

PAKISTAN ENGINEERING COUNCIL

Islamabad

**REVIVAL AND GROWTH OF THE
MACHINE BUILDING AND CAPITAL GOODS INDUSTRY
IN PAKISTAN**

*A National Strategy for Export-Led Industrialization, Technology Acquisition and
Engineering Competitiveness*

**REPORT OF THE PEC COMMITTEE ON REVIVAL OF
MACHINE BUILDING INDUSTRIES IN PAKISTAN**

Prepared for submission to the Federal Cabinet
through the Ministry of Industries and Production and the Planning Commission of Pakistan

Table of Contents

Foreword

This report is submitted by the Pakistan Engineering Council (PEC) Committee on the Revival of Machine Building Industries, constituted to examine the structural decline of Pakistan's capital goods manufacturing base and to recommend a coordinated national response. The Committee's deliberations draw on the technical and policy experience of its members across mechanical, electrical, industrial and manufacturing engineering disciplines, and on consultations with industry associations, public-sector engineering organizations, academia and financial-sector stakeholders.

Pakistan today imports the overwhelming majority of the machinery, equipment and engineering systems on which its economy depends — from textile spinning frames to power transformers, from tractors to telecom infrastructure. This is not a reflection of a lack of engineering talent. Pakistan trains tens of thousands of mechanical, electrical, industrial and manufacturing engineers every year, many of whom emigrate or move into sectors unrelated to capital goods production for want of a domestic industry capable of absorbing their skills at scale. It is, rather, the consequence of four decades of policy neglect: capital goods manufacturing was never designated a strategic sector, never received dedicated long-term financing, was never protected by an industrial participation framework comparable to those used by Pakistan's regional competitors, and was never organized into the kind of geographically concentrated, infrastructure-supported industrial clusters that have underpinned capital goods success in South Korea, Taiwan, Turkey, China and, more recently, Vietnam and India.

The Committee's central finding is that this is a remediable failure of policy design, not an irreversible feature of Pakistan's industrial structure. Pakistan possesses functioning foundries, forging shops, machine tool workshops, fabrication units and component manufacturers in Lahore, Gujranwala, Faisalabad, Sialkot, Karachi and elsewhere — most operating below technological potential, undercapitalized, and disconnected from export markets and original equipment manufacturers (OEMs). With a deliberate national strategy combining long-term industrial finance, technology acquisition mechanisms, industrial participation requirements on public procurement, and cluster-based infrastructure investment, this latent capacity can be converted into a globally competitive capital goods export sector within a fifteen-year horizon.

This report sets out that strategy in two volumes. Volume I presents the strategic framework: the rationale, the missions, the cluster geography and the financing and governance architecture. Volume II, presented as an accompanying Implementation Framework, sets out detailed cluster investment plans, employment and export projections, draft legislative text and the cabinet summary annexes required to move from policy approval to execution. The Committee recommends that this report be considered by the Federal Cabinet as the basis for declaring capital goods manufacturing a National Strategic Sector.

On behalf of the Committee,

Imtiaz Rastgar

Pakistan Engineering Council, Islamabad

Executive Summary

Pakistan's capital goods industry — the machinery, equipment, components and engineering systems that other industries depend upon to produce everything from textiles to electricity — has been allowed to atrophy over four decades of policy neglect. The country now imports an estimated US\$10–12 billion of capital goods annually across ten major HS code categories, including industrial machinery, electrical machinery, power equipment, transport equipment, agricultural machinery, pumps and compressors, automation equipment, mining equipment, renewable energy equipment and other engineering systems. This import dependence is not simply a trade statistic; it is a structural drain on foreign exchange reserves, a permanent ceiling on industrial value addition, a source of chronic vulnerability to currency depreciation, and a forfeited opportunity for high-skill employment for hundreds of thousands of Pakistani engineers and technicians.

The Committee's assessment is that this position is reversible. Pakistan retains an underutilized base of engineering skills, machine shops, foundries and component manufacturers concentrated in identifiable geographic clusters — principally in Punjab (Lahore, Gujranwala, Faisalabad, Sialkot, Gujrat and surrounding districts) and Sindh (Karachi and Hyderabad), with emerging potential in Khyber Pakhtunkhwa and Balochistan. What has been missing is not capability but coordination: the long-term, patient capital that machinery manufacturing requires (payback periods of seven to fifteen years, against commercial bank lending horizons of three to five years); a policy framework that systematically converts public and foreign-financed procurement into local industrial capacity, as virtually every successful capital goods exporter has done; and a national mission structure that concentrates scarce engineering, financial and institutional resources on a defined set of priority sub-sectors rather than dispersing them thinly across the entire economy.

This report proposes a comprehensive fifteen-year national strategy built on seven pillars:

1. Declaration of Capital Goods Manufacturing as a National Strategic Sector, with a standing inter-ministerial governance mechanism reporting to the Cabinet Committee on Industrial Development.
2. Ten National Capital Goods Missions, each anchored in a lead industrial cluster, with phased investment, employment and export targets running through 2040 — covering machine tools, industrial machinery, agricultural machinery, power equipment, renewable energy equipment, pumps and compressors, automotive components, mining equipment, industrial automation, and energy storage systems.
3. Twelve Strategic Industrial Clusters spanning Punjab, Sindh, Khyber Pakhtunkhwa and Balochistan, each receiving dedicated infrastructure, common-use technology facilities, testing and certification centers, and vendor development support tailored to its existing industrial base.

4. A Pakistan Industrial Development Finance Corporation (PIDFC), capitalized at PKR 300 billion, to provide the patient, long-tenor financing — technology modernization loans, export expansion loans, cluster infrastructure loans and matching product-development grants, at tenors of ten to fifteen years — that commercial banks structurally cannot supply.
5. An Industrial Participation Act mandating that all public procurement contracts (and foreign-financed contracts above a defined threshold) exceeding US\$50 million in value carry a minimum 40% local industrial participation obligation, fulfilled through local sourcing, technology transfer, joint ventures, vendor development or export orders, modeled on offset frameworks used successfully by Turkey, South Korea, Malaysia and South Africa.
6. A National Skills, Technology and Innovation Framework linking technical universities, polytechnics and vocational training institutes to cluster-specific curricula, combined with a Technology Acquisition Program to secure licensing, joint-venture and reverse-engineering pathways into machine tool, electrical equipment and automotive component technology.
7. A phased fifteen-year implementation roadmap — Phase I (2026–2028) for policy approval and institution-building, Phase II (2028–2032) for infrastructure and vendor development, and Phase III (2032–2040) for global supply-chain integration and export scaling — with a monitoring and evaluation framework reporting annually to Cabinet.

If implemented as proposed, the strategy is projected to generate approximately 285,000 direct jobs and 825,000 indirect jobs — over 1.1 million jobs in total — and to grow capital goods exports from a negligible base today to US\$1.75 billion by 2030, US\$7.15 billion by 2035, and US\$15–20 billion by 2040. These are not speculative figures; they are derived from cluster-level investment plans, mission-level export trajectories and employment multipliers benchmarked against comparable industrialization programs in Turkey, Malaysia and Vietnam, and are presented in full in Volume II of this report.

The Committee recommends that the Federal Cabinet approve, in principle, the designation of capital goods manufacturing as a National Strategic Sector; direct the Ministry of Industries and Production, in coordination with the Planning Commission, the State Bank of Pakistan and provincial governments, to operationalize the Ten National Capital Goods Missions and the PIDFC within the current fiscal year; and refer the draft Industrial Participation Act to the Cabinet Committee on Legislative Affairs for expedited processing. Indicative cabinet summaries for each of these decisions are appended as annexes to this report.

Summary of Key Figures

Metric	Value
Annual machinery import bill	US\$ 10 – 12 billion
Proposed National Capital Goods Missions	10

Metric	Value
Proposed Strategic Industrial Clusters	12 (across all four provinces)
Direct employment potential	~285,000 jobs
Indirect employment potential	~825,000 jobs
Total employment potential	> 1.1 million jobs
Export target by 2030	US\$ 1.75 billion
Export target by 2035	US\$ 7.15 billion
Export target by 2040	US\$ 15 – 20 billion
Proposed DFI initial capitalization (PIDFC)	PKR 300 billion
Minimum industrial participation on procurement >US\$50M	40% of contract value

Chapter 1: Capital Goods Industry — Definition and Strategic Importance

1.1 Definition and Scope

The capital goods industry comprises the machinery, equipment, tools, components and engineering systems used by other industries to produce goods and services, rather than goods consumed directly by households. It includes, among others: machine tools and metalworking equipment; industrial and process machinery (textile, food processing, packaging, cement, chemical and pharmaceutical machinery); electrical machinery and equipment (transformers, switchgear, motors, generators, industrial controls); power generation and transmission equipment; transport equipment and components (automotive, rail and marine systems); agricultural machinery and implements; pumps, compressors and fluid-handling equipment; industrial automation and robotics; mining and earth-moving equipment; and renewable energy equipment, including solar, wind and energy storage systems. Internationally, this sector corresponds broadly to Harmonized System (HS) Chapters 84 through 89 — covering nuclear reactors, boilers, machinery and mechanical appliances (HS 84); electrical machinery and equipment (HS 85); railway equipment (HS 86); vehicles and automotive systems (HS 87); aircraft and aerospace equipment (HS 88); and marine equipment (HS 89).

The Committee deliberately adopts a broad definition for the purposes of this strategy, encompassing both the upstream engineering and metalworking capabilities (foundries, forging, machine tools, precision components) that underpin all capital goods production, and the downstream assembled products (machinery, vehicles, equipment) that constitute the visible export and import categories. This is consistent with the approach taken by every successful capital goods exporting nation: machine tools and precision components are treated as a foundational, cross-cutting capability rather than a single end-product category, because competitiveness in machine tools determines the cost and quality of every downstream machinery category that depends on them.

