I-PSD Sector Selection Analysis

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التعاون الألماني
DEUTSCHE ZUSAMMENARBEIT

Implemented by

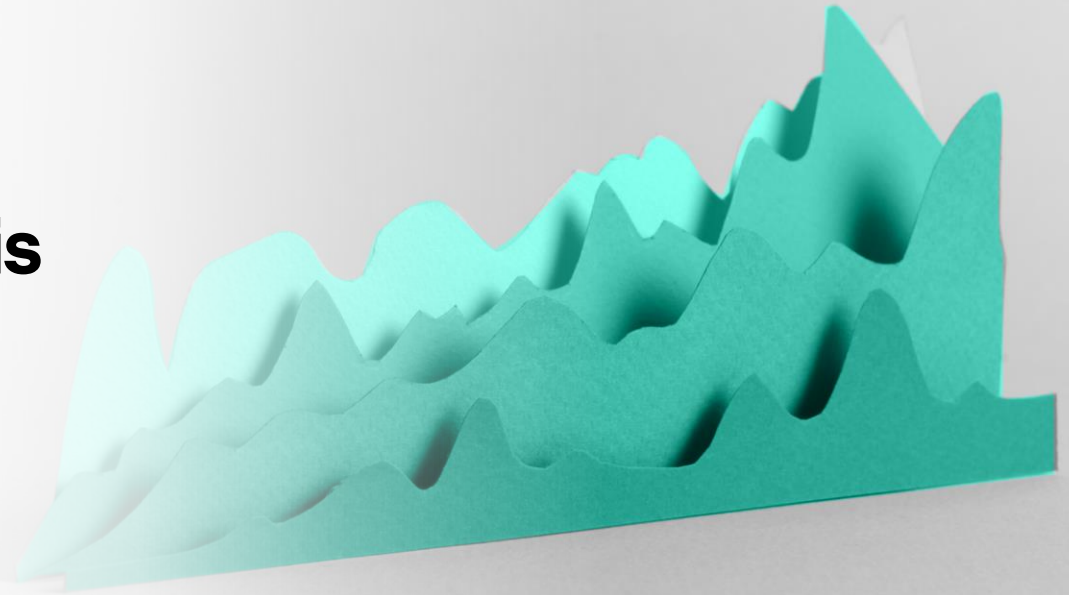
giz Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH

Gazelle Advisory

Contents

Part 1

Framing Analysis



Activity Background

Objective

Contribute to improving conditions for competitiveness in growth sectors with potential for innovation and high-quality employment

This analysis is a product developed by Gazelle Advisory for the GIZ-implemented "Innovation in Private Sector Development" (I-PSD) project, commissioned by the German Federal Ministry for Economic Cooperation and Development (BMZ), whose aim it is to support Jordan's Private Sector, unlocking innovation to support job creation and inclusive labour market outcomes.

The project partners with the Ministry of Industry, Trade and Supply as its key political stakeholder. Advisory services have been supplied in cooperation with British Consultancy "Gazelle Advisory".

Methodological Approach

Stakeholder interviews **25+**

60+ **Documents reviewed including from government, industry representative bodies, academia and international agencies.**

6 Sectors Reviewed:

- **Food Processing***
- **Chemical Products***
- **Pharma**
- **Engineering Products***
- **Engineering Services**
- **Creative Industries***

*** Include more in-depth sub-sector analysis**

The Innovative Private Sector Development Approaches for Employment Promotion Project

The objective of this document is to present an analysis of six shortlisted economic sectors* and options for a set of three to be supported by the I-PSD project. The study will then feed into later work which will help inform wider project interventions, ecosystem improvements, etc.

The goal of the I-PSD project is to contribute to improving conditions for competitiveness in growth sectors with potential for innovation and high-quality employment.

The project will include two innovation supporting components: one to work directly with firms to support innovation and job creation, and a second to support improvements to the 'innovation ecosystem' such as policy and regulatory improvements, links between businesses and academia, etc. This study will help inform which sectors the first of these components will target.

This study is broken into three sections:

- **Part 1: Framing Analysis** (this section) will review the levels and role of innovation in the Jordanian economy to help identify macro level priorities and constraints,
- **Part 2: Sector Analysis** will review each of the 6 sectors, considering their role in employment generation, exports earnings, strategic role in the economy (ex: spillovers) and the constraints to the sector's growth, and
- **Part 3: Strategic Options Analysis** will present options for sector choices that the I-PSD project might support, help identify the narrative behind the choice and how it will help the project maximise impact.

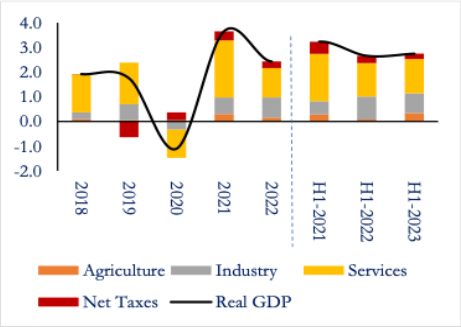
The 'Innovation Paradox'

The returns to innovation are often positive and high but, below a certain level of development, decrease with distance from the frontier and may even become negative… this decline is driven by the absence of a broad set of complementarities, such as physical and human capital, which becomes more acute with distance from the frontier and more than offsets the gains from catch-up. If a firm (country) invests in innovation but cannot also import the necessary machines, contract trained workers and engineers, or draw on new organizational techniques, the returns to that investment will be low.

World Bank – The Innovation Paradox (2017)

The Jordanian economy has struggled to grow and generate much needed jobs

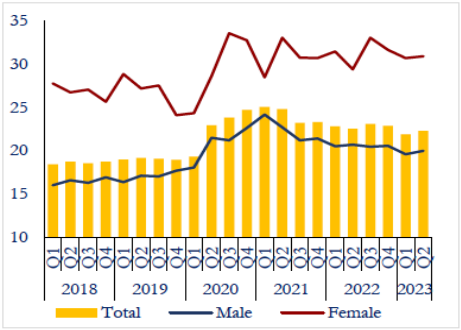
Figure 1: GDP growth by sector (%)



Despite a series of shocks, including regional conflict and the COVID pandemic, the Jordanian economy has shown resilience and maintained positive GDP growth in most years.

Whilst this resilience is welcome, growth has not been sufficient to generate sufficient job growth for Jordan's young population or to generate positive fiscal balances needed to prevent government debt growing sharply.

Figure 2: Unemployment rate, by gender (%)



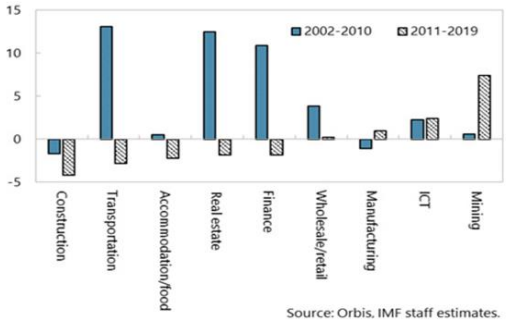
Source: DoS and WB staff calculations

Unemployment has not returned to pre-COVID levels and remains above 20% of economically active citizens, high by regional standards and compared with Jordan's peers.

The unemployment rate is particularly high amongst women, at over 30%. Jordan also has the lowest level of female labour force participation in the world, underlining an urgent need for the rapid creation of good jobs.

Productivity growth has stalled leaving Jordan falling behind its competitors

Figure 3: Productivity growth by economic sector

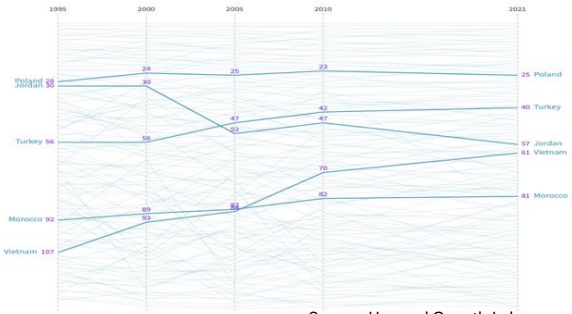


Source: Orbis, IMF staff estimates.

Productivity growth has slumped across most sectors in the last decade. Where the economy has grown it has typically come from either adding more workers or more capital rather than increased know-how & improved working practices.

This is a worrying trend for maintaining competitiveness and suggests low levels of innovation & tech adoption.

Figure 4: Economic complexity relative to other countries



Source: Harvard Growth Lab

'Economic complexity' – defined as the diversity of products exported and the complexity of each good – is a strong predictor of future economic growth and job creation.

Jordan's economic complexity ranking has fallen sharply since 1995 when it was equal to that of Poland. It has since fallen below the level of Turkey and is being rapidly caught up by more dynamic economies such as Vietnam.

Evidence that Jordanian firms innovate less than expected for their level of development

Global evidence shows firms innovate in different ways, in part influenced by their level of capabilities and level of development (see Figure 5):

- Less sophisticated are firms more likely to restrict innovation to improvements in basic production capabilities.
- More capable firms will begin seeking means for adoption of more sophisticated technologies used elsewhere.
- The most capable firms will undertake innovations linked to in-house inventions, often from internal R&D activities.

Whilst there is generally a wide span of firm capabilities within any country, the level of innovation within firms is influenced by country income/development levels, following a 'U' shaped curve.

Levels of innovation in Jordanian manufacturing firms are often beneath this expected level based on income (World Bank Enterprise Survey Data, sector analysis and interviews confirm this).

Figure 5: Innovation capability escalator

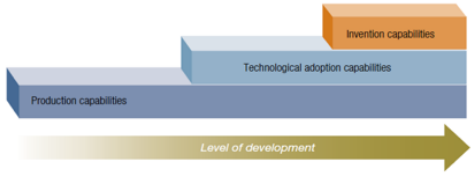
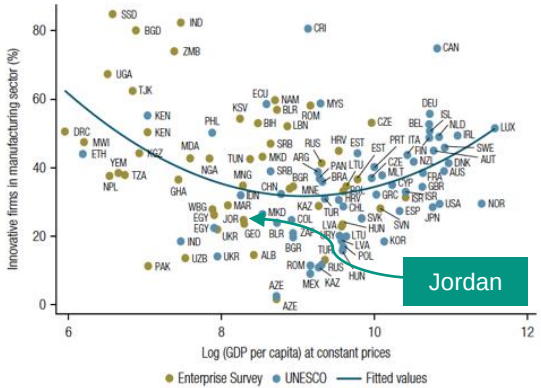


Figure 6: Share of firms innovating by GDP/capita



Source: Elaboration using Enterprise Survey data (www.enterprisesurveys.org) and United Nations Educational, Scientific, and Cultural Organization (UNESCO) data.

Note: GDP = gross domestic product.

What data and analytical approaches can help guide sector selection?

Almost all stakeholders described challenges in the **availability of reliable and comparable data** at the sectoral level. Even 'simple' indicators such as employment by sector are hard to obtain.

Reliable **data on innovation in sectors is completely absent** with at best 'anecdotal' reports of activities in individual firms or product lines.*

Given these data gaps **each sectoral analysis will be slightly different** and be opportunistic in data use and choice of analytical frameworks. The next three slides illustrate ways of differentiating between sectors:

i. Some sectors offer **more likely routes to complex and higher value-added economic activities** that can help put the economy on a higher growth path

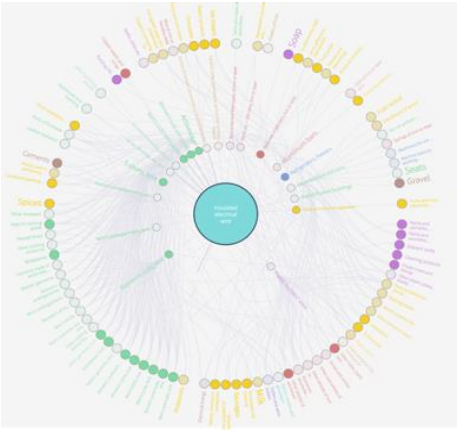
ii. Sectors vary in terms of their **ability to create jobs**, what type of jobs (quality) and who gets the jobs (equity and inclusivity)

iii. Sectors vary in terms of the **Government's plans and vision** with important implications for alignment and aid effectiveness

* Given this lack of data an early project activity might be to better understand this and baseline where things are as project begins. There are several potential approaches for this which can be discussed in later outputs.

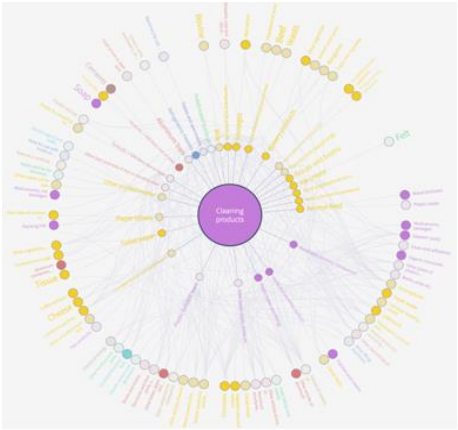
International experience shows some sectors are better than others as routes to diversification

Countries that export **insulated wire** typically also export the following goods:



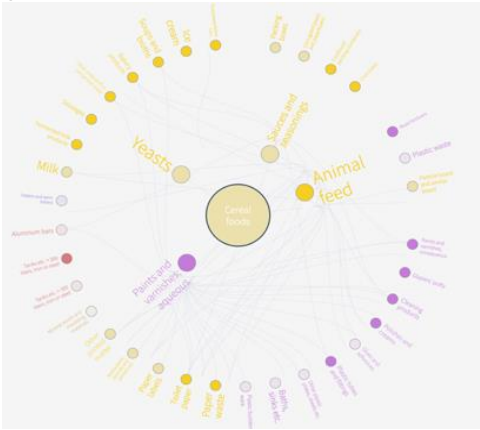
Countries that export insulated electrical wire have <u>used this as a pathway</u> to move into new products and sectors. Supporting innovation in this sector <u>may</u> translate into greater value-added and diversification.

Countries that export **cleaning products** typically also export the following goods:



Similarly, the production of cleaning products can act as a <u>stepping stone to move into new goods</u> both in chemicals and other sectors requiring similar technologies and skills.

Countries that export **cereal foods** typically also export the following goods:



In contrast, the international evidence is that cereal foods have <u>not been as successful</u> in creating pathways for diversification and increased complexity.

Note: this analysis comes from the Harvard Growth Lab. The intention of this slide is to illustrate the big differences in the numbers of diversification pathways for different products. More detailed analysis can be carried out to explore these pathways in more detail.

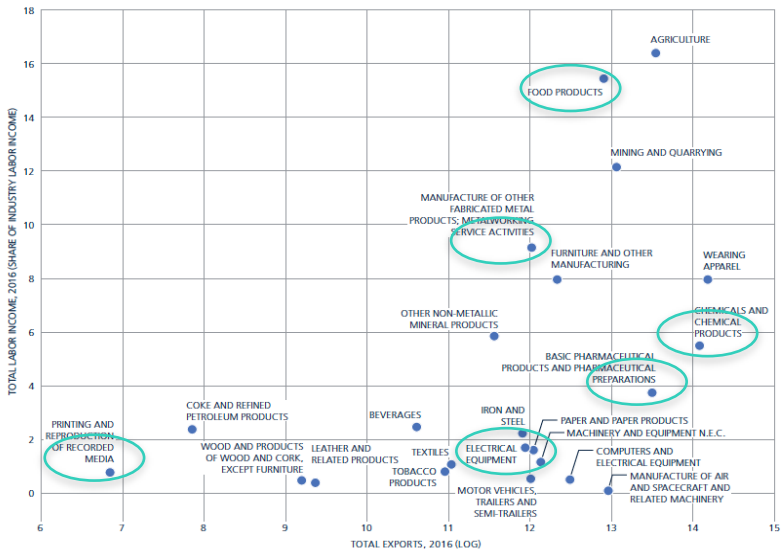
Sectors also vary in labour intensity and the rate at which growth stimulates job creation

Sectors such as food products have a very high share of total output being paid in wages – suggesting higher levels of employment.

