

WHITE PAPER 02 · CAMEROON STEEL

KRIBI CAN BECOME CENTRAL AFRICA'S STEEL PLATFORM IF INFRASTRUCTURE KEEPS PACE

Port, power, land and logistics at the Kribi industrial-port zone, what heavy industry needs from them, and the sequence in which they must arrive, 2026 to 2040.

DOCUMENT CONTROL

Reference	CS-WP-02
Edition	10 October 2026
Status	First edition
Classification	Public
Prepared by	Cameroon Steel
Series	Cameroon Steel public white papers, 02 of 10
Scope	Kribi port, industrial-port zone (ZIIPK / KPIZ), power, water, logistics corridors, cluster effects, benchmarks and a 2026 to 2040 roadmap
Evidence cut-off	10 October 2026
Sources	Annex C lists every source cited with an [S-id] marker
Data	Annex D gives the values plotted in every figure, with units, status and sources
Maps	Drawn by Cameroon Steel from Natural Earth and OpenStreetMap (© OpenStreetMap contributors, ODbL). No parcel boundaries are shown.
Languages	English (full text), French (full text), Chinese (summary)
Statement of interest	This paper is published by Cameroon Steel, which is developing a steelworks at Kribi. It is written to inform public debate; its analysis is independent of any commercial offer, and every figure is sourced or labelled with its status.

How to read this paper. Every number carries a unit, a year and a source marker such as [S12]. Figures and tables carry a status chip: sourced (read from a published source), derived (our arithmetic on sourced inputs, shown in Annex A), assumed (a stated planning assumption) or illustrative (a scenario, not a forecast). Generated images are labelled "Illustrative view" and are not photographs of any project.

What this paper is not. It is not a feasibility study, an offer or a commitment. It draws on Cameroon Steel's own project at Mboro, in the Kribi industrial-port zone, as a worked example, using public-record facts and planning estimates labelled with their status.

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EXECUTIVE SUMMARY: KRIBI HAS WHAT HEAVY INDUSTRY CANNOT BUILD FOR ITSELF; THE NEXT TWO YEARS DECIDE THE REST

Kribi combines the attributes that heavy industry needs on the Gulf of Guinea and cannot create for itself: 16 m of water at the quay on an open coast, a delimited port domain of 15,000 ha within which an integrated industrial zone of about 4,000 ha is now managed by a dedicated company, and a high-voltage link, due in service at the end of 2026, from the existing Kribi gas power plant [S22][S16][S02][S25]. Plans for rail and a 125 Mt a year mineral terminal, the subject of a memorandum of understanding signed on 4 November 2025, would connect it to Cameroon's iron ore and to the interior [S41][S32]. On this evidence Kribi can become Central Africa's steel and metals platform. Whether it does depends less on any single investment than on sequence: firm power in two stages, a power-quality code, serviced land under a clear contractual framework, industrial water and waste services, a dry-bulk berth and rail, each arriving before the industry that depends on it.

16 m

Water depth at the quay, Port of Kribi [S22]

12.7 Mt

Cargo handled in 2025, up 19% [S28]

555,398 TEU

Containers handled in 2025 [S28]

4,000 ha

Integrated industrial zone managed by KPIZ S.A. since February 2026 [S02]

100 MW

First stage of the 225 kV supply to the zone, end 2026; 330 to 400 MW later [S25]

The answer in brief

A steel works is a heavy-flow business with a difficult electrical load. An arc-furnace works making 1 Mtpa of long products moves about 2.5 Mt of material a year and draws an average of about 94 MW, with maximum demand of 130 to 190 MVA [S112]. It succeeds where iron units can arrive cheaply by sea, where firm high-voltage power is available at a strong connection point, where serviced and expandable land is held under a secure contract, and where customers can be reached by road, rail and coastal shipping.

Kribi already has the two attributes that only public authorities can create over decades: a deep-water port and a large, legally delimited land reserve. It is acquiring the next layer now: a 225 kV line and 225/30 kV substation, a water plant for the port platform, servicing works on new plots, a container yard expansion and a zone company with a fifteen-year, €795 million investment plan backed by the African Development Bank, the European Union and the IFC [S25][S26][S18][S30][S04][S07]. Its development clusters include "steelmaking linked to mineral exports" [S03]. What it does not yet have are the attributes that turn a first tenant into a cluster: a second power stage, a dedicated dry-bulk berth, rail, industrial gases, hazardous-waste services and a heavy-industry contractual framework.

Figure ES.1 summarises our assessment of the platform's attributes on announced schedules, with power shown in its two announced stages.

Deep water is in place; second-stage power, rail and services still lack firm dates

Readiness of ten platform attributes, by date, on announced schedules (our assessment)

	Oct 2026	End 2028	2032
Deep water 16 m at the quay; 600 m turning circle			
Container capacity Second terminal May 2025; yard expansion to 2027			
Dry-bulk and mineral terminal MoU Nov 2025; completion in 5 to 6 years (PAK, Mar 2026)			
Organised industrial land KPIZ S.A. created Feb 2026; ZIIPK about 4,000 ha			
Grid power, first stage (100 MW) 225 kV line and substation due end 2026			
Grid power, second stage (330 to 400 MW) Announced; date and financing not published			
Industrial water Water plant due early 2027; capacity not published			
Road to Douala and Yaoundé Édéa-Kribi road reconstruction (110 km)			
Rail Édéa-Kribi-Lolabé-Campo MoU, June 2026			
Industrial services Gases, hazardous waste, maintenance: not yet present			

 In place
  Under way or partial
  Announced or planned
  Gap

DERIVED **Figure ES.1.** Readiness of ten platform attributes at Kribi in October 2026, at the end of 2028 and in 2032, on announced schedules; the second power stage and the water plant's capacity have no published date or figure. Cameroon Steel assessment.

Source: Cameroon Steel assessment based on PAK port guide, 2020 [S22]; Business in Cameroon, 12 May 2025 and 18 May 2026 [S57][S52]; PAK, 4 November 2025 [S32]; Investir au Cameroun, 4 March 2026 [S03]; PAK, 26 February 2026 [S02]; PAK, 6 August 2025 and 19 August 2026 [S25][S26]; PAK, 13 March 2025 [S27]; PAK, 4 June 2026 [S41]; EcoMatin, 11 May 2026 [S18].

Why Kribi, and why now

Three facts make 2026 a turning point. First, the institutions are in place: the port authority has a delimited domain [S16], and a dedicated zone company with private shareholders and development-finance backing now manages the integrated zone [S02][S07]. Second, the enabling infrastructure for a first heavy tenant is under construction with dates: the 225 kV supply at the end of 2026 and the water plant in early 2027 [S25][S26]. Third, the policy frame points the same way: the national development strategy names mines, metallurgy and steelmaking as a priority sub-sector [S99], the Mining Code requires that at least 15% of mine production be made available for local transformation [S24], and the government's committee on mining and metallurgy is preparing exports of Cameroonian steel to African markets [S45].

The regional context adds urgency. Africa's steel use grew by about 10% in 2025 to 45 Mt while the continent imported 32.9 Mt, most of it from outside Africa [S95]. Cameroon alone imported 412,049 t of iron and steel under customs chapter 72 in 2025 [S93]. A coastal platform that can turn imported and, later, Cameroonian iron units into the steel the region builds with has a market; the question is whether the platform will be ready when investors are.

What it means for each reader

For the authorities and KPIZ, the priority is sequence: commit the second power stage, publish the heavy-industry framework and power-quality code, and launch the zone's strategic environmental assessment while the first tenants are still designing their plants. **For investors**, Kribi offers the hard attributes now and the enabling ones on a visible schedule; a first phase should be sized to what will exist at commissioning. **For lenders and development partners**, the shared enablers, from the second power stage to hazardous-waste services, are where public finance brings in the most private investment. **For communities and civil society**, a zone-level assessment of the coast's carrying capacity, agreed before industry scales up, is the best protection of the marine park, the Lobé falls and local livelihoods.

Twelve findings

- 01 Location fixes most of a steel mill's non-metallic costs.** Two of the three iron sources open to a Central African steelmaker, imported DRI or HBI and imported scrap, arrive by sea, and the third, Cameroonian ore, arrives at the same coast for export. A works of 1 Mtpa needs about 1.24 Mt a year of port-linked inbound cargo, and a first phase of 0.3 Mtpa about 351,000 t [S112]. The cheapest place to make steel in the region is beside a deep-water quay with dry-bulk handling (Chapter 1).
- 02 Kribi has the deepest quay in Cameroon and a record of filling new capacity.** With 16 m at the quay, the port handled 12.7 Mt and 555,398 TEU in 2025, and container volumes rose by 82% in the year after a second terminal opened in May 2025 [S22][S28][S52]. Vessel waiting times were about two days at Kribi against about nine at Douala in 2025 [S54] (Chapter 2).
- 03 Dry bulk is the port's missing link for heavy industry.** Existing terminals can serve a first steel phase of a few hundred thousand tonnes a year. A cluster needs a dry-bulk berth with covered storage for iron units. The 125 Mt a year mineral terminal, agreed in a memorandum of understanding on 4 November 2025 and expected by PAK's Director General in March 2026 to be completed within five to six years, should be designed with one [S32][S33][S03] (Chapter 2).
- 04 A dedicated zone company now holds the land.** KPIZ S.A., created on 26 February 2026 by PAK, AGL, Arise IIP and Belmont Investments, is mandated to design, finance, develop, operate and maintain an integrated zone of about 4,000 ha, with a €795 million plan over fifteen years [S02][S04][S01] (Chapter 3).
- 05 Demand for land is twenty times what has been allocated.** By mid-2025 investors had requested about 3,883 ha against 196 ha allocated under 48 occupation authorisations [S17]. The constraint is converting reserve into serviced, contracted plots, which requires KPIZ to publish its contractual framework and a tariff suited to heavy industry, without a levy on turnover [S11][S114]. As a prospective tenant, Cameroon Steel has an interest in these terms (Chapter 3).
- 06 The 225 kV link makes heavy industry possible; a second stage makes a cluster possible.** The KPDC-port line and substation will provide about 100 MW from the end of 2026 and 330 to 400 MW later [S25]. The first stage can carry a first steel phase averaging about 36 MW; a 1 Mtpa works alone averages about 94 MW [S112]. On a steel-led path, the first stage is fully used by about 2032, so the second must be financed and scheduled now; neither its date nor its financing has been published (Chapter 4).
- 07 Firmness, power quality and price need rules, not just megawatts.** Cameroon's grid was about 90% hydro in 2025, 150 MW of industrial demand was unmet in October 2026, no regulated tariff exists above 10

MW, and arc furnaces disturb weak networks [S60][S61][S72]. A published power-quality code, a second high-voltage source and a long-term tariff structure are preconditions for a cluster (Chapter 4).

-
- 08 Water is abundant; treatment and hazardous waste are the gaps.** Kribi receives about 2,836 mm of rain a year and a port-platform water plant is due in early 2027 [S79][S26]. Closed-loop cooling holds a mill's make-up near 2 m³ per tonne, but no licensed route has been identified for the 10 to 20 kg of hazardous furnace dust produced per tonne of steel [S76][S112] (Chapter 5).
-
- 09 Kribi reaches its markets; rail would make it the region's steel hinge.** Six cities lie within about 300 km and the CEMAC region imports about US\$500 million a year of iron and steel [S110][S94]. A 1 Mtpa works would generate about 245 truck movements a day if every flow went by road. Most of the inbound flow would stay inside the port domain, between quay and plant; about 110 to 120 loads a day would use the public road to Édéa, or about 55 to 60 if half the output ships by sea. That is the traffic the Édéa-Kribi road must carry until it is rebuilt and the June 2026 railway agreement becomes a funded line [S27][S41][S112] (Chapter 6).
-
- 10 A steel anchor creates a cluster.** One 1 Mtpa works yields about 185,000 t a year of slag, scale and dust and needs about 37 million Nm³ of oxygen; Kribi already hosts a 1 Mt a year cement plant and a second is planned [S112][S35][S37]. Adjacency in the master plan, pipe and conveyor corridors and shared services decide whether those exchanges happen (Chapter 7).
-
- 11 Successful port-industrial zones built infrastructure ahead of demand and organised around anchors.** Tanger Med, Jebel Ali, Jurong and Lekki share four traits: one authority for port and zone, utilities built ahead of or with the first tenants, anchor industries that pull suppliers in, and policy that pushes raw materials into local processing. Sohar and Pecém show steel organised at deep-water ports; Sohar also shows that where gas was not planned for industry, downstream growth stalled [S127] (Chapter 8).
-
- 12 Sequence is the strategy.** A first steel phase can rely on infrastructure already under construction. A cluster needs, in order, a financed second power stage and power-quality code, a zone strategic environmental assessment that allocates the coast's carrying capacity, a heavy-industry land framework, waste and gas services, and a dedicated bulk berth and rail (Chapters 9 and 10).
-

What must happen, and when

The roadmap in Chapter 10 is organised in three steps, an analytical sequence rather than a plan adopted by any authority. The actions that matter most fall in the first.

Enable, 2026 to 2028. Commission the 225 kV substation with a heavy-tenant bay and published short-circuit levels; adopt a power-quality code for arc furnaces; bring the water plant into production with an industrial tariff; publish KPIZ's heavy-industry contractual framework and tariff; launch the zone's strategic environmental assessment and baseline monitoring; identify a licensed route for hazardous furnace dust; complete the container yard expansion; write a steel-cluster berth into the mineral-terminal design; and permit, finance and design a first melt shop and rolling mill sized to the first power stage, so that works can start in 2029.

Anchor, 2028 to 2032. Bring the first melt shop into production, with a first heat in the second half of 2030 and ramp-up in 2031 on Cameroon Steel's planning estimate [S112]; bring the second power stage of 330 to 400 MW and a second high-voltage source into service by about 2031; bring the mineral terminal's first stage into service

within the five to six years announced in March 2026 [S03]; attract an industrial-gas supplier and a slag processor; finance the Édéa-Kribi-Lolabé-Campo railway; add a second heavy tenant, sections and downstream fabrication.

Integrate, 2032 to 2040. Make iron from Cameroonian ore at the coast through direct reduction, as the Mining Code's local-transformation requirement intends [S24]; connect the zone by rail to Édéa and the interior; and export steel and iron units into regional and carbon-regulated markets.

THE DECISIVE TWO YEARS

The decisions that make a 2040 steel platform possible are those taken in 2026 and 2027: the financing and timing of the second power stage, the publication of KPIZ's heavy-industry framework and a power-quality code, the design of the mineral terminal's bulk berth, a strategic environmental assessment of the zone, and a solution for hazardous waste. Each is within the reach of the institutions that already exist.

About this paper

This is the second paper in Cameroon Steel's public series on steel in Central Africa. It examines the Kribi industrial-port zone as a location for steel and metals industries: the port, the zone and its management company, power, water and utilities, logistics corridors, cluster effects, international benchmarks, constraints and a roadmap to 2040. It is based on public sources available on 10 October 2026, listed in Annex C, and Annex D gives the data behind every figure; documents of the Port Autonome de Kribi are cited by title and date. Planning figures for a steel tenant come from the Cameroon Steel reference configuration RC-1 (planning estimate) and are labelled with their status.

Cameroon Steel is developing a steel complex at Mboro, within the zone; its foundation stone was laid on 30 December 2024 by the Prime Minister, representing the Head of State [S39]. The paper draws on the project as a worked example of a heavy-industry tenant, using public-record facts and planning estimates labelled with their status. Its first phase is planned around an arc-furnace melt shop making billets, with output flexible between rolled products (wire rod and reinforcing bar) and merchant billets for Cameroon's existing re-rollers (Chapter 3 and White paper 04, Chapter 9). The paper is published for information and does not constitute an offer or a commitment.