1.2 Strategic Importance to the National Economy

The Committee considers capital goods manufacturing strategically important to Pakistan's economic trajectory for five interlocking reasons.

1.2.1 Foreign Exchange and Balance of Payments

Pakistan's recurring balance-of-payments crises are driven substantially by the import intensity of its industrial base. An estimated US\$10–12 billion is spent annually on machinery and engineering equipment imports — a sum that recurs every single year regardless of export performance, because virtually every other industrial sector (textiles, cement, fertilizer, power generation, food processing) depends on imported machinery for both initial capacity and ongoing replacement and modernization. Reducing this import bill through domestic substitution, even partially, has a direct and immediate

impact on the current account that is structurally different from export promotion in finished consumer goods: every dollar of machinery import substituted is a dollar that does not need to be earned through exports merely to stand still.

1.2.2 Industrial Sovereignty and Resilience

Recent global supply-chain disruptions — pandemic-related shutdowns, shipping disruptions, and geopolitically driven export restrictions on critical technologies — have demonstrated that import dependence on capital goods is not merely a cost issue but a resilience and sovereignty issue. A country that cannot manufacture, maintain or repair its own machine tools, power equipment and industrial systems is permanently exposed to external shocks over which it has no control, and is structurally unable to respond rapidly to domestic industrial expansion needs (for example, sudden growth in textile or cement capacity) without long international lead times.

1.2.3 High-Value Employment for Engineering Graduates

Pakistan's engineering universities and polytechnics produce a substantial annual cohort of mechanical, electrical, industrial, manufacturing and mechatronics engineers. In the continued absence of a domestic capital goods manufacturing base of adequate scale, a significant proportion of this cohort either emigrates to economies with stronger engineering manufacturing sectors (the Gulf, East Asia, North America and Europe) or is absorbed into sectors — trading, services, government — that do not utilize core engineering skills. A revived capital goods sector directly addresses this by creating high-value, skill-intensive domestic employment commensurate with the country's actual engineering training capacity, while also creating a retention incentive that reduces the long-run fiscal loss embedded in subsidized engineering education that does not translate into domestic economic value.

1.2.4 Technology Spillovers and Industrial Upgrading

Capital goods manufacturing functions as a uniquely powerful spillover sector because its outputs are inputs to nearly every other branch of manufacturing. A domestic machine tool industry, for example, lowers the cost and lead time of capital equipment for textiles, auto parts, furniture, and light engineering simultaneously; a domestic power equipment industry does the same for energy infrastructure across the entire economy. Historical evidence from South Korea, Taiwan and, more recently, Turkey and Vietnam, indicates that nations which deliberately built domestic capital goods capability achieved faster and more durable upgrading across their entire manufacturing base than nations that relied solely on assembly of imported capital equipment, because local engineering teams developed cumulative tacit knowledge of machine design, materials and process optimization that diffused into adjacent industries.

1.2.5 Export Diversification Beyond Textiles

Pakistan's exports remain heavily concentrated in textiles and apparel, a sector exposed to global commodity price cycles, preferential trade arrangement risk (notably GSP+ status with the European

Union), and intense low-cost competition from Bangladesh, Vietnam and Cambodia. Capital goods exports — machine tools, components, electrical equipment, automotive parts — represent a fundamentally different competitive proposition based on engineering quality, cost-competitive precision manufacturing and proximity to regional markets (South Asia, Central Asia, the Gulf and East Africa), rather than low-wage assembly labor. Diversifying the export base into this category materially reduces Pakistan's exposure to textile-sector-specific shocks and positions the country in higher-value-added global value chains.

Chapter 2: Global Capital Goods Industry Overview

2.1 Global Market Structure

The global capital goods industry is dominated by a small number of advanced and newly industrialized economies that made deliberate, state-supported strategic investments in machine tools, electrical equipment and engineering manufacturing over multi-decade horizons. Germany, Japan, the United States, South Korea, China and Italy together account for the overwhelming majority of global machine tool and industrial machinery exports. Within Asia specifically, the trajectory followed by South Korea and Taiwan from the 1960s through the 1990s, and more recently by China since the 2000s and by Vietnam and India over the past decade, offers the most directly relevant template for Pakistan, given comparable starting conditions of low initial capital stock, abundant engineering labor, and the need to industrialize rapidly under foreign exchange constraints.

2.2 Lessons from Comparator Economies

2.2.1 South Korea

South Korea's transformation from a capital-goods importer in the 1960s to a global machine tool and heavy machinery exporter by the 1990s was driven by a coordinated industrial policy combining: (i) long-tenor, subsidized financing through the Korea Development Bank for machinery manufacturers; (ii) mandatory technology transfer and local content requirements attached to foreign investment and procurement; (iii) concentrated industrial complexes (Changwon, Ulsan) purpose-built for machinery and heavy industry; and (iv) export targets imposed on supported firms as a condition of continued state financing, which forced early exposure to international quality standards rather than permanent reliance on protected domestic demand.

2.2.2 Turkey

Turkey's machinery and machine tool sector, now a substantial net exporter to Europe, the Middle East and Central Asia, developed through a combination of customs union access to the European Union (which forced quality and certification upgrading), an active industrial offsets framework on defense and infrastructure procurement, and organized industrial zones (Organize Sanayi Bölgeleri) that provided shared infrastructure, testing facilities and logistics to clustered machinery manufacturers. Turkey's experience is particularly instructive for Pakistan because it demonstrates that a middle-income economy with moderate capital availability can build a competitive capital goods export sector primarily through industrial organization and procurement policy, rather than through capital-intensive state-owned heavy industry alone.

2.2.3 Malaysia and Vietnam

Malaysia's electrical and electronics machinery sector and Vietnam's more recent industrial machinery and automotive component growth both relied heavily on attracting foreign OEMs into designated industrial zones under local-content and vendor-development obligations, progressively building domestic supplier capability around anchor multinational manufacturers. This model — using foreign direct investment and multinational supply chains as a vehicle for domestic capability transfer, rather than as a substitute for it — is directly relevant to Pakistan's automotive component and electrical equipment clusters in Lahore, Karachi and Sialkot, where existing joint-venture relationships with international OEMs can be systematically leveraged for deeper technology transfer under the Industrial Participation framework proposed in Chapter 10.

2.2.4 China

China's scale and the speed of its capital goods build-out are not directly replicable, but the underlying mechanism — sustained, multi-decade state development bank financing for machinery manufacturing at tenors far beyond commercial bank horizons, combined with deliberate localization targets for strategic equipment categories — is the single most relevant structural lesson for the financing architecture proposed in Chapter 11 of this report.

2.3 Common Success Factors

Across these comparator economies, the Committee identifies four recurring success factors that this strategy is designed to replicate within Pakistan's institutional and fiscal context:

- Patient, long-tenor industrial finance matched to actual machinery investment and payback cycles, rather than commercial banking tenors.
- Geographic concentration of manufacturing capacity into organized industrial clusters with shared infrastructure, rather than dispersed, isolated units.
- Procurement-linked industrial participation or offset obligations that convert public and foreign-financed spending into a guaranteed initial market for domestic manufacturers.
- A deliberate, time-bound technology acquisition strategy — through licensing, joint ventures, reverse engineering and applied research collaboration with technical universities — rather than reliance on organic technology development alone.

Chapter 3: Pakistan's Current Position

3.1 Scale of Import Dependence

Pakistan's machinery import bill is estimated at US\$10–12 billion annually, drawn from State Bank of Pakistan trade data, Pakistan Bureau of Statistics (PBS) external trade statistics, and UN Comtrade records. The Committee recommends that the final cabinet submission be supported by a fully reconciled three-source dataset (PBS, SBP and UN Comtrade) at the six-digit HS code level, given that headline trade classifications can understate true capital goods exposure where machinery is imported in semi-knocked-down (SKD) or completely knocked-down (CKD) form for local assembly. The indicative breakdown by category, based on Committee estimates, is presented below.

Category	Indicative Annual Imports (US\$ Billion)
Industrial Machinery	2.0
Electrical Machinery	2.5
Power Equipment	1.2
Transport Equipment	2.0
Agricultural Machinery	0.4
Pumps & Compressors	0.3
Automation Equipment	0.5
Mining Equipment	0.2
Renewable Energy Equipment	0.7
Other Capital Goods	0.7
Estimated Total	10.5

This import structure reveals a critical strategic vulnerability: electrical machinery, industrial machinery and transport equipment together account for over 60% of the total machinery import bill, indicating that Pakistan's industrial economy is fundamentally dependent on foreign-sourced equipment across precisely the categories — motors, transformers, industrial controls, processing machinery, vehicles and components — that most directly determine the cost structure of every other manufacturing sector in the country.

3.2 HS Code Classification for Detailed Analysis

For the purposes of detailed trade analysis, localization target-setting and annual monitoring, the Committee recommends that the Ministry of Commerce and the Ministry of Industries and Production

jointly adopt the following HS chapter structure as the standard reference classification for capital goods trade reporting, to be reconciled annually against PBS, SBP and UN Comtrade datasets:

HS Code	Category
HS 84	Nuclear reactors, boilers, machinery and mechanical appliances
HS 85	Electrical machinery and equipment
HS 86	Railway equipment
HS 87	Vehicles and automotive systems
HS 88	Aircraft and aerospace equipment
HS 89	Marine equipment

3.3 Existing Industrial Base and Latent Capacity

Despite the scale of import dependence, Pakistan retains a meaningful and geographically concentrated existing industrial base in machine building and engineering manufacturing, which this strategy is designed to upgrade and scale rather than build from a zero base. Key existing capabilities identified by the Committee include:

- A substantial machine tool, foundry and forging base centered on Gujranwala and the broader Gujranwala-Gujrat-Wazirabad industrial belt, historically supplying agricultural implements, hand tools, kitchenware and light engineering goods to both domestic and limited export markets.
- A precision engineering and sporting-goods-adjacent manufacturing base in Sialkot, with demonstrated export discipline and quality-certification experience (through decades of sporting goods and surgical instrument exports) that can be redirected toward precision components and emerging aerospace-adjacent manufacturing.
- An automotive and auto-component assembly base in Lahore and Karachi, built around joint ventures with international OEMs, which provides an existing — if underdeveloped — vendor base that can be deepened through the industrial participation mechanism proposed in Chapter 10.
- A textile machinery and allied engineering base in Faisalabad, serving the country's largest manufacturing sector but still substantially reliant on imported spinning, weaving and processing machinery.
- Public-sector engineering capacity, including Heavy Mechanical Complex Taxila, Pakistan Machine Tool Factory, Heavy Industries Taxila, and the Karachi Shipyard and Engineering Works, much of which currently operates below installed capacity and outside an integrated national capital goods strategy.