In contrast, more capital intensive sectors such as pharmaceuticals or chemicals *on average* represent fewer jobs per $m of exports (but jobs may be more highly skilled).

Note: caution is needed in interpreting these findings as the share of inputs/raw materials used in production of goods can obscure the true value added from labour.

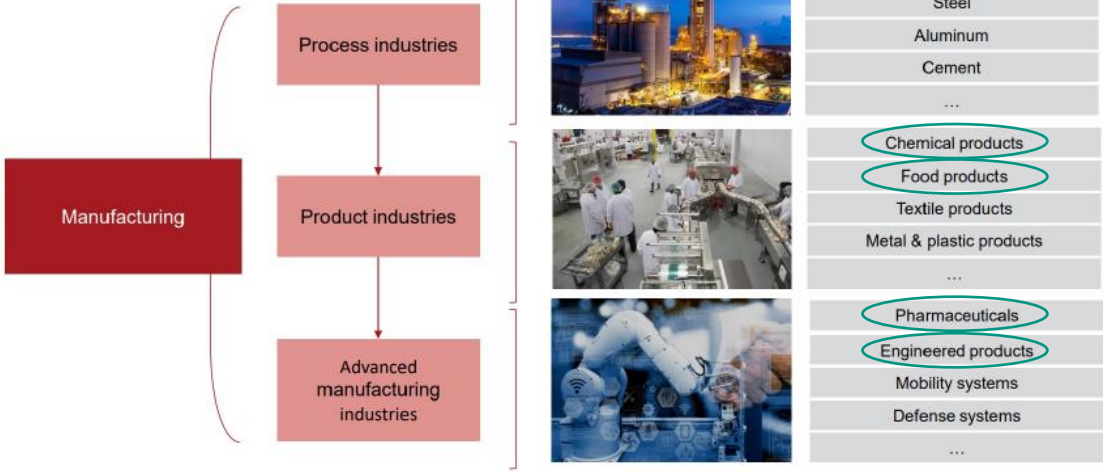
Figure 8: Share of labour income in key exports



Source: IMF, based on Jordan DoS data

Government thinking varies by sector – creating different plans to align behind

All shortlisted sectors have been highlighted as priorities under the Economic Modernization Vision but have been categorized in different ways:



Capital intensive and heavy industries producing intermediate, semi-finished products. Innovation mainly linked to capital spending, foreign technology adoption and linkages to foreign capital.

Typically lower value-added consumer facing products. Sectors typically labour intensive but lower skilled. Price sensitive markets require innovation on production efficiencies, which is main EMV focus.

High value-added technology dependant manufacturers. Innovation focused on product development and meeting tightly specified product requirements. EMV focus on links to R&D & niche expertise.

Source: Government of Jordan Economic Modernization Vision (2023)

Part 2

Sectoral Analysis

i. Pharma
ii. Chemicals
iii. Food Processing
iv. Engineering Products
v. Engineering Services
vi. Creative Industries

Pharmaceuticals

Sector summary

Sector

- EMV notes **"small domestic market, rigid domestic pricing, complex approval/registration processes, high production costs and taxes"**
- **Represents 10.2 percent of manufacturing**
- Focus **on branded generics** with wide variety of products
- **Low levels of R&D, costly machinery and** technologies make investing in higher quality products difficult

Employment

- Direct and indirect employment of **~10,000 workers, 98 percent Jordanian, 35 percent of whom are women**
- **Surplus of pharma graduates requiring upskilling,** most of whom **work in pharmacies and not with manufacturers**

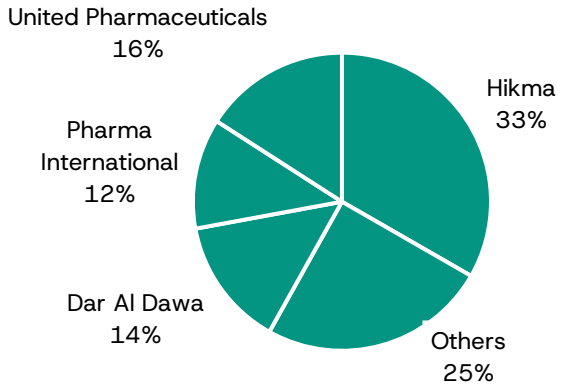
Multinationals and Imports

- **Multinationals hold 70 percent of market share** (licensed and contract manufacturing, co-marketing with local firms)
- **Imports preferred** due to perception of higher quality
- **Import companies have strong marketing and don't need to undergo testing by JFDA,** so can lower costs significantly

Firms

- Focus on **generic drugs, and prescription and over-the-counter (OTC) medication**
- **Solids, semi-solids, injectables and liquids**
- Specialties such as **antibiotics, anti-ulcer cures, anti-cancer treatments, hormones and supplements**

Local Company Market Share



Summary value chain

- More than **42 companies and 151 facilities** producing **481 drug varieties** marketed in **72 international markets**
- Mix of focus on both local market and exports

- **Market size of USD 1.16 billion**
- Contributes **4 percent to GDP**
- Employs **~10,000 workers (inc. indirect), 98 percent Jordanian, 35 percent of whom are women; aim to increase to 16,000 by 2033**

USD 869 million of exports (USD 633 million of imports) in 2023, increase of 19% on the previous year – **goal of USD 2.96 billion by 2033**

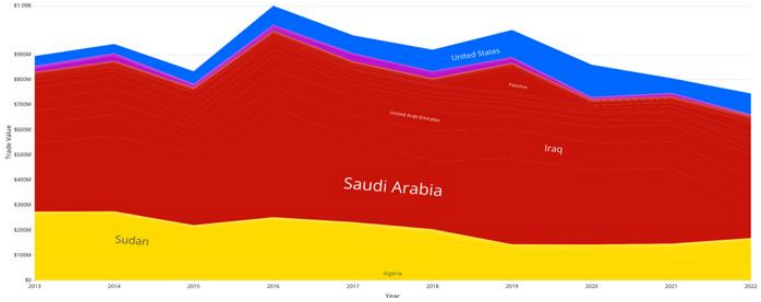
Top export destinations:

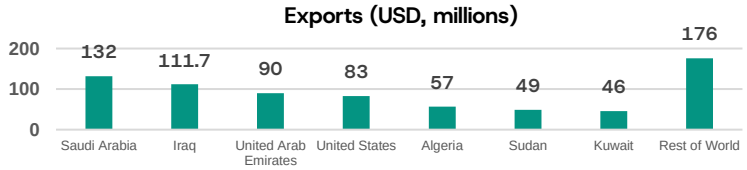
Top importers to local market:

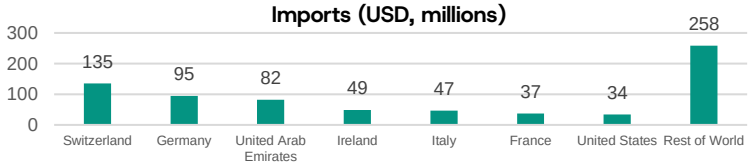
Research and Development	Sourcing	Registration	Production	Packaging and Storage	Distribution and Marketing	Exports

• Drug discovery and formulation
• Clinical trials
• Regulatory approval
• Patenting
	• Ingredient and material sourcing
	• Traceability and tracking
	• Compliance and inspection
		• Approval and registration	• Ingredient and material sourcing
			• Traceability and tracking
			• Testing, Inspection, and Quality Assurance
			• Maintenance
			• Waste disposal
				• Design and development
				• Labeling
				• Product integrity and identity / Compliance
				• In-house / outsourced to distributors
					• Storage and distribution to:
					  • Pharmacies
					  • Hospitals and clinics
					  • Retailers
					• Transportation:
					  • Land, air, sea	

Trade flows







Source: Observatory of Economic Complexity

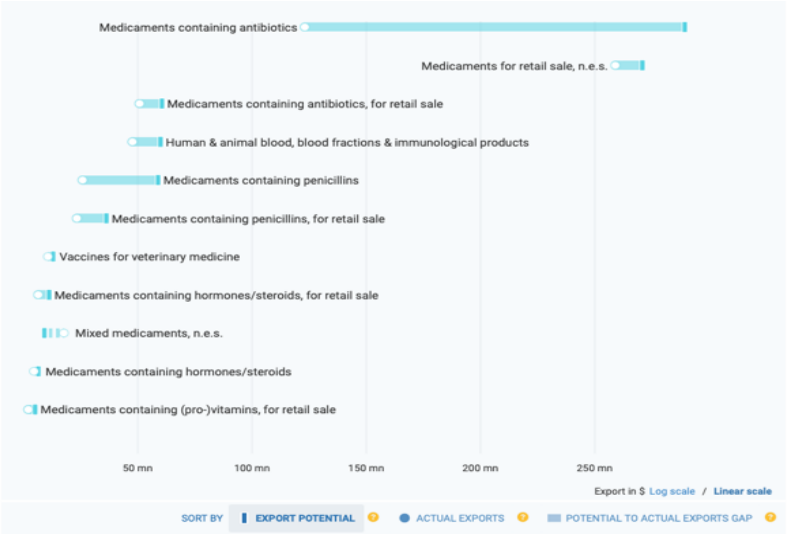
Existing trade & opportunities for growth:

- Exports of pharmaceuticals have reached over $1bn (approaching 8% of total exports) but revenues have trended downwards in recent years.
- Trade flows dominated by the near region (esp. Iraq, Saudi and UAE). Small scale exports to US and EU are an important foothold and represent linkage to significant markets.
- Higher level of diversification than other sectors offering scope for market growth within 'known' markets rather than having to invest heavily in destination research.
- Expansion into new markets more complicated and time consuming than for other sectors given need for registering of products which involves significant documentation, proof of certifications, etc.
- Sectors heavily dependant on imported raw materials, e.g. active ingredients, which often represent highest share of value.

Unmet trade potential and scope for diversification

Within existing pharmaceutical product lines there is scope for expansion and exporting to new markets. Analysis by the International Trade Centre show considerable scope for growth.

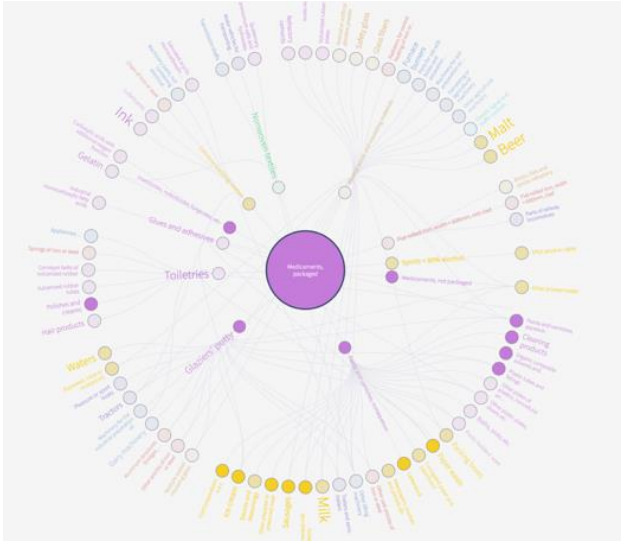
'Medicaments containing antibiotics' are already a significant export category but this analysis shows unmet demand sufficient to more than double exports to over $250m/year.



Source: ITC

Analysis of trade linkages of the pharma sector shows a dense set of diversification possibilities associated with the manufacture and exports of these goods.

Work by the Harvard Growth Lab suggests this can build both firm and worker capabilities supporting new product growth in food, engineering and several other sectors.



Source: Harvard Growth Lab

Employment

Pharma industry direct employs around **5,400 workers, around 44% of which are women,** one of the highest ratios of the 6 sectors evaluated.

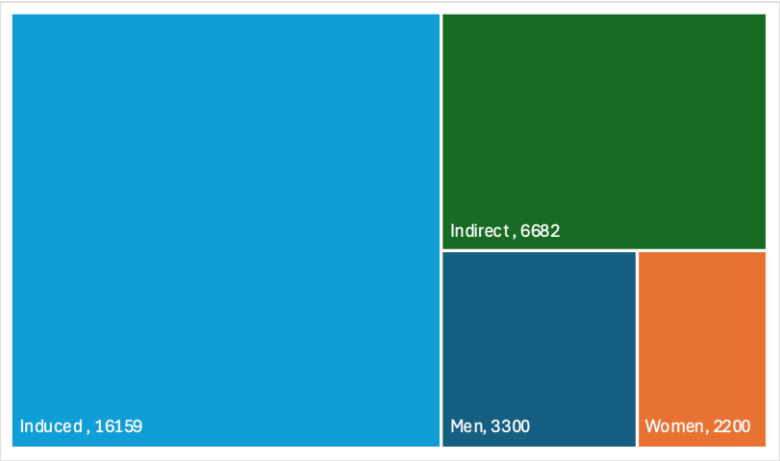
Indirect employment in functions and activities related to the wider value chain are estimated to be a further 6,600 with a further 16,000 in induced employment through economic multipliers, taking **total employment impact to over 27,000 jobs**.

Output (GDP) of **JOD 99,000 (US$ 143,000) per employee**, 4 times average level and highest of all 6 sectors considered.

Despite high levels of productivity, the sector's external competitiveness is, in part, premised on **low-cost labour inputs** with large number of workers on salaries as low as JOD280 per month.

As with all sectors employers reported a **mismatch between skills required and the employability of local graduates,** noting dearth of both hard skills (needed for R&D) and soft skills. Positions intended for locals often filled by foreign 'instructors'.

Employment footprint of Jordan's Pharma Sector, 2021



Based on EMV data and PWC approaches to calculating spillover effects of Pharma Industry.

https://www.efpia.eu/media/412941/efpia-economic-societal-footprint-industry-technical-report-250619.pdf

International supply chain trends and shifting demand patterns

1. **Demand in the region is expected continue to grow robustly.** Aging populations, increased urbanization, both lifestyle and chronic diseases as well as improved healthcare awareness are expected to buoy local demand over coming decade.
2. **The upcoming expiry of key patents** in the US and elsewhere offers significant scope for expansion of generic and biosimilars production. This is already an area of production for Jordan and could give a significant boost to the sector if the right production capabilities are in place.
3. **Global restructuring of the pharma supply chains.** Increased consolidation through M&As and cost saving measures such as localization of production and a drive for manufacturing efficiencies is expected to increase price competition in the sector.
4. **Investments in 4th Industrial Revolution technologies and AI enabled R&D.** Large MNCs have begun investing heavily in more automated and flexible manufacturing approaches and more technology-led approaches to research.
5. **Regional competition is expected to accelerate, including in current export markets.** This includes both investments in rival production capacity (Saudi) and some protectionist measures that could impact Jordanian exporters (Algeria and Sudan).

Government priorities and main constraints to sector growth

EMV is prioritising **new drug development** (both generic and proprietary) **linked to R&D and linkages between sector and academic institutions** – note very close alignment with I-PSD focus!

Constraints to rapid growth for the sector include challenges to both expanding exports and local sales:

1. **High dependency on foreign active pharmaceutical ingredients** (APIs) limits local value-added.
2. **Low levels of R&D** (less than 1% of revenues) with modern machinery and technology cited by manufactures as burdensome and expensive to import.
3. **Gaps in skilled and experienced labor,** including both a lack of research capabilities required for new product development and of the soft skills in graduate recruits.
4. **High levels of debt** owed by government to pharmaceutical companies is reducing liquidity and ability to invest.
5. **Regulatory challenges** such as complex approval/registration processes (both USAID and GIZ have supported this process) and compliance issues in areas such as waste disposal add to costs.
6. **Domestic market obstacles** also include the limited size of the Jordanian market reducing economies of scale, and international competitors preferred by consumers and able to bypass requirement to undergo JFDA testing.

