access Concession for the Value Chains under consideration with extension of services to areas like Sialkot and Faisalabad.</i></p> <p><i>Undertake feasibility studies and assist with linking the development</i></p>

Constraint	Description	Intervention/Recommendation
		<p><i>Rail Access Concession to suitably located dry ports.</i></p> <p><i>Provide support to develop business plans/ feasibility studies</i></p> <p><i>Provide support in marketing opportunities qualified investors and operators in the United States. USTDA, OPIC and U.S. Exim bank can be involved upfront so that they are up to speed on the project structure and can use their 'network' to market these opportunities</i></p>
Supporting Local Information Technology Market	<p>Most IT firms, especially SMEs, don't have resources to access foreign markets such as in the United States, and they don't have funds to initiate new projects or expand the existing ones.</p> <p>Finally, most IT firms don't have reliable and relevant infrastructure support necessary to provide reliable and timely services.</p>	<p><i>Providing support to undertake a study, on what the local and international, especially U.S., market needs are in IT and identifying which of these 'un' or 'under-served' needs can the Pakistani service providers cater to on commercially viable basis.</i></p> <p><i>Reaching out to and encouraging U.S. firms to work with local partners to develop clusters (technology eco-systems) comprising of technology based businesses, universities, financial support groups and highly skilled workforce — all connected with high-speed networking.</i></p> <p><i>Reaching out to and encouraging willing and experienced U.S. professionals to mentor/ coach (hands-on training, developing industry 'rules of thumb', developing guidelines etc.) for a fee. Mentors would also help turn good ideas into business plans that can be used to raise financing.</i></p> <p><i>Providing support to set up an ICT Venture Capital Fund with initial seed money with further capitalization is provided by established IT firms; as well other donors and multilaterals.</i></p> <p><i>Complementing above activities with developing a structured program to provide support to market and match local ICT firm capabilities that can advance, supplement capabilities of firms in the United States. This could be done in close collaboration with the National and Provincial Boards of Investment and Chambers of Commerce and Industry.</i></p>

ANNEX F

WORKFORCE DEVELOPMENT STRATEGY

PRESENTATION OF THE LABOR MARKET SITUATION¹¹³

Pakistan labor market is a complex one, highly heterogeneous both in the regional and in the sectoral dimension. On the aggregate there is an inadequate supply of skills, manifest in the low educational achievement of the labor force and reinforced by the narrow reach of education in rural areas and for women. Both trends result in an abundance of low skill, low wage labor with an unstable insertion on urban labor markets. Almost 80 percent of the population 10 years and older has literacy and numeracy abilities below metric level, making them functionally unable to interpret dials and read written instructions, essential abilities for the use of modern technology. This fraction reaches 85 percent for females.

This ability and educational deficits reflect themselves in the structure of participation rates, with female participation rates being less than a third of male ones (49 vs. 16 percent). However, these gender differences tend to attenuate when taking into account nontraditional forms of contract work realized at home mostly for females (cottage industry and other forms of contract work raise female participation rates to 27 percent).

The total labor force reaches a figure of 57.2 million in 2010-11, with regional increases of 470 thousand in Punjab and 260 thousand in Sindh. In turn, employment increased by 310 thousand workers in Punjab and by 130 thousand workers in Sindh. In 2010-2011 employment is on the rise in rural areas and for females in Punjab & Sindh, while change is negative in the case of males in urban areas. As a result of this evolution unemployment rates (6.0 percent) increased in 2011-2010 relative to the previous year (5.6 percent). Disaggregating this trend by gender shows that the increase in male unemployment rates (4.4 percent to 5.1 percent) more than offsets the decline in female ones (9.5 percent to 8.9 percent).

Most of employment is concentrated in manufacturing (13.7 percent), construction (7 percent) and agriculture & allied activities (45.1 percent). By occupational categories, employees constitute the largest group (36.0 percent), followed by own account workers (34.9 percent), contributing family workers (27.7 percent) and employers (1.4 percent). By gender, around two-thirds of female workers toil as contributing family workers (63.4 percent), while among males own account workers (40.5 percent) and employees (40.4 percent) account for the vast majority of workers.