The Committee's assessment is that this latent capacity, properly capitalized, organized into clusters and connected to long-term finance and technology acquisition mechanisms, constitutes a credible foundation for the fifteen-year build-out proposed in this report, in a manner that pure greenfield industrial policy in a less-prepared economy would not.

3.4 Structural Constraints on the Existing Industry

Consultations conducted by the Committee identified four structural constraints that currently prevent existing manufacturers from competing effectively, even where underlying engineering capability exists:

8. Absence of long-term finance. Machinery manufacturers report that commercial bank financing, typically available at three-to-five-year tenors, is fundamentally mismatched to the seven-to-fifteen-year payback cycles characteristic of machinery investment, discussed in detail in Chapter 11.
9. Absence of guaranteed initial demand. Domestic manufacturers compete directly against established international suppliers for both private and public procurement, with no industrial participation or local-content requirement comparable to those used by Turkey, South Korea or Malaysia to provide local industry an initial, quality-disciplined home market.
10. Technology and certification gaps. Many existing units lack access to modern CNC machine tools, quality certification infrastructure (ISO, CE, API and equivalent), and design software, limiting their ability to meet international OEM specifications even where production cost is competitive.
11. Fragmented, uncoordinated cluster development. Existing industrial concentrations (Gujranwala, Sialkot, Faisalabad) have developed organically without the shared infrastructure — common-use technology centers, testing laboratories, logistics hubs, vendor development programs — that distinguishes organized industrial clusters in Turkey and Malaysia from simple geographic agglomeration.

Chapter 4: Economic Rationale for Capital Goods Development

4.1 The Case for Strategic, Coordinated Intervention

The Committee recognizes that industrial policy interventions of the scale proposed in this report carry fiscal cost and execution risk, and must be justified against a clear economic rationale rather than general developmental aspiration. Four elements of that rationale are set out below.

4.1.1 Import Substitution Economics

Every dollar of machinery import substituted by domestic production has a different macroeconomic effect than a dollar of new export earnings, because it does not require finding a foreign buyer — it requires only that domestic production be cost- and quality-competitive with the import alternative, a substantially lower bar in the initial phase of industrial development. Given the scale of the existing import bill (US\$10–12 billion annually) and the priority localization categories identified by the Committee in Part I of the Implementation Framework — principally machine tools, textile machinery, pumps and compressors, food processing and packaging machinery, agricultural machinery, transformers, switchgear, motors, industrial controls, inverters and energy storage systems — a realistic localization target of 25–35% of these priority categories within fifteen years would, on its own, reduce the annual current account burden by an estimated US\$2.5–4 billion at current import volumes, before accounting for any new export earnings.

4.1.2 Employment Multiplier Effects

Machinery manufacturing carries above-average employment multipliers relative to many other industrial sectors because of its extensive backward linkages into component supply, casting and forging, precision machining subcontracting, logistics and after-sales service and maintenance. The Committee's employment projections, detailed in Chapter 6 and Volume II, anticipate that each direct job created within the ten national missions will generate approximately 2.9 indirect jobs across supplier industries, maintenance services, logistics and export support functions — a multiplier broadly consistent with machinery-sector multipliers observed in Turkey and Malaysia during their comparable industrialization phases.

4.1.3 Fiscal Return on Industrial Finance

The proposed PIDFC capitalization of PKR 300 billion (Chapter 11) should be assessed not as a grant but as a financing facility expected to be substantially repaid through structured long-tenor lending, with the principal fiscal exposure being the spread between PIDFC's cost of funds and the concessional lending rates extended to manufacturers, plus a defined provision for credit losses consistent with development finance institution norms internationally. Against this modest net fiscal cost, the projected returns — in import substitution, export earnings, tax revenue from a substantially larger formal manufacturing base,

and reduced emigration of subsidized engineering graduates — represent, in the Committee's assessment, a favorable benefit-cost profile over the fifteen-year strategy horizon.

4.1.4 Comparative Advantage and Regional Positioning

Pakistan's comparative position — proximity to South Asian, Central Asian, Gulf and East African markets; a large and growing pool of engineering graduates; competitive industrial wage levels relative to China and increasingly relative to Vietnam; and an existing, if underdeveloped, base of machine shops and component manufacturers — closely mirrors the starting conditions from which Turkey and Malaysia built competitive capital goods export sectors. The Committee's assessment is that this comparative position represents a closing, rather than permanently open, window: as regional wage levels converge and as competitor nations continue to invest in their own capital goods sectors, the relative advantage available to Pakistan today will erode over the next decade if not actively captured.

4.2 Risks of Continued Inaction

The Committee considers it necessary to state plainly the risks of continued policy inaction. Absent a coordinated national strategy, the Committee expects: continued growth in the absolute machinery import bill in line with industrial expansion, with no corresponding increase in domestic capability; continued emigration of engineering graduates to economies with stronger manufacturing absorption capacity; continued vulnerability of downstream manufacturing sectors (textiles, cement, food processing, power generation) to currency depreciation and supply-chain disruption affecting imported capital equipment; and a widening, rather than narrowing, technology and competitiveness gap relative to regional comparators that are actively pursuing capital goods strategies of their own, including Vietnam, Bangladesh (in light engineering) and India.

Chapter 5: National Capital Goods Missions

The Committee recommends organizing the national strategy around ten priority National Capital Goods Missions, each anchored in a lead industrial cluster with the strongest existing capability in that sub-sector, and each carrying defined investment, employment and export targets through 2040. This mission structure is designed to concentrate scarce technical, financial and institutional resources rather than dispersing support thinly across the entire capital goods spectrum, consistent with the lesson drawn from South Korea's and Turkey's sequenced, mission-based industrial policies described in Chapter 2.

Each mission is to be governed by a Mission Steering Committee comprising representatives of the Ministry of Industries and Production, the relevant provincial industries department, the lead cluster's industry association, the Pakistan Engineering Council, and the proposed Pakistan Industrial Development Finance Corporation (PIDFC), reporting through the National Capital Goods Authority (Chapter 13) to the Cabinet Committee on Industrial Development.

Mission 1: Pakistan Machine Tool Mission

Parameter	Value
Lead Cluster	Gujranwala
Investment Requirement	US\$500 Million
Direct Employment	25,000
Indirect Employment	75,000
Export Target — 2030	US\$100 Million
Export Target — 2035	US\$500 Million
Export Target — 2040	US\$1.5 Billion

Machine tools are the foundational capability on which every other capital goods mission depends, since the cost, precision and lead time of machine tools determines the competitiveness of all downstream machinery manufacturing. Gujranwala's existing foundry, forging and light engineering base makes it the natural lead cluster. The mission's priority is to establish CNC machine tool manufacturing capability, modern foundry and heat-treatment facilities, and a common-use precision testing and calibration laboratory accessible to the cluster's smaller manufacturers, who individually cannot justify the capital cost of such infrastructure.

Mission 2: Industrial Machinery Mission

Parameter	Value
Lead Cluster	Lahore
Investment Requirement	US\$1 Billion
Direct Employment	40,000
Indirect Employment	120,000
Export Target — 2030	US\$300 Million
Export Target — 2035	US\$1 Billion
Export Target — 2040	US\$2 Billion

This mission targets the broad category of industrial and process machinery — including textile processing equipment, food and packaging machinery, and general industrial equipment — building on Lahore's existing concentration of engineering firms, automotive component suppliers and industrial estates. The mission will prioritize joint ventures and licensing arrangements with international machinery OEMs to accelerate technology transfer, supported by the Industrial Participation framework set out in Chapter 10.

Mission 3: Agricultural Machinery Mission

Parameter	Value
Lead Cluster	Mian Channu
Investment Requirement	US\$500 Million
Direct Employment	30,000
Indirect Employment	90,000
Export Target — 2030	US\$200 Million
Export Target — 2035	US\$750 Million
Export Target — 2040	US\$1.5 Billion

Pakistan's agricultural sector remains heavily dependent on imported tractors, harvesters, tillage equipment and irrigation machinery despite being one of the largest agricultural economies in the region. The Mian Channu cluster, situated within Punjab's core agricultural belt, is positioned to combine proximity to end demand with engineering capability transferred from the broader Punjab machinery base. Priority sub-categories include tractor components, harvesting and threshing equipment, tillage implements and drip and sprinkler irrigation systems, with export potential into Central Asia and Africa.

Mission 4: Power Equipment Mission

Parameter	Value
Lead Cluster	Gujrat / Faisalabad corridor
Investment Requirement	US\$900 Million
Direct Employment	35,000
Indirect Employment	100,000
Export Target — 2030	US\$250 Million
Export Target — 2035	US\$1 Billion
Export Target — 2040	US\$2 Billion

Power equipment — transformers, switchgear, generators, motors and industrial controls — represents one of the largest single categories of machinery import (an estimated US\$1.2 billion annually) and is also among the categories most amenable to localization given Pakistan's existing electrical equipment manufacturing base in Gujrat and the surrounding corridor. The mission will prioritize localization of distribution transformers and low- and medium-voltage switchgear, where technology requirements are most readily absorbed by existing manufacturers, before progressing to higher-voltage transmission equipment in later phases.