Chemical Products Sector Assessment

Summary value chain

Even within the restricted set of sub-sectors very significant range of manufacturers with a few larger anchor firms with dedicated R&D, testing labs, and capabilities, but majority of companies still small 'artisanal' family run firms.

Key inputs:

Soaps, detergents, paints and misc. processed chemical products

- Mix of local inputs and imported raw materials, depending on products and local availability.
- Labour inputs include a mix of high-end chemical engineering roles, technical staff and lower skilled (even seasonal) staff.

Dead Sea and higher-end cosmetics

- High degree of local raw material use but up to 400 imported inputs also reported.

Manufacturing and other processes:

- Upstream activates include R&D, market awareness and, often, significant investment in productions systems and certifications.
- Production processes vary in terms of product complexity and firm size.
- Packaging, storage and distribution often represent over 50% of costs.
- Processes as above but small scale adds to overheads including costs of R&D, certification and product registration.

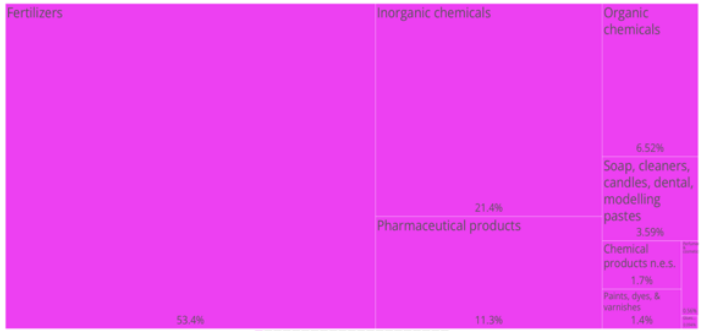
Over 90% of exports are to Middle East and North Africa, typically through traders and lower levels of direct marketing.

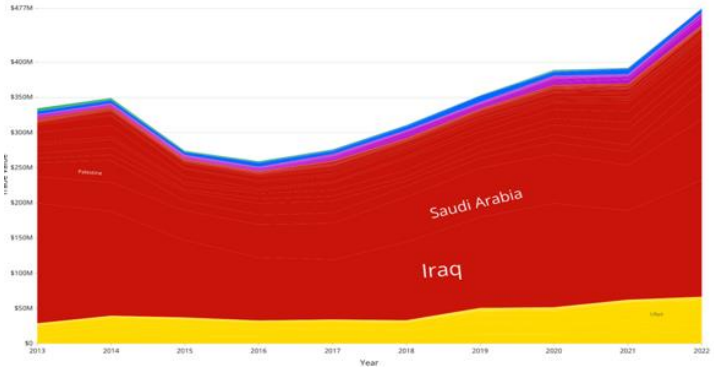
Est. $5m of exports, largely to region but also ad hoc exports into US and EU markets.

Inputs | Processing | Markets

Trade trends and opportunities

Chemical exports by sub-sector and market





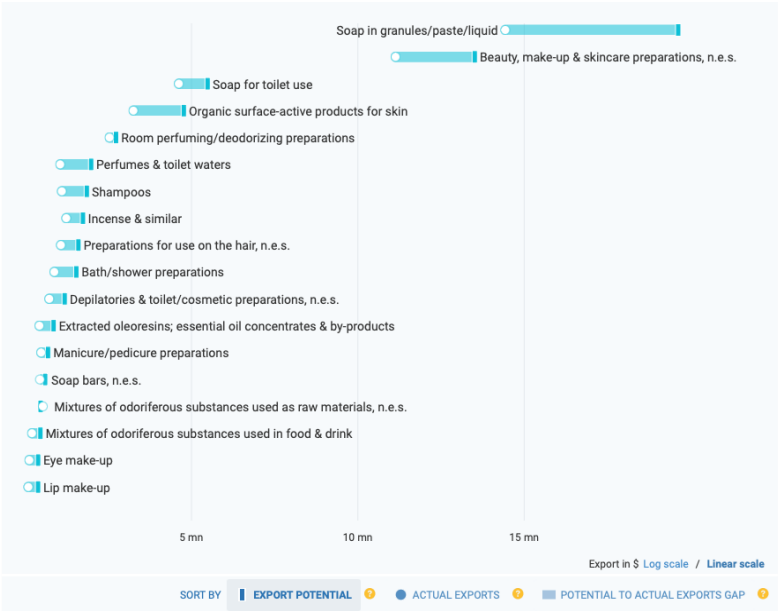
Source: Organisation for Economic Complexity

Existing trade & opportunities for growth:

- Excluding fertilizers and mined chemicals deposits (as requested by GIZ) and pharmaceuticals (considered as a standalone sector) reduces the size of the 'chemicals' sector to $470m (3% of total exports).
- Remaining sector is dominated by soaps, detergents, cleaning products ($230m), paints & dyes ($110m) perfumes ($36m) and assorted industry chemicals ($112m).
- Whilst modest in size, this grouping has grown rapidly in recent years, nearly doubling since 2016, despite several sub-sectors being reported close to 'production capacity' in 2019.
- Of almost all sectors analysed this grouping shows one of the lowest levels of market diversification with heavy dependence on small number of markets. This creates a strategic priority to diversify.
- Trade dominated by the near region (esp. Iraq and Saudi) and growing trade with Libya. Small exports to US are an important foothold. EU exports almost non-existent (European exports primarily to Russia).

Trade trends and opportunities

Trade potential in selected sub-sectors, ($m)



Source: ITC

Existing trade & opportunities for growth:

- International Trade Centre analysis shows even with rapid growth current exports are beneath potential levels within existing lines (esp. soap and skincare products).
- Scope for additional growth, for instance by development of new products linked to dead sea which might offer room for further diversification into high-value markets (e.g. EU and US).
- Whilst the individual size of these product lines is relatively modest, they all offer the benefits of current levels of value added and the opportunity to significantly add to revenues through 'premiumisation' linked to branding, packaging upgrades, etc.
- Note: many products will be manufactured by the same companies with opportunities to support development with smaller number of interventions.

Jobs and skills

Employment Levels

Whilst the chemicals sector as a whole directly employs around 21,000 workers, employment data for the 4 focus sub-sectors are not routinely collected. Given different firm sizes and processes of fertilizer, sector employment as a share of output/exports expected to be quite different, so hard to extrapolate.

Soaps and detergents subsector employed 2,900 workers in 2018 with production of $549m and exports of $130m. Assuming productivity per worker has been constant and extrapolating to other sub-sectors suggests around 11,000 workers across 4 focus sectors in 2023. Note: small size of dead sea products sub-sector with employment as low as 500 workers in 2019.

Indirect employment is estimated to be 2.6 jobs for each direct employee – this would take total employment created by the sector to as high as 40,000.

Inclusivity

Hard to find reliable gender data from sub-sectors but EMV cites chemicals sector as having lowest women's empowerment contribution of the 5 priority manufacturing sectors.

Several sources report levels of informality and seasonal labour but this is not expected to be lower than other focus sectors.

Skills Mix

Given technical nature of production process and safety requirements of all workers, skills mix of jobs created in the sector is reported, on average, higher than average manufacturing sector jobs. Despite this, only 70% of workers hold secondary level education. Skills gaps reported as a significant constraint – see later slide.

Global supply chain trends & demand shifts

- **Recent strong demand in sub-sectors expected to be maintained in medium term.** Post-pandemic, heightened awareness around hygiene has led to increased demand for soaps and detergents in residential and corporate settings. The growth in the tourism and hospitality sectors, particularly in countries like Saudi Arabia and the UAE (prior to recent conflict), had been expected to drive demand for both commercial and resort-branded products.
- **Demand for greener and more sustainable products.** In many markets consumers are increasingly looking for biodegradable and non-toxic detergents, requiring manufacturers to innovate and produce greener options. (However, important to note several manufactures point out that, to date, this trend is limited within the region). Stricter regulations also driving this trend, in particular for markets such as the EU, where this includes both product ingredients, manufacturing processes and packaging.
- **Technological advancements for new products.** Producers are adopting advanced technologies for better formulation and production processes. Innovations such as enzyme-based detergents and products suitable for cold water washing are gaining increased traction.
- **Increasing inputs costs and stronger competitive pressures.** The price of imported inputs, such as palm oil, have risen in recent years as consumer incomes have been squeezed by cost-of-living pressures. Increased production capacity and technology use in Saudi and elsewhere is also a rising threat to existing regional trade. Water intensive, and so, heavy, products have been relatively protected from global competition by high trade costs but this may not-continue.
- **Increased 'localisation' of global brands and manufactures.** Some MNCs have been encouraged to accelerate localisation of value chains and production close to core markets, creating opportunities for links with global brands. This may create opportunities for existing manufactures to operate under franchise.
- **Regional conflict and instability.** Continuing to exert direct & indirect impact e.g. trade logistics for inputs using red sea & exports using land crossings into Palestine.

Constraints to growth and the role of innovation & technological upgrading

Whilst sub-sectors have registered health growth in recent years, in part from improved access to local markets, a less favourable commercial environment will require innovation in three key areas:

i. **R&D to drive both new product development, environmental sustainability and 'premiumisation'** of Jordanian brands. Increased competition and changing consumer tastes create an imperative for improved products in areas such as lower end-user water consumption, health-conscious users of skincare products, and sanitation linked products. This will require both in-house R&D & technological adoption from manufactures closer to productivity frontiers.

ii. **Productivity improvements linked to production line efficiencies and new business models**. Pressure from lower cost producers in Saudi and Southeast Asia will require continued improvements in maintaining competitive position in key markets. This may include adoption of new production technologies and new business models such as pooling of R&D activities or licencing from MNCs.

iii. Approaches needed to overcome the high **upfront costs of R&D and marketing.** This might include partnerships with international buyers who could take volume orders without need for significant product development or in house brand development. This world however require investments in production capabilities to ensure stricter order, and product specification requirements could be consistently achieved.

For the nascent **Dead Sea Products sector** R&D for new products development, efficient production processes and certifications for skincare products will be needed. This subsector has received interest despite current modest size given the availability of key inputs, consumer recognition offering scope for price premiums and female leadership of several firms. However, unclear if any dedicated donor support in place beyond a JICA study on cluster formation.

There is an unresolved question of **commitment of government support** for the sector given EMV focus is almost exclusively on the potash and phosphates segment.

Chemical Products Sub-Sector Assessment

Three sub-sectors considered:

1. Soaps and detergents

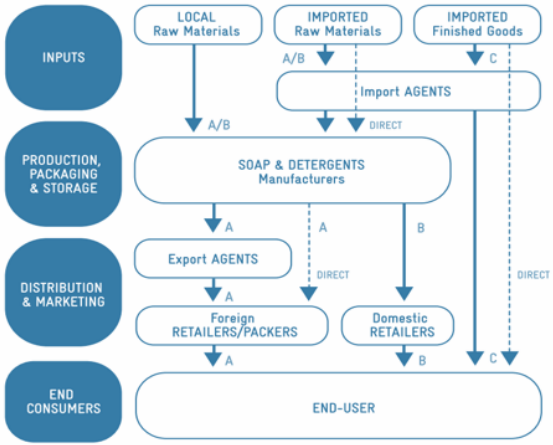
2. Dead sea products

3. Paints and lubricants

Soaps and detergents – products & value chains

Soaps and Detergents

- Soap and detergents market in Jordan **expected to reach value of ~USD 254.5 million by 2026, with a growth rate of 5.4% from 2020 to 2026**
- **Segments include**
  - **Personal Care** (soaps and liquid)
  - **Clothes Care** (detergents and softeners)
  - **Household Care** (dishwashing liquid, general purpose cleaners, shoe polish, etc.)



- Jordanian manufacturers are focusing on product diversification by launching new **organic or eco-friendly variants with superior cleaning capabilities compared to traditional products.**
- **Increased demand** for soaps, shampoos, liquid detergents, and other personal care products has been **observed in Jordan and the region due to population growth and rising disposable incomes**
- Sector described as **highly fragmented with a small number of large players, with most enterprises struggling to achieve economies of scale.** (GIZ)

Soaps and detergents

Market Share

- Focus on domestic market, with **~25% of goods exported and ~21% of products imported.**
- Primary **export destinations include Iraq, KSA, and USA.**
- Presence of renowned multinational corporations, such as Unilever Middle East FZE, contributes to the growth of the market.

Soaps and Detergents Industry Cost Share

Metric	Share of Costs Per Tonne (%)
Labour and Fixed Costs	18
Raw Materials	38
Packaging	16
Marketing	4
Transportation and Clearance	3
Maintenance	6
Research and Development	2
Profit Margin	13
Total	**100**

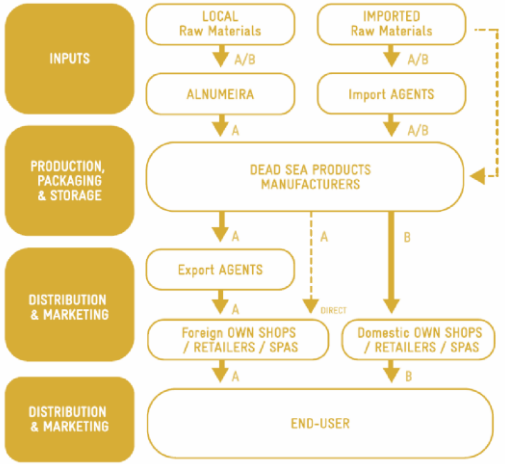
Challenges

- Labor market challenges observed are similar to those of other sectors – **lack of highly skilled and motivated workers and lack of R&D.**
- **Delays in testing and costs imposed by Jordan Standards and Metrology Organization (JSMO)** cited as significant.
- **Raw materials mainly imported,** with local alternatives perceived as low quality.
- Significant challenges noted with **counterfeit products imported, undercutting local manufacturers.**

Dead Sea Cosmetics – value chains and markets

Dead Sea Cosmetics

- Overall**, around 50 Jordanian firms produce Dead Sea cosmetics,** although **only 15 of them have a global presence** in markets across the Middle East, Asia, Europe, and the US. Japan is being targeted as a potential lucrative market for Dead Sea products.
- **Most SMEs are small,** making less than USD 500,000 annually, with 30 – 40% profit margin.



CAGR over the 2020-2027 period in some Dead Sea mud cosmetics markets

Region / Country	CAGR in %
USA	11.1
Europe	11.3
Germany	12.1
MENA Region	12.6
Jordan	**10.2**

- **83% of SMEs export, with exports representing 80-100% of production. Dead Sea mud and salts are responsible for 65% of total Jordanian exports in sector.**

Dead Sea Cosmetics – product types

Dead Sea Products Industry Cost Share	
Metric	**Share of Costs Per Tone (%)**
Labour and Fixed Costs	19
Raw Materials	30
Packaging	23
Transportation and Clearance	5
Maintenance	8
Research and Development	3
Profit Margin	12
Total	**100**

- Relatively **low profit margins affected by packaging costs**
- **Instability and delays related to sourcing of packaging limit maintenance of stock levels,** which are perishable
- **Limited spend on R&D**
- **High costs of raw materials due to single-source supplier and effective monopoly**

- Dead Sea Products produced in Jordan cover a range of distinct offerings:
  - **Dead Sea Bath Salts**: one of the most common Jordan Dead Sea companies like Dead Sea Treasures and Trinitae offer Dead Sea bath salts online.
  - **Dead Sea Mineral Bath Bombs**: Trinitae produces bath bombs with Dead Sea minerals, including salt, in various colors and scents.
  - **Dead Sea Mineral Bath Bubbles**: mineral-rich bubble bath products produced and possess customer potential.
  - **Dead Sea Mineral Shampoo & Conditioner**: products vary in terms of ingredients, scents, and uses, and one producer is Dead Sea Treasures.

Dead Sea Cosmetics – firms and constraints

- **Potential anchor firms include:**
  - **Ashtar Natural Dead Sea Products**: provides array of products, including different types of salt, mud, and water. Accessible in bulk or as finished goods. Perceived to provide high-quality Dead Sea products at competitive prices and currently export to over 25 countries worldwide.
  - **Kawar Dead Sea Products**: company successfully increased its market share locally, regionally, and internationally. They export to over 29 countries worldwide.
  - **Jordan Company of Dead Sea Products**: company achieved some success in the market as they have reached a large portion of exports to over 53 countries worldwide.