Statement of interest. This paper is published by Cameroon Steel, which is developing a steelworks at Kribi. It is written to inform public debate; its analysis is independent of any commercial offer, and every figure is sourced or labelled with its status.

CHAPTER 1

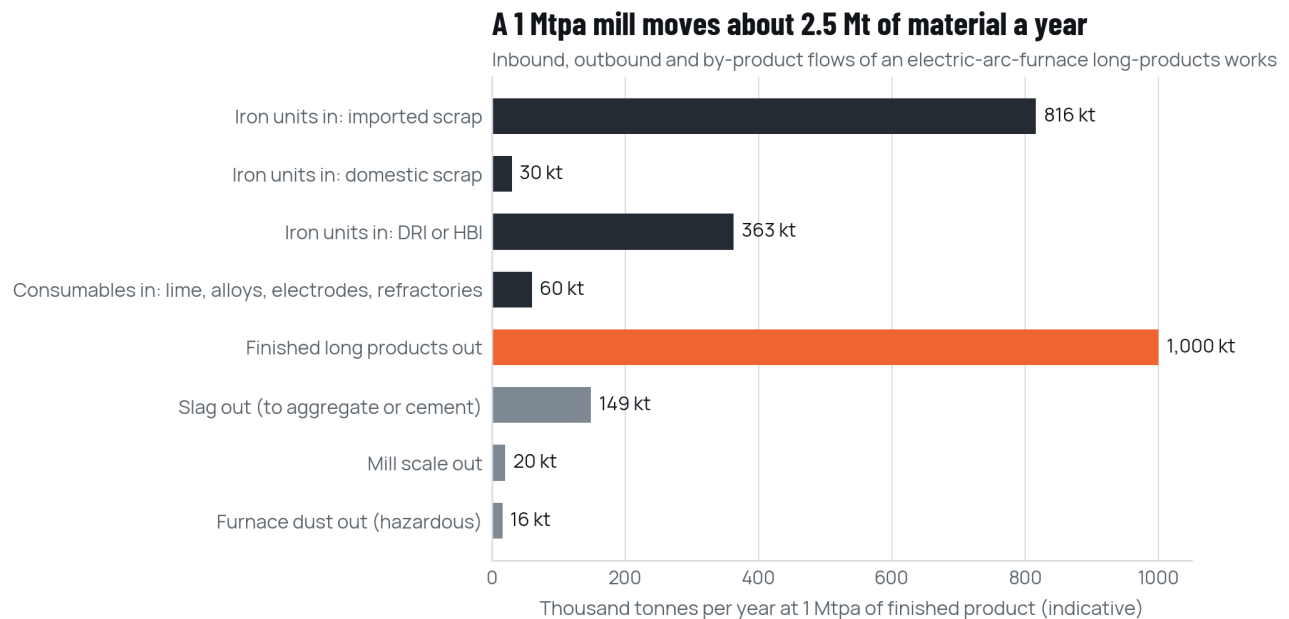
LOCATION FIXES A STEEL MILL'S COSTS BEFORE THE FIRST HEAT

A steel mill is a machine for moving heavy, low-value material and for drawing large, uneven blocks of electricity. An electric-arc-furnace works making 1 million tonnes a year (Mtpa) of long products handles about 2.5 Mt of material a year and draws an average of about 94 MW, with peaks well above 100 MVA [S112][S75]. Those two facts decide where such a plant can succeed. The site must sit next to deep water for inbound iron units, close to the markets that buy bars and sections, inside a power system strong enough to absorb a furnace, and on land that is organised, serviced and accepted by its neighbours. This chapter sets out each requirement in numbers, so that the chapters that follow can test Kribi against them rather than against slogans.

1.1 A steel mill moves about 2.5 tonnes of material for every tonne it sells

The physical arithmetic of steelmaking is unforgiving. An electric arc furnace (EAF) melts a charge of scrap and direct-reduced iron (DRI, or its compacted form, hot-briquetted iron, HBI). Some of the charge is lost as slag, dust and scale, and some liquid steel is lost again between the caster and the rolling mill. On published benchmarks, about 1.2 t of metallic charge is needed for each tonne of finished bar, rod or section [S112][S75]. Lime, ferro-alloys, graphite electrodes and refractories add inbound tonnage equal to about 6% of finished output, and every tonne of liquid steel generates 110 to 180 kg of solid residue, mostly slag [S75], of which 10 to 20 kg is furnace dust (a planning range; the European reference document reports 10 to 30 kg [S76]), and all of it must leave the site again.

Figure 1.1 applies these benchmarks to a works of 1 Mtpa of finished product, using the balance of the Cameroon Steel reference configuration RC-1 (planning estimate). It is a planning balance, not a design, but it illustrates the scale: about 1.2 Mt of iron units and 0.06 Mt of consumables come in, 1.0 Mt of products and about 0.19 Mt of by-products go out. A mill of this size is, in logistics terms, a medium-sized port terminal with a furnace attached.



DERIVED Figure 1.1. Annual material flows of a 1 Mtpa electric-arc-furnace long-products works. Indicative balance at full capacity; consumables taken as 6% of finished output; domestic scrap about 30,000 t a year.

Source: Cameroon Steel reference configuration RC-1 (planning estimate), edition 10 October 2026 [S112]; solid-waste benchmark from IFC, Environmental, Health and Safety Guidelines for Integrated Steel Mills, 2007 [S75]; dust: planning range, European reference document 10 to 30 kg [S76].

The point of the figure is not the precision of each bar but the ratio. Because steel is cheap per tonne relative to its weight, transport costs are a large share of delivered cost, and every avoidable kilometre between quay, furnace and customer is margin lost. In 2025 Cameroon imported 412,049 t of iron and steel under customs chapter 72 at an average declared value of about 413 FCFA per kilogram, roughly €630 per tonne [S93]. At values of that order, a few thousand francs per tonne of avoidable haulage on each inbound and outbound leg is the difference between a plant that competes with imports and one that does not. The series' indicative comparison of the cost of a Kribi billet with a delivered import is set out in White paper 04, section 8.6.

1.2 Iron units arrive by sea, so the quay sets the cost floor

The first locational test is where the iron comes from. Three sources are possible for a Central African EAF works, and two of them arrive by sea.

Scrap is the cheapest charge where it exists in volume, but Central Africa generates little of it. Cameroon's existing re-rolling mills already depend on imports: in September 2026 the country's largest steel group secured a €40 million revolving facility from Afreximbank specifically to import billets, and press reporting of the deal noted that local scrap covers only about 40% of the sector's needs [S98]. The only national estimate of scrap arising, made in 2006, put it at 53,000 to 62,000 t a year [S168], and most of what is collected already feeds the existing mills. A new melt shop cannot assume that domestic scrap will grow fast enough to feed it: Cameroon Steel's reference configuration assumes about 30,000 t a year of domestic scrap, within a range of zero to 60,000 t, and imports the rest of its charge [S112].

Imported DRI or HBI is the main alternative. World DRI output reached about 151 Mt in 2025, but on Midrex's plant statistics, which cover gas-based plants, Sub-Saharan Africa produced only 0.09 Mt of it, because the region's gas-based plants are idle [S101]. worldsteel also estimates about 2.7 Mt of mostly coal-based DRI made in East Africa, in Uganda, Kenya and Tanzania [S95]; none of it is made on the Gulf of Guinea. DRI and HBI are traded in bulk carriers between the Middle East, India, Russia and the Americas, and they are moisture-sensit-

ive: they need covered handling and dry storage at the quay. A plant that relies on them for a third of its charge at 1 Mtpa would import roughly 0.36 Mt a year in bulk, which only a deep-water port with a dry-bulk berth can receive economically [S112].

Domestic iron ore, reduced locally to DRI, is the long-term prize. Cameroon accounts for about 64 Mtpa, or 9%, of the world's iron-ore mine capacity in development [S102], and the 2023 Mining Code requires that mining conventions set out how at least 15% of production is made available for local transformation [S24]. Ore from the Mbalam deposit in the East Region, from Bipindi-Grand Zambé and from the Lobé deposit near Kribi is planned to move to the coast for export [S43][S42]. A steel platform that sits where that ore reaches the sea can take its share without a second inland journey.

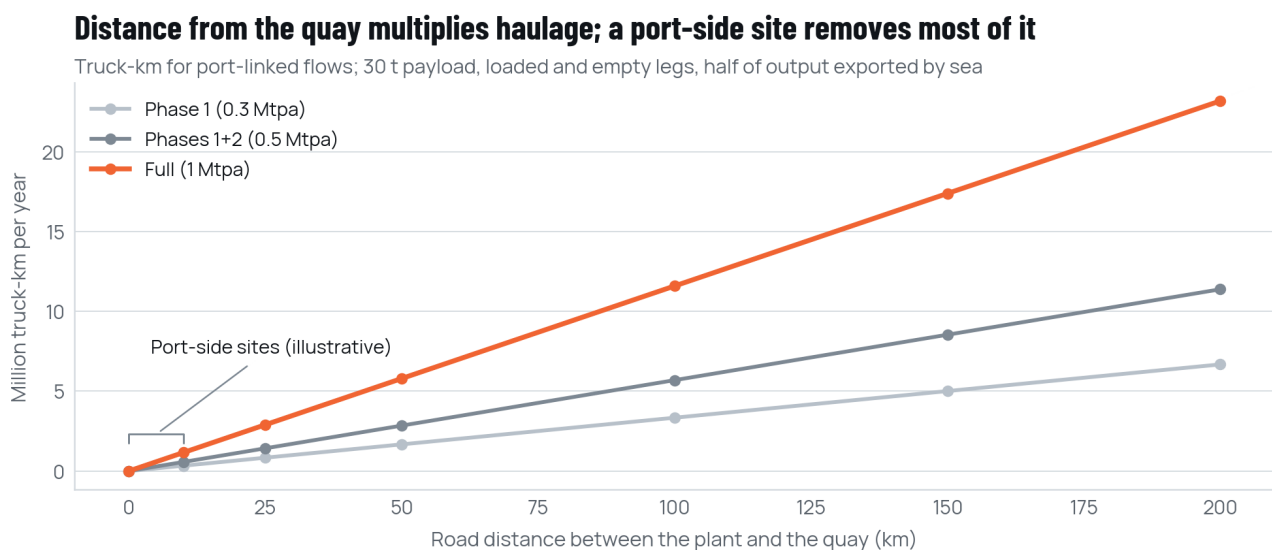
WHAT THE IRON SOURCES IMPLY

Two of the three iron sources available to a Central African steelmaker arrive by sea, and the third arrives at the same coast for export. The cheapest place to receive iron units is therefore beside a deep-water quay with dry-bulk handling, not at an inland market.

1.3 Products leave by road and coastal shipping, so distance to customers matters as much

The second test runs in the other direction. Long products such as reinforcing bar, wire rod, angles and channels are sold to builders, fabricators and public-works contractors. In Central Africa they move mostly by road, with some coastal shipping to neighbouring ports. Cameroon already exports about 31,000 t a year of bars, mostly to Chad [S93], and the six members of the Central African Economic and Monetary Community (CEMAC) imported about US\$500 million of chapter 72 products in 2023 [S94]. A mill that wants that regional market must reach Douala, Yaoundé and the CEMAC transit corridors as cheaply as it reaches its own quay.

Distance compounds quickly. Figure 1.2 shows how truck movements scale with the road distance between a mill and its port, for the port-linked flows of a works at three stages of growth. A site 100 km from the quay would generate about 12 million truck-kilometres a year at 1 Mtpa, with the road wear, fuel, accident risk and community impact that come with them. A port-side site removes most of that burden and leaves trucking for the final delivery to customers.

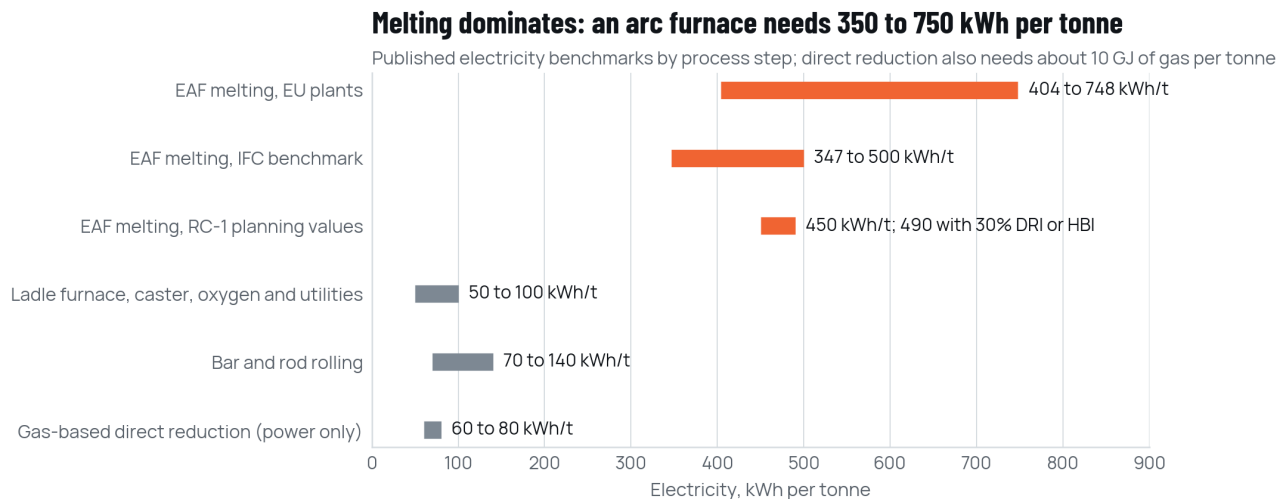


DERIVED Figure 1.2. Truck-kilometres generated by port-linked flows, by distance between plant and quay. Indicative flows at three capacities; 30 t payload; loaded and empty legs; half of output assumed to leave by sea.

Source: Cameroon Steel reference configuration RC-1 (planning estimate), logistics balance [S112]; arithmetic in Annex A.

1.4 Electricity: a mill is a grid-scale customer with a difficult load

The third test is energy. Melting steel in an arc furnace takes between about 350 and 750 kWh per tonne of liquid steel, depending on the charge, the furnace and how well it is operated; the European Union's reference document for the sector reports 404 to 748 kWh/t across EU plants, and the IFC benchmark is 347 to 500 kWh/t [S76] [S75]. Cameroon Steel's reference configuration plans on 450 kWh per tonne of liquid steel, the RC-1 planning value, within the IFC range of 347 to 500 kWh/t; with 30% DRI or HBI in the charge, about 490 kWh/t is the upper planning value [S112] [S75]. Rolling adds 70 to 140 kWh per tonne of product, and the ladle furnace, caster, oxygen plant and utilities add more [S75] [S112]. A gas-based direct-reduction plant, if one is added later, needs about 10 GJ of natural gas and some 60 to 80 kWh of electricity for each tonne of DRI [S116].



SOURCED Figure 1.3. Electricity benchmarks by process step for an EAF long-products works.

Source: European Commission JRC, Best Available Techniques Reference Document for Iron and Steel Production, 2013 [S76]; IFC, EHS Guidelines for Integrated Steel Mills, 2007 [S75]; Cameroon Steel indicative planning ranges for auxiliaries and direct reduction [S112].