Informal sector, unregulated activities account for more than seven-tenth (73.8 percent) of non-agricultural employment, and figures are similar in rural and urban

¹¹³ Data on this section comes from PBS, Labor Survey 2010-2011.

areas. Female workers are relatively more numerous in urban formal (36.9 percent) and less in rural formal (21 percent) than males, who are more numerous in urban informal (72.4 percent) than in rural informal (76.2 percent) compared to respective shares of females. By sector, informal activities tend to concentrate in wholesale and retail trade (38.9 percent) manufacturing (22.3 percent), construction (16.1 percent), transport (10.7 percent) and community, social and personal services (10.0 percent).

The picture that emerges from the figures mentioned above is that of a highly unregulated labor market, prone to a high incidence of gender discrimination and populated by low skill workers earning low wages. In most of the value chains that we analyze in this study (with the possible exception of the IT value chain) the picture is similar: dominated numerically by SMEs with highly flexible employment structures that often rely on contract work from cottage industries and domestic workers. Bigger firms tend to be less informal, and those that export tend to be more respectful of labor and environmental standards. Overall, the Pakistani economy, and to some extent the value chains object of this study, seem to be trapped in a low skill-low wage equilibrium where the feeble employment commitment between firms and workers feeds an equilibrium where neither of them have incentives to invest in the acquisition of new skills.

Breaking this equilibrium at the aggregate level requires of at least two sets of capacity building activities that can create the capabilities to implement significant policy remedies. First, the cost and relevance of available training needs to change in order to make it more attractive as an investment for firms and workers. Second, the enforcement of regulations, and particularly of labor regulations, needs to be enhanced to create incentives for a more stable employment commitment between workers and firms.

In what regards the cost, quality and relevance of training USAID should engage in dialogue and deployment of new approaches with NAVTEC at the national level and with TEVTA at the provincial level. Both are organizational structures that are mostly dominated by a supply driven approach that has hindered the achievement of adequate placement rates of trainees and resulted in a lack of interest by firms. There are some experiments, such as the Punjab Skill Development Fund, that have improved result indicators mostly as a result of the introduction of demand driven approaches and more reliance on external training providers (as opposed to the in house training provision that dominates TEVTA). Enhancing the access of TEVTA to more technical support and funding for the deployment of experimental approaches on a narrow district-defined basis should support these efforts.

In what regards the enforcement of regulations much has been written about the low effectiveness and widespread corruption of labor regulation enforcement in Pakistan¹¹⁴. According to most analysts, the situation has worsened with the adoption of the 18th Constitutional amendment in 2010 that resulted in the devolution of the labor administration responsibilities to the provincial governments. As provincial

¹¹⁴ See, among others, Report No. 46435-PK, PAKISTAN'S INVESTMENT CLIMATE: LAYING THE FOUNDATION FOR RENEWED GROWTH (In Three Volumes), Poverty Reduction & Economic Management Department Finance and Private Sector Unit, South Asia Department, The World Bank

governments lacked the organizational infrastructure labor administration and labor inspection activities have become even more ineffective and dysfunctional.

In terms of legislation there is a risk that the devolution of labor administration responsibilities to the provinces produces a very uneven mosaic of effective (i.e. enforced) legislation in each province. Legislation and labor administration systems need to be updated to adequate them to the characteristic of a more open economy populated by dynamic SMEs. The present legislation tends to burden SMEs with high and uncertain labor costs, SMEs recourse to informal labor relations is just a reaction to these regulatory constraints. USAID should promote awareness regarding the impact of labor regulation on employment and productivity, particularly of SMEs.

USAID should also engage in dialogue and collaboration with ILO-Pakistan in order to enhance the impact of ILO's efforts with provincial governments in the area of labor administration and labor inspection. A more effective system of labor administration has often been the difference between success and failure in changing the working and impact of legislation on employment and productivity.