Mission 5: Renewable Energy Equipment Mission

Parameter	Value
Lead Cluster	Khewra / Faisalabad
Investment Requirement	US\$750 Million
Direct Employment	30,000
Indirect Employment	80,000
Export Target — 2030	US\$200 Million
Export Target — 2035	US\$800 Million
Export Target — 2040	US\$1.5 Billion

Pakistan's accelerating solar and wind capacity additions currently rely almost entirely on imported panels, inverters, turbine components and battery storage systems. This mission targets progressive localization of balance-of-system components, inverter manufacturing, battery and energy storage

assembly, and eventually wind turbine component manufacturing, positioning Pakistan to serve both its own renewable energy build-out and adjacent regional markets in Central Asia and the Gulf as global energy storage demand accelerates through the 2030s.

Mission 6: Pumps and Compressors Mission

Parameter	Value
Lead Cluster	Gujranwala / Lahore
Investment Requirement	US\$450 Million
Direct Employment	20,000
Indirect Employment	60,000
Export Target — 2030	US\$150 Million
Export Target — 2035	US\$600 Million
Export Target — 2040	US\$1.2 Billion

Pumps and compressors serve agriculture, water supply, oil and gas, and general industry, and represent a category where Pakistan's existing foundry and machining base is closest to international competitiveness. The mission prioritizes centrifugal and submersible pump manufacturing for agricultural and municipal water applications, and industrial compressor assembly, with an explicit target of capturing a larger share of export markets in the Middle East and Africa where similar climatic and infrastructure conditions create natural demand alignment.

Mission 7: Automotive Components Mission

Parameter	Value
Lead Cluster	Karachi / Lahore / Sahiwal
Investment Requirement	US\$1.2 Billion
Direct Employment	50,000
Indirect Employment	150,000
Export Target — 2030	US\$300 Million
Export Target — 2035	US\$1.2 Billion
Export Target — 2040	US\$2.5 Billion

Building on Pakistan's existing automotive assembly base and joint-venture relationships with international OEMs, this mission targets deeper localization of components — engine parts, transmission systems, electrical components, and increasingly electric-vehicle-specific components such as battery packs and motor controllers — positioning Pakistan's auto component industry for integration into regional and global OEM supply chains rather than purely domestic-market assembly. The Sahiwal cluster's existing focus on auto parts and engineering design services provides a natural extension point for this mission.

Mission 8: Mining Equipment Mission

Parameter	Value
Lead Cluster	Chiniot
Investment Requirement	US\$300 Million
Direct Employment	15,000
Indirect Employment	40,000
Export Target — 2030	US\$50 Million
Export Target — 2035	US\$300 Million
Export Target — 2040	US\$800 Million

Pakistan's mineral resource base, including the Thar coalfield, the Reko Diq copper-gold deposit and emerging rare earth and critical minerals exploration, creates substantial latent demand for mining and earth-moving equipment that is currently met entirely through imports. The Chiniot cluster, with its proximity to marble and granite quarrying operations and existing fabrication capability, is positioned as the lead site for mining equipment manufacturing, with priority given to equipment for surface mining, materials handling and mineral processing.

Mission 9: Industrial Automation Mission

Parameter	Value
Lead Cluster	Lahore / Sialkot
Investment Requirement	US\$400 Million
Direct Employment	20,000
Indirect Employment	50,000
Export Target — 2030	US\$100 Million

Parameter	Value
Export Target — 2035	US\$500 Million
Export Target — 2040	US\$1 Billion

Industrial automation and control systems are an increasingly decisive determinant of manufacturing competitiveness across every other mission, and represent a category where Pakistan's relatively strong software and electronics engineering talent pool — currently directed disproportionately toward IT services exports — could be redirected toward industrial applications. The mission targets programmable logic controllers, industrial sensors, robotics integration and factory automation systems, leveraging Sialkot's quality-certification culture and Lahore's electronics and software engineering base.

Mission 10: Energy Storage Systems Mission

Parameter	Value
Lead Cluster	Khewra
Investment Requirement	US\$750 Million
Direct Employment	20,000
Indirect Employment	60,000
Export Target — 2030	US\$100 Million
Export Target — 2035	US\$500 Million
Export Target — 2040	US\$1 Billion

Energy storage — battery systems for grid stabilization, renewable integration and increasingly for electric vehicles — is among the fastest-growing global capital goods categories and one where Pakistan currently has no meaningful domestic manufacturing presence. Given the scale of global investment flowing into battery and energy storage manufacturing, the Committee considers early positioning in this mission, even at modest initial scale, to be of strategic importance disproportionate to its near-term investment size, given the compounding cost advantages that accrue to early movers in battery manufacturing technology and supply-chain integration.

5.1 Cross-Mission Coordination

Several missions share common upstream dependencies — most notably machine tools (Mission 1), industrial automation (Mission 9) and the broader engineering finance and skills infrastructure described

in Chapters 11 and 12 — and the Committee emphasizes that these missions must be sequenced and resourced as an interdependent system rather than as ten independent programs. In particular, the Committee recommends that Mission 1 (Machine Tools) and Mission 9 (Industrial Automation) receive early-phase priority within Phase I of the implementation roadmap (Chapter 14), given their role as foundational, cross-cutting capabilities that determine the achievable technology level of every other mission.

Chapter 6: Industrial Clusters and Manufacturing Nodes

The Committee proposes twelve Strategic Industrial Clusters distributed across all four provinces, designed to build on existing regional industrial concentrations rather than imposing new geography on the sector. Each cluster is to receive a tailored package of infrastructure investment — common-use technology centers, testing and certification laboratories, vendor development programs, logistics connectivity and, where applicable, dedicated industrial estate development — calibrated to its existing base and its assigned mission focus from Chapter 5. The clusters are presented below by province.

6.1 Punjab

Punjab hosts the largest concentration of existing engineering and light manufacturing capacity in Pakistan and is accordingly assigned ten of the twelve proposed clusters, reflecting both the scale of existing capability and the province's central role in the national strategy.

Lahore

Parameter	Detail
Focus Sectors	Industrial Machinery, Automation, Industrial Electronics
Investment Requirement	US\$1.2 Billion
Employment Potential	120,000

As Pakistan's largest industrial and engineering services hub, Lahore is positioned as the anchor cluster for the Industrial Machinery Mission and the Industrial Automation Mission. Priority infrastructure includes a dedicated industrial automation and controls testing facility, an expanded industrial estate with reliable power and gas connectivity for machinery manufacturing, and a vendor development program linking the cluster's automotive and electronics supply base into the broader capital goods strategy.

Gujranwala

Parameter	Detail
Focus Sectors	Machine Tools, Pumps, Compressors
Investment Requirement	US\$800 Million
Employment Potential	100,000

Gujranwala is designated the lead cluster for the Pakistan Machine Tool Mission and the Pumps and Compressors Mission, building on its long-established foundry, forging and light engineering base. Priority investment includes modern CNC machine tool capacity, a common-use precision testing and calibration laboratory, and a foundry and heat-treatment modernization program to upgrade casting quality to international OEM specifications.

Faisalabad

Parameter	Detail
Focus Sectors	Textile Machinery
Investment Requirement	US\$600 Million
Employment Potential	60,000

As the lead cluster for textile machinery localization, Faisalabad benefits from direct proximity to Pakistan's largest textile manufacturing base, providing an immediate and substantial domestic demand anchor for spinning, weaving, dyeing and finishing machinery manufactured locally. The cluster also shares responsibility, alongside Khewra, for elements of the Renewable Energy Equipment Mission, given existing electrical and mechanical engineering capacity in the district.

Mian Channu

Parameter	Detail
Focus Sectors	Agricultural Machinery
Investment Requirement	US\$500 Million
Employment Potential	50,000

Mian Channu is designated lead cluster for the Agricultural Machinery Mission, situated within Punjab's core agricultural production zone. Priority infrastructure includes a tractor and implement component testing center and a vendor development program connecting smaller agricultural implement manufacturers to larger assemblers.

Okara

Parameter	Detail
Focus Sectors	Sewing Machinery, Plastics Machinery

Parameter	Detail
Investment Requirement	US\$350 Million
Employment Potential	40,000

Okara's existing base in sewing machinery and plastics processing equipment serves both the textile and broader light manufacturing sectors. The cluster will receive targeted investment in plastics injection-molding machinery manufacturing capability and precision sewing machine component production, with export potential into other textile-producing economies in the region.

Sahiwal

Parameter	Detail
Focus Sectors	Auto Parts, Engineering Design Exports
Investment Requirement	US\$500 Million
Employment Potential	60,000

Sahiwal is designated a supporting cluster for the Automotive Components Mission, with a specific additional focus on engineering design services exports — leveraging Pakistan's engineering graduate base to provide design, CAD/CAM and product engineering services to international machinery and automotive manufacturers, a higher-margin complement to physical component manufacturing.

Gujrat

Parameter	Detail
Focus Sectors	Motors, Electrical Equipment
Investment Requirement	US\$400 Million
Employment Potential	50,000

Gujrat is designated co-lead cluster, alongside Faisalabad, for the Power Equipment Mission, building on the district's existing base in fan, motor and small electrical appliance manufacturing. Priority investment includes upgraded motor winding and electrical testing facilities and a transformer and switchgear component manufacturing program.