Three features of this demand matter for location. First, the **quantity**: at 1 Mtpa, total consumption is of the order of 0.75 TWh a year, an average load of about 94 MW [S112]. Cameroon's whole power system served a peak of 1,278 MW in 2025 [S60], so a single mill at full output is a customer the size of a medium town. Second, the **shape**: an arc furnace draws power in violent, rapidly fluctuating bursts that cause voltage flicker and harmonics on weak networks, so the furnace needs a connection point with high short-circuit strength or dedicated compensation equipment (Chapter 4). Its load is schedulable rather than interruptible: an operator can time melting around grid peaks, but cannot cut power in the middle of a heat without losing it. Third, the **price**: electricity is typically the largest conversion cost after the metallic charge, so a difference of a few francs per kilowatt-hour moves the plant's competitiveness against imports. Cameroon's power system and tariffs are analysed in White paper 05, Chapters 2 and 3.

These features favour a site close to a large generating plant or a high-voltage substation, inside an industrial zone that can plan its network for heavy users. They penalise a site at the end of a long medium-voltage line, however good its other attributes.

STEEL IS MADE WHERE IRON, POWER AND WATER MEET THE SEA; IT IS SOLD WHERE PEOPLE BUILD.

Cameroon Steel

1.5 Land, water and neighbours: the quiet conditions

The fourth group of requirements is less visible but just as decisive.

Land. A modern long-products works needs a compact core for the melt shop and mills, but also stockyards for scrap and iron units, covered stores for DRI and HBI, a finished-products yard, a high-voltage substation, water treatment, a slag yard and a buffer from its neighbours. Expansion space matters as much as the first phase: mills grow by adding lines, and a site that cannot take a second melt shop or a direct-reduction module will strand capital later. The land must also be legally secure, serviced with roads, drainage and utilities, and free of unresolved claims.

Water. Steel plants are not the thirstiest industry when they recycle, but they need reliable make-up water for cooling towers and rolling-mill circuits. The world steel sector withdrew an average of 8.5 m³ of fresh water per tonne of steel in 2024 and consumed 2.3 m³/t [S77]; closed-loop designs can hold make-up water near 2 m³ per tonne of product [S112]. At 1 Mtpa that is 2 to 8.5 million m³ a year depending on practice (Chapter 5).

Neighbours and environment. A steel works produces dust, noise, traffic and a large carbon footprint; it also creates skilled jobs and supplier contracts. Cameroonian law classifies metal production as an activity requiring a detailed environmental and social impact assessment, and requires a strategic environmental assessment for industrial zones and industrial-port complexes [S87]. A zone that has already studied and planned for heavy industry, and that keeps it at a distance from sensitive coasts and communities, lowers the risk for every tenant.

1.6 A scoring frame for steel locations

Table 1.1 DERIVED What a 1 Mtpa electric-arc-furnace long-products works needs from its location

Requirement	Why it matters	Indicative quantity at 1 Mtpa	Where this paper tests Kribi
Deep-water quay with dry-bulk handling	Iron units (DRI, HBI, scrap) and consumables arrive in bulk carriers	About 1.24 Mt a year of port-linked inbound cargo [S112]	Chapter 2
Container and break-bulk capacity	Spares, alloys, refractories in; some products out	Tens of thousands of tonnes a year	Chapter 2
Organised, serviced industrial land	Secure tenure, roads, drainage, utilities, buffers, room for later phases	A core plant site plus buffers and expansion reserve	Chapter 3
Firm high-voltage power	Average load and furnace peaks; power quality	About 94 MW average; 130 to 190 MVA maximum demand [S112]	Chapter 4
Reliable industrial water and waste services	Cooling make-up, rolling circuits, hazardous dust disposal	2 to 8.5 Mm ³ a year; about 16 kt a year of furnace dust [S112][S77]	Chapter 5
Road and rail to markets and ore	Regional sales, ore supply, workforce access	About 245 truck movements a day if every flow went by road, of which about 110 to 120 on public roads [S112]	Chapter 6
Suppliers and customers nearby	Gases, maintenance, slag users, fabricators	Oxygen of about 37 million Nm ³ a year; 149 kt of slag [S112]	Chapter 7
Environmental carrying capacity	Air, water, coast, biodiversity, communities	Cumulative assessment at zone level	Chapter 9

Source: Cameroon Steel analysis; quantities are indicative planning figures for one tenant [S112], with benchmarks from [S75], [S76] and [S77].

The table is deliberately demanding. Few locations in Sub-Saharan Africa can tick every row today, and none could do so without public infrastructure arriving on time. The question for Kribi is therefore not whether it is perfect, but whether it has the hard attributes that cannot be built elsewhere, chiefly deep water and space, and whether the attributes that can be built, chiefly power, rail and services, are on a credible schedule.

1.7 Why the hard attributes come first

Some locational advantages can be bought; others cannot. A mill can build its own substation, water-treatment plant and rail siding, and it can contract for gases and maintenance. It cannot dredge a natural harbour, create a protected deep-water coast or assemble thousands of hectares of contiguous land in an organised legal regime. These are the attributes that public authorities create once, over decades, and that private investors then rent.

Kribi's deep-water port, opened in 2018, and its land reserve, delimited by presidential decree in 2023, fall into that second category [S117][S16]. They are the reason the Kribi industrial-port zone has been chosen as the site for a steel and metals cluster in the plans of its new management company, which lists "steelmaking linked to mineral exports" among its development clusters [S03]. They are also why Cameroon Steel, whose foundation stone was laid at Mboro on 30 December 2024 by the Prime Minister on behalf of the Head of State, chose to develop its steel complex within the zone [S39].

The chapters that follow test the remaining rows of the table one by one. The test is applied as a lender or an independent engineer would apply it: by asking what exists today, what is under construction with a date, what is only announced, and what must still be organised.

CHAPTER FINDING

Location fixes most of a steel mill's non-metallic costs before it melts a tonne. The decisive attributes are a deep-water quay with dry-bulk handling, firm high-voltage power at a strong connection point, serviced and expandable industrial land, reliable water and waste services, and short road and rail links to customers and ore. Deep water and land are the attributes that only public authorities can create, and Kribi already has both.



SIXTEEN METRES OF WATER AT THE QUAY: THE ONE PLATFORM ATTRIBUTE THAT CANNOT BE BUILT ANYWHERE ELSE IN CAMEROON.

Illustrative view. Generated image of a bulk carrier berthed at a deep-water quay with mobile harbour cranes and a conveyor; not a photograph of any project, place or person.

CHAPTER 2

THE PORT OF KRIBI GIVES CENTRAL AFRICA ITS DEEPEST QUAY, AND IT IS FILLING FAST

Kribi offers what no other Cameroonian port can: 16 m of water at the quay, a 600 m turning basin and a coast with room to grow [S22]. Since it opened in March 2018 [S117] the port has become the country's leading container gateway, handling 12.7 Mt of cargo and 555,398 twenty-foot equivalent units (TEU) in 2025 [S28]. For heavy industry the strength is depth and space; the gap is dry bulk. Today's general cargo and container terminals were not designed for the regular bulk flows of iron units, ore and slag that a steel platform generates, and the mineral terminal that would provide them, agreed in a memorandum of understanding on 4 November 2025, is expected to be completed within five to six years of March 2026 [S32][S03]. The port is an asset to build on, not yet a finished bulk platform.

2.1 A deep-water port in the right place

The Port of Kribi lies on the Atlantic coast of the South Region, at Mboro and Lolabé, about 24 km south of Kribi town by straight line (Figure 2.1). It is reached by a buoyed access channel 650 m long and 200 m wide, with 16 m of water at the foot of the quays and a turning circle 600 m in diameter dredged to 15 m [S22]. The port guide published by the Port Autonome de Kribi (PAK) in August 2020 gives about 70,000 deadweight tonnes (DWT) as the design vessel for the general port and up to 350,000 DWT for future industrial terminals in deeper water [S22]. The offshore terminals for oil and gas loading, including the Komé-Kribi 1 export terminal of the Chad-Cameroon pipeline, are also under PAK's management [S22].

Depth is the attribute that matters most for heavy industry, because bulk freight rates fall steeply with ship size. Douala, the country's historic port, sits on the Wouri estuary at the end of a long dredged channel; mariners are advised to take particular care with vessels drawing more than about 8 m, and the channel needs constant dredging [S55][S54]. Kribi has roughly twice that draught at the quay. It is also on open coast, with deep water close inshore, which allows further berths to be built without the estuarine siltation that constrains Douala.

Port, gas power plant and motorway share one coastal strip

Kribi coast, Mboro and Lolabé port area; UTM zone 32N; OpenStreetMap data base 24 July 2026



DERIVED Figure 2.1. The Kribi coast from Kribi town to Lolabé: port, gas power plant, motorway, rivers and protected-area limits. No project boundaries are shown.

Source: Drawn by Cameroon Steel from OpenStreetMap data, base 24 July 2026, © OpenStreetMap contributors, ODbL [S111]; 225 kV line from PAK, 6 August 2025 and 19 August 2026 [S25][S26]. The line route is schematic; the substation position is indicative.

Waiting times tell the same story from the shipping side. In September 2025 Business in Cameroon reported average vessel waiting times of about nine days at Douala against about two days at Kribi, while noting that Douala still handled 75 to 85% of Cameroon's freight [S54]. Kribi's advantage is not only the water: it is a modern port with spare marine capacity, in a country whose main port is congested.

The location also places Kribi within reach of Central Africa's coastal capitals. By straight line, Bata in Equatorial Guinea is about 120 km away, Douala 125 km, Malabo 154 km, Yaoundé 206 km and Libreville 287 km (Chapter 6). For bulk iron units arriving by sea, and for coastal shipment of steel products to neighbouring ports, Kribi is well placed at the hinge of the Gulf of Guinea.

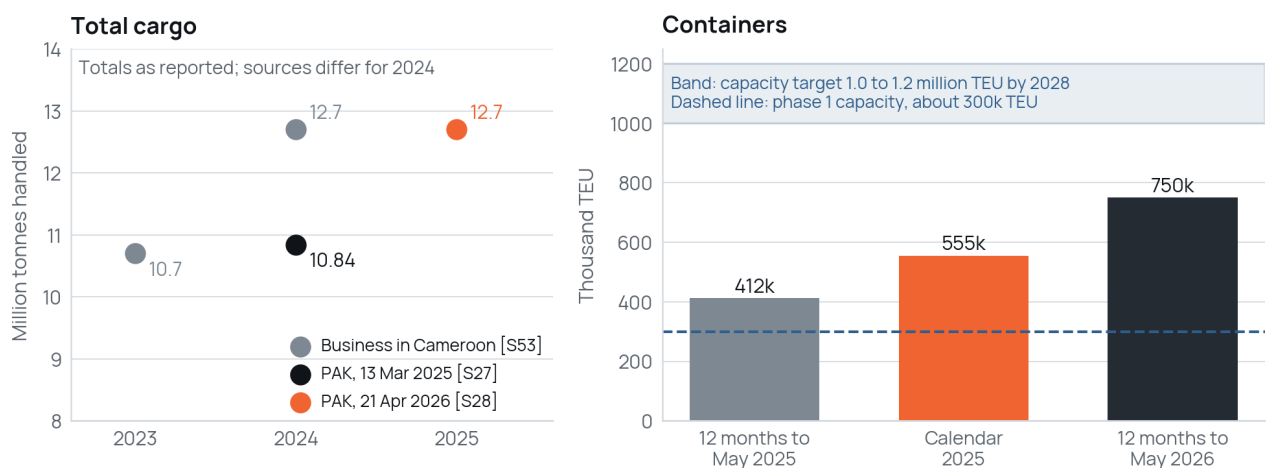
2.2 Containers: rapid growth and a yard that is filling

The container business shows how quickly Kribi can scale when capacity is provided. The first container terminal, operated by Kribi Conteneurs Terminal (KCT), opened with a 350 m quay [S30]. A second terminal with a 715 m quay entered service on 9 May 2025, bringing the combined quay length of the container and multipurpose terminals to 1,330 m and design capacity to more than one million TEU a year [S57]. The second phase cost about 400 bn FCFA, mostly financed by China Eximbank, and added quay cranes and an extension of the main breakwater [S57].

Traffic followed. In the twelve months after the second terminal opened, KCT handled about 750,000 TEU against 412,087 TEU in the previous twelve months, an increase of 82% [S52][S115]. Over calendar 2025 the port handled 555,398 TEU, which PAK presents as 37.5% of national container traffic, making Kribi Cameroon's first container port [S28]. About 70% of KCT's volume is regional transshipment [S52].

Growth is now pressing on the yard. In October 2026 EcoMatin reported average dwell times for import containers of about 25 days and quay productivity of about 33 moves an hour, and described the terminal as beginning to saturate [S56]. KCT is responding with a 21.5 bn FCFA expansion that adds 8 ha of yard and raises static storage from 24,000 to 34,000 TEU by the end of 2027, with annual handling capacity targeted at 1.0 to 1.2 million TEU by 2028 [S30][S52].

Kribi handled 12.7 Mt and 555,398 TEU in 2025, with containers growing fastest



SOURCED Figure 2.2. Port of Kribi: total cargo as reported by different sources (left; each dot is tied to its source in the legend), and container throughput against capacity (right).

Source: PAK, Bilan et perspectives, 13 March 2025 [S27]; PAK, opinion article by the Director General, 21 April 2026 [S28]; Business in Cameroon, 1 July 2025 and 18 May 2026 [S53][S52]; Business in Cameroon, 12 May 2025 [S57].

EVIDENCE NOTE: CONFLICTING TONNAGE SERIES

Published totals for Kribi do not agree. PAK reported 10.84 Mt for 2024 and 12.7 Mt for 2025, up 19% [S27][S28]; Business in Cameroon reported 12.7 Mt for 2024 and 10.7 Mt for 2023 [S53]. The difference is probably one of scope (for example, whether offshore hydrocarbon terminals are included) rather than of fact, but no published breakdown resolves it. This paper uses PAK’s own figure for 2025 and treats earlier years as indicative.

For a steel platform the container business matters in two ways. It brings regular liner services that connect Kribi to Asia, Europe and West Africa, which is how spares, alloys, refractories and electrodes arrive. And it is evidence of execution: a second terminal was built, opened and filled within a year, and an expansion was financed within eighteen months. That is the kind of delivery record a heavy-industry investor looks for.

2.3 General cargo and dry bulk: the missing link for heavy industry

The steel question is not containers but bulk. A works of 1 Mtpa would need to receive about 1.24 Mt a year of port-linked inbound cargo, mostly DRI or HBI, scrap, lime and alloys, and would ship a share of its products and by-products by sea [S112]. These flows need a dry-bulk berth with grab cranes or continuous unloaders, covered conveyors or trucks to the plant, and, for DRI and HBI, covered and dry storage because the material reacts with water.

Kribi’s multipurpose terminal handles break-bulk and dry-bulk cargo, and PAK planned to use it for the first shipments of iron ore from the Bipindi-Grand Zambi deposit [S42]. It is a general-purpose facility, however, shared between many users, and it was not designed for the continuous, high-tonnage flows of a steel plant.

The structural answer is the mineral terminal. On 4 November 2025 PAK, the national social insurance fund (CNPS), a consortium of the mining developers Bestway and AustSino, and the iron-ore developer G-Stones signed a memorandum of understanding for a mineral terminal with a capacity of 125 Mt a year on about 330 ha, to be built in phases [S32][S47]. Business in Cameroon reported a cost of about US\$2 billion and a first stage built around a 30 Mt a year jetty, and linked the terminal to a dedicated steel cluster in the industrial zone [S33]. The parties gave themselves four to six months to complete the technical, legal and financial structuring [S32]. In March 2026 PAK’s Director General said the mineral and hydrocarbon terminals should be completed within five to six years in partnership with their developers [S03]. This paper uses that dated statement as its reference for the terminal’s timing: a memorandum of understanding of 4 November 2025, structuring in four to six months, and completion within five to six years, that is around 2031 to 2032.