EVALUATING THE POTENTIAL EMPLOYMENT IMPACT OF THE PROPOSED INTERVENTIONS IN EACH VALUE CHAIN

Projecting employment impacts at the sector level is a famously difficult, if not impossible, task. On the one hand, the volatility of growth of the Pakistani economy (annual rates of growth of aggregate GDP have ranged between 9 and 1.7 percent in the last decade) is reflected in an even wider volatility of sectoral growth. On the other hand, the impact itself of the proposed interventions depend on a host of conditions that range from national macroeconomic policies to the evolution of the world market for exports of the different sectors. Therefore, the figures presented below should be read as illustrative rather than predictive.

To start with we base our projections on the assumption of a stable structure and rate of growth of GDP and exports for the aggregate economy. In both cases we assume a 4 percent rate of growth over the period between today and 2017, a rate which is well within the range of behavior of GDP and exports over the last decade. It goes without saying that deviations from this assumed stable path will introduce changes in the values predicted for each sector.

Furthermore, we translate each proposed intervention in impacts on the sector rate of growth or on the average product of labor or both. That way, for instance, the expansion of the square block technology of mining in the marble sector is expected to increase the rate of growth of GDP and exports in the sector. By the same token, the proposed re-launching of the MIDC in Sialkot is expected to enhance the availability of high quality training and, through that, to increase average labor productivity in the medical and surgical instruments value chain. In turn, increasing labor productivity will translate itself into lower prices and enhance the competitive position of the sector, thus increasing exports that, in turn, will increase the rhythm of GDP growth.

We do not attempt to formalize this projection. The figures for sector and export growth and for average labor product are in itself well informed guesses that result

from our analysis of the value chains. The projection through the use of an accounting device as the tables below has the advantage of imposing consistency on the employment results (i.e., employment results from dividing total projected GDP by the projected average product of labor) and providing a good approximation in terms of orders of magnitude (i.e., employment growth is calculated over present employment applying the effects of the hypothesized rates of growth and productivity increases). We hope that the reduction of arbitrariness thus obtained allows for a more informative reading of the impact of interventions proposed in this document.

SURGICAL AND MEDICAL INSTRUMENTS: PAKISTAN 2013-2017

Three institutions are crucial for the implementation of a workforce development strategy for the surgical and medical instruments value chain. In the first place, USAID should partner with the Surgical Instruments Manufacturers Association of Pakistan (SIMAP) as an entry point to activities within the industry. Secondly, the Technical Education and Vocational Training Authority of Punjab (TEVTA-Punjab) who owns the Metal Industry Development Center in Sialkot (MIDC). Third, the Technology Upgradation and Skill Development Company (TUSDEC) who has the managerial and organizational abilities needed to implement a plan to re-launch the MIDC with strong involvement and future devolution to the private sector represented by SIMAP. Between these three institution and action plan for improving training and enhancing growth of the industry can be implemented.

Recommendations:

- Support the apprentice program that SIMAP is planning to introduce by supporting training costs as well as stipends for students to give them an incentive to complete the course. The course should be followed by immediate placement in SIMAP member firms. Use the Hunar Foundation model by providing resources to set up a working vocational training institute in Sialkot. Hunar Foundation initiates work through a market survey which is used to specify the trades to be taught in a certain institute. Hence specific skills needed by the surgical sector can be taken up. It costs \$1 million to set up a Hunar Foundation Institute with annual operating costs of \$ 250,000. The Association could provide the land while USAID could provide the set up and operational costs to begin operations.
- *Use TUSDEC organizational and managerial skills to re-launch the Metal Industries Development Center.* TUSDEC has a proven track record of setting up common facilities for training and technology upgrading. USAID should promote the creation of an association between TUSDEC (that has the experience of setting up common facilities as the Karachi Tools, Dies and Moulds Centre (KTDMC) in Karachi) and TEVTA (that has invested heavily in technology, equipment and classroom space in the MIDC in Sialkot) to set up a state of the art training facility that can also serve as a mechanism for technology upgrading for the surgical and medical instruments industry. There is a new administration at TEVTA Punjab that has showed interest in this kind of associative mechanism to enhance the impact of its activities. Total cost of this initiative is estimated to cost in the order of \$1-2 million.