- **Sub-sector challenges:**
  - Companies observed to **lack managerial and financial capabilities,** affecting expansion.
  - Subsector **outcompeted by Israeli companies**, including **Ahava,** present in 30 markets, and earning USD 150 million annually, five times all Jordanian companies combined.
  - **Absence of modern storage facilities** to track quantities and products.
  - Most companies struggle with **access to finance, testing requirements costs (**including heavy metals testing).
  - **R&D investment and capabilities in subsector very limited.**
  - AlNumeira is main supplier of mud and salts, **effectively a monopoly**, with prices of raw materials observed to be increasing and lacking quality.

Paints and industrial lubricants

- Paints market expected to **grow at a rate of 5.4% between 2020 and 2026.**
- Local paints market includes various types of paints, such as **car refinish, coil coating, and powder paints.** Resins used in paints include acrylic, alkyd, epoxy, polyurethane, and polyester.
- **Rising demand for durable architectural coatings in the construction industry and increasing investments in infrastructure development and residential projects** is driving growth in the Jordan paints market.
- Trend of using **decorative and eco-friendly products, such as water-based paints, has significantly contributed to the positive outlook of this segment over the next six years.**
- Technological advancements, including **intelligent color selection systems and digital printing technologies, have impacted consumer purchasing behavior, leading to an increase in sales volume of advanced coating solutions offered by Jordanian manufacturers.**
- Existing market factors indicate that the **Herfindahl Index (HHI),** which measures the competitiveness of exporting countries, **has increased slightly in the Jordan paints market from 2938 in 2017 to 3039 in 2023**. A higher HHI indicates fewer players or countries exporting in the market. As such **Jordan's export potential for paints market is positive**, however, there are no specific statistics available for paint retailers in Jordan.

Sub-sectors: strategic fit and synergies

- At the request of GIZ, the **phosphate, fertilizer, & mined chemicals sub-sectors have not been a focus** of the sector-wide or sub-sector assessments. The monopolistic nature and environmental challenges in these sectors suggest a more targeted set of interventions would be more impactful than a project focused on jobs and innovation.
- In total the three sub-sectors considered (soaps and detergents, paints and lubricants and dead sea cosmetics) are a relatively modest cluster of activities employing only around 10,000 workers. This may be an argument for including all three if the chemicals sector is selected.
- As important to project success as sub-sector specific issues will be how the sectors fit together providing economies of scale, scope for common interventions, and other synergies. Relevant features of the three sub-sectors include:
  - Soaps and detergents have an obvious read across to Dead Sea cosmetics in terms of certifications & market dynamics around skin care products (ex: **certifications, shifts to greener products**, etc.).
  - All sub-sectors are consumer facing and **target similar local and export markets** as each other and the processed food sector creating potential for common interventions and across-sector learnings.
  - All three sub-sectors face similar issues around controlling quality (ex: **testing** and **certification** processes) and **production line efficiency** creating read across the engineering products and food processing sectors.

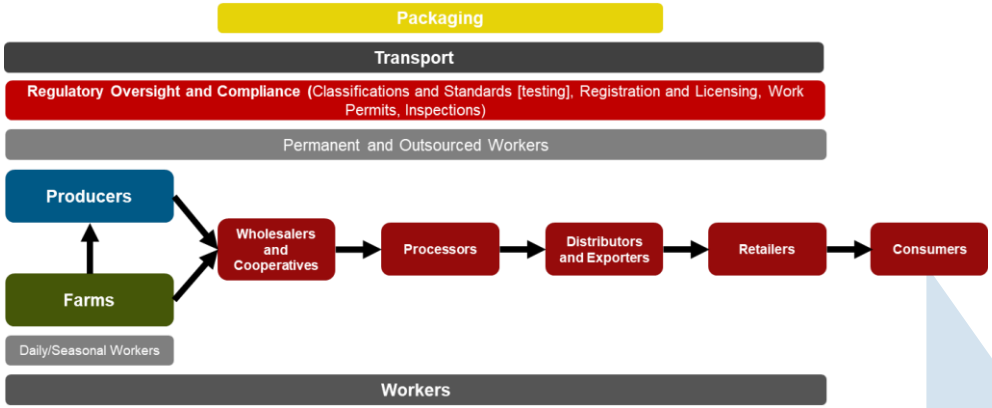
Food Processing Sector Assessment

Summary value chain

- Economic contribution of USD 2.1 billion
- USD 1.3 billion exports
- Nearly 40,000 employees in sector

Main sub-sectors include:

a) Processed Fruits and Vegetables
b) Dairy Products
c) Processed Meats
d) Olive Oil
e) Bakery products and Arabic Sweets



Key Inputs

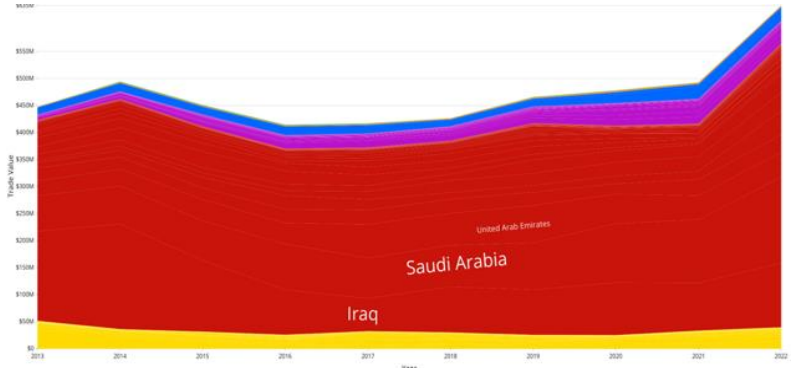
- Raw materials: including water and agricultural products
- Labor: skilled and unskilled workers
- Energy: electricity, oil and natural gas
- Packaging materials: plastics and paper, glass and metals

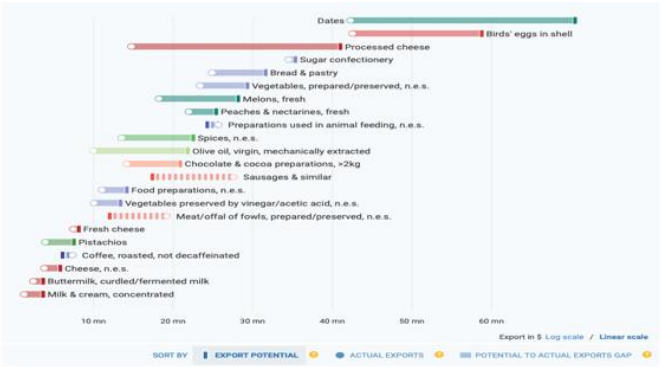
- Processing (primary, secondary, tertiary)
- Quality control
- Distribution, logistics and transportation
- Waste management

Contributes JOD 1.3 billion to Jordan's exports (out of JOD 8.9 billion)
Main export markets include Saudi Arabia and Iraq

Inputs → Processing → Markets

Trade flows and potential for growth





Food processing (a subset of all food exports) has shown steady growth since 2015 earning both export receipts as well as serving the local market and saving foreign exchange. The sector represents around 5% of export revenues.

Trade flows dominated by the near region (esp. Iraq, Saudi and UAE). Small exports in high end products to the US and EU are an important foothold.

International Trade Centre analysis shows key product lines may be able to double earnings by diversifying into new markets or upgrading products and marketing efforts. Products such as dates and processed cheeses show high potential.

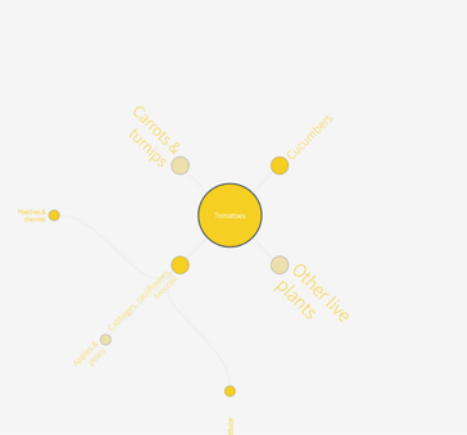
Given the scope to grow without developing new product lines there is scope for more rapid expansion of jobs than may be the case with other sectors.

Complexity of products and pathways for diversification

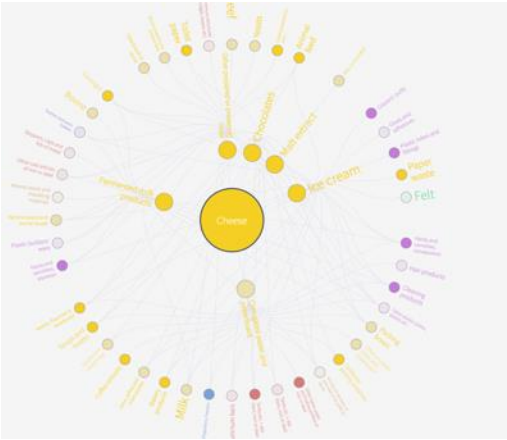
As discussed in earlier sections, product lines vary in their complexity & ability to create pathways into more numerous and higher value-added products. This process has been found to be a strong predicator of future growth and job creation. As can be seen for tomatoes, cheese & chocolates there is huge variation with food products.

Jordan's top three export products (tomatoes, sheep, and peaches & cherries) all show very limited diversification pathways suggesting caution is needed in relying on these sectors to drive economic transformation.

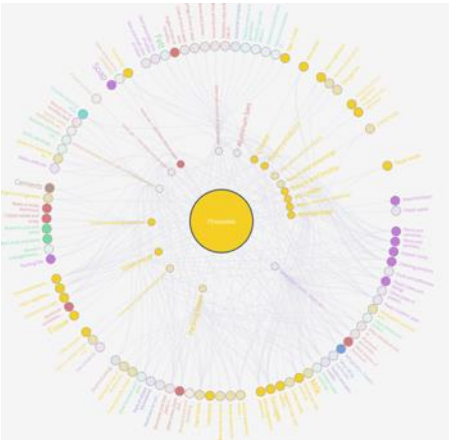
Product linkages: tomatoes



Product linkages: cheese



Product linkages: chocolates



Source: Harvard Growth Lab

Firms

- **2,657 food processing enterprises** in operation in 2019, **80% of which are micro or small**
  - Of 2,645 enterprises registered with Chambers in 2017, 52% of MSMEs were registered with the Amman Chamber of Industry, 36.5% with the Zarqa Chamber of Industry, and 11.5% with the Irbid Chamber of Industry.
- Highest **profit margins** found in 'vegetable oils and fats' (32.9%) and 'processed meats' (26.4%) and lowest profit margins in 'milled goods' (9.9%) and 'bakery' (16.6%).
- In terms of **cost distribution** of companies, 'packaging' was highest at 35.7% followed by 'fuel', 29.1%, and 'electricity' 18.8%.
- Significant number of **informal micro and small enterprises** lacking skilled labor, advanced production and processing machinery and methods, international certifications, and hygiene standards.
- **High-growth firms** ultimately find Jordan to be a small market, **targeting export markets** and the **'ethnic products'** segment.
- Food processing firms in Jordan are **not represented by a dedicated association.**

Jobs and skills

- **37,315 workers** working in the food processing sector in 2021 – **89% Jordanian** and with a **significant share of temporary migrant labor (Egyptian and Syrian).**
- Workforce regarded as **largely unskilled and of low education,** with firms exhibiting **low levels of investment in human capital.**
- **Seasonal sub-sectors** (jams, pickled vegetables, olive oil) lead to **high levels of informality and employment based on kinship.**
- Workforce dominated by men, especially in the formal sector with **women comprising only 11% of all employees.**
  - Preference to hire women over men in **"activities requiring patience and intensive manual work, as well in quality control activities"** (GIZ).
- Small and medium firms can face **challenges with turnover and absenteeism**, with **dependence on outsourcing solutions** expected to increase.

International supply chain trends and shifting demand patterns

1. **Increased focus on food safety and traceability** in sector, including through government regulations on quality control and buyer/customer expectations.
2. **Sustainability of supply chains and production being increasingly addressed** to drive neutral or positive environmental impact, including through anticipated **EU 'Farm to Fork Strategy'** of European Green Deal.
3. **Growth of ethnic food market** (USD 54 billion in 2023, projected to grow to USD 110.4 billion by 2032), representing prime opportunity for Jordanian producers.
4. **Increased utilization of advanced technologies**, including automation, robotics, AI and IoT to **improve efficiency, consistency and food safety**
5. **Consumer preferences changing**, with increasing interest in **ethical, sustainable, and more personalized foods** (for example, plant-based) foods.

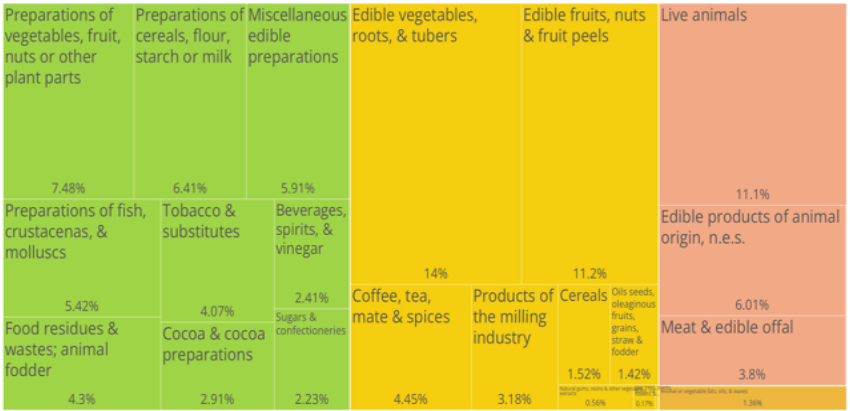
Constraints to sector growth in the food sector

- Lack of a broad-based **traceability system** in Jordan affecting investments, buyer interest and exports to some foreign markets.
- **Lack of skilled workers,** including in areas such as food safety; **absenteeism and employee turnover** significant challenge to small and medium enterprises not fully addressed through outsourcing.
- **Competitiveness undermined by rising costs,** including high energy and raw materials costs, worker transportation, regional and international exhibitions, certifications, sustainability requirements, etc.
- **Licensing costs and regulatory burdens** can be significant for micro and small enterprises, including from Jordan Food and Drug Administration (JFDA).
- **Sector not represented by a dedicated association.** Some sub-sector representative bodies exist but micro and small enterprises report not being adequately represented by chambers.
- **Foreign import requirements and self-sufficiency efforts in key markets** becoming more challenging in markets such as Egypt, KSA, Qatar, etc.

Food Processing – sub-sectors (1)

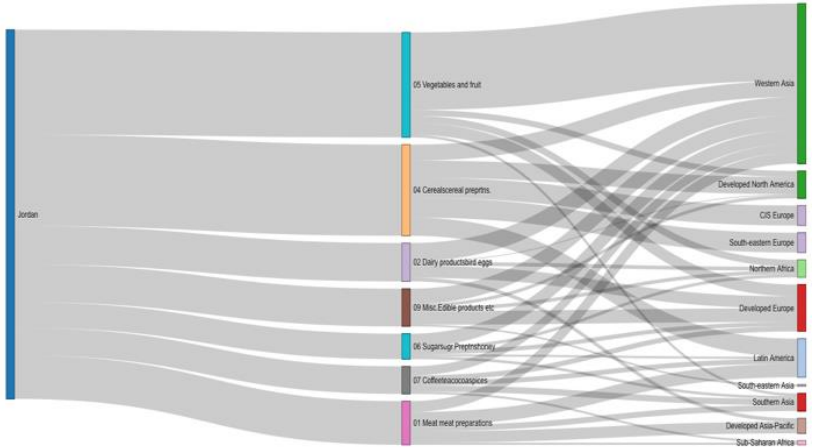
- Most sub-sector analysis of food-related products is divided by core ingredient. This is true of both international trade data (OECs, UN Comtrade, ITC) and Government data.
- This sub-division can be helpful for following trade flows, traceability and where sub-sectors present very different value chain features and market dynamics but is less helpful for gauging value-added or potential for innovation-led product upgrading (the focus of this analysis).

