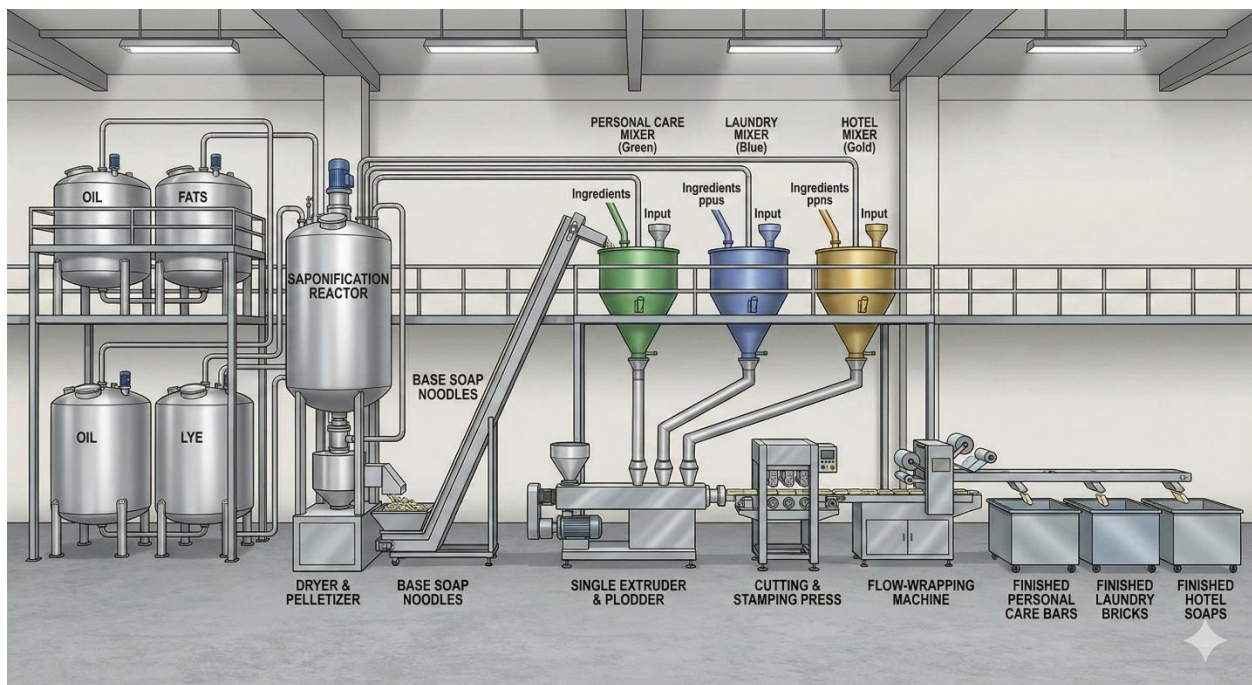


Soap Production Line – Complete TurnKey Business Proposal



Fused soap production flow inside a hanger shaped graphic

Executive Summary

The proposed **Soap Production Line** provides a complete turnkey solution for establishing an efficient and competitive manufacturing facility for solid bar soaps. Designed as a fused line that accommodates multiple product types—personal care and toilet soaps, laundry and household soaps, and hotel & guest amenities—this line integrates **saponification, vacuum drying, extrusion, stamping and flow-wrapping** into a single continuous process. Key highlights include:

- **Production Capacity:** 300 kg – 800 kg per hour (modular to scale).

- **Investment Range:** US \$80,000 – \$150,000 covering equipment, installation, training, and initial working capital.
- **Payback Period:** 6 – 12 months depending on utilisation and product mix.
- **Market Potential:** Strong demand for personal care and household soaps in Afghanistan and neighbouring markets, with opportunities to substitute imports and supply hotel amenities.

This proposal details the market opportunity, product portfolio, manufacturing process, equipment requirements, raw materials, investment analysis, quality standards and next steps for launching a fused bar-soap production line.