The actions proposed for the surgical and medical instruments value chain are expected to have a double effect on labor productivity and sector growth. Regarding labor productivity we expect to observe a gradual increase in labor productivity (measured as the average product of labor) that will peak at 2 percent in 2016 and will stabilize at that rate of growth from then on. Regarding sector growth, we expect the sector to accelerate and grow faster than total GDP (projected to grow at 4 percent annually over the period) over the whole period of projection, peaking at 9 percent in 2017.

As a result of changes in productivity and growth in the sector, employment growth will peak in 2017 at close to 7 percent annual. Over the period of projection it is expected that the industry will create 2.8 thousand new jobs.

It is to be noted that these projections represent a minimum base scenario as we are not assuming a slow increase in exports and a stable level of capacity utilization. Given that capacity utilization is now around 60 percent and that exports are expected to grow above GDP in the projection period, it is reasonable to expect that the employment and wage effects predicted here are underestimated.

Surgical Instruments VC					
Data for 2011/2012					
	Value	Units			
Total # jobs created	10,000	person			
Exports	22.7	b 2011 PKR			
Production					
* as % GDP	0.12	% GDP			
* value in 2011 PKR	2,163.9	b 2011 PKR			
Source: Surgical and medical instruments industry in Pakistan: an overview					
TDAP, Pakistan, 2011					
Projection					
	2013	2014	2015	2016	2017
Sector GDP growth	4.0%	5.0%	7.0%	8.0%	9.0%
Sector export growth	4.0%	6.0%	7.0%	8.0%	9.0%
Labor productivity increase	0.5%	1.0%	1.5%	2.0%	2.0%
	2013	2014	2015	2016	2017
Sector GDP (billion 2011 PKR)	2,250.5	2,363.0	2,528.4	2,730.7	2,976.5
Average product of labor (million 2011 PKR per worker)	217.5	219.7	222.9	227.4	232.0
Employment (1,000 people)	10.3	10.8	11.3	12.0	12.8
(annual rate of growth)	3.48%	3.96%	5.42%	5.88%	6.86%

CUTTING AND SHAPING STONES: PAKISTAN 2013-2017

The Pakistan Stone Development Company (PASDEC) is a publicly funded, privately run organization (PPP) that is dedicated to issues of the marble industry in Pakistan, focusing on the introduction of square block" technology in the quarry segment of the value marble chain. As such, most of its operation are outside Sindh and Punjab.

However, the impact of these project will be felt mostly in the factory segment of the marble industry that is important in almost every city in those two provinces.

As of today, most factories operate from blasted pieces (potatoes) bought from trucks. Obtaining dimensional slates is more an art than a science. Square blocks would make the factory business more productive, without introducing per se higher skill demands at the factory floor. The technology used in factories is quite simple, requiring basic numerical skills (measuring and composite angles) that are consistent with most workforce in the industry having below secondary levels of education. Once the introduction of square block technology at the quarry level is generalized the increase in the quality of inputs will allow for the introduction of new technology at the factory level (such as CAD programming of cutters and shapers). This technology is likely to have early adopters in the big companies that compete in the international market, and will slowly be introduced in the small factories that supply the domestic market.

Recommendations:

- PASDEC, using results from other projects, is interested in the development of the mosaic and tile industry. Mosaics in particular would allow for the use of waste from quarry operations as input, and has the potential of generating home based employment, particularly for females. The Workforce Development Program Study of Lyari, Korangi, Sultanabad¹¹⁵ indicates that world marble mosaic trade is about \$9.2 billion and Pakistan's share is less than 0.1 percent. It provides the greatest employment opportunities for youth, especially women. The national and export sales of mosaic and field tiles can be increased tremendously, if proper marketing system and supply chain is established.

Due to the nature of work, females are more suitable for such type of trainings and employment, because they can even work on piece rate basis, at home. Designing of mosaic on computers by using various specialized software's may also provide a good employment opportunity for qualified women. However, experimental development of this activity has been affected by lack of marketing and sales promotion.

The actions proposed for this value chain will have a larger impact on the mining segment of the value chain, mainly via the generalization of the square block mining technology that will have a major impact on employment and production in Baluchistan and NWFP. The impact reflected in the projections below refer to the Punjab and Sindh provinces where manufacturing activities are located. The provision of better quality and easier processed square blocks will have a direct impact on productivity and exports, that in turn will translate into faster sector GDP growth.