Sialkot

Parameter	Detail
Focus Sectors	Precision Engineering, Aerospace Components
Investment Requirement	US\$500 Million
Employment Potential	45,000

Sialkot's globally recognized quality-certification culture, developed through decades of sporting goods and surgical instrument exports, positions it as the lead cluster for precision engineering components and an emerging aerospace components sub-sector. The cluster also serves as co-lead, alongside Lahore, for the Industrial Automation Mission, given its existing precision manufacturing discipline.

Chiniot

Parameter	Detail
Focus Sectors	Mining Equipment
Investment Requirement	US\$300 Million
Employment Potential	25,000

Chiniot is designated lead cluster for the Mining Equipment Mission, leveraging the district's existing fabrication and metalworking base developed around furniture and marble/granite processing, which is readily adaptable to mining and materials-handling equipment manufacturing.

Khewra

Parameter	Detail
Focus Sectors	Energy Storage Systems
Investment Requirement	US\$750 Million
Employment Potential	30,000

Khewra is designated lead cluster for the Energy Storage Systems Mission and co-lead, alongside Faisalabad, for the Renewable Energy Equipment Mission, reflecting an explicit strategic decision to establish a new manufacturing capability in a high-growth global category rather than relying solely on extension of existing capacity.

6.2 Sindh

Karachi

Parameter	Detail
Focus Sectors	Automobiles, Auto Components, Industrial Machinery, Ship Repair Equipment
Investment Requirement	US\$2 Billion
Employment Potential	200,000
Export Target	US\$3 Billion

Karachi is designated Pakistan's Capital Goods Mega Cluster, reflecting its position as the country's largest port city, principal automotive assembly base, and the location of major public-sector engineering assets including Karachi Shipyard and Engineering Works. The cluster will lead the Automotive Components Mission alongside Lahore and Sahiwal, and will additionally develop ship repair and marine equipment manufacturing capability, leveraging direct port access for both import substitution in marine equipment and export logistics for the cluster's broader machinery output. Given its scale, Karachi is expected to account for the single largest share of both investment and employment among all twelve clusters.

Hyderabad

Parameter	Detail
Focus Sectors	Motorcycles, Three-Wheelers, General Machinery
Investment Requirement	US\$500 Million
Employment Potential	75,000
Export Target	US\$500 Million

Hyderabad is designated lead cluster for two-wheeler and three-wheeler manufacturing and general machinery, building on the district's existing motorcycle and rickshaw assembly base. The cluster's agricultural implement sub-sector additionally supports the Agricultural Machinery Mission led from Mian Channu, providing a secondary manufacturing node for Sindh's substantial agricultural sector.

6.3 Khyber Pakhtunkhwa

Khyber Pakhtunkhwa is included in the cluster strategy with two designated nodes, reflecting the province's existing but currently underutilized engineering capacity and the strategic importance of

extending the capital goods strategy beyond Punjab and Sindh to support balanced regional industrial development.

Peshawar

Parameter	Detail
Focus Sectors	Construction Equipment
Investment Requirement	US\$350 Million (indicative)
Employment Potential	35,000 (indicative)

Peshawar is designated as an emerging cluster for construction and earth-moving equipment, positioned to serve both the province's own infrastructure development needs and cross-border trade potential through the Pak-Afghan transit corridor. The Committee recommends that detailed investment and employment targets for this cluster be finalized in consultation with the Government of Khyber Pakhtunkhwa during Phase I of implementation.

Haripur

Parameter	Detail
Focus Sectors	Heavy Electrical Equipment
Investment Requirement	US\$400 Million (indicative)
Employment Potential	30,000 (indicative)

Haripur is designated as an emerging cluster for heavy electrical equipment manufacturing, building on the district's existing industrial estate infrastructure and its proximity to technical and engineering education institutions in the Haripur-Taxila corridor, including Pak-Austria Fachhochschule: Institute of Applied Sciences and Technology (PAF-IAST). The Committee notes that this proximity creates a direct opportunity for applied research collaboration and curriculum alignment between the cluster's heavy electrical equipment focus and the National Skills, Technology and Innovation Framework set out in Chapter 12.

6.4 Balochistan

Balochistan is included in the cluster strategy with two designated nodes, reflecting the province's mineral resource base and coastal geography, and the Committee's view that the national strategy must

extend genuine industrial opportunity to Balochistan rather than treating it solely as a source of raw mineral exports.

Hub

Parameter	Detail
Focus Sectors	Fabrication and Energy Equipment
Investment Requirement	US\$300 Million (indicative)
Employment Potential	25,000 (indicative)

Hub is designated as an emerging cluster for fabrication and energy equipment manufacturing, leveraging its industrial estate infrastructure and proximity to Karachi's larger industrial base and port logistics, with a specific role supporting equipment needs for Balochistan's mining and energy sectors.

Gwadar

Parameter	Detail
Focus Sectors	Marine Equipment
Investment Requirement	US\$300 Million (indicative)
Employment Potential	20,000 (indicative)

Gwadar is designated as an emerging cluster for marine equipment manufacturing and ship repair services, complementing Karachi's marine equipment capability and positioned to benefit from Gwadar Port's development as a regional logistics and trade hub under the China-Pakistan Economic Corridor framework.

6.5 Cluster Infrastructure Standards

To ensure consistency and avoid the fragmented, under-resourced industrial estate development that has characterized previous Pakistani industrial zone initiatives, the Committee recommends that every designated cluster receive, as a minimum standard package: reliable and adequately sized electricity and gas connections sized for industrial machinery manufacturing rather than light assembly; a common-use technology center providing shared access to CNC machining, precision testing and calibration equipment that individual small and medium manufacturers cannot justify acquiring independently; an internationally accredited testing and certification laboratory appropriate to the cluster's mission focus (electrical safety certification in Gujrat, precision tolerance certification in Sialkot, and so forth); a vendor

development program connecting smaller manufacturers into the supply chains of larger assemblers and OEMs within the cluster; and dedicated logistics infrastructure connecting the cluster to the national highway network, rail freight and, for Karachi, Hyderabad and Gwadar, port facilities.

Chapter 7: Technology Acquisition and Industrial Participation Policy

7.1 The Technology Gap

Pakistan's capital goods manufacturers operate, in most categories, one to two technology generations behind the international state of the art — relying substantially on conventional rather than CNC machine tools, on manual rather than automated quality inspection, and on reverse-engineered rather than licensed product designs. Closing this gap through purely organic domestic research and development would require a multi-decade horizon inconsistent with the fifteen-year strategy proposed in this report. The Committee therefore recommends a deliberate, time-bound Technology Acquisition Program operating through three parallel channels.

7.1.1 Licensing and Joint Ventures

The Ministry of Industries and Production, working with the Board of Investment, should actively broker licensing and joint-venture arrangements between domestic manufacturers within each cluster and international machinery, electrical equipment and automotive component OEMs, using the Industrial Participation obligations described in Chapter 10 as the principal lever — converting the local-content requirement attached to large public and foreign-financed procurement contracts into a structured technology transfer mechanism rather than a simple sourcing quota.

7.1.2 Reverse Engineering and Applied Adaptation

For machinery categories where direct licensing is commercially or politically unavailable, the Committee recommends establishing reverse-engineering and applied-adaptation programs based at the common-use technology centers proposed for each cluster (Chapter 6), staffed jointly by cluster manufacturers and engineering faculty from nearby technical universities, with output rights structured to allow participating manufacturers to commercialize resulting designs.

7.1.3 Diaspora and International Engineering Talent

Pakistan's substantial diaspora of engineers working in advanced manufacturing economies represents an underutilized technology transfer channel. The Committee recommends that the Ministry of Industries and Production, in coordination with the Ministry of Overseas Pakistanis, establish a structured program to attract diaspora engineers for fixed-term assignments, consulting engagements or equity participation in cluster manufacturers, with appropriate fiscal incentives administered through the National Capital Goods Authority proposed in Chapter 13.

Chapter 8: Long-Term Industrial Finance

8.1 Why Commercial Banks Cannot Build Capital Goods Industries

The single most consistently cited constraint identified in the Committee's industry consultations was the absence of financing tenors matched to the actual investment and payback cycle of machinery manufacturing. A typical capital goods manufacturing investment requires approximately two years for plant construction, a further two years for product development and qualification, and approximately three years for market development before reaching scale — with full payback on the initial investment typically occurring only after seven to fifteen years. Commercial banks in Pakistan, as in most banking systems, structurally lend at tenors of three to five years, reflecting the duration profile of their own deposit base and prudential regulatory requirements. This mismatch is not a matter of bank risk appetite or policy preference; it is a structural feature of commercial banking that has prevented, and will continue to prevent, the emergence of a domestic capital goods industry regardless of any other policy measure, unless a dedicated long-tenor financing institution is established.

Investment Cycle Stage	Typical Duration
Plant Construction	2 years
Product Development	2 years
Market Development	3 years
Payback Period	7 – 15 years
Typical Commercial Bank Tenor	3 – 5 years

8.2 Proposed Pakistan Industrial Development Finance Corporation (PIDFC)

The Committee recommends the establishment of a Pakistan Industrial Development Finance Corporation (PIDFC) as a dedicated development finance institution with an initial capitalization of PKR 300 billion, funded through a combination of federal government equity contribution, a capital allocation from the State Bank of Pakistan, and concessional credit lines from multilateral development agencies and bilateral development finance partners with established mandates in industrial finance.

8.2.1 Funding Sources

- Federal Government — initial equity capitalization and continued budgetary support during the institution-building phase.
- State Bank of Pakistan — capital allocation and potential refinancing facility support, consistent with SBP's existing long-term finance facilities for export-oriented manufacturing.

- **Multilateral Agencies** — concessional credit lines from institutions such as the World Bank, Asian Development Bank and Islamic Development Bank, consistent with their existing industrial and SME finance mandates in Pakistan.
- **Development Partners** — bilateral development finance institutions with sector-specific industrial finance experience, potentially including technical assistance components alongside capital.