Jordan's food products export basket



Source: Organisation of Economic Complexity

Jordan's food products export destinations



Source: UN Comtrade

Food Processing – sub-sector dynamics

a) Processed Fruits and Vegetables

Revenues of processed & frozen fruits and veg stood at USD 191m in 2024 and demand is predicted to to grow at around 5% annually around the coming 5 years (source: Statista). A profit margin of 33% for 'vegetable oils and fats' is among highest in processed foods sector. **Global demand is expected to be especially strong in the (a) organic and (b) plant-based foods over the coming decade.**

b) Processed Meats

Value added from the processed meat sub-sector stood at USD 631m in 2024* (the highest of all sub-sectors) with the market expected to grow annually by over 3% (source: Statista). The sub-sector has a profit margin of 26%, second to processed fruits and vegetables. **The sector has an increased emphasis on export markets, especially for larger small and medium enterprises, given relatively small size of local market.**

c) 'Ethnic/Regional' Food Products

Key processed Jordanian foods in this rapidly growing sector include tahini, falafel mixes, ghee, lentils, rose water, and dairy (jameed and labneh). Global demand for these products is expected to more than double over the next decade, reaching USD 108.2 billion by 2032 with growth in the US, for which Jordan already has good levels of market access, expected to be particularly strong, but for which **traceability certification and marketing are key constraints**.

d) Shelf-Stable Foods

This is a key growth segment but challenges exist with storage and foreign import regulations, which is critical in the shelf-life of dairy products. An **increased focus on processed foods with long shelf lives**, and utilization of preservatives, including with Arabic sweets in ethnic markets present potential for particularly significant value added.

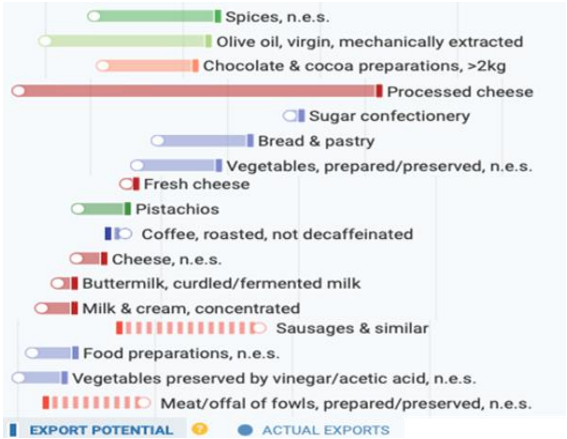
* includes local sales

Food Processing – sub-sector growth potential

Analysis by the International Trade Centre (ITC) suggests where **global markets are growing fastest** but experiencing supply gaps as a means of predicting where export growth is possible. Unfortunately, as a guide for choosing sub-sectors these products are dispersed across most sub-sectors (ex: dairy, vegetables, 'ethnic' food groups, etc).

Profitability or **labour dynamics** might offer other means of selecting sectors as a means of selecting on the basis of where growth might be expected to be fastest and so rapid job creation might be possible. sub-sectors including F&V and meat-based processed goods suggest high profitability but it is **unclear if a good determining factor for future performance**.

Food sector export growth potential estimates



Source: ITC

Main sub-sectors:

a) Processed Fruits and Vegetables

b) Processed Meats

c) Dairy Products

d) Olive Oil

e) Bakery products & Arabic Sweets

Highest profit margins	Seasonal, agro-oriented, limited processing & employment	Low profit margins

Source: GIZ sector analysis

Prioritising based on processing stage vs. sector

- An alternative to focusing on sectors may be to **focus on processing stage**. Whereas the early processing stages such as sorting, cleaning, cold storage may create employment they are typically less driven by innovation and more opportunities for proximity & scale. Areas for value-added at these stages may lie in traceability systems and organic type certifications.
- **Secondary and further processing stages** (such as the creation of juice products, baking, the creation of ready meals) may offer greater scope for the creation of both value added and innovation in product types.

Processing Stage

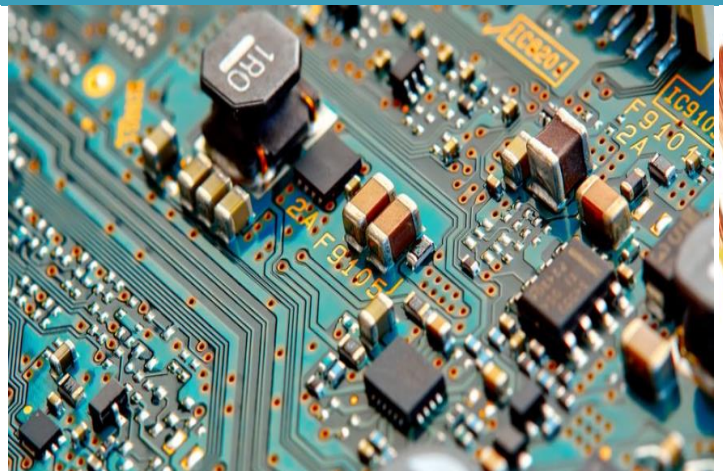
Sub-Sectors	Trade and primary processing	Secondary processing	Further processing
Fruits and vegetables	▪ Sorting/cleaning product ▪ Packing and cold storage E.g., packaged tomatoes	▪ Dried ▪ Preserved ▪ E.g., chips, Jams, tomato paste	▪ Vegetable oils ▪ Juices and pulps
Meat, poultry, fish	▪ Slaughtering ▪ Cleaning and cold storage	▪ Processing to create a different format of protein	
Dairy & its derivatives	▪ Pasteurization, harmonization and packaging of milk E.g., packaged fresh milk, UHT	▪ Further processing with different formats E.g., Yogurt cups, cheese, butter, baby food	
Grain products	▪ Meal	▪ Yeast	▪ Biscuits ▪ Bakeries
Sugar and its derivatives	▪ Raw sugar	▪ Refined sugar	▪ Confectionary ▪ Chocolates ▪ Sweets
Other diversified foods			▪ Food preparations ▪ Sauces ▪ Mixes

Food Sub-Sectors: strategic fit and synergies

- Whilst most economic data and sector organization (ex: representative bodies) is based around **sub-sectors based on product type or ingredient,** this might lead to arbitrary distinctions in relation to more 'economic factors' and not be the most helpful distinction to determine project support.
- Distinctions made on **stage of product processing** might be preferred but this does not always reflect how companies are organized – ex: many will work from early-stage processing (ex: cleaning and sorting) to finished packaged products.
- Given the size of the processed food sector there may be arguments for only focusing on specific sub-sectors but in practical terms it **might be more effective to find other means of eligibility** for firm support, for example:
  - Companies seeking to develop new products
  - Companies seeking to adopt new technologies
  - Companies exporting to countries that require updated business processes to grant market access

  (note: illustrative only, other criteria could be developed)

Engineering Products Sector Assessment



Engineering Products – summary value chain

Extremely varied set of products produced with significantly different levels of sophistication and value-added. Very different value chains in each:

Higher value-added products, e.g.:
- Customised and bespoke air conditioning units
- Locally produced insulated wires

45% of larger firms report using 'advanced technologies', including automation, 3D printing and robotics (ILO)

Lower value-added assembled products
- e.g. LCDs, component parts imported from China and Asia

Often relatively low levels of technical value-added but some job creation

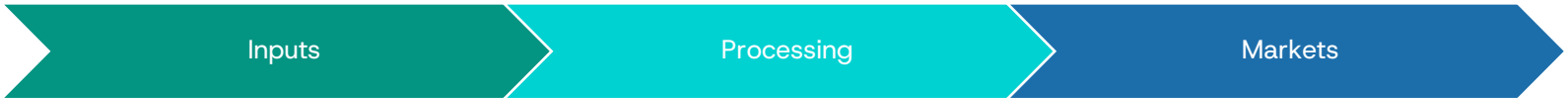
Low value-added but domestically sourced products
- e.g. locally and regionally sourced scrap metal

Processes include sorting and some recycling activities

Approx $100m (10% of sector) to US benefitting from Free Trade Agreement & commercial relationships (e.g. aircon).

Approx $50m of diversified exports to Europe.

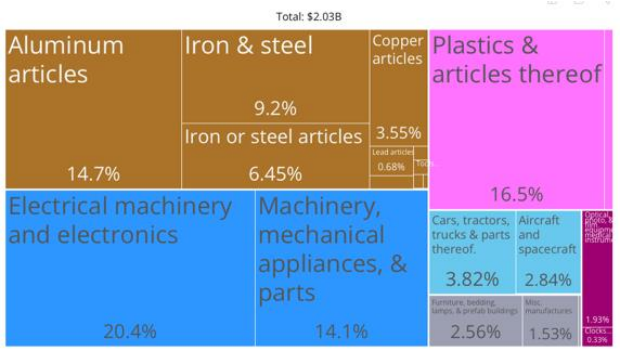
Diversified exports into region, inc. insulated wires, refrigeration units, video equipment etc. Main markets Saudi, UAE and Iraq.

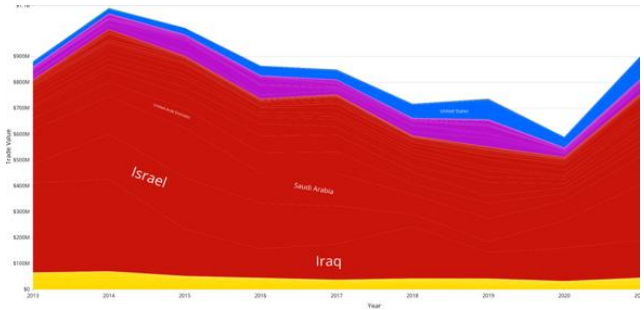


Key products and markets

Existing trade & opportunities for growth:

- No fixed definition of 'engineered products' – can include a high degree of sophistication (e.g. semi-conductors), assembly (e.g. video displays) or low-level processing (e.g. scrap metal).
- Total trade flows range from $1bn to nearly $2bn (depending on definition) but this may be an overestimate of value-added given imported inputs.
- High concentration of exports to the near region but highly specialised exporters servicing specific markets, such as customised air conditioning units to the US.
- After spending much of last decade in decline, export revenues have recovered post COVID, mainly driven by regional exports of assembled electrical products.
- Regional instability likely to have hit latest figures, esp. given reliance on Asian imported inputs via the Red Sea.

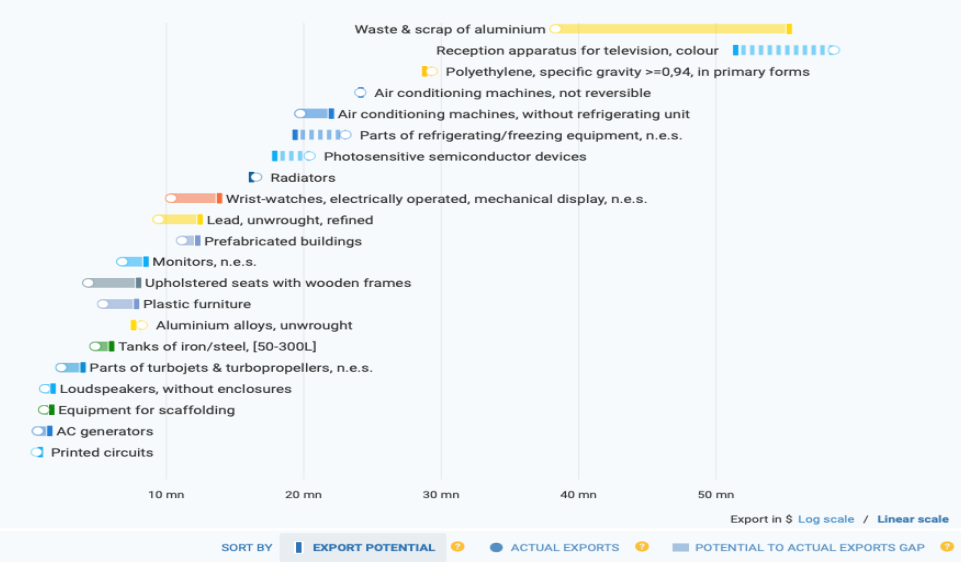




Unmet demand and export gap analysis

- International Trade Centre (ITC) analysis reveals significant scope for increasing export volumes and further diversification of markets.
- Identified product lines with potential for expansion include a broad range of manufacturing products, including:
  - air conditioning units
  - printed circuit boards (IFC support?)
  - moulded plastic products
  - wrist watches, etc.
- Expertise built up under competitive cover of US FTA (e.g. in refrigeration and air con units) can be further leveraged for other markets.
- If sector is chosen more in-depth product specific mapping should be undertaken.

Engineering Products export gap estimates ($ million)

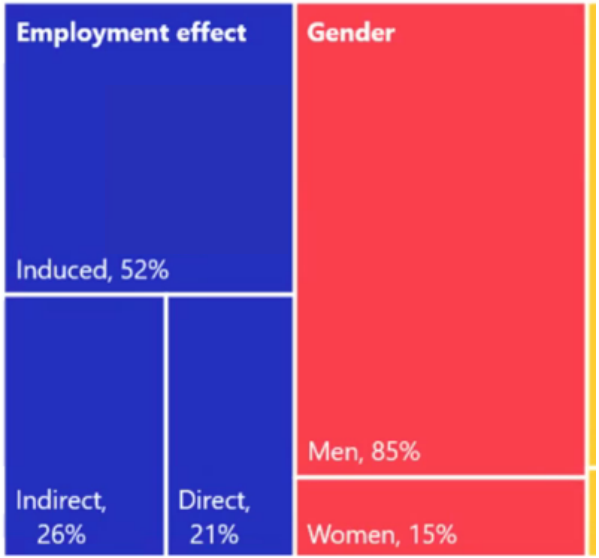


Source: International Trade Centre (ITC)

Jobs and skills

- Engineering products sector **directly employs over 10,000 people** (ILO) or 4.6% of total manufacturing employment. JCI data (including electrical engineering and potentially some ICT) is almost 40,000 workers.
- **Indirect employment** (e.g. in logistics & marketing) doubles the sector's contribution and **induced employment** (e.g. via spending power of workers) may double this again.
- **Female employment in the sector is low.** ILO estimates 15% (roughly in line with wider economy) but JCI data <10%.
- Biggest share of employees are skilled **technical employees** such as maintenance workers (22%), **safety technicians** (5%) and **quality control** (3.3%).
- Skills **shortages in both technical skills** (esp. latest technologies) and gaps in **soft skills** of recent graduates cited as constraint to growth (ILO).
- Hitting ITC export gap of $33 million in refrigeration products alone is estimated by the ILO to generate over 1,500 new jobs.

Employment breakdown of EP sector



Source: ILO METI project

Global supply chain trends & demand shifts

Regional conflict and instability will continue to exert direct & indirect impact e.g. trade logistics for inputs using Red Sea & exports using land crossings into Palestine

Demand for 5G/Internet of Things-enabled products expected to surge in coming years, including products such as refrigeration units and air conditioners.

Volatile regional demand patterns linked to consumer spending & the construction sector in Iraq, flagship projects in Saudi and spillover effects of regional instability.

Buyers taking more directive approach to supply chain management, including being more hands on in planning, diversification of sourcing destinations, etc.

US firms decoupling from Chinese suppliers will support demand for assembled products and air conditioning units under FTA arrangements.

Green regulations, including e-waste directive in EU will impact behaviours of European buyers towards recyclability and labelling.