About Sanaatchi Industrial Vision

Sanaatchi Industrial Vision is Afghanistan's premier partner for turnkey manufacturing solutions. Operating under the motto *"Your vision, our expertise"*, the company partners with entrepreneurs to transform concepts and capital into fully operational production facilities. From initial feasibility studies and line design to global equipment sourcing, installation, commissioning and ongoing support, Sanaatchi manages the entire journey from idea to first product. The company's multidisciplinary team of engineers, procurement specialists and project managers ensure that every factory meets technical specifications, regulatory requirements and market needs. Clients benefit from transparent pricing, on-time delivery and comprehensive training, allowing them to focus on their vision while Sanaatchi handles the execution.

Market Opportunity in Afghanistan

Afghanistan's soap market is dominated by imported personal care and laundry soaps from India, Pakistan and Turkey. Establishing a local production line offers significant advantages:

- **Import Substitution & Localisation:** High import duties and transport costs make locally produced soap price-competitive. A domestic facility can meet demand quickly while ensuring consistent quality.
- **Growing Hygiene Awareness:** Rising awareness of personal hygiene and household cleanliness—especially since the COVID-19 pandemic—has increased demand for quality soaps across urban and rural areas.
- **Diverse Consumer Segments:** Urban consumers seek premium personal care and beauty soaps, families rely on affordable laundry soaps, while hotels and guest houses need branded amenity soaps.
- **Nutritional & Social Impact:** Producing soaps fortified with moisturisers, antibacterial agents or herbal extracts can differentiate products and address health needs.
- **Export Potential:** Regional markets in Central Asia and the Middle East import bar soaps; certified products from Afghanistan can penetrate these markets with competitive pricing and halal certification.

Product Portfolio – Phase 1 Launch

The fused production line can manufacture multiple soap categories on the same equipment by changing moulds, formulations and packaging. Initial products include:

Product Line	Key Features	Target Market	Typical Price Range
Personal & Toilet Soaps	Gentle formulations using palm/coconut oils; scented with fragrances or essential oils; moisturising additives.	Urban families, young professionals	US \$1.50 – \$3.00 per 100 g bar
Laundry & Household Soaps	Strong cleansing power with fillers (e.g., sodium silicate) and minimal fragrance; high foam generation; suitable for manual washing.	Households, laundries, restaurants	US \$0.80 – \$1.50 per 200 g bar
Hotel & Guest Amenities	Small (15 – 30 g) bars with customised hotel logos; often wrapped individually; formulations similar to personal soaps.	Hotels, guest houses, hospitals	US \$0.20 – \$0.50 per bar

Note: Other specialty products—herbal soaps, antibacterial bars, medicated soaps—can be developed in later phases using the same equipment.

Manufacturing Process Flow

Production is organised into eight sequential stages. Each stage is designed to work seamlessly with the next, forming a **fused production line** that handles multiple product types without requiring separate machines for each category.

Step	Process Name	Key Equipment	Main Parameters & Notes
1	Saponification & Soap Base Preparation	Saponification kettle, oil-melting tanks, soda-melting tanks	Fats or oils (palm, coconut, tallow) are mixed with sodium hydroxide; temperature is maintained at 70 – 90 °C while stirring until the oils react completely to form soap base. Neutralise excess alkali and allow the mixture to settle; remove glycerin and wash the soap base to remove impurities.
2	Vacuum Drying & Noodle Cutting	Vacuum dryer, soap noodle cutter	The semi-liquid soap mass is dried under vacuum to remove water and improve hardness; typical drying temperature 40 – 60 °C. The dried soap slab is then cut into noodles or chips for further processing.
3	Mixing &	Sigma mixer /	Soap noodles are blended with