¹¹⁵((October 15, 2012) by Chemonics Intl.

Cutting and shaping stones VC					
Data for 2011/2012					
	Value	Units			
Total # jobs created	22,000	person			
Exports	5.1	b 2011 PKR			
Production					
* as % GDP	0.20	% GDP			
* value in 2011 PKR	3,606.6	b 2011 PKR			
Source: Census of manufacturing industries 2005-2006 (sector 26) PBS, Pakistan, 2013 (data for Punjab and Sindh)					
TDA estimates exports as 0.2% of total exports in 2011 (including marble and onyx products)					
Data yearbook 2011 - 13.5 Value of Production by Industry Major Groups, PBS Pakistan 2011					
Projection					
	2013	2014	2015	2016	2017
Sector GDP growth	4.0%	6.0%	7.0%	9.0%	9.0%
Sector export growth	4.0%	6.0%	9.0%	10.0%	10.0%
Labor productivity increase	0.5%	1.0%	1.5%	1.5%	1.5%
	2013	2014	2015	2016	2017
Sector GDP (billion 2011 PKR)	3,750.8	3,975.9	4,254.2	4,637.1	5,054.4
Average product of labor (million 2011 PKR per worker)	164.8	166.4	168.9	171.4	174.0
Employment (1,000 people)	22.8	23.9	25.2	27.0	29.0
(annual rate of growth)	3.48%	4.95%	5.42%	7.39%	7.39%

We expect sector GDP growth to be above total GDP growth, mostly as the result of a faster increase in exports. This increase in exports will reach a peak in 2016, when we expect that square block production will expand to a point where larger fractions of production will be ready for non-regional export markets, and hence for faster growth. This increase in the quality of raw inputs (square blocks) will translate in faster average product of labor growth. Given the growth of exports this trend will be contemporaneous with a faster growth of total employment.

Again, it should be noted that this is a low base scenario that could be impacted, for instance, by the development of a strong mosaic sub-segment of the industry.

LEATHER: PAKISTAN 2013-2017

One of the keys to pulling Pakistan's leather production into the higher quality markets is the ability of its workforce to design and brand its own product lines. At present, the industry will be held back without more workforce skills in the area of product development and market awareness/understanding. Although still incipient, the Leather Accessories and Footwear (Design and Manufacturing) program at the Pakistani Institute of Fashion Design in Lahore can fulfill a useful role in filling this gap. This is an intensive skill based program emphasizing the crucial relationship between designs and manufacturing needs of the modern leather industry.

Two institutions are key partners in efforts in this area. The Pakistani Tanner Association that has organized the National Institute of Leather Technology as a technical and vocational training institution, and the Pakistan Institute of Fashion Design, that has a program geared to connecting design and manufacturing is its facilities in Lahore.

Recommendations

- USAID should work with internationally recognized institutions (such as Northampton UK, ISC-Primassens and Reutlingen University identified in the JE Austin study¹¹⁶) to launch a country-wide TOT program with technical training institutes (e.g., the National Institute of Leather Technology, Pakistan Institute of Fashion Design) on product development, pricing, and understanding of international market trends. Cost of this initiative could be in the order of \$1-2 million for technical assistance and first year operational costs.
- USAID should work with the Pakistani Tanner Association to strengthen the linkages with the British School of Leather Technology (Northampton University) to re-launch the National Institute of Leather Technology as a technical and vocational training institutions geared at providing factory and production floor training to quality and productivity supervisory personnel in the industry. Cost of this initiative could be in the order of \$1 million for technical assistance and updating of teaching equipment at the NILT.

The actions proposed for this value chain are expected to have a strong impact in the growth of exports and production in the sector, mainly through increased availability of mid-level managerial skills (to enable production growth and possible introduction of more advanced technologies) and high level design (to open new potential export markets). In turn, this increase in production and exports will translate in higher productivity of labor, whose growth is expected to stabilize by 2016 at 2 percent annual.

As a consequence of these trends we expect the creation of 4 thousand new jobs in the sector over the projection period. A renewal of the links between industry and advanced technology from the international Institutes to be engaged in updating the NILT and the PIFD might have a further positive impact in the operations of the leather sector.