The role of innovation and technological upgrading

Innovation, productivity enhancements and new technologies will be critical to maintaining existing market share and develop new export lines

- Price competition is intense in a **highly tradable sector** with over 60% of manufacturers citing accessing technology as a concern.
- JCI analysis estimates **worker productivity** to be around JOD 19,000 per year, lower than average for manufacturing sector as a whole (much lower than chemicals or food processing).
- **Supply chain integration** needs to be improved, e.g. by forming supply chain consortia, using digital management tools, and improving infrastructure (scope for GIZ to support development of new business models?).
- InJo support to engineering products manufacturers have identified **gaps around data management, product tracking, energy saving**, & autonomous manufacturing operations.
- Employers have pointed to **skills gaps** but also several collaborative partnerships with academic institutions linked to training.

Government priorities and constraints to growth

Economic Modernisation Vision prioritises set of activities closely aligned with I-PSD:

a) **Feasibility assessments** for new products

b) Setting up **collaborative efforts on R&D and innovation**

c) Roll out of **4th industrial revolution** investments and product & service packages (potential for innovation in new business models?)

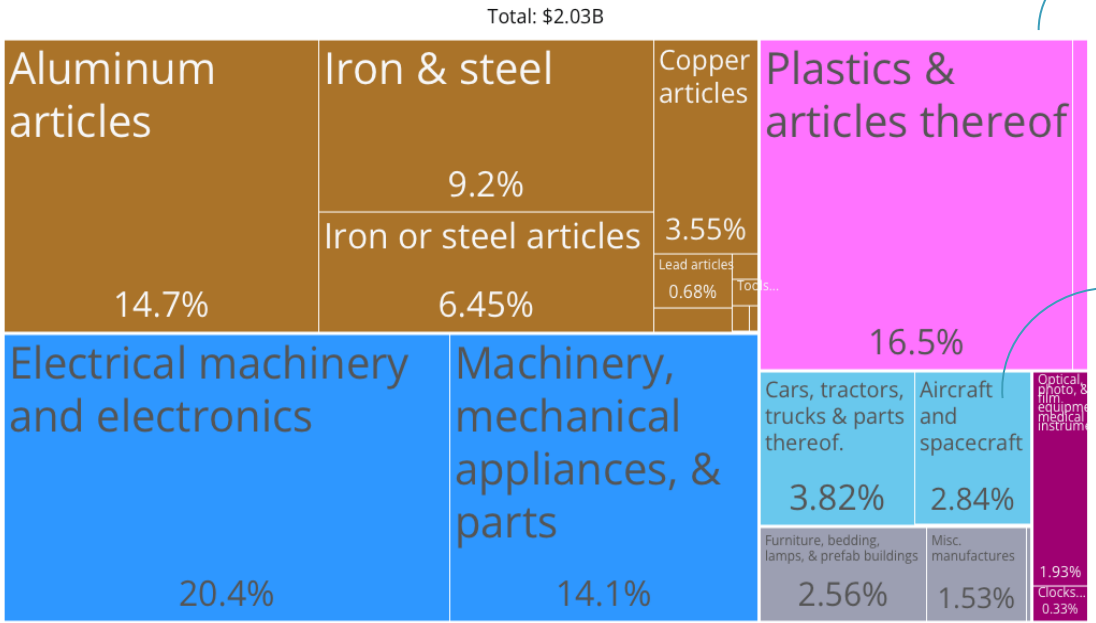
Firm surveys also highlight a number of constraints to growth:

- **High costs** of advanced technology, lack of a skilled workforce, and limited access to capital are significant barriers to technological adoption.
- **Fragmented supply chains** and logistical inefficiencies create unpredictability in meeting orders and push up operating costs.
- **awareness** of advanced manufacturing techniques, new product innovations (e.g. Internet of Things) & sustainability requirements, esp. in S/MSEs.
- Significant **underrepresentation of women** limits workforce diversity.

Very diversified mix of activities within the engineered products sub-sectors

Largest sub-sector is Around $7bn of **metal-based products,** but closer inspection shows mostly recycled and scrap metal to the region.

Second biggest sub-sector is categorized as '**machines**', around 1/3 of sector. Huge array of assembled products, insulated wire & air con/refrigeration units as biggest product lines.



Source: OEC

Plastic products (17% of sector) mainly made up of relatively low value-added plastic parts such as bottles, lids and pipes.

Vehicles (7% of sector) mainly made up of resold or reconditioned used vehicle and parts.

Measuring equipment (2%) largely assembly of LCD screens and various types of electronic products, very similar to 'machine' category.

'Misc. products' is a diversified mix including furniture and construction materials.

Sub-sector analysis can be used to considerably reduce the size of the potential area of support

- Initial size of engineered products sector is over $2 billion in exports, with significant additional jobs and value added focused on the domestic markets (especially focused on inputs to the construction and homewares sectors).

- The **unfinished metal products sub-sector** is a significant generator of foreign exchange earnings and can be seen to contribute to a transition to a circular economy through a high share of recycling (Jordan doesn't produce any primary raw materials for the sector). However, the value-added and technical content of operations is reported as low with growth more dependent on issues of raw materials supply than innovation of new product development. To support prioritisation the sub-sector is **not recommended for inclusion**.

- **Vehicles and parts sub-sector** also represents a sizable share of foreign and local revenues and business turnover. Whilst there is some high value-added technical services that can contribute to this sector (e.g. high revenues from aircraft parts) these sales not are typically productive or industrial activities and are **not recommended for inclusion.**

Sub-sectors with strong export potential

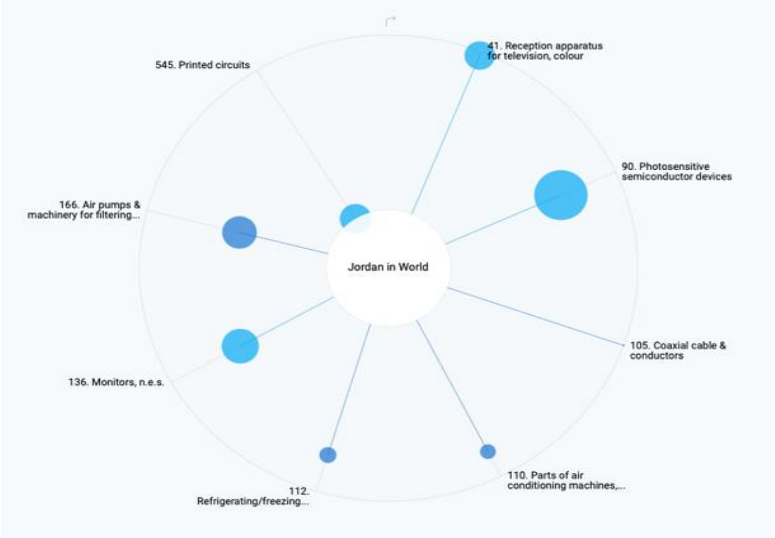
As with other areas of sub-sector analysis a narrow focus on product type often presents a confusing picture of potential.

Product-by-product analysis by the International Trade Centre* suggests three sub-sectors with highest potential:

- Building on the existing expertise in air **conditioning and refrigeration products.**
- Assembly of **household electrical equipment** such as monitors and and TVs.
- High-tech printed **circuit boards and semi-conductor devices.**

** ITC export potential toolkits use supply capacity, import demand projections and tariff regimes to predict unmet demand. Size of bubbles represents unmet demand and distance from center is an estimate of Jordan's potential for market share.*

Trade potential mapping of selected engineering products

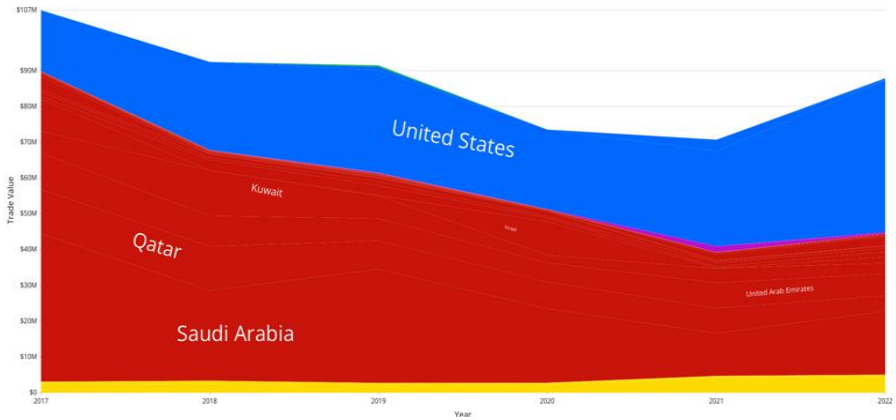


Source: ITC

Sub-sector potential: refrigeration units and air conditioning as a model for other sub-sectors

- The air conditioning and refrigeration unit sub-sector has been a significant source of both export earnings and local market revenue in recent years.
- 29 local companies engaged in manufacturing, with Abdin Industries, Mohammed Tahseen Baalbaki among most prominent. Important link to engineering services with over 300 service providers in operation.
- The sector has been able to exploit benefits from the US FTA to set up assembly plants and deliver high-end commercial bespoke products for major US buyers.
- This expertise has been leveraged to export to the region. Whist sales to KSA have fallen in recent years a recent recovery in the construction sector there has reignited growth.

Jordan's exports of air-conditioning unit, by market ($m)



Source: OEC

Engineering sub-sectors: strategic fit and synergies

- A wide definition of the engineering products sector would cover close to 15% of Jordan merchandise export revenues, too broad a range of sub-sectors and including many low value-added activities. It is therefore recommended to prioritize sub-sectors for support. Two sub-sectors are suggested for exclusion:
  - The **metal products** sector generates large export revenues but is dominated by scrap and recycled products and is not seen as innovation driven so not a good candidate for I-PSD support.
  - The **vehicles and parts** sector is dominated by trade in used products so creates few jobs or productive capabilities so is also suggested for exclusion.
- Given the modest size of the Jordanian private sector and the targeted nature of the I-PSD project the **remaining sub-sectors are recommended to be eligible for support.** This would specifically include:
  - **Assembly and customization of electrical and electronic appliances.** This should include the established air conditioning, refrigeration and LCD screen sectors where there has been demonstrated comparative advantage. GIZ may be better to avoid the difficult task of 'picking winners' within this sector and be open to supporting other firms working in comparable product categories.
  - **Semiconductors** are a sector with very high levels of value-added which are being considered in Jordan in part due to substantial deposits of silica in the South. Early support from GIZ to better understand the viability of this sector and potentially de-risk early investors could be a good fit for I-PSD.

Engineering Services Sector Assessment

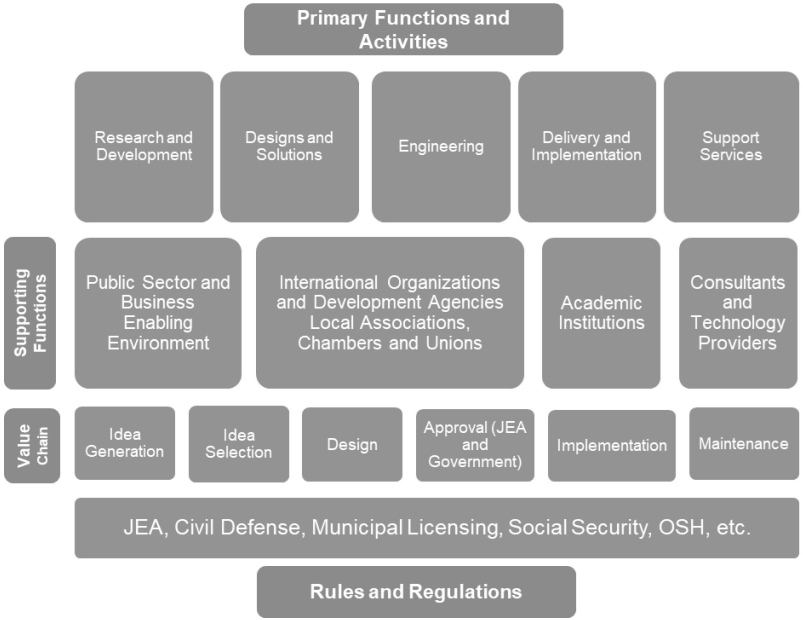
Summary value chain

Sector
- Heavily oriented towards **construction**
- **Lacking technological advancement**
- Reported **mismatch between education and labour market requirements** (lack of medium and high-skilled engineers)

Firms
- **1,312 engineering offices** and firms at end of 2023; 73.6% in Amman
- Dearth of highly qualified or experienced firms (JEA)
- **Focus on GCC and region** given cultural and language links

Engineer's Office			Engineering Office	Advisory Firm	Opinion Office	Total
A	B	Total				
453	381	834	272	196	10	1,312

Jobs
- Oversaturation of engineers and inadequate supply of engineering jobs
- Lack of medium- and high-skilled engineers with sufficient experience



Sector and firms

- Despite being 'weightless' export of engineering **services still closely tied to regional neighbors. Services exported to more than 31 countries** in 2020 but dominated by GCC (KSA, UAE, and Qatar – infrastructure) and Iraq (reconstruction/development).
- Almost ¾ of engineering firms based in Amman, followed by Irbid (10%), Zarqa (7%), and Balqa (3%).
- Sector **heavily oriented towards construction**, (8–10% of GDP, services exports of USD 68 million in 2022) working in both domestic market and (more limited) export focus.

Specialty	Engineer's Office			Engineering Office	Advisory Firm	Opinion Office	Total
	A	B	Total				
Building Construction	234	220	454	200	134	2	790
Civil Engineering	107	120	227	191	128	1	547
Building Mechanical Engineering Services	24	18	42	74	92	0	208
Total	**365**	**358**	**723**	**465**	**354**	**3**	**1545**

- In terms of **construction sector**, an estimated 2,600 enterprises operate in the sector, formally employing 17,000 workers, or 6.4% of the industrial workforce.
- Construction sub-sector informal and disorganized:
  - Responsible for 13% of work-related injuries
  - ILO estimates of 89% of workforce lacking social security coverage
  - Challenging environment for MSMEs, e.g. access to public procurement delays in payment.

Jobs and skills

- **Total of 7,876 workers sectors in the sector, 84% males and 16% female** (slightly higher ratio than female labor force participation rate of 14%).
- Most work in **civil and construction sectors** and in **design or supervision/managerial** roles.
- Main **occupational groups** for engineering services are:
  - GIS Specialists
  - Climate change analysts and specialists
  - Sustainability analysts

Number of workers in engineering offices according to field					
	Design	Training	Supervision	Total	Percent
Civil	**1574**	145	**2190**	**3909**	49.6%
Construction	**2079**	177	**389**	**2645**	33.6%
Mechanical	488	45	67	600	7.6%
Electrical	468	52	67	587	7.4%
Mining	109	1	3	113	1.4%
Chemical	18	0	4	22	0.3%
Total	4736	420	2720	7876	

- Jordan has the **highest engineers-to-population ratio in the world** – one engineer for every 39 citizens.
  - 190,000 registered engineers, over 36,000 engineering students in local and foreign universities
  - Despite abundance of trained staff employers cite **gaps in both hard and soft skills**

Innovation advances and challenges

- **Increasing utilization of advanced technologies in sector** (AI and machine learning, etc.), **sustainability and industry-specific skills** lacking in Jordanian firms and by training providers.
- Firms identify **lack of sufficiently trained and experienced medium and high-skilled engineers** as significant challenge.
- Lack of employment opportunities and low wages (e.g. sector ceilings) lead to brain drain to GCC and beyond.
- Challenges in **funding research and development** due to financial constraints identified by 45% of surveyed firms (ILO).
- Inconsistency in **quality and reliability of support services** cited as impacting project outcomes by 43% of respondents (ILO).
- Marketing/access to markets and awareness about regulations in export markets.