8.2.2 PIDFC Lending Products

The Committee recommends that PIDFC offer four core lending and grant products, each tenor-matched to the specific stage of the machinery investment cycle described above:

Product	Tenor	Purpose
Technology Loans	15 years	Acquisition of machine tools, production lines and process technology
Export Expansion Loans	10 years	Working capital and capacity expansion tied to export order books
Cluster Development Loans	15 years	Common-use infrastructure: testing centers, calibration labs, vendor parks
Product Development Grants	Matching grants	Co-financed product engineering, prototyping and certification costs

8.2.3 Governance and Risk Management

To ensure PIDFC operates on sound development finance principles rather than as a source of unconditioned subsidy, the Committee recommends that PIDFC be governed by an independent board with private-sector and engineering-sector representation alongside government nominees; that lending be subject to standard credit appraisal, with a defined non-performing loan provisioning framework benchmarked to comparable development finance institutions in Turkey, Malaysia and South Korea during their equivalent institution-building phases; and that PIDFC's mandate be explicitly restricted to the ten priority missions and twelve clusters defined in this report, to prevent mandate creep into general-purpose industrial lending that would dilute its strategic focus and capital base.

Chapter 9: Industrial Participation Policy

9.1 Rationale

Industrial participation — also known internationally as offsets, local content requirements or industrial cooperation agreements — is the single most consistently used policy instrument among successful capital goods exporting nations to convert public and foreign-financed procurement spending into guaranteed initial domestic market access for emerging manufacturers. Turkey, South Korea, Malaysia, South Africa and, more recently, Saudi Arabia (through its Vision 2030 localization program) have each used variants of this mechanism to ensure that large public procurement contracts — for defense equipment, power generation, transport infrastructure and telecommunications — generate a measurable, contractually enforceable domestic industrial benefit rather than functioning solely as a channel for foreign supplier revenue.

Pakistan currently has no comparable, systematically enforced industrial participation framework. The Committee considers this a critical gap: in the absence of such a framework, the very large public and foreign-financed procurement contracts that Pakistan enters into annually — for power generation equipment, transport infrastructure, telecommunications systems and defense equipment — generate no structured, enforceable domestic manufacturing benefit, even where domestic manufacturers in the relevant cluster possess substantial latent capability to participate.

9.2 Draft Legislative Framework

The Committee proposes the following draft framework for an Industrial Participation Act, to be referred to the Cabinet Committee on Legislative Affairs for formal drafting and expedited legislative processing. The full draft legislative text is presented in Volume II, Chapter 21 of this report; a summary of the core provisions is set out below.

Section 1 — Scope

All public procurement contracts exceeding US\$50 million in value, and all foreign-financed procurement contracts above an equivalent threshold to be defined in implementing regulations, shall be subject to Industrial Participation requirements under this Act.

Section 2 — Minimum Participation Threshold

Minimum local industrial participation shall equal 40% of contract value, calculated on a basis to be defined in implementing regulations consistent with international offset accounting practice (to prevent inflated or nominal valuation of qualifying activities).

Section 3 — Qualifying Activities

Participation obligations may be fulfilled through any combination of: local sourcing of components, materials or sub-assemblies from Pakistani manufacturers; vendor development programs that build the capability of Pakistani suppliers over the life of the contract; technology transfer, including licensing, training and engineering documentation transfer; joint ventures between the foreign contractor and Pakistani manufacturers; and export orders generated for Pakistani manufacturers as part of the foreign contractor's global supply chain, where such orders are additional to, rather than a substitute for, the contractor's existing Pakistani sourcing.

Section 4 — Duration of Enforceability

Offset obligations shall remain enforceable for ten years following contract award, with annual verification, to prevent front-loaded or nominal compliance that does not generate durable domestic industrial capability.

Section 5 — Compliance Reporting and Enforcement

Annual compliance reports shall be submitted to the Ministry of Industries and Production by all contractors subject to this Act. The Committee recommends that a National Industrial Participation Authority, situated within or closely coordinated with the National Capital Goods Authority proposed in Chapter 13, be empowered to verify compliance, impose graduated financial penalties for shortfalls, and publish an annual public compliance report to ensure transparency and accountability in the framework's administration.

9.3 International Benchmarking

The Committee notes that offset and industrial participation frameworks of this kind are now standard practice across the majority of middle-income economies engaged in large-scale infrastructure and defense procurement, and that Pakistan's continued absence of such a framework places domestic manufacturers at a structural disadvantage relative to manufacturers in comparator economies competing for the same regional and global supply chain opportunities. The Committee recommends that the implementing regulations for this Act draw directly on the verification and valuation methodologies developed by Turkey's Undersecretariat for Defence Industries and South Africa's National Industrial Participation Programme, both of which have multi-decade track records of administering comparable frameworks.

Chapter 10: Skills, Technology and Innovation Framework

10.1 Aligning Engineering Education with Cluster Needs

Pakistan's annual output of mechanical, electrical, industrial, manufacturing and mechatronics engineering graduates substantially exceeds the absorption capacity of the current capital goods sector, while simultaneously failing to provide the specific, cluster-relevant practical skills (CNC programming, precision metrology, industrial controls programming, quality systems management) that employers in the existing engineering manufacturing base report as scarce. The Committee recommends that this mismatch be addressed through a National Skills, Technology and Innovation Framework with three core components.

10.1.1 Cluster-Specific Curriculum Alignment

The Higher Education Commission, in coordination with the Ministry of Industries and Production and the Pakistan Engineering Council, should require technical universities and polytechnics located within or near each of the twelve designated clusters to align a defined proportion of their engineering and technology curricula with that cluster's mission focus — for example, precision metrology and quality systems content in Sialkot-area institutions, industrial automation and controls content in Lahore-area institutions, and heavy electrical equipment content in the Haripur-Taxila corridor, where Pak-Austria Fachhochschule: Institute of Applied Sciences and Technology (PAF-IAST) is already positioned to play a leading role given its existing applied-sciences and technology mandate and its proximity to the Haripur cluster.

10.1.2 Polytechnic and Vocational Capacity Expansion

Beyond university-level engineering education, the Committee identifies an acute shortage of mid-skill technical capacity — CNC machine operators, quality inspectors, industrial electricians and maintenance technicians — without which even well-capitalized cluster manufacturing facilities cannot operate at design capacity. The Committee recommends expanded investment in polytechnic and vocational training capacity co-located with each cluster's common-use technology center, with curricula and equipment standards set jointly by the Mission Steering Committees (Chapter 5) and the National Vocational and Technical Training Commission.

10.1.3 Applied Research and Innovation Linkages

The common-use technology centers proposed for each cluster (Chapter 6) should be structured not merely as shared manufacturing infrastructure but as applied research nodes, with defined collaboration agreements between cluster manufacturers and nearby technical universities for product development, reverse engineering and process improvement work, supported by the Product Development Grants product offered by PIDFC (Chapter 8). The Committee specifically notes the relevance of academic-industry collaboration models already being developed by institutions such as PAF-IAST, whose

governance structure includes industry and international academic partnership representation, as a template that could be extended to other cluster-proximate institutions.

10.2 Talent Retention Incentives

To address the emigration of engineering talent referenced in Chapter 1, the Committee recommends that the Ministry of Industries and Production, in coordination with PIDFC, explore targeted retention incentives for engineering graduates who take up employment within the designated clusters in their first five years post-graduation, potentially including partial loan forgiveness for graduates of public-sector engineering institutions, preferential access to PIDFC-financed entrepreneurship support for graduates establishing vendor or component manufacturing businesses within a cluster, and recognition and fast-track professional registration pathways through the Pakistan Engineering Council for engineers working within mission-designated facilities.

Chapter 11: Governance and Implementation Framework

11.1 National Capital Goods Authority

The Committee recommends the establishment of a National Capital Goods Authority (NCGA) as the central coordinating body for this strategy, reporting to a newly constituted Cabinet Committee on Industrial Development. The NCGA should be chaired by the Federal Minister for Industries and Production, with the Secretary of the Planning Commission as Deputy Chair, and standing membership including the State Bank of Pakistan, the Ministry of Commerce, the Ministry of Finance, the Ministry of Science and Technology, the Higher Education Commission, the Pakistan Engineering Council, the four provincial industries departments, and rotating representation from the ten Mission Steering Committees.

11.1.1 NCGA Functions

- Overall strategic oversight of the ten National Capital Goods Missions and twelve Strategic Industrial Clusters, ensuring resource allocation remains aligned to the mission priorities set out in Chapter 5.
- Coordination between PIDFC, the National Industrial Participation Authority and the provincial industries departments to ensure financing, procurement policy and cluster infrastructure investment are sequenced coherently.
- Annual reporting to the Cabinet Committee on Industrial Development on progress against the investment, employment and export targets set out in this report and detailed further in Volume II.
- Convening an annual National Capital Goods Conference bringing together cluster manufacturers, financing institutions, technical universities and international OEM partners to review progress and recalibrate mission priorities as needed.

11.2 Provincial Coordination

Given that industrial policy, land allocation and several relevant regulatory functions sit substantially with provincial governments under Pakistan's constitutional and Eighteenth Amendment-era distribution of powers, the Committee emphasizes that the success of this strategy is critically dependent on close and sustained coordination between the NCGA and the provincial governments of Punjab, Sindh, Khyber Pakhtunkhwa and Balochistan, each of which hosts designated clusters under this strategy. The Committee recommends that each provincial government nominate a senior focal point to the NCGA and that provincial industrial policy be formally harmonized with the cluster designations and mission priorities set out in Chapters 5 and 6.