FOR HEAVY INDUSTRY, THE STRENGTH OF KRIBI IS DEPTH AND SPACE; THE GAP IS A DRY-BULK BERTH BUILT FOR CONTINUOUS FLOWS.

Cameroon Steel

Table 2.1 SOURCED Port of Kribi: facilities in service and announced, October 2026

Facility	Main characteristics	Status	Relevance to a steel platform	Source
Access channel and basin	650 m by 200 m channel; 16 m at the quay; 600 m turning circle at 15 m	In service	Allows Supramax and Panamax bulk carriers	[S22]
Container terminals (KCT)	Quays of 350 m and 715 m; capacity above 1 million TEU; second terminal from 9 May 2025	In service	Spares, alloys, electrodes, refractories; some product exports	[S57]

Facility	Main characteristics	Status	Relevance to a steel platform	Source
Container yard expansion	+8 ha; static storage 24,000 to 34,000 TEU; 21.5 bn FCFA	Works to end 2027	Relieves congestion that would delay inbound consumables	[S30] [S52]
Multipurpose terminal	Break-bulk and dry bulk; planned first ore shipments	In service	Can serve a first steel phase at modest volumes	[S42]
Mineral terminal	125 Mt a year on about 330 ha; phased, first stage around a 30 Mt a year jetty	MoU 4 November 2025; completion within five to six years (PAK, March 2026)	The natural berth for iron units, ore and HBI	[S32] [S33] [S03]
Hydrocarbon terminal	Liquid bulk for the zone's refining and petrochemical projects	Announced; five to six years	Fuels and, potentially, gas for industry	[S03]
Agro-industrial terminal	Grain and oil terminal on 9.2 ha; 50 bn FCFA; 20-year renewable occupation	MoU 9 October 2026	Shows the model for single-user terminals in the domain	[S19]
Offshore terminals	Oil export (Komé-Kribi 1) and other offshore loading points	In service	Not directly relevant to steel	[S22]

Source: as listed; status as of 10 October 2026.

2.4 Handling iron units on a wet coast

The choice of berth for iron units is not only a question of capacity. DRI and HBI are classified under the International Maritime Solid Bulk Cargoes Code as cargoes that can react with water, generating heat and flammable hydrogen. A guideline published by the shipowners' mutual insurer Skuld in March 2025 summarises the precautions: cargo must be dry and clean, it must not be loaded or handled in the rain, its temperature must stay below 65 °C, and holds must be ventilated during the voyage to keep hydrogen below 1% by volume [S160]. Hot-briquetted iron is the most robust form; DRI pellets and fines need more care.

At Kribi this matters more than at most ports, because rain falls in every month of the year and exceeds 400 mm a month in September and October (Chapter 5) [S79]. A berth where iron units are discharged in the open will lose working days to rain and expose cargo to water. The practical answers are well known: discharge with enclosed grabs or continuous unloaders into covered conveyors, store the material in covered sheds at the plant rather than on open quay stockpiles, and schedule vessels around the wettest months where possible. Each of these has a cost, which is lower when it is designed into a terminal from the start than when it is added later.

The same reasoning applies to export cargoes. Bars, wire rod and sections tolerate rain better than iron units, but coils of wire rod and finished products for export are usually stored under cover to avoid rust staining that buyers may reject. A steel cluster therefore needs covered storage at both ends of its sea leg.

Two further points follow for the design of the mineral terminal. First, its ore-export berth, built for very large vessels and open-air stockpiles, is not automatically suitable for iron-unit imports. Second, a smaller covered berth or a covered section of the multipurpose terminal, built for parcels of tens of thousands of tonnes, may serve the steel cluster better and sooner than a share of a very large ore berth. Either way, the requirement should be specified now, while the terminal's design is still open.

2.5 How the port is governed and financed

The port is owned and managed by the Port Autonome de Kribi, a public-capital company whose sole shareholder is the State; its organic decree of 5 May 2020 allows it to create subsidiaries and to concede industrial and logistics activities under specific agreements [S118]. Terminals are operated by private concessionaires: KCT's shareholders include AGL, CMA CGM, China Harbour Engineering Company and Cameroonian investors [S115][S30]. The port authority itself reported a net profit of more than 4 bn FCFA for 2025, and PAK's Director General stated that customs revenue collected at the port reached a record of about 350 bn FCFA in 2025 [S31][S28].

This structure matters for steel because the dry-bulk capacity a steel platform needs will most likely be delivered in the same way: by a concessionaire or a consortium of users, on land in the public port domain, under a long-term agreement with the port authority. The model has been used for the container terminals, for cement plants and for the agro-industrial terminal [S57][S35][S19]. The open question is whether the mineral terminal will be designed from the start with a berth, or a share of berth time, dedicated to the steel cluster's imports and exports, rather than optimised only for very large ore exports.

2.6 What the port means for a steel platform

Four conclusions follow.

The water is in place. Kribi's 16 m quay and open-coast setting are the platform's single largest advantage, and they cannot be replicated elsewhere in Cameroon. For a steelmaker importing DRI or HBI in parcels of tens of thousands of tonnes, the difference between a 16 m port and an 8 m estuary port is the difference between economic bulk freight and part-loaded ships or lighterage.

The first steel phase can start on existing facilities. A first melt shop and rolling mill of 0.3 Mtpa would need about 351,000 t of port-linked inbound cargo a year, almost all of it imported scrap, DRI or HBI and consumables [S112]. That is within the reach of the multipurpose terminal and the container terminals, provided berth windows and covered storage are agreed in advance.

Scale needs a bulk berth. Beyond the first phase, and certainly at 1 Mtpa with a direct-reduction module, a steel cluster needs dedicated dry-bulk capacity. The mineral terminal is the right vehicle, but its first priority is likely to be very large ore exports. A steel-cluster berth, or a guaranteed share of berth time and covered storage, should be written into its design now.

Containers must keep pace. Congestion in the container yard is a real if temporary constraint. Spares and consumables arrive in containers, and a melt shop cannot wait three weeks for electrodes. The yard expansion due by the end of 2027 is therefore relevant to steel as well as to trade.

CHAPTER FINDING

Kribi has the deepest quay in Cameroon (16 m), a proven record of building and filling terminal capacity, and a governance model that can deliver user-dedicated terminals in the public domain. It does not yet have a dry-bulk berth designed for continuous steel flows. A first steel phase can use existing facilities; the steel cluster at scale depends on the mineral terminal, agreed in a memorandum of understanding on 4 November 2025 and due for completion within five to six years of March 2026, being designed and built with a berth and covered storage for iron units.

CHAPTER 3

A DEDICATED ZONE COMPANY NOW HOLDS KRIBI'S 4,000 HA, AND STEEL IS ONE OF ITS NAMED CLUSTERS

The creation of Kribi Port Industrial Zone S.A. (KPIZ) on 26 February 2026 changed the question from whether Kribi will have an organised industrial zone to how fast it will be delivered. KPIZ is a company owned by the Port Autonome de Kribi and three private partners, mandated to design, finance, develop, operate and maintain an integrated industrial zone of about 4,000 ha, backed by a €795 million, fifteen-year investment plan with support from the African Development Bank, the European Union and the IFC [S01][S04][S07]. Its development clusters include "steelmaking linked to mineral exports" [S03]. The zone's constraint is not ambition but conversion: investors had asked for about 3,883 ha by mid-2025, while only 196 ha had been allocated and about 300 ha were operational by March 2026 [S17][S03]. Serviced land, a clear contractual framework and a working one-stop shop are what turn a land reserve into a platform.

3.1 Five names, one land system

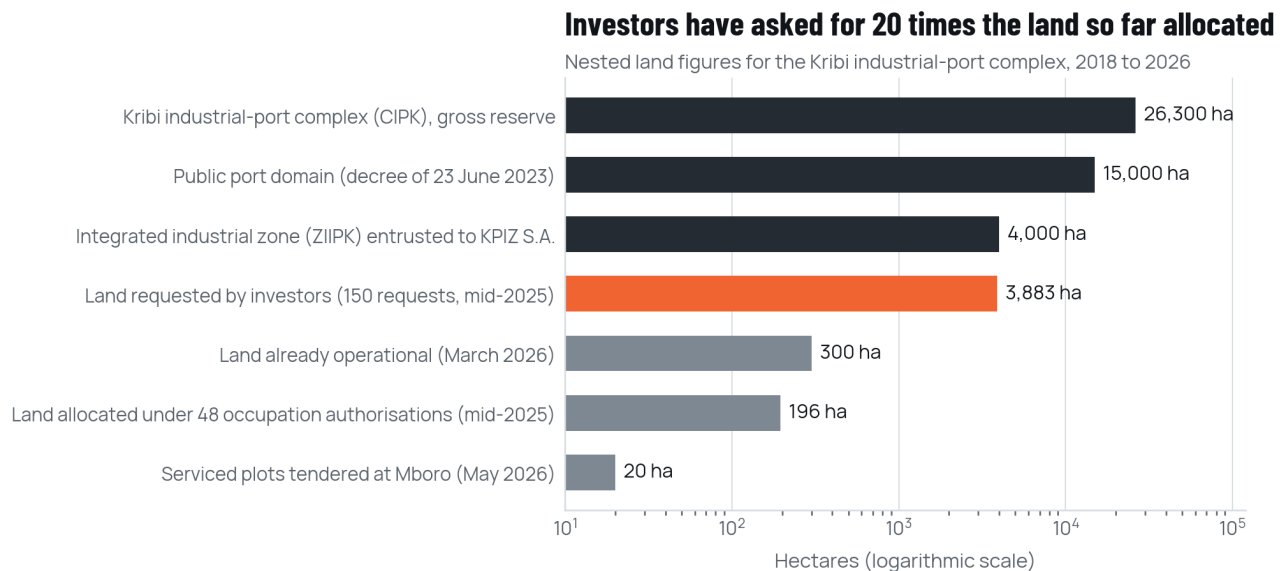
Readers of Cameroonian and international sources meet several overlapping names for the land around the port. They describe nested areas with different legal status, and confusing them leads to errors of scale.

Table 3.1 SOURCED The names of Kribi's port and industrial land, from largest to smallest

Name	What it designates	Size	Status and source
Kribi industrial-port complex (CIPK)	The land reserve originally classified for the port and its industrial hinterland, about 30 km of coast by 10 km inland	About 26,300 ha gross (PAK brochure, 2018)	Planning reserve [S21]
Public port domain	The legally delimited domain managed by PAK, carved out of the complex	15,000 ha 29 a 80 ca	Presidential decree of 23 June 2023 [S16]
Industrial-port zone (ZIPK)	PAK's usual name for the industrial and logistics area inside the port domain	Not precisely bounded in public sources	In use since 2018 [S20]
Integrated industrial zone of the Port of Kribi (ZIIPK)	The zone that KPIZ is mandated to develop	About 4,000 ha, described as extensible	Launched 26 February 2026 [S02] [S15]
Kribi Port Industrial Zone S.A. (KPIZ)	The company that develops and manages the ZIIPK; the acronym is also used loosely for the zone	About 300 ha operational, more than 60 companies installed or installing (March 2026)	Société anonyme, PAK subsidiary [S03] [S13]

Source: as listed.

Figure 3.1 places these areas side by side on a logarithmic scale, together with the land that investors have asked for and the land actually allocated. Two numbers stand out. First, the integrated zone of 4,000 ha is large by international standards: KPIZ's Director General has compared it with an international average of about 500 ha for comparable zones [S15]. Second, demand has run far ahead of delivery. A PAK procurement notice published in January 2026 recorded about 150 requests for occupation covering 3,883 ha, against 48 occupation authorisations covering 196 ha [S17].



SOURCED Figure 3.1. Nested land figures for the Kribi industrial-port complex, from the gross reserve to serviced plots, with investor demand and allocations.

Source: PAK brochure, 2018 [S21]; PAK, 26 June 2023 [S16]; PAK, 26 February 2026 [S02]; ARMP notice AMI n°013/AMI/PAK/2026, 30 January 2026 [S17]; Investir au Cameroun, 4 March 2026 [S03]; EcoMatin, 11 May 2026 [S18].

The gap between requests and allocations is not necessarily a failure. Some requests are speculative, and a port authority is right to be selective about who occupies scarce coastal land. But the ratio of about twenty to one shows that the binding constraint is the conversion of reserve land into serviced, contracted plots, not the availability of land itself.

3.2 KPIZ S.A.: who owns it, what it must do

KPIZ was set up at a constitutive general assembly and first board meeting held in Yaoundé on 26 February 2026 [S02][S08]. Its shareholders are PAK, Africa Global Logistics (AGL, part of the MSC group), Arise Integrated Industrial Platforms (Arise IIP) and Belmont Investments; the individual stakes have not been published [S04][S06]. PAK describes KPIZ as its subsidiary and as the special-purpose company that will design, finance, develop, operate and maintain the zone, promote it internationally and attract foreign direct investment [S01][S13]. The same day, PAK and KPIZ signed a shareholders' pact and a delegation agreement setting out the missions entrusted to the subsidiary and how they are to be monitored; the text of the delegation agreement is not public [S03].

The shareholding brings complementary skills. PAK holds the land and the public-domain powers. AGL operates container terminals and logistics across Africa, including at Kribi itself [S30]. Arise IIP develops and operates industrial zones in Gabon, Benin and Togo (Chapter 8), and brings a model of zone delivery that has attracted processing industries in wood and agriculture. Morocco's Tanger Med Special Agency had been part of an earlier consortium and withdrew before launch [S04], but the Tanger Med model remains an explicit reference for KPIZ's management [S134].

Table 3.2 SOURCED Kribi Port Industrial Zone S.A.: fact sheet, October 2026

Item	Detail	Source
Legal form	Société anonyme; subsidiary of the Port Autonome de Kribi	[S01] [S13]
Created	26 February 2026, Yaoundé (constitutive general assembly and first board)	[S02] [S08]
Shareholders	PAK, AGL (MSC group), Arise IIP, Belmont Investments (stakes not published)	[S04] [S06]
Mandate	Design, finance, develop, operate and maintain the integrated industrial zone; promote it and attract investment	[S01]
Area	About 4,000 ha, described as extensible	[S02] [S15]
Investment plan	€795 million (about 521 bn FCFA) over 15 years; phase 1 €400 million	[S04]
Development finance	AfDB to mobilise about €411 million of public finance to catalyse about €384 million of private investment; EU Global Gateway and IFC also named	[S07] [S04]
Targets	Up to 150,000 direct and indirect jobs in 15 years; 5 to 8 points of additional growth	[S03] [S05]
Offer to investors	Internal roads; power, water, sanitation and telecoms networks; logistics complex with modular warehouses; business and conference centre; one-stop shop	[S03] [S06]
Clusters	Wood processing and logistics; steelmaking linked to mineral exports; petrochemicals; agro-industry; construction materials	[S03]
First-year priorities	Upgrade existing infrastructure and services; finalise technical and environmental studies for new phases; mobilise finance	[S03]
Status	Described by PAK as operational in June 2026; management of existing occupants in transition from PAK	[S14] [S10]

Source: as listed.