International supply chain trends & shifting demand patterns

1. **Global architectural, engineering consultants and related services market valued at USD 1.5 trillion in 2023;** global infrastructure demand will continue to drive demand for engineering services, with architecture expected to exhibit highest compound annual growth rate (CAGR) of engineering services (6.7%) between 2022 and 2027.
2. **Increasing adoption and utilization of advanced technologies,** including AI, AR/VR, IoT, computer-aided design (CAD) and cloud adoption, transforming the sector's operations, services, and hiring methods, and with Advanced Driver Assistance Systems (ADAS) and Electric Vehicles (EVs) transforming logistics.
3. **Sustainability gaining attention,** with increasing utilization of **energy-efficiency and renewable energy** in construction.
4. Major markets such as **North America, Western Europe, and Asia Pacific dominate**, but **emerging markets such as India** (projected to grow from USD 65.3B in 2023 to USD 88.77B by 2028) showing higher growth rates.

Constraints to sector growth

1. **Inadequate supply of medium and high-skilled workers:**
    a) Mismatch between education system and labour market
    b) Lack of specialized training
    c) Brain drain to GCC
2. Evidence that Jordanian firms having **difficulties keeping up with market requirements** (sustainability/green) and technological advances (AI, digital technologies, etc.).
3. **Disorganized construction sub-sector** unfavourable to MSMEs and highly informal.
4. **Access to finance for MSMEs difficult** (delays in payment by public and private sectors) leading to limited spending on R&D and business development.

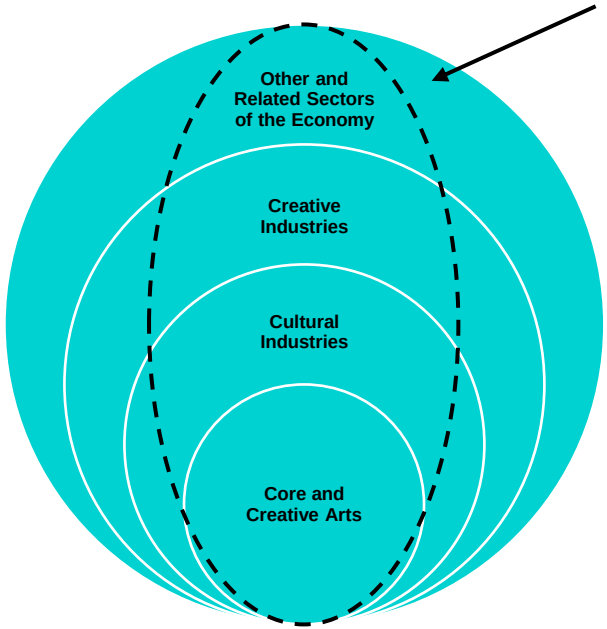
Creative and Cultural Industries Sector Assessment

Constraints to sector Creative and Cultural Industries – summary growth

Jordan's CCI

- Disparate sector that includes various semi-independent sub-sectors with common thread (human capital and creativity)
- EMV creative industries focus sub-sectors:
  - Creative and Design Services
  - Consumer Product and Industrial Design Studios
  - Apparel Design Studios
  - Creative Industries Hub
- Generally low barrier to entry and relatively high-end creative input
- Rich human resource basis for creative sub-sectors with some development needs
- IT-related subsectors like e-gaming, e-sports receive much of focus
- Artisanal products also prevalent among more economically underprivileged areas and have an ecosystem to support them between NGOs and donors

Strong competition from (subsidies), , and in filming, due in large part to more enabling ecosystems.
Some competition from Lebanon and Turkey as well.



Creative Economy: creative input embedded in economy.

Other Economic Sectors: benefitting from outputs of creative industries.

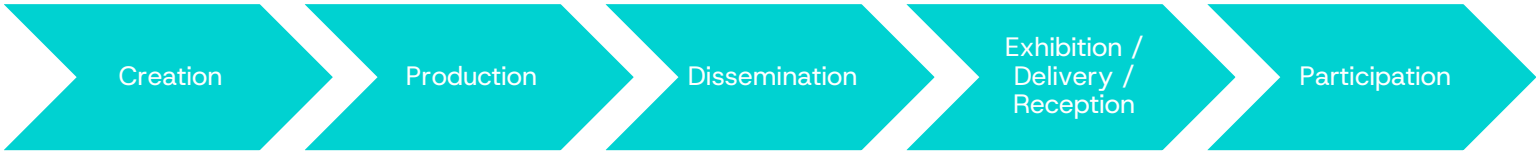
Creative Industries (advertising, architecture, design): primarily economic value-adding good of service output.

Cultural Industries (books and press, fashion, film and video, brands, media (TV and radio), video games): economic and/or cultural and social value-adding good or service.

Creative Arts (heritage, performing and visual arts): artistic goods and/or service outputs of creative activities by artists.

Summary value chain

Core Functions

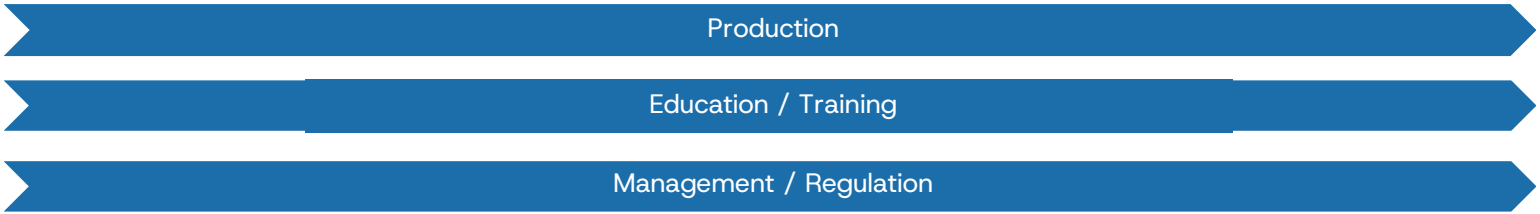


- Qualified human resources
- Acceptable business infrastructure and IPR frameworks
- Promotion and facilitation support

- Robust internet and communication network
- Stages from 'ideation' to market are well established through existing infrastructure and networks
- Different subsectors require different skillsets in terms of employment. Film support staff differ from gaming developers/artisanal and handicraft producers
- Better gender diversity in the sector than average

- Main customers are both local and (mostly) foreign consumers
- Markets are primarily regional with Saudi Arabia largest
- Sales are mostly direct to consumer with less than average intermediaries

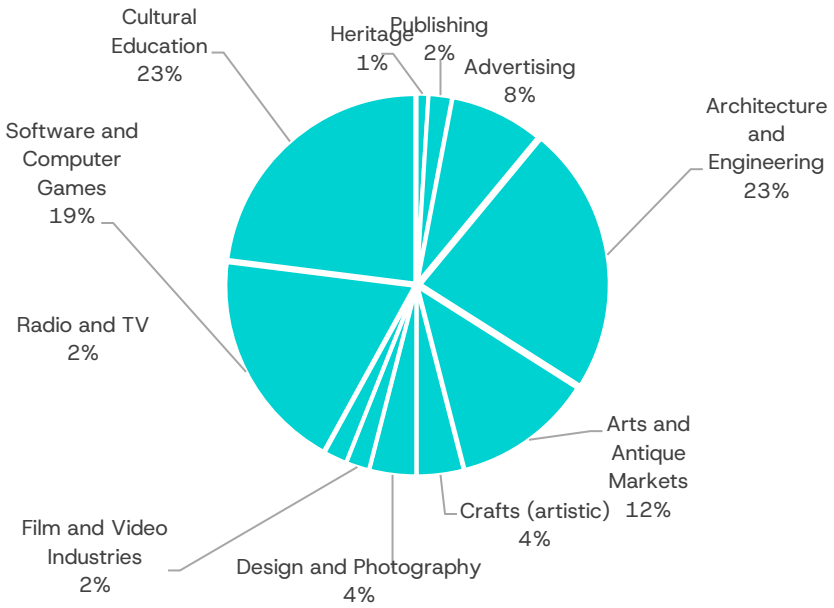
Supporting Functions



Employment

- Employment in sector has a multiplier effect for other sectors, supporting marketing of goods and services and increasing consumer interest.
- Total of 25,339 individuals employed in industry in 2018 (most recent enterprise survey data, DoS), representing 3 percent of total employees in country – 28% of employees in cultural and creative industry are women.
- 'Architecture and engineering', 'cultural education' and 'software and computer games' are the largest contributors to employment, and 'heritage', 'publishing', 'film and video industries', and 'radio and TV' lowest contributors.
- Union of Architects represents architects and urban designers, and seems to be most organized and able to offer practical support.
- Independent cultural producers in cinema, dance and theater legally represented by the Union of Artists. Artists and Writers Association represent visual artists and writers, respectively.

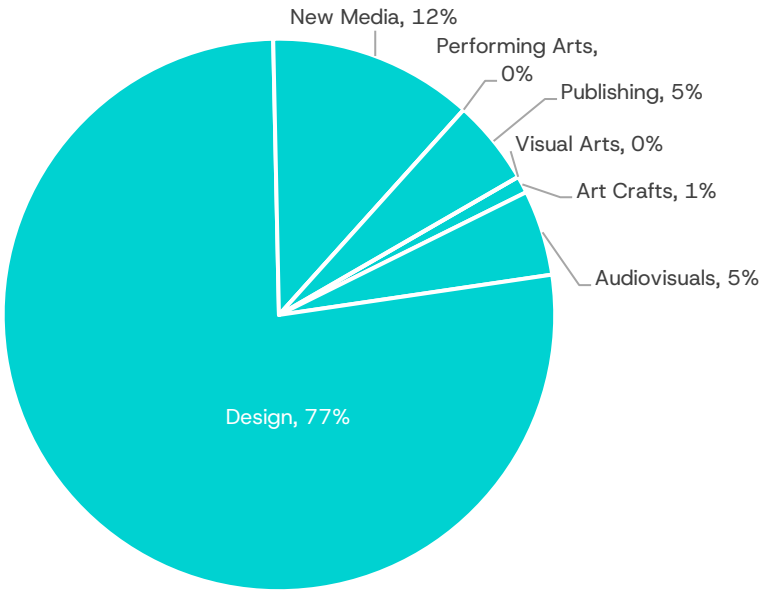
Employment Contribution of Creative and Cultural Industries



Trade

- Latest data show that Jordan's CCI exports reached USD 285 million in 2015, but were exceeded by imports, valued at USD 510 million. (More recent data so far challenging to obtain).
- Design exports highest due to architecture and role it plays in construction services as well as relatively large stone industry.
- Design industries linked to ICT such as advertising, graphic design, visual communications and web design also classified as mature industries, benefit from support to ICT industry and can be easier to export.
- Film production increasingly significant, producing more than USD 272 million up to 2020, creating over 111,965 'daily basis' job opportunities.
- Fashion and textiles, new media and publishing also identified as significant export sectors.

Creative Goods Exports



International trends and shifting trade patterns

1. Increased **integration of digital technologies** (AI, VR/AR, blockchain & NFTs) transforming the production, distribution, and the monetisation of creative content.
2. Ethical and **sustainability related practices** becoming more prominent, as CCI responds to consumer demands for environmentally friendly production methods, ethically sourced materials and increased government regulation.
3. Globalization leading to **greater cross-cultural exchange, with notable rise in South-South trade** (doubling in past two decades) contributing to a richer blend of cultural influences in creative content.
4. Rise of **remote work and gig economy** platforms reshaping creative workforce, encouraging more freelance and contract-based work in the creative industries.
5. Increased importance of **Intellectual Property Rights (IPR)** as CCI evolves digitally and expands into developing countries lacking robust frameworks (inc. Middle East).
6. Some **less developed economies with rich CCIs** will continue to lack critical mass of enablers, including in logistics, digital (including payment gateways) access, etc.

Government priorities and main constraints to sector growth

Economic Modernization Vision (EMV) cites the sector as priority with initiative largely around coordination promotion of the 'brand' and cultivating talent.

Industry stakeholders report government 'interference', bureaucracy and slow adoption as significant hindrances:

- e.g. the import of critical and advanced technological equipment is described as fraught with "extreme difficulties, unclear import/export rules, and bureaucratic barriers"

CCI in Jordan still largely misunderstood:

- Architectural education, while offering significant potential, noted to be 'misunderstood and underappreciated', with failing and underdeveloped curriculum unable to compete globally.
- Film production threatened by KSA with similar 'product' but high subsidies and by Morrocco with similar natural scene possibilities.
- Music and cultural programming noted to be negatively affected by bureaucracy plus lack of suitable spaces and venues.

Creative industries sub-sector prioritisation

- 'Creative Industries' a broad term for a disparate set of activities and service providers ranging from highly informal artisanal activities to large architectural and structural engineering practices.
- Two sub-sectors suggested for early exclusion:
  - '**Cultural Education**' is a sizeable sub-sector, representing almost a quarter of all employment but is largely comprised of tourism-related services. Whilst this subsector has been an important source of forex and job creation a major USAID project provides dedicated support.
  - **'Engineering and Architectural Services'** also employs close to a quarter of those in the sector but is closely aligned with the dispersed and informal construction industry and may be better addressed through a targeted programmme better aligned to that sector's needs and challenges.
- Two other sub-sectors have not been analyzed – 'advertising' and 'arts and antiques markets'. Together these represent around 20% of employment but are not considered closely aligned with I-PSD objectives or potential project instruments (e.g. partnerships with academia).
- Sectors considered in more depth in following slides include the a) **film industry**, b) **e-gaming & e-sports** and c) **Jewelry**.

Film industry

- Jordan has become a leading **location for shooting of films and TV series** over recent years, hosting over 160 shoots including Hollywood films such as Star Wars, Dune 2 and the Martian. Much filming takes place in the south (Wadi Rum, Petra, Dead Sea coast) but also in urban centers in the north.
- The sector employs an **estimated 9,000 workers** with wages typically high (an estimated **4x minimum wage** according to BCG). Over 90% of personnel employed on individual sets are typically Jordanian.
- Jordan's comparative advantage and 'offer' has traditionally been based mainly on **availability of dramatic locations** but an experienced sub-sector has developed with a **reputation for reliable personnel and a cost-effective platform** for shooting and hosting of crews.

Film industry ecosystem, priorities & challenges

Ecosystem
Sector facilitation and extensive package of incentives (e.g. tax breaks) is provided by the Royal Film Commission.

To enhance local production capabilities, Jordan has established a premier production studio, Olivewood Film Studios, that includes two sounds stages (1,500 m2 each) and a 68,000 sqm backlot.

Priorities
To keep the sector competitive and to maximize the value-added and spillovers for Jordan it is important to ensure the availability of on-site crew services, highly skilled technical staff and that it is possible to extend offerings into sound stage infrastructure and post-production services such as editing suites.

Challenges
The main challenge to the sector's growth is from competition in KSA, where the sector is very highly subsidized, and other geographically comparable locations such as Morocco.

Creative industries: e-gaming and e-sports

- E-gaming (the creation of electronic games and associated series) and hosting of live e-sports (the hosting of live e-gaming events) are nascent sectors but already generate significant revenues for Jordan.
- Currently over **15 SMEs in Jordan** specializing in the production of electronic games, **employing around 300** young people, alongside numerous independent developers.
- Reliable data is hard to obtain (number on this sector should be treated with some caution) but estimates range as high as the sector contributing 1.9% to GDP and 1.1% to total exports. Given the online nature of much activity it is thought to be potentially 'safer' and **more welcoming working environment for young women**.
- MoDEE **Strategy for Games and Electronic Sports** (2023-2027) aims to create over 3,000 jobs and increase contribution to GDP to 3% by 2027. Includes nurturing 1,500 professional players and certified coaches and increasing the profile of the national e-sports team.
- Challenges to the sector growth include a) infrastructure (esp. internet connectivity), b) regulatory burdens, c) talent development, and d) market penetration and awareness.