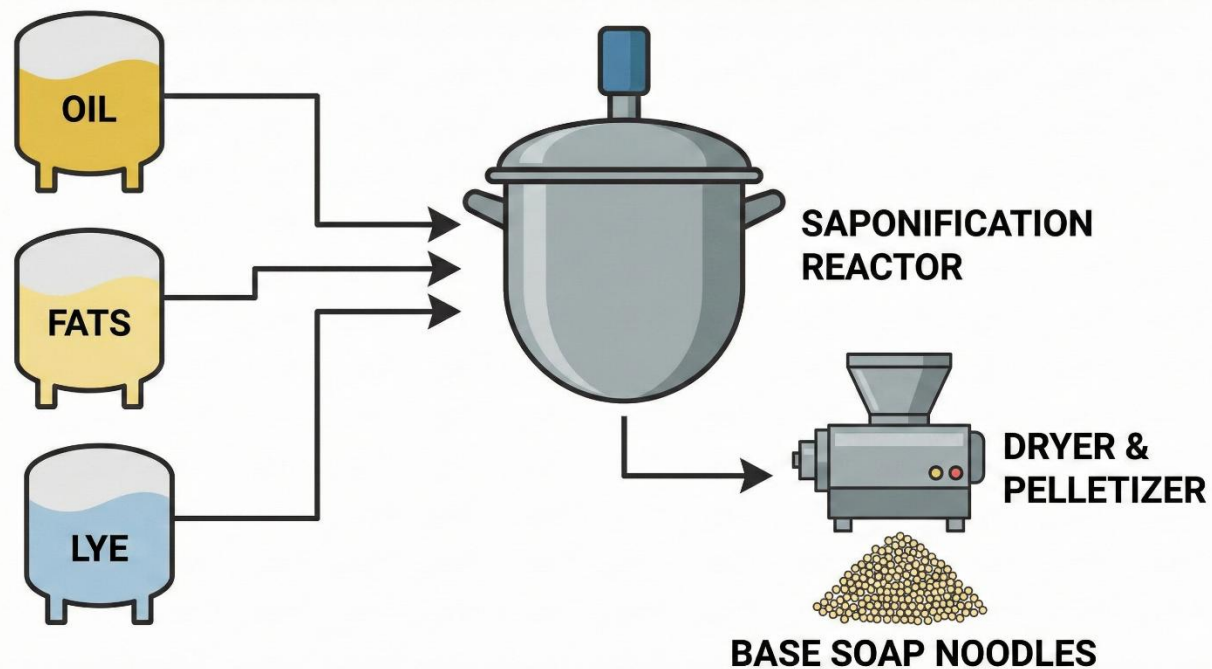
Step	Process Name	Key Equipment	Main Parameters & Notes
	Refining	ribbon blender, three-roll mill	fragrances, colorants and functional additives (e.g., moisturisers, fillers); mixing time 5 – 10 minutes until homogeneous. The three-roll mill refines the soap into thin sheets, improving smoothness and removing air pockets.
4	Vacuum Plodder / Extrusion	Vacuum plodder (soap extruder)	Refined soap is fed into the plodder where a screw compacts and extrudes it into a continuous bar. Vacuum de-airing ensures a dense, uniform bar; screw speed 20 – 40 rpm; barrel temperature controlled at 35 – 40 °C.
5	Stamping & Branding	Soap stamping press with logo dies	Continuous soap bars are cut into pre-measured billets and stamped to imprint the brand logo. The stamping machine uses controlled pressure to emboss the soap; stamping speed 60 – 120 bars per minute.
6	Cooling & Conditioning	Cooling conveyor, conditioning racks	Stamped bars are cooled to room temperature (25 °C) to stabilise shape. Conditioning for 24 – 48 hours reduces moisture and increases hardness.
7	Flow-Wrap Packaging	Automatic flow-wrapping machine	Bars are wrapped in laminated film or paper; machine speed 80 – 150 wraps per minute; options for pillow-pack, pleated wrap or carton packaging.
8	Quality Control & Storage	Metal detector, QC lab, warehouse	Each batch is checked for weight, dimensions, pH, moisture, and appearance. Metal detectors ensure no contamination, and finished goods are stored under controlled humidity before dispatch.