The investment plan is modest per hectare for heavy industry: €795 million over fifteen years for 4,000 ha is about €200,000 per hectare, which suggests that KPIZ will provide trunk infrastructure and expect large tenants to build their own plot-level utilities. That is normal for heavy-industry zones internationally, but it should be said plainly to steel investors, who will need to budget for their own substations, water treatment and internal roads.

The development-finance package matters for more than its size. The AfDB statement describes a public contribution of about €411 million intended to catalyse about €384 million of private investment, and links the project to Cameroon's industrialisation master plan and national development strategy [S07]. Lenders of this kind bring standards with them: environmental and social safeguards, procurement rules and disclosure. A zone financed on those terms is more likely to be acceptable to the international lenders that a steel project will itself need.

The targets are ambitious. Up to 150,000 direct and indirect jobs over fifteen years, and 5 to 8 points of additional growth, imply a zone that hosts several large anchor industries, not only logistics and light processing [S03][S05]. Steel and metals are among the few activities large enough to anchor such a zone on their own.

3.3 Steel is a named cluster, and the policy frame supports it

KPIZ's published development plan names five clusters to be developed in phases: wood processing and logistics; steelmaking linked to mineral exports; petrochemicals; agro-industry; and construction materials [S03]. Areas are set aside for heavy and medium industries [S04]. The partners' own list of priority industries puts "steel and processing" first, followed by timber, aluminium and metallurgy, ceramics and building materials, and cocoa processing [S09].

The cluster label is significant. "Steelmaking linked to mineral exports" ties the zone's steel ambition to the iron-ore projects whose exports will pass through Kribi, and to the Mining Code's requirement that mining conventions provide for at least 15% of production to be made available for local transformation [S24]. It also fits the national strategy. Cameroon's national development strategy for 2020 to 2030 (SND30) lists mines, metallurgy and steelmaking among its priority industrial sub-sectors and sets an objective of raising manufacturing to 25% of GDP by 2030 [S99]. In December 2025 the Prime Minister set up a strategic committee on the integration of mining and metallurgy whose mandate includes securing iron-ore supply for local steelmakers; its review of the metals industry in April 2026 found that domestic re-rolling capacity already exceeds local demand and began preparing exports of Cameroonian steel to markets of the African Continental Free Trade Area [S44][S45].

That last finding is a useful discipline for the zone's steel cluster. Cameroon's rebar market is saturated: rolling capacity of about 627,000 t a year faces demand of about 180,000 t [S97]. The country's existing re-rollers already import about 60% of their charge as billets [S98], and billets were its largest steel import in 2023, at about 161,000 t [S94]. The value of Kribi therefore lies less in re-rolling imported billets, which the Douala mills already do, or in adding rebar capacity, which alone would close no gap, than in making steel from the iron units that arrive at its quay. A first melt shop makes billets; its output can be split between rolled products (wire rod and rebar) and merchant billets sold to the existing re-rollers, so that its tonnage displaces imports of billets and wire rod and supplies exports to CEMAC markets. Heavier sections that are not made in the region, iron from Cameroonian ore in later phases and further exports follow. The series' market analysis is set out in White paper 04, Chapter 9. The cluster's design, and the services the zone provides, should be built around those flows.

The investment framework adds incentives. The 2025 investment ordinance, which replaced the 2013 incentives law, brings economic zones and public-private partnerships into a single framework, extends the operating phase of incentives to seven years for projects located in economic zones, and requires investors to provide a programme of local skills, technology transfer and local hiring, together with proof of financing [S23]. The US State Department's investment climate statement records that the ports of Douala and Kribi have been classified as economic zones under the 2013 economic-zones law and its 2019 implementing decree [S100].

THE PUBLIC RECORD OF ONE STEEL TENANT

Cameroon Steel is developing a steel complex at Mboro, within the zone. Its foundation stone was laid on 30 December 2024 by the Prime Minister, representing the Head of State [S39]; the design capacity reported by the national daily is 1 Mtpa, to be built in phases [S40], and PAK's Director General included the "complexe de sidérurgie moderne de Kribi" in his inspection tour of port-domain works in April 2026 [S38]. The paper draws on the project as a worked example of the kind of anchor tenant the steel cluster is designed to attract, using public-record facts and planning estimates labelled with their status.

3.4 From reserve to platform: allocation, servicing and the transition to KPIZ

Land becomes useful to industry only when three things are in place: a clear right to occupy it, services to the plot boundary, and a predictable administration. Kribi is working on all three, but none is finished.

The right to occupy. Land in the public port domain is not sold. Occupants receive temporary occupation authorisations or occupation agreements from the port authority, with a schedule of conditions and a development programme; heavy users negotiate longer agreements [S114][S19]. The most recent published example is the agro-industrial terminal agreed on 9 October 2026, which received a twenty-year renewable authorisation over 9.2 ha [S19]. Under the transition announced on 25 May 2026, PAK remains the administrative and contractual counterpart of existing occupants while KPIZ teams progressively take over operations; occupancy titles are being reviewed to build a reliable database before a new contractual framework under KPIZ is introduced [S10][S11]. At a meeting with occupants on 26 August 2026, PAK and KPIZ presented the classification of existing rights, the takeover plan and how the transfer of rights will be formalised, and committed to transparency and legal certainty during the transition [S12].

Services to the plot. In May 2026 PAK tendered about 3.5 bn FCFA of works to service 20 ha at Mboro over one year, financed from its 2026 to 2028 budget: a 30 kV network and substation, potable water, fibre, roads, drainage, wastewater treatment and solar lighting [S18]. At about 175 million FCFA per hectare this is a standard of servicing suited to logistics and light industry. Heavy industry needs more (Chapters 4 and 5), but the tender shows that the port authority is servicing land ahead of tenants, which is the right sequence.

Predictable administration. KPIZ's offer includes a one-stop shop for investor set-up [S06][S09], and the 2025 investment ordinance creates a national one-stop shop for investment incentives, with existing bodies remaining competent until it is set up [S23]. For a steel investor the practical test is whether a single counterpart can bring together the land agreement, the environmental assessment, the connection to the 225 kV network, water supply, customs facilities for imported iron units and the incentive approval, on one timetable.

THE BINDING CONSTRAINT AT KRIBI IS THE CONVERSION OF RESERVE LAND INTO SERVICED, CONTRACTED PLOTS, NOT THE AVAILABILITY OF LAND.

Cameroon Steel

3.5 What the published tariff book implies for heavy industry

PAK's general tariff book, homologated by the national port authority in 2018 and still published, sets the terms for occupation of the port domain [S114]. Its structure illustrates the issues a heavy-industry tenant will raise in negotiation with KPIZ:

- **Land rent per square metre**, with a base rate for serviced land, surcharges for proximity to the port and for environmental hazard, and a reduction of up to half for unserviced land where the occupant pre-finances the servicing works [S114].
- **A commercial levy of 3% of turnover**, excluding tax, for every occupant carrying on a lucrative activity in the domain [S114].
- **A works levy of 0.5%** of the validated estimate of works carried out in the domain [S114].

For a logistics operator these terms are manageable. For a steel mill, which has high turnover and low margins, a 3% levy on turnover would be equivalent to a large share of operating profit, and rent charged per square metre on large stockyards and buffers would penalise exactly the land uses that make a heavy plant safe and expandable. KPIZ may set its own pricing under its new contractual framework [S11]. A tariff schedule designed for heavy industry, with rent per hectare for buffers and stockyards, credit for tenant-funded servicing and a levy structure based on throughput or value added rather than turnover, would remove one obstacle to financing a steel plant, provided that it is fixed for a term longer than the plant's debt. Cameroon Steel, as a prospective tenant, has a direct interest in these terms; the statement of interest on the document-control page applies.

3.6 What the zone means for a steel platform

The zone has the scale, the mandate, the shareholders and the development finance to host a steel and metals cluster. What it must now demonstrate is speed and fit:

- **Speed** in converting reserve land into serviced plots under a published contractual framework, and in completing the transition from PAK to KPIZ without leaving investors uncertain about who signs.
- **Fit** between what heavy industry needs and what the zone provides: larger plots with buffers and expansion reserve, a high-voltage connection policy, industrial water, hazardous-waste solutions and a tariff schedule that does not tax turnover.
- **Discipline** in organising the steel cluster around iron units, heavier products and exports rather than duplicating existing rebar capacity.

CHAPTER FINDING

KPIZ S.A. gives Kribi what most African port cities lack: a single company with the land, the mandate and the development finance to build an integrated industrial zone of about 4,000 ha, in which steelmaking linked to mineral exports is a named cluster. Investor demand already exceeds allocation by about twenty to one. Turning that demand into a steel platform requires a heavy-industry contractual framework, serviced land at plot scale and a one-stop shop that works on an investor's timetable.

CHAPTER 4

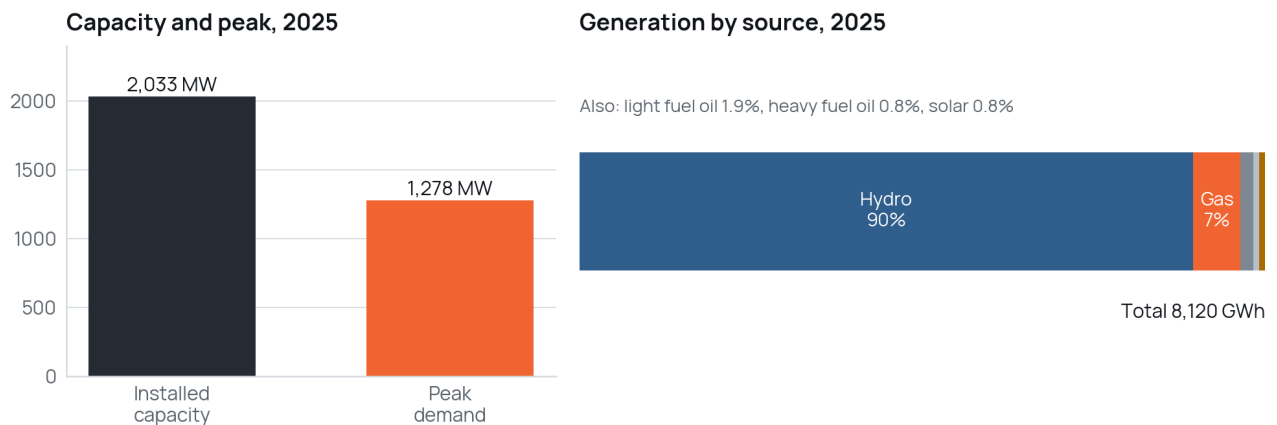
THE 225 KV LINK MAKES HEAVY INDUSTRY POSSIBLE AT KRIBI; A SECOND STAGE MAKES A CLUSTER POSSIBLE

Power is the attribute on which a Kribi steel platform will stand or fall. The 42 km double-circuit 225 kV line from the Kribi gas power plant to a new 225/30 kV sub-station at the port, due for commissioning at the end of 2026, will make about 100 MW available to the zone at first and 330 to 400 MW later [S25][S26]. One electric-arc-furnace works of 1 Mtpa would draw an average of about 94 MW, with maximum demand of 130 to 190 MVA [S112]. The first stage can therefore carry a first steel phase but not a cluster. Three further conditions matter as much as capacity: firmness, because Cameroon's grid was about 90% hydro in 2025 and its Kribi gas plant ran well below its capability that year; power quality, because arc furnaces disturb weak networks; and price, because no regulated tariff exists for loads above 10 MW [S60]. Each can be solved, but only if planned now.

4.1 Cameroon's grid: abundant hydro, thin firm margins

Cameroon's power system, its tariffs and its cost of supply are analysed in White paper 05, Chapters 2 and 3; this chapter keeps to what matters for heavy industry at Kribi. The system had 2,033 MW of installed capacity in 2025 against a peak demand of 1,278 MW, according to the electricity regulator ARSEL [S60]. Hydropower supplied about 90% of the 8,120 GWh generated that year, gas about 7% and oil and solar the rest (Figure 4.1) [S60]. The latest published emission factor for the grid is older: about 226 g of CO₂ per kWh for 2024, a year in which the same Ember dataset puts hydropower at about 72% of generation [S78][S169]. No emission factor has yet been published for 2025; the papers of this series keep 226 g as a conservative planning value.

Cameroon's grid was about 90% hydro in 2025, with 755 MW of capacity margin on paper



SOURCED Figure 4.1. Cameroon's power system in 2025: installed capacity against peak demand, and generation by source.

Source: ARSEL, Rapport d'activités 2025, 7 September 2026 [S60].

The capacity margin of about 755 MW on paper overstates what industry can rely on. Hydro output depends on river flows and reservoir management, and new plants depend on transmission lines that have lagged behind generation. In October 2026 Business in Cameroon reported that about 150 MW of industrial demand remained unmet because the 400 kV line that will evacuate power from the 420 MW Nachtigal hydro plant had been delayed, with completion now expected in November 2026 [S61]. ARSEL's 2025 report records an average interruption duration of about 148 hours per customer, and only six customers in the whole country are supplied at high voltage [S60].

For a steel investor the lesson is that national capacity is necessary but not sufficient. What matters is firm capacity delivered to the plant's connection point, with redundancy, at a voltage and short-circuit strength that the furnace can use.

4.2 Kribi has a gas power plant 30 to 40 km north, but it feeds the grid

The Kribi gas-fired power plant, operated by the Kribi Power Development Corporation (KPDC), has an installed capacity of 216 MW and has been in service since 2013 [S64]. It was developed by Globeleq with the State as minority partner and with World Bank Group guarantees [S64]. It sits at Mpolongwe, north of Kribi town, about 35 km from the port by straight line (Figure 2.1), and burns gas from offshore fields operated with the national hydrocarbons company SNH [S67].

The plant's record in recent years shows why proximity is not the same as availability. It was offline from September 2024 to February 2025 during a dispute over about 137 bn FCFA of unpaid invoices [S71]. In 2025 it delivered about 560 GWh against about 1,031 GWh planned, which implies a capacity factor of about 30% [S60]. In August 2026 Forbes Afrique reported that the State was exercising pre-emption rights to acquire Globeleq's stakes in the Kribi and Dibamba plants [S66]. A planned extension of 114 MW, to the plant's licensed 330 MW, was discussed with AfDB support in 2020 but has not been built [S65]. And the plant's output is dispatched into the southern interconnected grid: in May 2025 only about 13 MW of local thermal output was reported to be available to the port area [S20].

Gas supply is changing. In 2025 almost all of Cameroon's gas came from the Sanaga Sud system offshore Kribi, and about 95% of it fed the Hilli Episeyo floating liquefaction vessel, while KPDC took about 4.9 billion cubic feet (bcf) [S67]. The vessel left Cameroon in July 2026 at the end of its charter [S68]. That frees gas for power and

industry at Kribi, but its quantity and duration depend on reserves that are not publicly certified, and the larger Yoyo-Yolanda resource has not reached a final investment decision [S69]. The gas balance after the vessel's departure is analysed in White paper 05, Chapter 6.