Creative Industries: jewelry sub-sector

- Official trade data show jewelry sector exports growing from roughly $100m a year for the last decade to almost $1bn in 2022. (At the time of this analysis it is unclear if this is an error in official statistics). Sector representatives suggest exports are typically closer to **$500m a year in revenues**.
- Exports are almost all directed to the **US market** where they benefit from **generous market access terms under the FTA**. Other markets include United Arab Emirates, Italy, Oman, and Austria.
- Consolidated employment data for the sector is absent but the Amman Chamber of Industry reports 126 manufacturers under its jurisdiction, employing **over 1,600 workers**. The sector is characterized by a number of features that may inhibit growth:
  - Heavily unionized but with challenges of **informality and occupational health and safety**
  - Challenges **moving up value chain into design** rather than just manufacturing/assembly
  - Controlled by a **small number of large players** but with **low margins**
- Sector stakeholders such as the East Amman Investors Association point to the sector's potential but the need for more in-depth diagnostic work to identify bottlenecks and opportunities. Moving up the value chain into design activities could link to project innovation objectives.

Creative sub-sectors: strategic fit & synergies

- Given the highly diverse nature of the creative industries sector there is a strong case for **prioritisation on a smaller number of sub-sectors** but taking care not to arbitrarily exclude potentially innovative or dynamic companies.
- **Architectural and engineering services** are closely aligned with the construction industry which might be better supported through a project that would span these combined sectors.
- The '**Creative Education**' subsector is largely made up of tourism-related activities which are supported with a dedicated USAID programme. The '**antique markets**' sectors is also suggested for exclusion given its links to tourism and trading activities.
- Three sub-sectors might offer greater scope for synergies with other I-PSD sectors and alignment with project objectives:
  - **Jewellery sector** has many parallels with engineering products sector (e.g. assembly processes) and may fit well with project interventions around innovation given an objective of sector players is to move upstream into product design activities.
  - **E-gaming and e-sports sub-sector** is a highly dynamic, tech-dependant & youth-oriented sector which may be a good fit for deepening economic complexity and diversification. However, the sector does not offer many obvious spillovers or synergies with other sectors being considered.
  - **Film Sector** offers a good fit with job creation and diversification objectives but does not present obvious spillovers or links with other sectors or with I-PSD interventions currently being considered.

Part 3

Strategic Options Analysis

Options analysis – introduction

- Earlier sections considered the dual challenges of a) **insufficient employment growth** to keep up with the needs of young and increasingly well-educated labour market entrants, and b) **falling levels of economic complexity**, which is an important predictor of future economic growth.
- A sectoral analysis of 6 key economic sectors has illustrated the **opportunities and challenges** at a more granular level, including export performance, job creation and the degree to which innovation is playing a role in driving growth.
- This section will use the findings of this analysis to help **guide sector selection for the I-PSD project**. Whilst this analysis will help make comparisons and understand some of the trade-offs in sector selection the gaps in comparable data and the very different nature of the pre-selected sectors mean a hierarchy or ranking of sectors would be misleading and judgment will be needed to further refine sector choices:
    - *Given data limitations and the very different nature of sectors will be better to take a holistic/judgment best approach*
    - *Also prob more important that the sectors 'fit' together than which ones we choose. This will allow building of thematic expertise in project staff, synergies between sectors, etc.*

Across all options ICT a particular example of this. Creative industries should prob be included but need to think carefully about what and how – keep targeted on where can deliver transformation and innovation for other sectors

Comparison 1: employment by sector

Employment figures for each sector should be seen as best as estimates. Weaknesses of the data include:

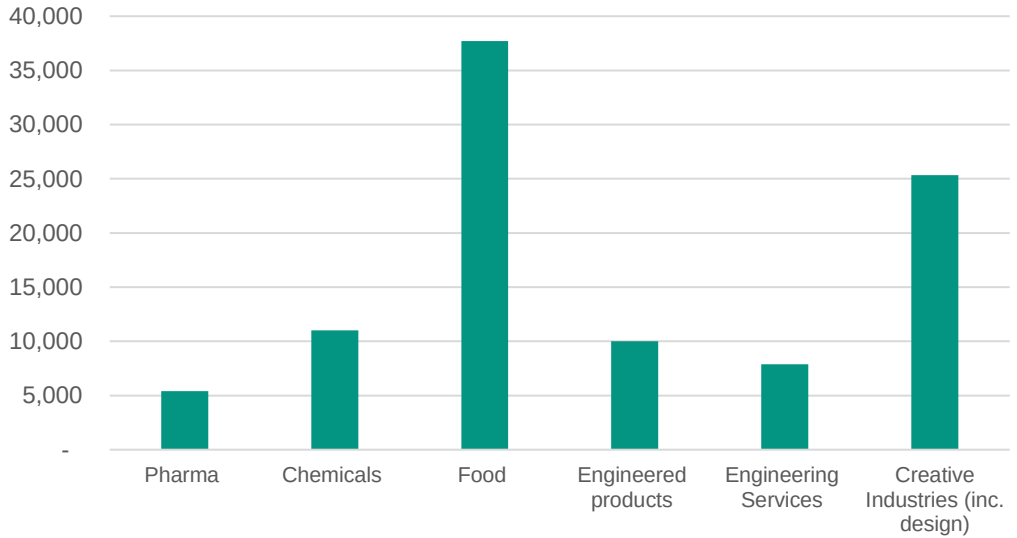
- Agreement on definition of the sectors
- Timing of data collection, surveys, etc.
- What counts as a job (part time, seasonal, etc.)

Despite the shortcomings, the data in the graph opposite gives a reliable enough measure for an informed discussion of relative merits.

One important caveat is that 'creative industries' includes design & architecture & so would have some overlap with Eng. Services.

A full analysis of job creation within each sector could include 'indirect employment' and 'multiplier effects' but no consensus on size of these effects or how they vary.

Direct employment, by sector

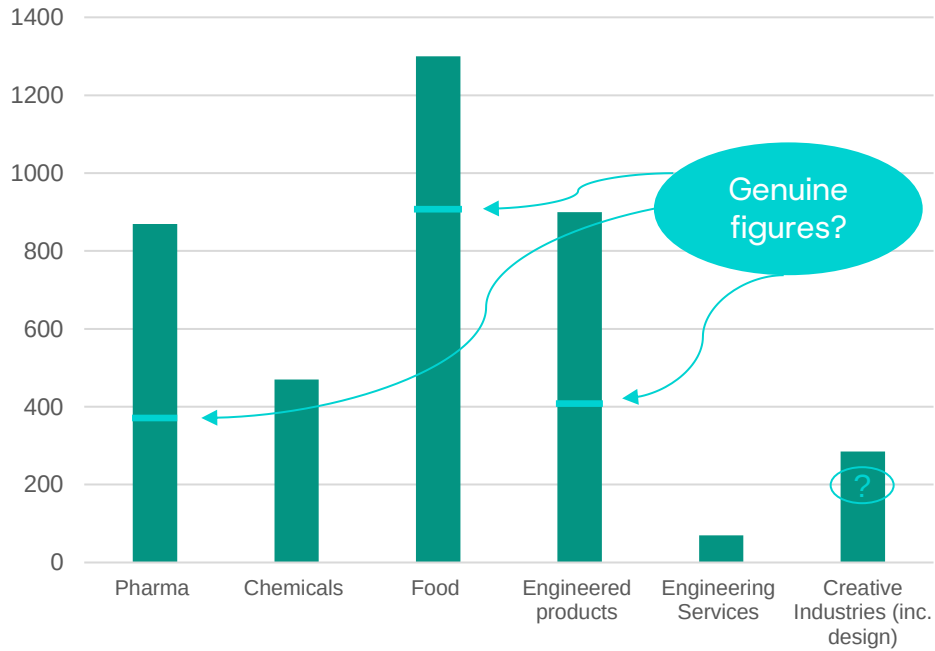


Comparison 2: exports by sector

Export data is included for completeness but presented with significant caveats due to sector specific measurement issues:

- **Pharma** exports should be seen as a significant overestimate due to the offsetting import of inputs (e.g. APIs).
- **Chemicals** is a subset of official figures after subtracting potash, phosphates and fertilizers.
- **Food products** a likely overestimate as also includes unprocessed agricultural products and no offsetting of imported inputs.
- **Engineered products** also requires deducting of imported inputs.
- **Creative industries** and **engineering services** are subject to large measurement challenges and data availability.

Figure 10. Exports ($m), by sector



Comparison 3: innovation needs and strategic contribution

All sectors have been judged on the basis of whether innovation is a binding constraint (and so a good fit for a project aimed at supporting innovation). Three types of innovation have been considered:

i. **Innovation towards new products and services.** Sectors for which this is anticipated to be critical for growth include pharma (e.g. new generics and biosimilars), chemicals (esp. around healthcare and 'greener' products), and engineering products (e.g. tech enabled products).

ii. **Innovation for more efficient production techniques.** This was most important for price sensitive sectors including processed foods, household and industrial chemicals, pharma and engineered (assembled) products.

iii. **Innovation for new business models.** This element required the most judgment but both engineering services (e.g. electrical products and services packaged together such as security or mobility solutions) and creative industries both rated more highly.

The **'Strategic Contribution'** of sectors also required a large degree of judgment, but factors include the ability of the sector to stimulate or link with other important sectors or to help diversify the economy in some respect. Most sectors scored highly on this criteria (limiting its value as a differentiator) but creative industries (for cross cutting links to product development and tourism) rated the most highly.

Summary results table

	 Pharma	 Chemicals	 Food	 Eng. Prod.	 Eng Serv.	 Creative Ind.
Jobs and employment	Direct employ. not large but good share of high skill/wage jobs.	Significant employer with good cross section of skills levels	Huge creator of needed jobs but many are low skilled and seasonal.	Significant employer with good cross section of skills levels.	Sizeable employer of high professional and highly skilled but few other roles.	High numbers of jobs but unclear quality (e.g. part time). Inclusive sector and good skills mix.
Exports & int. linkages	Highly export focused with foothold in new markets to help diversify risks.	Recent strong growth but very low level of diversification, creating case for support.	Strong regional trade links with scope for niche products to new destinations.	Diversified set of products and of markets with scope to further grow both but high input needs.	At present mainly serving neighbouring countries. Weak data a major challenge.	Very hard to get reliable data. Underreported revenues and 'lumpy' one-off film projects.
Strategic relevance & synergies	Central to shift to high-value goods. Strong links to chem. & healthcare.	Scope for good links with pharma and locally sourced raw materials.	Good links to ag & packaging but not big role for pathways into better 'economic sophistication'.	Higher end products and assembly both offer scope for gradual upgrading.	Important sector for supporting construction and potentially other sectors (e.g. eng. products).	Huge value in reputation, for driving innov. in other sectors & spillovers for tourism.
Is innovation a binding constraint?	Innovation critical to new generics and other next gen. products. Good R&D spillovers.	High demand for new products and production efficiency to maintain exist. competitiveness	New product innovations would support growth but the sector will 'survive' in current shape.	Significant new demand for new tech-enabled products and in production line efficiency.	Likely that skills of architects & engineers plus marketing more relevant than 'innovation'.	New products and business models could support growth.

Picking focus sectors: synergies not rankings

Any of the **6 focus sectors would be suitable** for the I-PSD – offering scope to catalyze innovation, productivity improvements, improve competitiveness and (in turn) create jobs.

Whilst there are **differences in the overall suitability**/attractiveness of the sectors in general the differences are not significant and ultimately would rely on **judgment**.

Where differences have emerged are in how the sector might be combined and the degree to which GIZ wishes the I-PSD project specific types of innovation. For instance:

- A focus on **innovation for new products and markets** could help prepare companies for new consumer and regulatory demands and shift Jordan towards more sophisticated higher value-added products based around intellectual capital. A trade off maybe, however, reduced emphasis on job intensive sectors.
- A focus on **innovation in production techniques** would support adoption of the most efficient and productive technologies and ways of working. Outputs could create more competitive firms and may more quickly feed into job creation, but with perhaps lower 'transformative' impact.

Option 1: high value-added 'innovation' sectors

Headline Narrative: Given Jordan's small size and its high cost base it will always be difficult to compete on price and scale – more successful will be working in more sophisticated products and sectors that offer routes to great value-added and economic complexity. This can build on Jordan's comparative advantages, such as high numbers of skilled engineers, stable economy, proximity to markets and Free Trade Agreements. This is closely aligned with the EMV's 'Advanced Manufacturing Industries' cluster and associated interventions.

Sector focus: **chemicals**, **pharma**, high-end **engineering products** and associated **services (e.g. prod design)**.

Synergies include: pharma and the healthcare side of chemicals; engineering products and services (combining for tech-enabled product and services combos).

Project activities could include: support to new product development; academic linkages; support to R&D; advisory services on 4th IR, etc.

Advantages:

- Focusing on Jordan's comparative advantage, e.g. engineers
- Recognising Jordan is a high-cost economy and trying to progress, where possible, past competing on price
- Options for working on new business models linked to 'products as services'?

Disadvantages:

- Lower expected job creation in short run
- Untested if these companies want GIZ's support
- Are sectors too heavily based around preferential trade access?

Option 2: production efficiency innovation

Headline Narrative: Using innovation, technology and lean manufacturing to keep Jordan competitive on price as it expands markets and trade. Given Jordan's small size and high cost base it is critical that tradeable sectors are at the cutting edge of production efficiencies. Many of these sectors compete in the same overseas markets and consumer facing products face the same challenges of changing consumer demands and evolving regulations. This is closely aligned with the EMV's 'Product Industries' cluster and associated interventions.

Sector focus: **food**, **chemicals** (consumer-facing products), **engineering products** (assembly)

Synergies include: all production line operations and understanding cost drivers; food and consumer facing chemicals have some overlap in certifications, market access issues, etc.

Project activities could include: tech solutions to optimising efficiencies (elements of 4th IR such as communications machine learning); academic linkages; B2B learning on production efficiencies (e.g. might include garment industry on 'optimisation').

Advantages:

- Sectors that employ large numbers
- Focused on regional markets to build scale for then more ambitious markets
- Might see results more quickly, taking less chances

Disadvantages:

- Labour-saving tech?
- Innovative/ambitious enough?
- Lots of other donors supporting similar (maybe with more flexible instruments?)

Option 3: hybrid option

Headline Narrative: a balanced portfolio of sectors that will drive job creation and seek to reverse the decline in economic complexity of productive sectors. The focus would be to both a) work to with existing dominant sectors to improve price competitiveness through innovation-led efficiency gains, as well as b) harness creativity and help higher value-added manufacturing sectors use innovation to develop new products and markets. This would span the EMV's 'Product Industries' and Advanced Manufacturing Industries' clusters and associated interventions.

Sector focus: **food, chemicals** (consumer facing), **engineering products** (assembly) & **creative industries**

Synergies include: may be things that can take from creative industries to support assembly and manufacturing firms on design.

Project activities could include: Support to new product development; tech solutions to optimising efficiencies (elements of 4th IR such as communications machine learning); B2B learning on production efficiencies; academic linkages; support to R&D, etc.

Advantages:
A mix of both high impact strategic/transformational industries and those having short-term employment potential.
Breadth of challenges across diverse sectors gives opportunity for project to cross-fertilize ideas.

Disadvantages:
Perhaps a lack coherence across sectors covered might lead to a lack of focus and increase coordination costs.
Challenges across sub-sectors might be quite diverse meaning the project does not benefit from deeper learning on what makes successful interventions.

End

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Disclaimer

This analysis has been prepared based on recent data, research, and insights available regarding the Primark Sustainable Cotton Programme. While every effort has been made to ensure the accuracy, relevancy, and comprehensiveness of the information and recommendations presented, it is essential to recognise that the dynamic nature of sustainability practices, varying regional conditions, technological advancements, and regulatory changes may influence the applicability and effectiveness of the suggested strategies. The recommendations provided herein should be interpreted as general guidelines rather than definitive solutions. Users of this report are encouraged to consider its content in conjunction with other sources, local conditions, and expert advice before making significant decisions or investments. The authors of this report accept no liability for any actions taken, or not taken, based on its content.