Detailed Process Descriptions

Step 1 – Saponification & Soap Base Preparation

Oils and fats (such as palm oil, palm kernel oil or tallow) are pumped into the **saponification kettle**, where they are mixed with a caustic soda solution. The mixture is heated and stirred to initiate the saponification reaction. Temperature is maintained between **70 – 90 °C** and the pH is monitored to track reaction progress. After saponification, the soap mass is neutralised with a weak acid (e.g., citric acid) and allowed

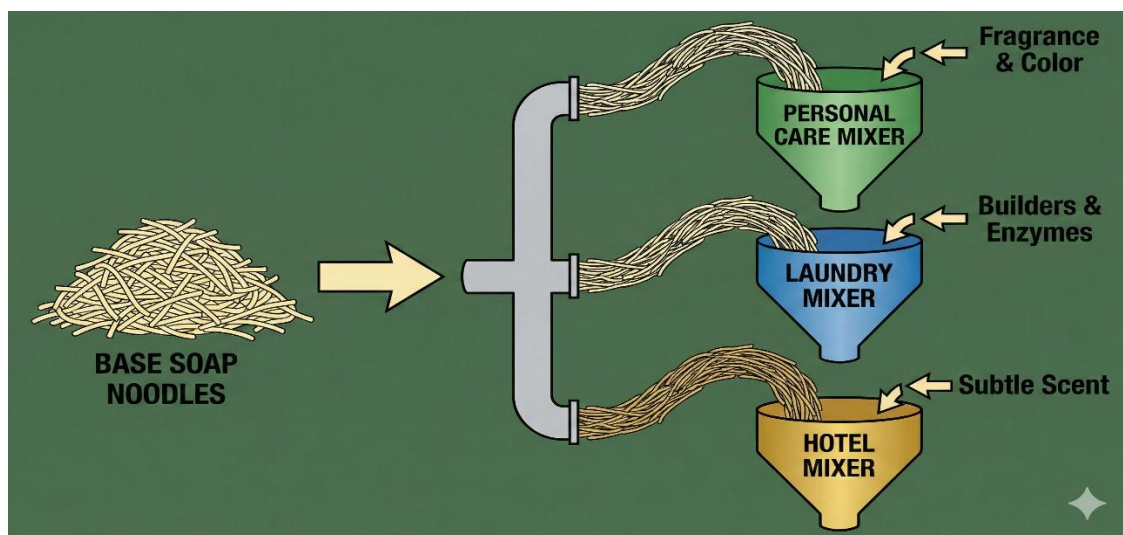
to settle. Glycerin is separated and the soap is washed to remove excess alkali and impurities. The result is a purified soap base ready for drying.



Saponification kettle with mixing motor

Step 2 – Vacuum Drying & Noodle Cutting

The semi-liquid soap base is transferred to a **vacuum dryer**, where moisture is removed under reduced pressure to improve hardness and shelf life. Drying at **40 – 60 °C** under vacuum preserves fragrance and colour. The dried soap slab is cut into noodles or chips for easier blending and extrusion.



Horizontal vacuum dryer with control panel

Step 3 – Mixing & Refining

Soap noodles are fed into a **sigma mixer or ribbon blender** together with fragrances, colourants, fillers (such as sodium silicate for laundry soaps) and functional additives (moisturisers, herbs, or antibacterial agents). The mixing time is typically **5 – 10 minutes** until a homogeneous dough is obtained. This dough passes through a **three-roll mill** which refines it into thin sheets, improving texture and removing air pockets. Refining ensures the soap has a smooth feel and consistent colour.