WHY GAS MATTERS TO THE STEEL PLATFORM

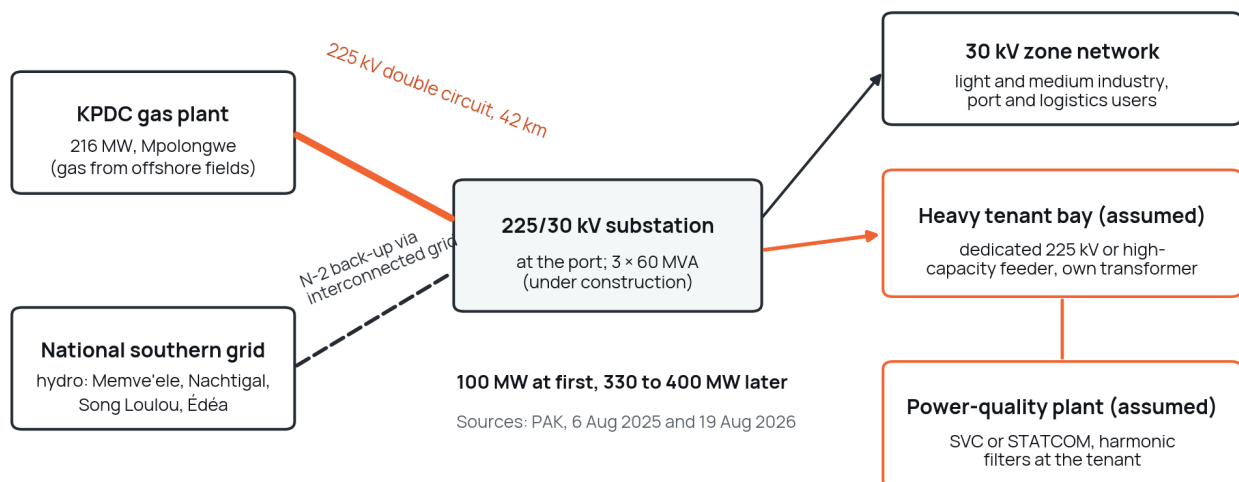
A gas-based direct-reduction module, the route by which Cameroonian ore could become iron for local steelmaking, would need about 10 GJ of gas per tonne of DRI [S116]. A module of 1 Mtpa would therefore need roughly 9 to 10 PJ a year, of the order of 9 bcf. Whether that gas can be contracted at Kribi for twenty years is a question for SNH and its partners, and is listed among the evidence gaps in Chapter 11.

4.3 The 225 kV KPDC-port line and substation

The project that changes the picture is a 42 km double-circuit 225 kV line from the KPDC plant to a new 225/30 kV substation at the port, equipped with three 60 MVA transformers [S25]. Works were launched on 6 August 2025 at a cost of about 35 bn FCFA, with commissioning planned for the end of 2026 [S25]. PAK states that the substation will make about 100 MW available to the port and its zone immediately, rising to 330 to 400 MW at a later stage, and that supply will benefit from N-2 redundancy through the southern interconnected grid, which links the Memve'ele, Nachtigal, Song Loulou and Édéa hydro plants and KPDC [S25]. The Minister of Water and Energy inspected the substation and line on 19 August 2026 [S26], and a planning ministry mission in April 2026 singled out the substation as a key public investment for the zone's industrial development [S49]. The supply is examined from a steelworks' side in White paper 05, Chapter 5.

One substation, two supply paths, and a bay a steel tenant must add

Simplified single-line view of the Kribi zone supply; tenant elements are assumptions



ILLUSTRATIVE Figure 4.2. Simplified single-line view of the Kribi zone supply, with the elements a heavy tenant would add.

Source: PAK, 6 August 2025 and 19 August 2026 [S25][S26]; tenant elements are Cameroon Steel assumptions.

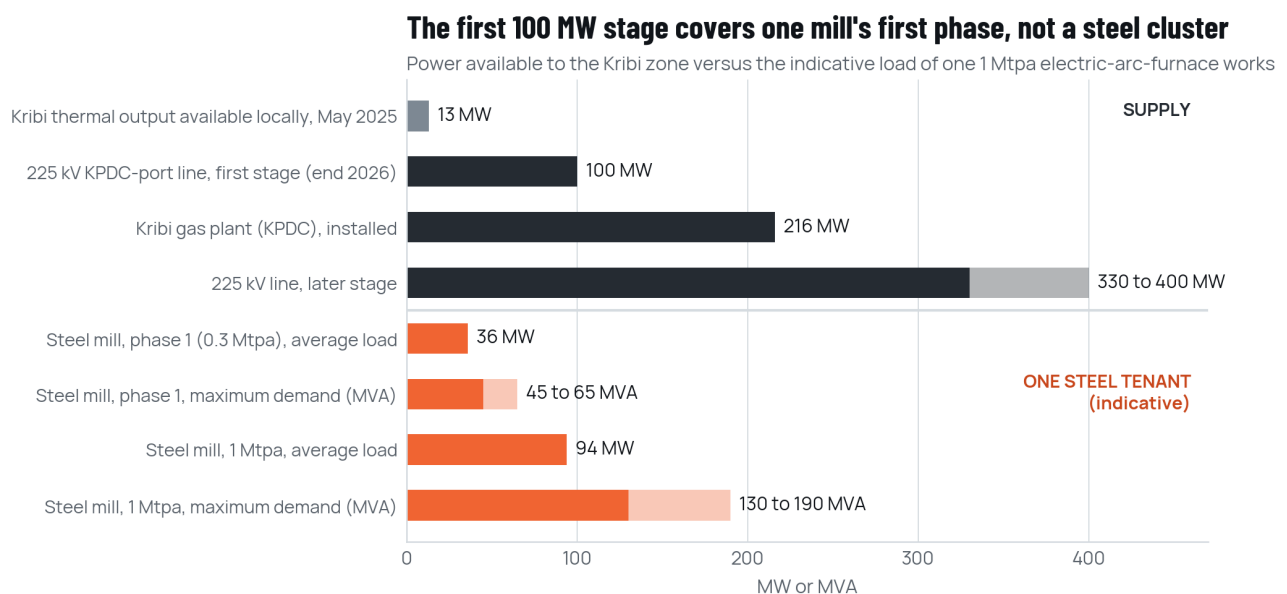
Two features of the design deserve emphasis. The **30 kV distribution voltage** is well suited to logistics, light industry and medium industry, and to the 20 ha of serviced plots being prepared at Mboro [S18]. An arc furnace of the size used in modern long-products plants, however, is normally connected through its own furnace transformer from a high-voltage bus, so a steel tenant will want either its own 225 kV bay at the substation or a

dedicated high-capacity feeder. And the **two supply paths**, from KPDC directly and from the national grid, are what make the supply firm. The value of the line for heavy industry depends on both paths being available at the capacity the tenants need, including when KPDC is out of service.

4.4 What one steel tenant needs: quantity, firmness, quality

Figure 4.3 compares the supply stages announced for the zone with the indicative demand of one electric-arc-furnace long-products works. A first phase of 0.3 Mtpa would draw an average of about 36 MW, with maximum demand of 45 to 65 MVA; at 1 Mtpa, the average rises to about 94 MW and maximum demand to 130 to 190 MVA [S112]. The first 100 MW stage can carry a first phase with headroom for other tenants. It cannot carry a full-size works and the zone's other industries together. The second stage, 330 to 400 MW, can.

Firmness. A melt shop cannot tolerate frequent interruptions: an unplanned outage during a heat freezes steel in ladles and tundishes, damages refractories and costs a shift of production. Firmness at Kribi will depend on the availability of KPDC, on the N-2 grid backup and on the operating rules for the substation. Large steel tenants elsewhere secure firmness through a combination of contracted firm capacity, a second supply source and, where the grid is weak, captive generation. In return, a melt shop can offer the grid schedulable load: melting can be timed around peaks under a scheduling agreement. It is not an interruptible load, because a heat cannot be stopped midway without loss.



DERIVED Figure 4.3. Power available to the Kribi zone, by stage, against the indicative load of one steel tenant.

Source: Investir au Cameroun, 20 May 2025 [S20]; PAK, 6 August 2025 [S25]; MIGA, 2014 [S64]; Cameroon Steel indicative planning figures [S112].

Power quality. An arc furnace is among the most disturbing loads a network can host. The arc between electrodes and scrap fluctuates rapidly, causing voltage flicker, harmonics, unbalance between phases and large swings in reactive power. International standards set planning levels for flicker on medium, high and extra-high-voltage networks and guide how a utility allocates emission limits to a fluctuating installation such as a furnace [S74]. How much flicker a furnace causes depends on the short-circuit strength of the network at the point of connection: an engineering note on furnace flicker found that, for a single furnace of about 80 MVA, flicker would become objectionable at a short-circuit capacity of about 14,000 MVA and could be noticeable even at 25,000 MVA [S72]. Networks in Central Africa are far weaker than that, so a steel plant at Kribi will need dynamic compensation, a static var compensator (SVC) or a STATCOM, at its own connection. One reference installation

in North America used an SVC rated 0 to 80 Mvar for a melt shop with one arc furnace and one ladle furnace, to reduce flicker, correct power factor, filter harmonics and keep the plant within the utility's power-quality standards [S73].

HOW ARC-FURNACE POWER QUALITY IS MANAGED

Voltage flicker, caused by rapid fluctuation of the arc current, especially while the electrodes bore down into fresh scrap, is managed by connecting at a point of high short-circuit power and by dynamic compensation with an SVC or STATCOM, sometimes with a series reactor [S72][S73][S74].

Reactive-power swings and low power factor from the furnace transformer and arc are corrected by static compensation with filter banks [S73].

Harmonics from the non-linear arc and from rectifiers and drives in the rolling mill are absorbed by tuned filters sized in a harmonic study [S73].

Phase unbalance from unequal arcs on the three electrodes is reduced by phase-balancing control in the compensator [S73].

Large load steps in the tap-to-tap cycle are handled through scheduling agreements, generator governor response and a firm supply contract. Each mitigation must be confirmed by a connection study for the tenant concerned.

The practical conclusion is that the zone needs a **power-quality code** for heavy tenants before the first furnace is connected: a published short-circuit level at the 225 kV and 30 kV busbars, emission limits for flicker and harmonics allocated to each tenant, and a requirement for compensation equipment sized by a connection study. Without one, the first furnace to connect will consume the network's tolerance and leave none for the second.

4.5 Price: no regulated tariff above 10 MW

Electricity is usually the largest conversion cost of an arc-furnace works after the metallic charge, so the tariff is as important as the capacity. At the planning value of 450 kWh per tonne of liquid steel, or about 490 kWh/t with 30% DRI or HBI in the charge, a difference of 10 FCFA per kWh moves the cost of a tonne of liquid steel by about 4,500 to 4,900 FCFA for melting alone [S112]. Cameroon has no published regulated tariff for loads above 10 MW; large consumers negotiate bilateral high-voltage contracts [S60]. The reference points that do exist are wide apart (Table 4.1); White paper 05, Chapter 3, analyses them in detail.

Table 4.1 DERIVED Electricity price reference points for a large industrial consumer in Cameroon

Reference	Value	Basis	Status	Source
Average price realised on legacy high-voltage contracts	About 18.4 FCFA/kWh	969 GWh sold to 6 HT customers for 17.8 bn FCFA, 2025	Derived	[S60]
All-in price for the top published medium-voltage band (9 to 10 MW)	About 44 FCFA/kWh	Demand and energy charges, more than 400 hours a month, after scheduled escalations, 2026	Derived	[S63]
Average realised medium-voltage price	About 86 FCFA/kWh	All MV customers, 2025	Derived	[S60]
Cost-reflective average tariff set by the regulator	About 105 FCFA/kWh	Required average revenue against about 83 FCFA/kWh collected, 2025	Sourced	[S62]

Reference	Value	Basis	Status	Source
Transmission use-of-system charge	About 2.7 FCFA/kWh	Withdrawal tariff applied to 100 MW at an 80% load factor	Derived	[S119]

Source: as listed; arithmetic in Annex A. At the 2026 planning rate of 600 FCFA to the US dollar, 44 FCFA/kWh is about US\$0.073 per kWh.

The spread between legacy industrial contracts and the regulator's cost-reflective average shows the risk on both sides. A steel investor needs a price low enough and stable enough to compete with imported billets and products (the series' indicative cost comparison is in White paper 04, section 8.6); the utility and the State need a price that covers the cost of supply, including the gas and hydro investments on which firmness depends. A structure that lenders can finance would combine a long-term contract with a capacity charge that rewards a high load factor, a transparent indexation formula and payment-security arrangements that protect the generator, so that the price agreed in year one is still honoured in year ten.

4.6 Planning the zone's load, not one tenant's

The decisive planning issue is cumulative. KPIZ is designed to host several heavy industries: cement, refining, petrochemicals, metals and wood processing, as well as logistics. An illustrative scenario in which steel and metals tenants grow alongside other users is set out in Chapter 10 (Figure 10.2). It is not a forecast, but it shows the shape of the problem: on any plausible path in which steel is an anchor, the first 100 MW stage is fully used by about 2032, and the second stage must be in service by then.

Three actions follow. First, the timing and financing of the second stage, from 100 MW to 330 to 400 MW, should be fixed now, with the transmission reinforcements it needs. Second, the zone should plan a second 225 kV source into the port substation, so that N-2 security does not depend on a single line. Third, the use of Kribi's gas should be planned with industry in mind, whether as fuel for an extension of KPDC, for captive generation at the zone or for direct reduction, because the departure of the floating liquefaction vessel has, for the first time, made that choice available.

CHAPTER FINDING

The 225 kV KPDC-port line and 225/30 kV substation, due at the end of 2026, are the single most important infrastructure for heavy industry at Kribi. Their first 100 MW stage can carry a first steel phase; a cluster needs the second stage of 330 to 400 MW by about 2031, a second high-voltage source, a published power-quality code for arc furnaces and a long-term tariff for loads above 10 MW on terms that lenders can rely on. The departure of the Hilli floating liquefaction vessel in July 2026 opens a new question worth answering early: how much of Kribi's gas can be committed to industry.

CHAPTER 5

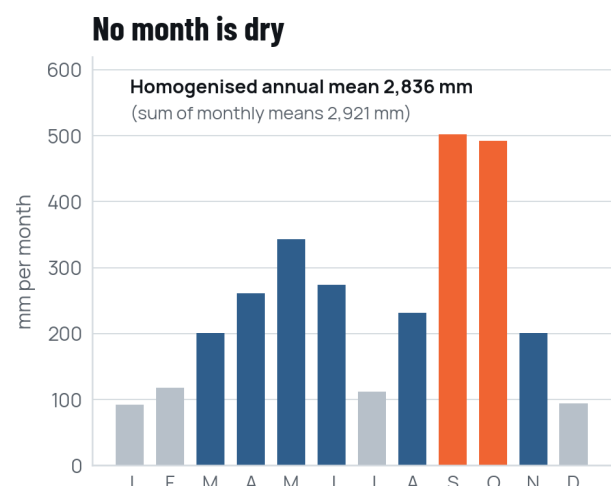
WATER IS PLENTIFUL AT KRIBI; TREATMENT, WASTEWATER AND HAZARDOUS WASTE ARE THE REAL UTILITY GAPS

Kribi receives about 2,836 mm of rain a year, no month is dry, and two substantial rivers reach the sea within a few kilometres of the port [S79]. A dedicated water plant for the port platform is due to start production in early 2027 [S26]. Quantity is therefore not the constraint for a steel platform. A long-products works with closed-loop cooling needs make-up water of about 2 m³ per tonne, 0.6 to 2 million m³ a year depending on its size, and could cover a third or more of a first phase's need from rain falling on its own roofs and yards [S112][S77]. The gaps lie elsewhere: industrial-grade supply and tariffs, wastewater treatment to lender standards, stormwater design for a 264 mm rain day, and, above all, a solution for hazardous furnace dust, for which no treatment or secure disposal facility has been identified in the region. These are the utilities that a zone, rather than each tenant, should provide.