¹¹⁶Leather sector of Pakistan, Draft strategy, version 1.0, April 2009

Leather VC					
Data for 2011/2012					
	Value	Units			
Total # jobs created	17,000	person			
Exports	89.3	b 2011 PKR			
Production					
* as % GDP	0.47	% GDP			
* value in 2011 PKR	8,475.5	b 2011 PKR			
Source: Census of manufacturing industries 2005-2006 (sector 19) PBS, Pakistan, 2013 (data for Punjab and Sindh) Data yearbook 2011 - 13.5 Value of Production by Industry Major Groups, PBS Pakistan 2011 TDA estimates exports as 3.5% of total exports in 2011					
Projection					
	2013	2014	2015	2016	2017
Sector GDP growth	4.0%	5.0%	6.0%	8.0%	9.0%
Sector export growth	4.0%	6.0%	8.0%	10.0%	10.0%
Labor productivity increase	0.5%	1.0%	1.5%	2.0%	2.0%
	2013	2014	2015	2016	2017
Sector GDP (billion 2011 PKR)	8,814.5	9,255.2	9,810.5	10,595.4	11,548.9
Average product of labor (million 2011 PKR per worker)	501.0	506.1	513.7	523.9	534.4
Employment (1,000 people)	17.6	18.3	19.1	20.2	21.6
(annual rate of growth)	3.48%	3.96%	4.43%	5.88%	6.86%

TEXTILES AND GARMENTS VALUE CHAIN: PAKISTAN 2013-2017

There are a number of institutions providing training to the textiles and garment sector, but a number of gaps remain. Medium and big firms in the garment industry often complain about the scarcity of floor- and middle management personnel. Firms report an acute scarcity of line supervisors and floor level management, and complain about the lack of production experience of newly hired engineers (BA and BE levels of education).

The National Textile University in Faisalabad and the Textile Institute of Pakistan in Karachi are providing training at the BA and BE level on all aspects of the textile sector value chain including spinning, weaving, processing (dyeing and printing) and manufacturing. In our interviews the National Textile University reported having high placement rates, associated with the availability of factory-like installations in the University that serve to train their students under real world factory conditions. Designing is an integral part of the garment manufacturing process for the high-end local market. Good design schools such as the Pakistan Institute of Fashion Design (PIFD) and Asian Institute of Fashion Design (AIFD) are producing skilled designers. In the past these institutes taught high fashion and most of the faculty lacked experience in the garment industry, producing a disconnect between the graduates and garment sector firms. This is changing however. The Director of the College of Fashion and Design Faisalabad (a PIFD unit) has experience working in the garment industry, and the college has a garment production line on its premises where students test the manufacturing of their designs.

Associations such as the Pakistan Hosiery Manufacturing Association (PHMA) and the Pakistan Readymade Garments, Manufacturers and Exporters Association (PRGMEA) set up training institutes more than a decade ago with resources allocated

from the Export Development Fund. They have been providing competency-based training on different aspects of the garment production process since then and have received extensive support from ILO. Association members contribute to these training institutes. However, it is important to note that these institutes have been working under capacity for some time due to funding limitations and rely on donor projects in order to generate some resources.

In addition to the training being given by skill development institutes mentioned above, ad hoc trainings and apprenticeships are conducted through TEVTA and its affiliated organizations but they have limited impact at least measured by placement rates of trainees. TEVTA needs to develop a comprehensive training policy that incorporates demand driven elements and links to institutes already providing training in relevant areas.