Sigma mixer used for blending soap noodles and additives



Three-roll mill for refining soap sheets

Step 4 – Vacuum Plodder / Extrusion

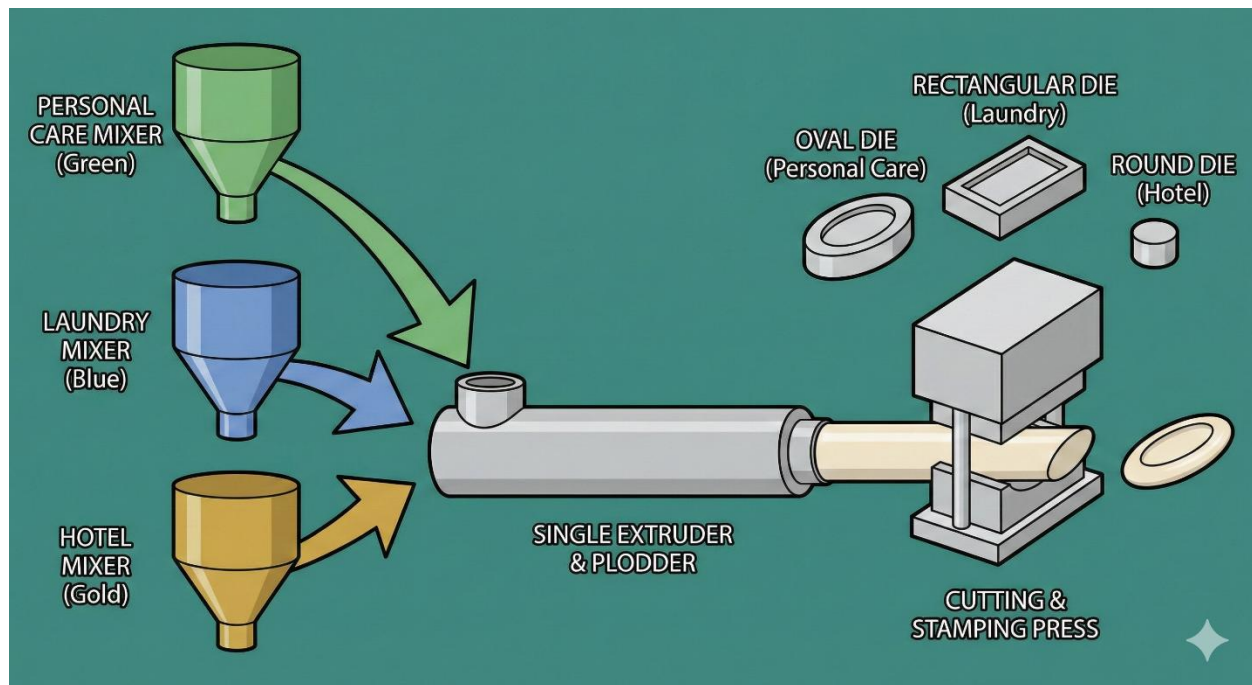
The refined soap sheets enter a **vacuum plodder (extruder)**. Inside the plodder, a screw conveys and compacts the soap under vacuum to expel trapped air, ensuring density and preventing cracks. The soap is extruded through a die to form a continuous billet. Barrel temperature is controlled at **35 – 40 °C**, and screw speed is maintained at **20 – 40 rpm** for uniform extrusion. This stage determines the final cross-section of the soap bar.



Soap plodder extruder machine

Step 5 – Stamping & Branding

The continuous extruded bar is cut into billets of the desired length and transferred to the **stamping machine**, where each billet is embossed with the company logo and cut to final shape. Stamping ensures brand identity and uniform dimensions. Heated or non-heated dies may be used depending on soap hardness. Typical stamping speeds range from **60 – 120 bars per minute**.