5.1 A wet coast with a long rainy season

The meteorological station at Kribi has one of the longest records on the Cameroonian coast. The hydrological monograph of the Nyong and coastal rivers, published by ORSTOM in 1979, gives a homogenised mean annual rainfall of 2,835.8 mm for 1937 to 1976, with half of all years between about 2,540 and 3,100 mm [S79]. Modern reanalysis data for the grid cell around Kribi give a similar figure for 1991 to 2020, about 2,836 mm, although reanalysis smooths the extremes [S83]. The coast has an equatorial four-season regime moderated by the ocean: a main dry season from December to February that still brings about 90 to 120 mm a month, first rains from March to June, a short and weak relative dry spell in July, and a main wet season in September and October with about 500 mm a month (Figure 5.1) [S79].

For a steel plant, three consequences follow. **Storm-water, not water supply, sets the drainage design.** The same monograph estimates a 1-day rainfall of 193 mm with a 10-year return period and 264 mm with a 100-year return period, and records a maximum observed 24-hour fall of 205 mm [S79]. Stockyards for scrap, DRI and slag, which can release suspended solids, oil and metals in run-off, need first-flush retention and treatment sized for these events. **Humidity and rain affect materials handling.** DRI and HBI re-oxidise and can heat when wet, so covered storage and conveyors are not optional at Kribi. **The rain is also a**



resource, which can be harvested from roofs and paved yards to reduce the plant's draw on the zone's supply (below).

SOURCED **Figure 5.1.** Mean monthly rainfall at Kribi station.
Source: Olivry, ORSTOM, 1979 (homogenised record 1937 to 1976) [S79].

5.2 Rivers, groundwater and the limits of local abstraction

Two rivers drain the coastal plateau around the port. The Lobé, which reaches the sea at the Lobé falls north of the port, has a catchment of about 2,305 km² and a mean flow of about 102 m³/s, with a median annual low flow of about 8.4 m³/s and a recorded minimum of 3.5 m³/s [S79]. The Kienké, which reaches the sea at Kribi town, has a mean flow of about 49 m³/s and a low flow of about 6.9 m³/s [S79]. Smaller streams drain the plateau directly to the sea near the port.

In volume, these rivers dwarf any industrial demand: the Lobé's minimum recorded flow, 3.5 m³/s, is about 110 million m³ a year, fifty times the make-up need of a 1 Mtpa works with closed-loop cooling. Abstraction is nonetheless sensitive. The Lobé falls are on UNESCO's Tentative List as a cultural landscape [S86], the lower rivers are habitat for species of conservation concern, and the plateau's small streams, which would receive any treated effluent, have no published flow or quality records. Groundwater is used locally, including by the Kribi gas plant, which is supplied from boreholes [S151], but no public data exist on aquifer yields or quality at the zone.

The sensible approach is therefore a zone-level water system with a single, licensed abstraction designed for the whole platform, rather than a scatter of private intakes and boreholes. That is what PAK has begun to build.

5.3 The port-platform water plant

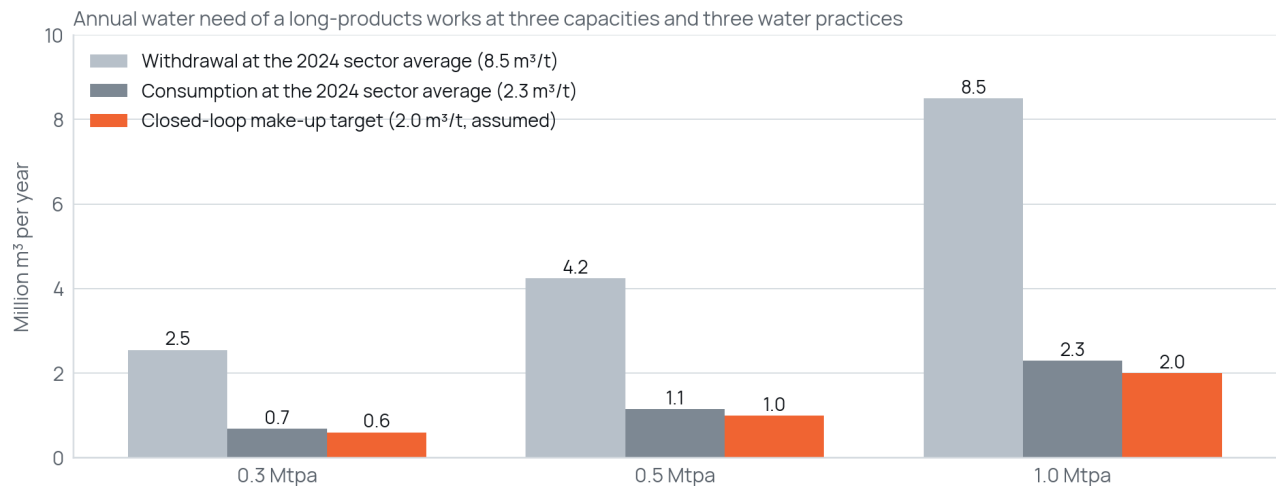
During his inspection on 19 August 2026, the Minister of Water and Energy visited the works of a dedicated water supply project for the port platform, with an intake and treatment plant whose production is planned for early 2027 [S26]. The plant's capacity has not been published. Separately, the 20 ha of serviced plots tendered at Mboro in May 2026 include potable-water networks, drainage and a wastewater treatment unit [S18], and KPIZ's offer to investors includes water and sanitation networks [S03].

These are the right first steps. For heavy industry, three further specifications will matter: the capacity reserved for industrial users and how it grows; whether the zone will supply raw or partially treated industrial water separately from potable water, which is cheaper for cooling make-up; and the tariff. The only published reference for water supplied by the port authority is a 2018 tariff of 400 FCFA per m³ for water delivered to port users [S114]; KPIZ may set its own industrial tariff.

5.4 How much water a steel works needs

Water use in steelmaking varies widely with design. The world steel association's 2024 sector averages are 8.5 m³ of fresh water withdrawn and 2.3 m³ consumed per tonne of steel [S77]. The difference is returned, usually after treatment, to rivers or the sea. IFC benchmarks for an EAF works are about 3 m³ per tonne for the melt shop, with 1 to 15 m³ per tonne for rolling depending on whether cooling is once-through or recirculated [S75]. A modern closed-loop plant, recirculating more than 95% of its cooling water and treating its scale-pit water for reuse, can hold make-up near 2 m³ per tonne of product, which Cameroon Steel uses as a planning assumption [S112].

Water recycling cuts a mill's draw on the zone by three-quarters



DERIVED Figure 5.2. Annual water need of a long-products works at three capacities and three water practices.

Source: worldsteel, Sustainability Indicators 2025 report (2024 data) [S77]; closed-loop make-up target is a Cameroon Steel planning assumption [S112]. Arithmetic in Annex A.

Figure 5.2 shows what the choice of practice means at three sizes. At 1 Mtpa, a plant at the sector-average withdrawal would draw about 8.5 million m³ a year, the equivalent of the domestic consumption of a town of more than 150,000 people at 150 litres per person per day. A closed-loop plant would draw about 2 million m³. The zone should require closed-loop cooling from heavy tenants as a condition of supply, both to protect the shared system and because it simplifies effluent treatment.

AT KRIBI THE RAIN THAT FALLS ON A MILL'S ROOFS CAN SUPPLY A THIRD OF ITS FIRST PHASE. WATER QUANTITY IS NOT THE CONSTRAINT; TREATMENT AND WASTE ARE.

Cameroon Steel

5.5 Rain as a resource

Because no month at Kribi is dry, rainwater harvesting is more reliable than in most of the world's steel regions. A steel works has large roof areas over its melt shop, mills and covered stores, and large paved yards. At the station's mean rainfall and a run-off coefficient of 0.8, harvesting from 5, 10 and 20 ha of roofs and paved surfaces would yield about 0.11, 0.23 and 0.45 million m³ a year [S79] (Annex A).

Ten hectares of collecting surface would yield about 0.23 million m³ a year, more than a third of the indicative make-up need of a first phase of 0.3 Mtpa [S112]. Storage is the limiting factor, because the wet-season surplus must carry the plant through the drier months, but the cooling-water basins and stormwater retention ponds that a plant needs anyway can serve as storage. Harvested rainwater is also soft and low in chlorides, which suits cooling circuits.

The broader point is that Kribi's climate rewards integrated water design: the same infrastructure that manages a 264 mm storm can store the water that reduces a plant's draw on the zone's supply.

5.6 Wastewater, stormwater and the coast

A steel works produces several distinct water streams: cooling-tower blowdown, scale-pit water from the rolling mill containing oil and suspended solids, water from gas cleaning, sanitary wastewater, and stormwater from stockyards. International lenders apply the IFC effluent guidelines for integrated steel mills, which set limits for suspended solids, oil, metals and other parameters at the point of discharge [S75].

Two local factors raise the stakes. First, the receiving waters are small: the streams that drain the plateau around the port have low dry-season flows and no published baseline. Second, the coast south of the port is protected. The northern limit of the Manyange na Elombo-Campo Marine National Park, created by decree in 2021, lies about 11 km south of the port (Chapter 9) [S84], and the beaches beyond it are used by nesting sea turtles [S91]. Any effluent that reaches the sea near the port must be treated to standards that protect that coast.

For these reasons the zone would benefit from three shared facilities: a central industrial wastewater treatment plant that accepts pre-treated effluent from tenants, a stormwater master plan for the whole zone with retention basins sized for the 100-year storm, and a monitoring network on the receiving streams and the coast. The 20 ha servicing tender's wastewater unit is a start at plot scale [S18].

5.7 Shared or private utilities: where the line should fall

Every heavy-industry zone has to decide which utilities it provides centrally and which it leaves to tenants. The answer at Kribi follows from scale and risk.

Utilities with strong economies of scale and shared environmental risk should be central. Raw-water abstraction from a single licensed source, a central industrial wastewater plant, a zone stormwater system and a hazardous-waste facility all fall into this category. Each is cheaper per cubic metre or per tonne when built once for the whole zone; each protects the shared rivers and coast; and each is easier to permit once than many times. They are also the kind of public-good infrastructure that the zone's development-finance package can fund [S07].

Utilities that depend on a tenant's process should be private, built to zone standards. Cooling towers, scale pits, oil separators, pre-treatment of process effluent and rainwater harvesting belong inside the plant fence, because only the operator can run them with the process. The zone's role is to set the standards they must meet at the fence: maximum make-up per tonne, effluent quality at the connection to the central plant, and minimum on-site retention for stormwater.

Some services can start private and become shared. A first steel tenant may have to build its own secure cell for furnace dust, or contract an export route, because no shared facility yet exists. If the zone agrees in advance that the cell can later be transferred to, or replaced by, a shared facility, the first tenant's investment becomes the seed of the zone's service rather than a stranded asset.

The same logic applies to climate risk. The plateau on which the zone's industrial plots sit is well above the level of coastal flooding, but intakes, outfalls and any pipelines that cross the shoreline must be designed for a coast that is retreating in places by about 2 m a year and for sea-level rise later in the century [S80][S82]. Designing those crossings once, at zone level, is cheaper and safer than leaving each tenant to engineer its own.

5.8 Hazardous waste: the gap that must be closed first

The most important utility gap for a steel cluster is hazardous waste. An electric arc furnace generates about 10 to 20 kg of dust per tonne of steel, collected in its bag filters (a planning range; the European reference document reports 10 to 30 kg) [S76]. The dust contains zinc and lead, mostly from galvanised and coated scrap, and is classified as hazardous. At 1 Mtpa, one works would produce about 16,000 t a year [S112]. Furnace refractories, oily mill sludge and spent filter media add smaller hazardous streams.

There are three ways to manage furnace dust: recycling in a dedicated zinc-recovery plant, usually a Waelz kiln, which needs a large regional dust supply to be economic; export to such a plant abroad under the Basel and Bamako conventions on transboundary movements of hazardous waste; or stabilisation and disposal in an engineered secure cell. Cameroon's 2012 decree on waste management sets the conditions for the collection, transport, treatment and final disposal of waste, including hazardous waste [S152]. Our review of public sources did not identify an engineered hazardous-waste facility in the Océan department or a zinc-recovery plant in Central Africa.

For a single first-phase plant, export for recycling or an on-site secure cell is workable. For a cluster, a shared hazardous-waste facility in the zone, licensed and operated to international standards, would lower every tenant's cost and risk. It also matters to the zone's reputation: a platform marketed to international lenders cannot have its first heavy tenant stockpiling hazardous dust.



ILLUSTRATIVE Illustrative view. Generated image of a small forest stream in a coastal rainforest; not a photograph of any project, place or person.

Table 5.1 **SOURCED** Utilities and services a steel platform needs from the Kribi zone: status in October 2026

Service	What heavy industry needs	Status at Kribi, October 2026	Who could provide it	Source
Raw water	Licensed bulk supply with capacity reserved for industry	Port-platform water plant: production planned early 2027; capacity not published	PAK and KPIZ	[S26]
Potable water and sanitation	Networks to plot boundaries	Included in the 20 ha servicing works at Mboro	PAK, KPIZ	[S18]
Industrial wastewater	Central treatment accepting pre-treated effluent	Plot-scale unit in the 20 ha works; no central plant announced	KPIZ or concessionaire	[S18]
Stormwater	Zone master plan sized for a 264 mm storm	Drainage in the 20 ha works; no zone-wide plan published	KPIZ	[S18] [S79]

Service	What heavy industry needs	Status at Kribi, October 2026	Who could provide it	Source
Hazardous waste	Licensed secure cell or export route; possible zinc recovery	No facility identified in public sources	Specialist operator under KPIZ	[S152]
Industrial gases	Oxygen, nitrogen and argon by pipeline or on-site plant	No supplier identified at the zone	Gas companies, on tenant demand	Chapter 7
Telecommunications	Fibre to the plot	Included in the 20 ha works	PAK, operators	[S18]
Fire and emergency response	Zone fire service, mutual-aid plan for molten-metal and gas risks	Not described in public sources	KPIZ with civil protection	Evidence gap

Source: as listed.

CHAPTER FINDING

Kribi has more water than a steel platform will ever need, and a dedicated water plant for the port platform is due in early 2027. The binding utility gaps are not supply but service: an industrial water tariff and reserved capacity, central treatment of industrial wastewater to lender standards, a zone-wide stormwater plan for 264 mm rain days, and a licensed solution for about 10 to 20 kg of hazardous furnace dust per tonne of steel. Requiring closed-loop cooling and rainwater harvesting from heavy tenants would cut their draw on the zone by about three-quarters.