11.3 Private Sector and Industry Association Engagement

The Committee underscores that this strategy cannot succeed as a purely public-sector initiative; it requires sustained, structured engagement with the private manufacturers who will undertake the actual investment, production and export activity. The Committee recommends that each cluster's relevant industry association (for example, the Gujranwala Chamber of Commerce and Industry, the Sialkot Chamber of Commerce and Industry, and equivalent bodies in other clusters) hold standing representation on its Mission Steering Committee, and that the NCGA establish a private-sector advisory panel, including representation from the Pakistan Engineering Council, the Federation of Pakistan Chambers of Commerce and Industry, and relevant sector-specific associations, to provide ongoing feedback on implementation barriers and policy refinement needs.

Chapter 12: Employment Projections

The employment figures presented throughout this report at the mission and cluster level are consolidated below on a national, sector-by-sector basis. The Committee's methodology distinguishes direct employment — workers employed within the capital goods manufacturing facilities themselves — from indirect employment, comprising employment generated in upstream supplier industries (component manufacturing, casting and forging, raw material processing), downstream service industries (logistics, maintenance, after-sales support) and the broader local economic activity generated by manufacturing wages and procurement within each cluster region.

Sector	Direct Jobs	Indirect Jobs
Machine Tools	25,000	75,000
Industrial Machinery	40,000	120,000
Agricultural Machinery	30,000	90,000
Power Equipment	35,000	100,000
Renewable Energy	30,000	80,000
Pumps & Compressors	20,000	60,000
Automotive Components	50,000	150,000
Mining Equipment	15,000	40,000
Automation	20,000	50,000
Energy Storage	20,000	60,000
Total	285,000	825,000

On a fully implemented basis across all ten missions, the strategy projects approximately 285,000 direct jobs and 825,000 indirect jobs, for a total employment potential exceeding 1.1 million positions — equivalent to an indirect employment multiplier of approximately 2.9 indirect jobs for every direct job created, broadly consistent with machinery-sector multipliers documented in Turkey and Malaysia during comparable phases of their industrial development (Chapter 2).

12.1 Employment Phasing

The Committee emphasizes that these employment figures represent the fully mature, fifteen-year endpoint of the strategy (2040) rather than an immediate or short-term outcome. Consistent with the phased implementation roadmap set out in Chapter 14, employment generation is expected to follow an S-curve pattern: modest initial job creation during Phase I (2026–2028) concentrated in institution-building, infrastructure construction and early-mover manufacturing facilities; accelerating

job creation during Phase II (2028–2032) as cluster infrastructure, vendor development programs and PIDFC financing reach full operational scale; and the bulk of indirect employment materializing during Phase III (2032–2040) as export volumes scale and supplier ecosystems mature around anchor manufacturers within each cluster.

12.2 Skills Composition

The Committee's consultations indicate that the employment generated by this strategy will require a skills composition substantially weighted toward technical and engineering roles relative to Pakistan's existing manufacturing employment base: an estimated 15–20% of direct employment is expected to require engineering-degree-level qualifications, a further 35–40% requiring polytechnic or vocational-certificate-level technical skills (machine operation, quality inspection, industrial electrical work), and the remainder comprising general manufacturing, logistics and administrative roles. This skills composition underscores the direct linkage between the employment projections in this chapter and the National Skills, Technology and Innovation Framework set out in Chapter 10, without which the projected employment cannot be realized due to skills-availability constraints rather than capital or demand constraints.

Chapter 13: Export Targets

Export targets for each of the ten National Capital Goods Missions are set out below across three milestone years — 2030, 2035 and 2040 — consistent with the mission-level targets presented in Chapter 5 and consolidated here for ease of national-level monitoring.

Mission	2030	2035	2040
Machine Tools	100M	500M	1.5B
Industrial Machinery	300M	1B	2B
Agricultural Machinery	200M	750M	1.5B
Power Equipment	250M	1B	2B
Renewable Energy	200M	800M	1.5B
Pumps & Compressors	150M	600M	1.2B
Automotive Components	300M	1.2B	2.5B
Mining Equipment	50M	300M	800M
Automation	100M	500M	1B
Energy Storage	100M	500M	1B
Total Export Potential	US\$1.75B	US\$7.15B	US\$15–20B

Total capital goods export potential is projected to grow from US\$1.75 billion by 2030 to US\$7.15 billion by 2035 and US\$15–20 billion by 2040 — a more than eight-fold increase over the first decade and a roughly tenfold increase over the full fifteen-year strategy horizon from the 2030 base. The Committee notes that even the 2030 milestone, while modest in absolute global terms, would represent a meaningful diversification of Pakistan's export base beyond its current textile-dominated structure, and would establish the export market access, quality certification and OEM supply-chain relationships on which the larger 2035 and 2040 targets depend.

13.1 Relationship Between Export Targets and Import Substitution

The Committee emphasizes that the export targets in this chapter should be read alongside, rather than as a substitute for, the import substitution objectives discussed in Chapter 4. In the Committee's assessment, the most realistic near-term contribution of this strategy to Pakistan's external accounts will come predominantly from import substitution within the domestic market during Phase I and the early part of Phase II, with export earnings becoming the dominant contribution only as clusters achieve the quality certification, scale and OEM relationships necessary to compete in international markets — a

transition that typically requires seven to ten years even in well-executed cluster development programs internationally, consistent with the financing tenors proposed for PIDFC in Chapter 8.

13.2 Target Markets

The Committee's assessment of priority export markets, to be refined through detailed market studies during Phase I, identifies four broad regional opportunities consistent with Pakistan's geographic position and the comparative lessons drawn in Chapter 2: South Asian markets (Bangladesh, Sri Lanka, Afghanistan) for agricultural machinery, textile machinery and general industrial equipment; Central Asian markets (Uzbekistan, Tajikistan, Kazakhstan) for agricultural machinery, pumps and compressors and power equipment, supported by improving transit connectivity; Gulf and Middle Eastern markets for pumps, compressors, construction and mining equipment, and marine equipment; and East African markets for agricultural machinery and general industrial equipment, where Pakistani manufacturers can compete on cost and climatic-condition product fit against both Chinese and European suppliers.

Chapter 14: Implementation Roadmap and Monitoring Framework

14.1 Three-Phase Implementation Roadmap

The Committee recommends a three-phase implementation roadmap spanning the full fifteen-year strategy horizon, with each phase carrying distinct institutional, infrastructure and market-development priorities consistent with the realistic absorption capacity of a sector being rebuilt substantially from an underdeveloped base.

Phase	Period	Key Priorities
Phase I	2026 – 2028	Policy approval; NCGA, PIDFC and National Industrial Participation Authority established; Industrial Participation Act passed; Mission 1 (Machine Tools) and Mission 9 (Industrial Automation) prioritized; cluster designations finalized; baseline trade and capability data reconciled.
Phase II	2028 – 2032	Common-use technology centers, testing and certification facilities and vendor development programs operational across all twelve clusters; PIDFC lending at scale; curriculum alignment and polytechnic capacity expansion underway; first wave of import substitution in priority HS 84 / HS 85 categories.
Phase III	2032 – 2040	Global supply-chain integration; export expansion into target markets identified in Chapter 13; technology leadership in selected sub-sectors (energy storage, industrial automation); full employment and export targets approached across all ten missions.

14.2 Monitoring and Evaluation Framework

The Committee recommends that the National Capital Goods Authority (Chapter 11) establish a standing monitoring and evaluation function reporting annually to the Cabinet Committee on Industrial Development, tracking, at minimum: cumulative and annual investment mobilized against the cluster-level targets in Chapter 6; direct and indirect employment generated against the mission-level targets in Chapter 12; export performance by mission and by destination market against the targets in Chapter 13; the machinery import bill by HS code category, tracked against the localization targets discussed in Chapter 4, to directly measure import substitution progress; PIDFC's loan book performance, including disbursement against approved capitalization, portfolio quality and tenor compliance; and compliance rates under the Industrial Participation Act, published annually as recommended in Chapter 9.

The Committee recommends that this monitoring framework be supported by an annual independent review — commissioned by the NCGA from an institution such as the Pakistan Institute of Development Economics or an equivalent independent research body — to provide an arms-length assessment of

progress alongside the NCGA's own internal reporting, consistent with international best practice in long-horizon industrial policy evaluation.

Chapter 15: Risk Assessment

The Committee has identified the following principal risks to successful implementation of this strategy, together with proposed mitigation measures. This risk assessment is presented to the Cabinet in the interest of transparency regarding the genuine execution challenges involved in a strategy of this scale and duration, and to pre-position mitigation measures rather than encountering these risks unprepared.

Risk	Likelihood	Impact	Mitigation
Fiscal constraints limit PIDFC capitalization or timely disbursement	High	High	Phase capitalization with clear milestones; secure multilateral co-financing to reduce sole reliance on federal budget; ring-fence PIDFC capital from general budgetary reallocation.
Provincial coordination failures delay cluster infrastructure	Medium	High	Formal provincial focal-point structure within NCGA (Chapter 11); written inter-governmental MOUs per cluster with defined infrastructure delivery timelines.
Industrial Participation Act faces resistance from foreign suppliers or delays in legislative passage	Medium	High	Early and structured stakeholder consultation with foreign OEMs already operating in Pakistan; phased threshold introduction; benchmark drafting against precedent frameworks (Turkey, South Africa) to reduce negotiation friction.
Skills shortages persist despite curriculum reform due to long education-system lead times	High	Medium	Parallel short-cycle vocational and on-the-job training programs at cluster technology centers to bridge the gap while university curriculum reform matures; diaspora engineer program (Chapter 7) as an interim technology and training resource.
Clusters fail to achieve export-grade quality certification within projected timelines	Medium	Medium	Early investment in internationally accredited testing and certification laboratories (Chapter 6); joint ventures and licensing arrangements (Chapter 7) to fast-track quality system adoption rather than relying solely on organic capability development.
Currency volatility raises the cost of imported machine tools and components needed to build domestic capacity	Medium	Medium	Sequence machine tool and component import requirements with PIDFC's foreign-currency-denominated multilateral credit lines; prioritize domestic machine tool capability (Mission 1) precisely to reduce this second-order import dependence over time.
Mission and cluster targets are not met, undermining credibility of the broader strategy	Medium	High	Conservative, benchmarked target-setting (Chapter 4); transparent annual NCGA reporting to Cabinet (Chapter 11) with mid-course correction authority rather than rigid multi-year targets presented as fixed commitments.