Soap stamping machine on conveyor belt

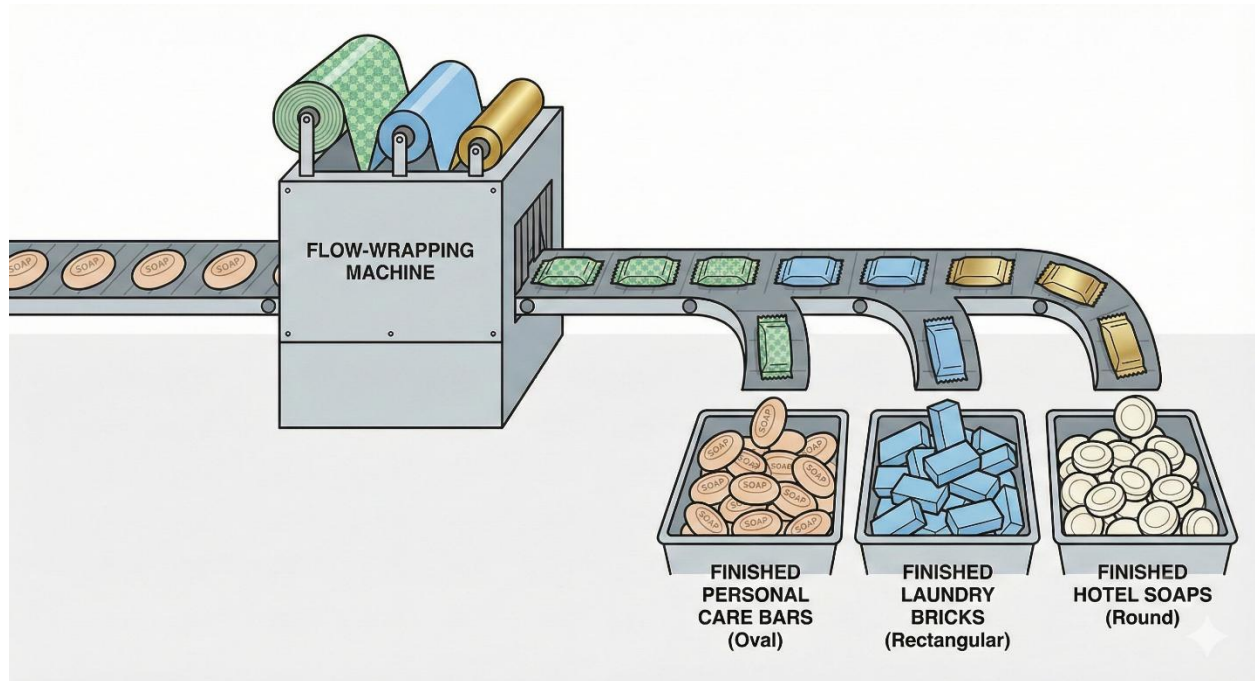
Step 6 – Cooling & Conditioning

Stamped bars exit onto a **cooling conveyor**, where they are cooled to room temperature. Proper cooling prevents deformation and allows the soap structure to stabilise. After cooling, bars are conditioned on racks for **24–48 hours**, during which residual moisture equilibrates and hardness increases. This step is crucial for preventing warping during storage.

Step 7 – Flow-Wrap Packaging

Fully conditioned bars are conveyed to an **automatic flow-wrapping machine**. Packaging materials such as laminated film, paper, or biodegradable film are fed from a roll and wrapped around each bar. The machine seals and cuts the wrap, optionally flushing nitrogen to minimise oxidation. Packaging speeds range from **80 – 150 wraps per minute**. Alternative packaging options, such as paper boxes or shrink-wrapped bundles, can be

added.



Flow-wrapping machine packaging soap bar

Step 8 – Quality Control & Storage

Final products undergo **quality control checks**, including weight verification, dimensional checks, moisture content measurement and visual inspection for defects. Metal detectors ensure that no ferrous or non-ferrous contamination is present. Samples from each batch are tested in the lab for pH and hardness, and results are recorded for traceability. The soaps are then stored in a clean, dry warehouse until shipment.



Metal detector scanning soap bars on conveyor

Raw Materials Requirements & Cost Analysis

Bar soap production uses readily available raw materials:

- **Base Oils/Fats (60 – 70 %):** Palm oil, palm kernel oil, coconut oil, tallow or a blend. These provide lather, hardness and cleansing ability.
- **Alkali (10 – 15 %):** Sodium hydroxide (caustic soda) for solid soaps; potassium hydroxide for semi-soft formulations.
- **Fillers (5 – 10 %):** Sodium silicate or sodium carbonate to enhance cleaning (particularly for laundry soaps).
- **Additives (1 – 3 %):** Salt (sodium chloride) to precipitate soap, EDTA to bind calcium/magnesium, preservatives.