Recommendations

- *Allocation of Export Development Fund resources.* A transparent and effective system for allocating Export Development Fund resources for skill building, technology up gradation and marketing for the garment sector is required. Perhaps some resources could be allocated annually to PHMA and PRGMEA. The Associations based on consensus of their members could then decide how to use these funds for development of exports. In this way representatives of private sector firms would take charge of deciding key initiatives to fund each year. In this context, it would be critical to ensure that the Associations being allocated the funds are truly representative of the garment sub-sector they are working for.
- *Improving the linkages between education and production in the garment and design segments of the value chain.* The garment industry is at a crucial juncture that opens opportunities for a significant increase in value added and productivity. One of the conditions for that evolution to take place is an improvement in the linkages between education and production. There are a number of highly rated educational institutions in Pakistan that produce engineers and technical personnel with a good theoretical command of updated technologies but with almost no experience in production line management. In particular, in the garment segment of the value chain there is no equivalent to the National Textile University, an institution that produces textile engineers trained in the University production facilities.
- The School of Textile and Design of the University of Management and Technology (Lahore) is looking for financing of a project to develop a training facility for its students in a closed textile mill with equipment to go from weaving to garment finishing. This facility would give UMT students a hands-on experience on factory operations and management in the garment industry equivalent to the one acquired by students of the National Textile University for the textile segment. Given the record of excellence of the UMT this is a project well worth exploring where USAID could act as a partner linking the University with potential donors and investors. Cost of this initiative would be \$2-3 million, including asset building and partial first year operational expenses.

- *Supporting PRGMEA in the establishment of modern training facilities in Sialkot.* PRGMEA, the premier employer's association in the readymade garment industry, has received a grant from the Export Development Fund for the establishment of a training institute in the Sialkot area. Ijaz A. Khokhar, chief coordinator of PRGMEA and Kamran Yousaf Sandhu, Principal of PRGTTI, have developed a project to create a complex facility including state of the art equipment and gender segregated dormitories for students that can have a substantial impact on skill development and female employment in the area of Sialkot.

To overcome the classical financing constraints that affect this kind of centers Mr. Khokhar is proposing a scheme by which mid-size firms in the area would sponsor students of a three year training program with a promise of employment at completion. This initiative should be supported by USAID through technical assistance for the adoption of modern training standards. Estimated total cost would be \$0.5 million.

The adoption of the recommendations contained in this report for the textile and garment value chain would implicate an increase in exports through entrance in higher value added activities linked to design and to an increase in labor productivity linked to the refinement of training activities. Besides support to PRGMEA and PRGTTI for the Sialkot training initiative it would be important (as is mentioned above) to enhance the dialogue between TEVTA and USAID for the updating of training standards and practices. Another important partner in this endeavor is ILO-Pakistan that has an on-going collaboration with PRGTTI in the development of competency-based training.

As a result of this revamping of the training system and development of the design sub-segment we expect to observe an increase in exports starting in 2014 that will produce a surge in GDP growth. These trends will result in the creation of more than a quarter million new jobs in the industry in the period under analysis.

Textile and garment VC					
Data for 2011/2012					
	Value	Units			
Total # jobs created	1,350,000	person			
Exports	1,378.4	b 2011 PKR			
Production					
* as % GDP	11.40	% GDP			
* value in 2011 PKR	205,575.1	b 2011 PKR			
Source: Small and Medium Enterprise Development Authority (SMEDA) of Pakistan Data yearbook 2011 - 13.5 Value of Production by Industry Major Groups, PBS Pakistan 2011 TDA estimates exports as 54 % of total exports in 2011					
Projection					
	2013	2014	2015	2016	2017
Sector GDP growth	4.0%	5.0%	6.0%	7.0%	8.0%
Sector export growth	4.0%	6.0%	7.0%	8.0%	8.0%
Labor productivity increase	0.5%	1.0%	1.5%	2.0%	2.0%
	2013	2014	2015	2016	2017
Sector GDP (billion 2011 PKR)	213,798.1	224,488.0	237,957.2	254,614.3	274,983.4
Average product of labor (million 2011 PKR per worker)	153.0	154.6	156.9	160.0	163.2
Employment (1,000 people)	1,397.0	1,452.3	1,516.7	1,591.1	1,684.7
(annual rate of growth)	3.48%	3.96%	4.43%	4.90%	5.88%

INFORMATION TECHNOLOGY: PAKISTAN 2013-2017

The IT value chain is at a critical juncture today in Pakistan. A number of institutional developments and the tensions between production for the local and international market shape a dynamic industry where a number of initiatives are being developed. Most of the recommendations related to workforce are listed in the main report and will not be presented here. We list here only recommendations referred to the links between the university system and the industry that are expected to have a direct and quantifiable impact in labor productivity in the value chain.