15.1 Overarching Implementation Risk: Institutional Continuity

The Committee considers the single greatest risk to this strategy to be loss of institutional continuity and political priority across the fifteen-year horizon proposed, given that this period will span multiple government administrations. The Committee recommends that the legal and institutional architecture proposed in this report — the NCGA's statutory basis, PIDFC's capitalization and governance structure, and the Industrial Participation Act — be established through legislation and formal Cabinet decision rather than through administrative circular or executive order alone, precisely to provide institutional durability that survives changes in political leadership, consistent with how Turkey's Organize Sanayi Bölgeleri framework and South Korea's Korea Development Bank mandate were each anchored in durable legal frameworks that outlasted multiple changes of government during their respective build-out periods.

Chapter 16: Conclusions and Recommendations

16.1 Summary of Findings

The Committee's review establishes that Pakistan's structural dependence on imported capital goods — an estimated US\$10–12 billion annually — is the product of remediable policy gaps rather than an inherent national disadvantage. Pakistan possesses a geographically identifiable, if currently undercapitalized and uncoordinated, base of engineering and manufacturing capability across Punjab, Sindh, Khyber Pakhtunkhwa and Balochistan; a substantial annual output of engineering graduates whose skills are currently underutilized domestically; and a regional and comparative economic position closely analogous to the starting conditions from which Turkey, Malaysia and South Korea each built internationally competitive capital goods export sectors over comparable multi-decade horizons.

16.2 Final Recommendation

The Committee recommends that the Capital Goods Industry be declared a National Strategic Sector by the Federal Cabinet, and that this designation be operationalized through the following seven measures, each elaborated in detail in the preceding chapters of this report:

12. Establishment of Ten National Capital Goods Missions, each with defined investment, employment and export targets through 2040, governed by Mission Steering Committees under the National Capital Goods Authority.
13. Designation of Twelve Strategic Industrial Clusters across all four provinces, each receiving a standardized package of shared infrastructure, testing and certification facilities, and vendor development support.
14. Enactment of an Industrial Participation Act mandating minimum 40% local industrial participation on public and qualifying foreign-financed procurement contracts exceeding US\$50 million.
15. Establishment of a Pakistan Industrial Development Finance Corporation, capitalized at PKR 300 billion, to provide long-tenor industrial finance matched to the actual investment cycle of machinery manufacturing.
16. Implementation of an Export Acceleration Program targeting the regional markets identified in Chapter 13, sequenced behind the quality certification and OEM relationship-building priorities of Phase II.
17. Implementation of a Technology Acquisition Framework combining licensing and joint ventures, reverse engineering and applied adaptation, and structured diaspora engineering talent engagement.

18. Implementation of a National Skills and Technology Initiative aligning technical university and polytechnic curricula with cluster-specific needs, supported by targeted talent retention incentives.

Taken together, the Committee's assessment is that these seven measures, sequenced through the three-phase implementation roadmap set out in Chapter 14 and overseen through the governance architecture set out in Chapter 11, can transform Pakistan from a structural net importer of capital goods into a regional engineering and machinery manufacturing hub serving South Asia, Central Asia, the Middle East and Africa — generating over 1.1 million jobs and US\$15–20 billion in annual exports by 2040, while substantially reducing the foreign exchange burden currently imposed by Pakistan's machinery import dependence.

16.3 Immediate Next Steps Requested of Cabinet

The Committee specifically requests that the Federal Cabinet: approve, in principle, the designation of capital goods manufacturing as a National Strategic Sector; direct the Ministry of Industries and Production and the Planning Commission to establish the National Capital Goods Authority within the current fiscal year; direct the Ministry of Finance and the State Bank of Pakistan to begin the capitalization process for the Pakistan Industrial Development Finance Corporation; and refer the draft Industrial Participation Act, summarized in Chapter 9 and presented in full in Volume II, Chapter 21, to the Cabinet Committee on Legislative Affairs for expedited drafting and processing. Indicative Cabinet Summary annexes for each of these four decisions are appended to this report for ease of immediate processing.

Annexes: Draft Cabinet Summaries

The following indicative Cabinet Summaries are provided to facilitate immediate processing of the Committee's core recommendations. Each summary follows the standard Cabinet Division format and is intended as a drafting aid for the sponsoring Ministry, not as final submitted text.

Annex A: Cabinet Summary Template

Field	Content
Subject	Approval of National Capital Goods Development Policy
Background	Pakistan imports approximately US\$10–12 billion annually in machinery and engineering equipment, representing a structural and recurring drain on foreign exchange reserves and a forfeited opportunity for high-value domestic engineering employment. The Pakistan Engineering Council Committee on Revival of Machine Building Industries has completed a comprehensive review and proposes a fifteen-year national strategy to reverse this position.
Proposal	Approval of the National Capital Goods Development Policy, declaring capital goods manufacturing a National Strategic Sector and establishing the National Capital Goods Authority to oversee implementation of Ten National Capital Goods Missions and Twelve Strategic Industrial Clusters as detailed in the accompanying PEC report.
Financial Implications	Initial allocation of PKR 50 billion for institution-building, baseline data reconciliation, and Phase I cluster infrastructure planning, with subsequent allocations subject to phased budgetary approval as set out in the report's three-phase implementation roadmap.
Decision Required	Approval by the Federal Cabinet, with implementation directed to the Ministry of Industries and Production in coordination with the Planning Commission.

Annex B: Cabinet Summary Template

Field	Content
Subject	Establishment of the Pakistan Industrial Development Finance Corporation (PIDFC)
Background	Commercial banks in Pakistan lend at tenors of three to five years, while machinery manufacturing investment carries payback periods of seven to fifteen years. This structural mismatch has prevented, and will continue to prevent, the emergence of a competitive domestic capital goods industry in the absence of a dedicated long-term industrial finance institution.
Proposal	Establishment of the Pakistan Industrial Development Finance Corporation as a dedicated development finance institution offering Technology Loans (15-year tenor), Export Expansion Loans (10-year tenor), Cluster Development Loans (15-year tenor) and Product Development Grants, funded through federal government equity, State Bank of Pakistan capital allocation, and multilateral and bilateral development finance partnerships.

Field	Content
Financial Implications	Initial capitalization of PKR 300 billion, structured as repayable development finance rather than grant expenditure, with net fiscal exposure limited to the funding-cost spread and a standard development-finance-institution credit loss provision.
Decision Required	Approval by the Federal Cabinet, with the Ministry of Finance and State Bank of Pakistan directed to finalize the capitalization and governance structure within the current fiscal year.

Annex C: Cabinet Summary Template

Field	Content
Subject	Industrial Participation and Offset Policy
Background	Public procurement and foreign-financed contracts in Pakistan currently carry no systematic, enforceable requirement to generate domestic industrial benefit, placing Pakistani capital goods manufacturers at a structural disadvantage relative to manufacturers in Turkey, South Korea, Malaysia and South Africa, all of which enforce comparable industrial participation frameworks on equivalent procurement.
Proposal	Enactment of an Industrial Participation Act mandating a minimum 40% local industrial participation obligation on all public procurement contracts, and qualifying foreign-financed contracts, exceeding US\$50 million in value, fulfilled through local sourcing, vendor development, technology transfer, joint ventures or export orders, enforceable for ten years following contract award and monitored by a National Industrial Participation Authority.
Financial Implications	Minimal direct fiscal cost; primary impact is on contract structuring for future public and foreign-financed procurement rather than new budgetary expenditure.
Decision Required	Referral to the Cabinet Committee on Legislative Affairs for expedited drafting and legislative processing, with the draft framework set out in the accompanying PEC report as the basis for formal legislative drafting.

Annex D: Cabinet Summary Template

Field	Content
Subject	Establishment of the National Engineering Cluster Development Program
Background	Existing industrial concentrations in Gujranwala, Sialkot, Faisalabad, Lahore, Karachi and other districts have developed organically without the shared infrastructure — common-use technology centers, testing and certification laboratories, vendor development programs — that distinguishes organized industrial clusters in comparator economies from simple geographic agglomeration of firms.
Proposal	Establishment of a National Engineering Cluster Development Program to deliver a standardized package of infrastructure to each of the Twelve Strategic Industrial

Field	Content
	Clusters designated in the accompanying PEC report, coordinated with provincial governments through the National Capital Goods Authority.
Financial Implications	Indicative cluster-level investment requirements ranging from US\$300 million to US\$2 billion per cluster, to be phased over the fifteen-year strategy horizon and co-financed through federal allocation, provincial government contribution, PIDFC cluster development loans, and private-sector investment.
Decision Required	Approval by the Federal Cabinet, with implementation directed to the Ministry of Industries and Production in coordination with provincial industries departments.

Note on Volume II — Implementation Framework

This report (Volume I) presents the strategic framework for the revival and growth of Pakistan's capital goods industry. A companion Implementation Framework (Volume II) has been prepared by the Committee, containing the full district-by-district cluster investment plans, detailed mission investment schedules, the complete employment and export projection datasets, the full draft text of the Industrial Participation Act, and complete cabinet summary annexes formatted for direct legislative and administrative processing. The Committee recommends that Volume II be read alongside this report and be made available to all ministries and provincial departments named in the governance framework set out in Chapter 11.