- **Fragrances & Colourants (0.5 – 2 %):** Essential oils, synthetic fragrances, pigments or micas.
- **Functional Agents (0.5 – 2 %):** Moisturisers (glycerin, shea butter), herbal extracts, antibacterial compounds (triclosan), exfoliants (oatmeal).
- **Packaging Materials:** Laminate films, paper wraps, printed cartons and shipping boxes.

Estimated Cost Range: Standard personal soap bars cost approximately **US \$0.70 – \$1.20 per kg** to produce (raw materials and energy). Laundry soap bars cost **US \$0.60 – \$0.90 per kg** due to lower fragrances and fillers. With retail prices between **US \$2.00 – \$4.00 per kg** for personal soaps and **US \$1.50 – \$2.50 per kg** for laundry soaps, gross margins can exceed 40–50 %.

Investment Summary & Returns

Component	Low Range (US) HighRange(US)		Notes
Equipment Cost	50,000	90,000	Saponification tank, vacuum dryer, mixer, three-roll mill, vacuum plodder, stamping press, flow-wrapping machine, conveyors and laboratory instruments.
Installation & Training	5,000	10,000	Includes shipping, customs clearance, on-site assembly, commissioning and operator training.
Working Capital	20,000	30,000	Raw material stock (oils, caustic soda, packaging), utilities, labour for first 3 months.
Total Investment	75,000	130,000	Variation depends on capacity (300–800 kg/h) and degree of automation (semi-automatic vs. fully automatic).

Timeline:

1. **Months 1–2:** Finalise plant layout and place orders for machinery (lead times 45–60 days).
2. **Month 3:** Receive equipment, clear customs and transport to site.
3. **Month 4:** Install machinery, connect utilities (steam, water, electricity) and perform dry runs.
4. **Month 5:** Commissioning and operator training; adjust formulations and process parameters.
5. **Month 6:** Start pilot production; refine packaging and branding.
6. **Month 7:** Full commercial launch.

ROI: Assuming production of 600 kg/h at 70 % utilisation and a gross margin of 45 %, payback is expected within **12 – 18 months**.

Quality Standards & Compliance

To ensure product safety and market acceptance, the soap production line adheres to international standards:

- **Good Manufacturing Practice (GMP):** Factory layout, equipment hygiene and personnel practices follow GMP guidelines for cosmetics and soap manufacturing.
- **ISO 9001 & 22716:** Quality management and cosmetic GMP certifications assure consistent production and documentation.
- **Halal Certification:** Ingredients and processes comply with halal requirements for Muslim markets.
- **Bureau Standards Compliance:** Soaps meet Afghanistan's Ministry of Public Health regulations for pH, weight, labelling and permitted ingredients.
- **Environmental & Safety Standards:** Effluent treatment and waste management comply with local environmental laws.

Conclusion & Next Steps

Launching a **Soap Production Line** in Afghanistan represents a lucrative opportunity to meet growing demand for personal, household and hospitality soaps while substituting imports. The fused process design delivers flexibility and efficiency, allowing the same equipment to produce various bar soap products. Sanaatchi Industrial Vision's turnkey approach reduces risk and ensures on-time project delivery.

Contact Information:

For customised proposals or to discuss your project requirements, please contact:

Sanaatchi Industrial Vision – Afghanistan's premier turnkey manufacturing partner.

Afghanistan Office – Kabul, Afghanistan

- **Phone:** +93 779 819 820
- **Email:** info@sanaatchi.com
- **Working Hours:** Saturday – Wednesday 9:00–17:00; Thursday 9:00–13:00

China Office – China

- **Phone:** +86 159 5171 6867
- **Email:** china@sanaatchi.com
- **Working Hours:** Saturday – Friday 9:00–18:00

Website: www.sanaatchi.com

Next Steps:

1. Schedule an initial consultation within 24 hours.
2. Receive a custom proposal tailored to your desired capacity and product mix.
3. Conduct site assessment and utility planning (electricity, steam, water).
4. Begin project implementation under Sanaatchi's guidance.

End of Document