Recommendations

- USAID should partner with UMT School of Science and Technology¹¹⁷ for the implementation of a 200 work station computer lab dedicated to the creation, development and licensing of computer applications for mobile and portable devices (.mov). The University is looking for funding in the order of 2M U\$ to support the set up costs and partial coverage of operational expenses over a period of two years. The Center would support the initial stages of development and marketing of applications. The selloff of IP rights to interested private parties (Google, Samsung, etc.) would finance the operation of the Center beyond the two years initial funding.

¹¹⁷ UMT at Lahore (Rector Dr. Hasan Sohaib Murad, Exec Director Abid HK Shirwani)

- USAID should explore working with the NUST¹¹⁸ in the support of the Technology Incubation Center through NUST Corporate Advisory Council. The University has lots of experience in technology development and has worked with companies such as Audi, Mercedes Benz, Castrol and the PAK Army in the development of technology solutions connected to light mechanical engineering. Through the Technology Incubation Center they are exploring the launching of companies such as Entaly (www.entaly.com), a private company created by graduates of their School of Electrical Engineering and Computer Science dedicated to gaming and learning.

NUST is a well-accredited and recognized educational institution that has a proven track record and strong institutional capabilities to coordinate with the private sector. They could serve not only as an educational center well-coordinated with the IT industry, but also as a support mechanism for the development of innovative firms in the sector. USAID could provide technical assistance and some limited operational support funding with an estimated cost of \$1 million over the first year of collaboration.

- NUCES¹¹⁹ is a privately owned and funded university that has a proven market record in the education of BSs in Computer Science that have fed the industry at the level of middle management. USAID should collaborate with the Software Engineering Research Center (SERC) through which the University seeks to help and support the local software industry in establishing and improving their processes and practices through continuous feedback and training. The aim of SERC is to analyze and develop process and lifecycle models for different types of projects being undertaken by local software industry in the offshore and distributed environment.

The adoption of the recommendations contained in this report for the IT value chain are expected to result in a fast increase in growth of production, led by an acceleration of the growth in exports. We expect export growth to peak at 12 percent in 2015, leading to a sustained rate of growth of production of 10 percent annual. As a result of these trends we expect employment to increase by 40 thousand employees over the projection period.

¹¹⁸National University of Sciences and Technology (Rabia Shoaib Ahmad, Director CAC, Akhtar Ali Qureshi, Gral Manager, Technology Incubation Centre)

¹¹⁹ National University of Computer and Emerging Sciences (NUCES - FAST) (Dr. Muhamad Latif Virk, Registrar, Yasir Nazir, Deputy Manager)

Information Technology VC					
Data for 2011/2012					
	Value	Units			
Total # jobs created	110,000	person			
Exports	1,400.0	b 2011 PKR			
Production					
* as % GDP	1.50	% GDP			
* value in 2011 PKR	27,049.4	b 2011 PKR			
Source: Pakistan Software Export Development Board					
"Pakistan IT Industry Overview", by PSEB, URL: http://www.pseb.org.pk/item/industry_overview					
Projection					
	2013	2014	2015	2016	2017
Sector GDP growth	8.0%	9.0%	10.0%	10.0%	10.0%
Sector export growth	6.0%	10.0%	12.0%	12.0%	12.0%
Labor productivity increase	0.5%	1.0%	1.5%	2.0%	2.0%
	2013	2014	2015	2016	2017
Sector GDP (billion 2011 PKR)	29,213.3	31,842.5	35,026.7	38,529.4	42,382.4
Average product of labor (million 2011 PKR per worker)	247.1	249.6	253.3	258.4	263.6
Employment (1.000 people)	118.2	127.6	138.3	149.1	160.8
(annual rate of growth)	7.46%	7.92%	8.37%	7.84%	7.84%

ANNEX G

CONTACT LIST

Garments Sector Contacts	Address
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Garments Sector Contacts	Address
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PRAGTTI the training institute run by PRAGMA	18-G, Block-6, P.E.C.H.S., Shahrah-e-Faisal, Karachi. Tel: 4546446-47-48 , 4526918
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Hasham Hansa Leather Factory	Sialkot
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