CHAPTER 6

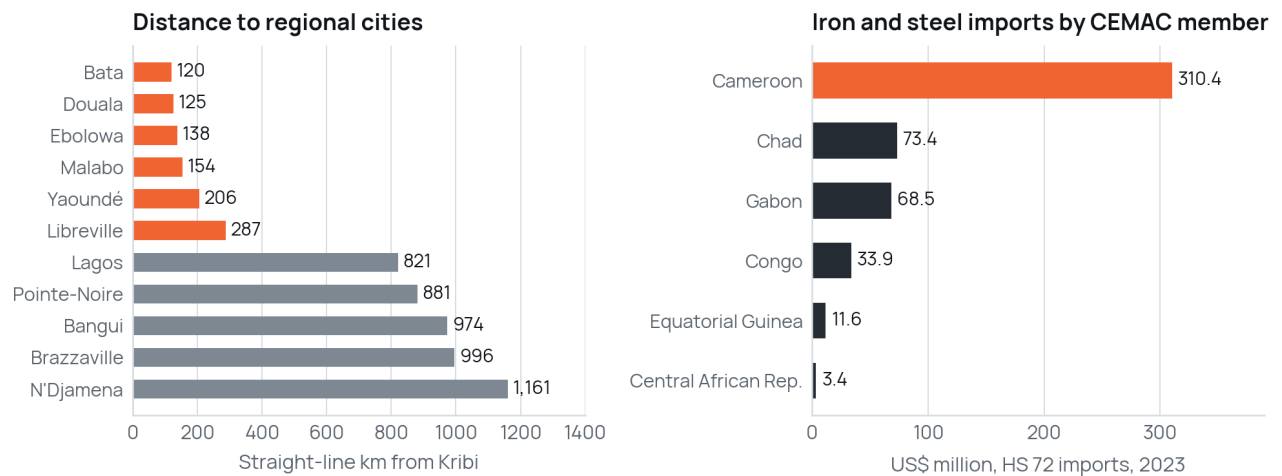
KRIBI REACHES SIX CITIES, THREE OF THEM CAPITALS, WITHIN 300 KM; RAIL WOULD MAKE IT THE REGION'S STEEL HINGE

Kribi sits within about 300 km, by straight line, of six cities that matter for steel demand: Bata, Douala, Ebolowa, Malabo, Yaoundé and Libreville [S110]. By sea it reaches every coastal market of the Gulf of Guinea, and by road it connects through Édéa to the transit corridors that serve Chad and the Central African Republic. Those links are good enough for a first steel phase. They are not good enough for a cluster. At full output a single 1 Mtpa works would generate about 245 truck movements a day if every flow went by road; most inbound movements would stay inside the port domain, but about 110 to 120 loads a day would use the public road to Édéa, or about 55 to 60 if half the output ships by sea [S112]. That road is being reconstructed. The railway agreed in principle in June 2026, linking Édéa, Kribi, Lolabé and Campo, and the planned ore railway from the Mbalam deposit in the east are what would turn Kribi from a port with an industrial zone into the hinge of a regional steel system [S41][S34].

6.1 Where the customers are

Steel demand in Central Africa follows construction: cities, roads, bridges, power lines and housing. Africa's apparent steel use rose by about 10% to 45.0 Mt in 2025, and the world steel association forecasts further growth of 3.8% in 2026 and 4.6% in 2027 [S95][S96]. Use per head is still low, about 29 kg in Africa as a whole and 22.5 kg outside Egypt and South Africa, against about 209 kg worldwide [S95]. Cameroon is the largest market in the CEMAC region: in 2023 it accounted for about US\$310 million of the region's roughly US\$500 million of imports of iron and steel products under chapter 72 [S94].

Six cities lie within 300 km, and the CEMAC market imports about US\$0.5bn a year



DERIVED Figure 6.1. Straight-line distances from Kribi to regional cities, and imports of iron and steel (HS 72) by CEMAC member in 2023. Road distances are longer; Chad and Equatorial Guinea imports from partner (mirror) data.

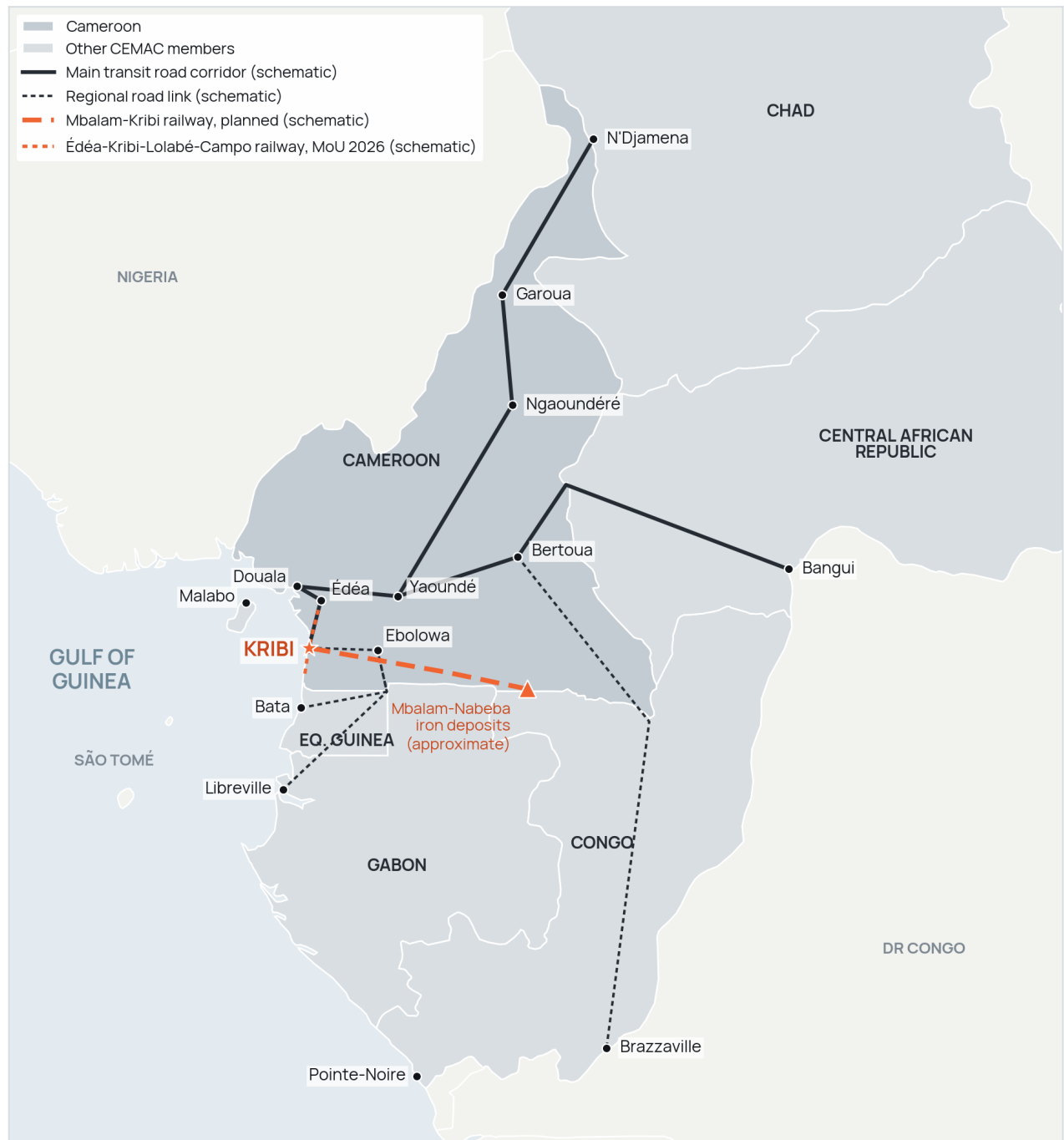
Source: geodesic calculation by Cameroon Steel from city-centre positions [S110]; UN Comtrade public API [S94].

The neighbours buy finished products and semi-finished steel from outside the region and, to a lesser extent, from Cameroon. Cameroon already exports about 31,000 t a year of bars, mostly to Chad [S93], and in 2026 the government's committee on mining and metallurgy began preparing exports of Cameroonian steel to markets of the African Continental Free Trade Area, which Cameroon has ratified [S45][S108].

For a Kribi platform, the geography of demand points two ways. **Inland**, the large markets are Douala and Yaoundé, reached through Édéa, and the transit corridors from Douala to N'Djamena and Bangui, which carry most of the landlocked countries' imports. **Along the coast**, the markets of Equatorial Guinea, Gabon, Congo and São Tomé are closer to Kribi by sea than to most of their other suppliers, and can be served by coastal shipping or, for Equatorial Guinea and northern Gabon, by road through Ebolowa and the southern border crossings.

Kribi is the deep-water gate to a six-country customs union

CEMAC members, main corridors and planned railways; corridor lines are schematic, not surveyed alignments



DERIVED Figure 6.2. Kribi in its region: CEMAC members, main transit corridors and planned railways. Corridor lines are schematic, not surveyed alignments.

Source: Drawn by Cameroon Steel from Natural Earth admin-0 boundaries [S110]; railway projects from PAK, 25 February 2022 and 4 June 2026 [S34][S41]; deposit position approximate.

6.2 Distance: close to the coastal capitals, far from the interior

Figure 6.1 also sets out straight-line distances from Kribi to the region's main cities. They are not road distances, which are longer, but they show the structure of the market. Six cities, including three capitals, lie within 300 km. The interior capitals, N'Djamena and Bangui, lie about 1,000 to 1,200 km away, as does Brazzaville. Lagos, the largest market in the Gulf of Guinea, is about 820 km by straight line and is served by its own ports.

The implication is that Kribi's natural steel market is the coastal belt from Douala to Libreville plus Yaoundé, a population of several million in fast-growing cities, with the landlocked interior reached through the existing corridors on the same terms as Douala's suppliers. A Kribi mill does not need to beat Douala's re-rollers in N'Djamena; it needs to supply what the region imports, at a delivered cost below imports, along the corridors that already exist.

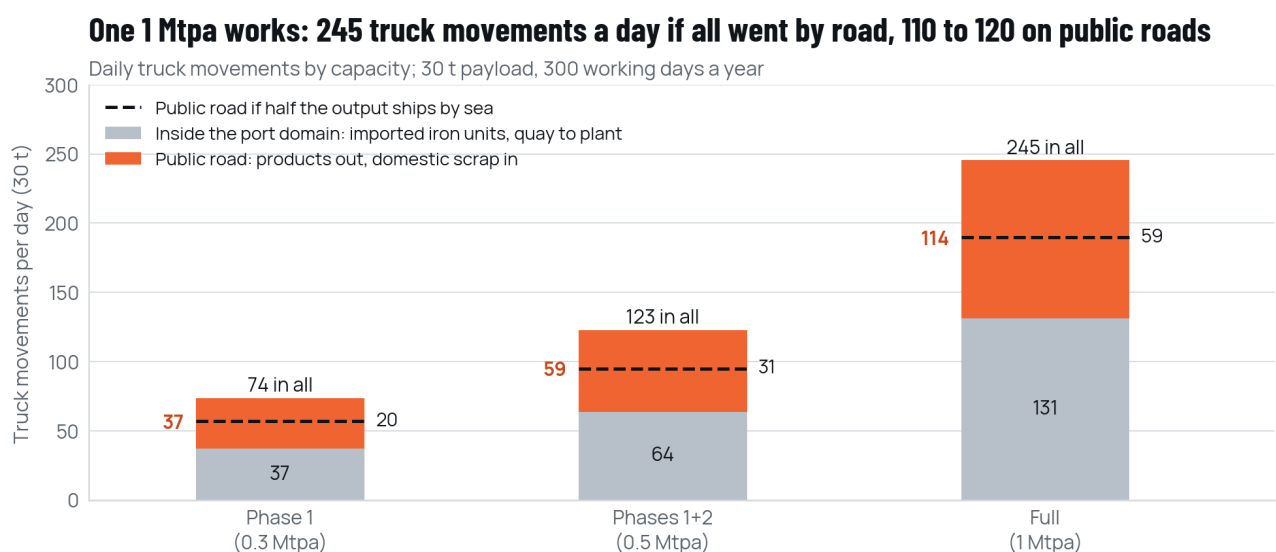
Coastal shipping is underused in the region and deserves attention. A coaster or barge service from Kribi to Bata, Malabo, Libreville, Port-Gentil and Pointe-Noire could carry bars, coils of wire rod and sections in parcels of a few thousand tonnes. The deep-water quay matters less for this trade than berth availability and simple customs procedures for intra-CEMAC goods, which travel duty-free when they meet the community's rules of origin.

6.3 Roads: one motorway, one trunk road under reconstruction

Kribi's road links are shown in Figure 2.1. A motorway connects Kribi town with the port at Lolabé [S11]. From Kribi, the national trunk road runs north to Édéa, on the main Douala-Yaoundé axis, and a second trunk road runs east to Ebolowa and the south of the country [S11].

The road to Édéa is the critical link. The international tender for the reconstruction of the Édéa-Kribi road, 110 km long, was signed on 24 February 2025 [S27]. The African Development Bank had urged priority for the Édéa-Kribi and Lolabé-Campo roads during a visit to the port in September 2024 [S48], and PAK listed the acceleration of road projects, starting with Édéa-Kribi, among its challenges for 2026 [S29]. No completion date has been published. Until the road is rebuilt, all heavy traffic between Kribi and Douala or Yaoundé shares an older two-lane road with passenger traffic.

Figure 6.3 shows why this matters for a steel cluster, and which part of the traffic matters. If every flow moved by road, a first phase of 0.3 Mtpa would generate about 74 truck movements a day and a full works of 1 Mtpa about 245 [S112]. More than half of these movements carry imported iron units over the short distance from the quay to a plant inside the port domain, and could move on private haul roads or covered conveyors. The public road to Édéa would carry the products sold to Douala, Yaoundé and the interior, plus a small flow of domestic scrap: about 37 loads a day for a first phase and about 110 to 120 at 1 Mtpa, falling to about 20 and 55 to 60 if half the output ships by sea. A cluster of several heavy tenants would multiply these numbers.



DERIVED Figure 6.3. Daily truck movements for one steel works at three capacities if all flows went by road, split between movements inside the port domain and movements on the public road, with the public-road flow if half the output ships by sea.

Source: Cameroon Steel reference configuration RC-1 (planning estimate), logistics balance; 30 t payload, 300 working days a year [S112]. Split and train equivalents are Cameroon Steel arithmetic (Annex A).

6.4 Rail: an agreement in principle and an ore railway in planning

Kribi is not yet connected to Cameroon's railway network. Two projects would change that.

The first is the **Édéa-Kribi-Lolabé-Campo railway**, about 185 km long. On 4 June 2026 the Government, AGL, the aluminium company CAMALCO and other partners signed a memorandum of understanding covering feasibility, design, financing, construction and operation, under the chairmanship of the Minister of Transport [S41]. By linking the port to Édéa, the line would connect Kribi to the existing metre-gauge network that serves Douala, Yaoundé and the north, and through it to the corridor towards Chad. For a steel cluster it would carry outbound products to Douala and Yaoundé and inbound scrap collected inland, and it would take most of the cluster's heavy traffic off the public road: at 1 Mtpa, the public-road flows of one works, about 110 to 120 truck loads a day, are equivalent to more than two trains of 1,500 t a day (Annex A).

The second is the **Mbalam-Kribi ore railway**. In February 2022 PAK announced the signature of a public-private partnership contract for a railway from the Mbalam iron-ore deposit in the East Region to Kribi, together with a concession for a multimodal mineral terminal [S34]. The railway corridor is reported at 659 km, 540 km of it in Cameroon [S170]; the 2011 feasibility study had costed a 510 km line [S171]. The mine's developers have described a plan to export up to 10 Mt a year by road in 2026 to 2029 and up to 25 Mt a year by rail from 2030 [S46]. The government's 2026 to 2030 iron-ore programme covers three projects whose ore would reach the coast at or near Kribi: Mbalam, Bipindi-Grand Zambi and Kribi-Lobé, with a combined investment of about 1,748 bn FCFA [S43]. The Lobé deposit lies close to the port; its developer has planned a short road link to the port and has deferred first exports to 2027 [S153][S154].

For the steel platform, the ore railway matters less for the tonnage of ore it would carry, most of which would be exported, than for the fact that it would make Kribi the point where Cameroonian iron reaches the sea. The Mining Code's requirement that at least 15% of production be made available for local transformation [S24], and the cluster label "steelmaking linked to mineral exports" [S03], both assume that ore and steel meet at the coast.

Table 6.1 SOURCED Kribi's corridor projects relevant to a steel platform, October 2026

Project	Scope	Latest public milestone	Relevance to steel	Source
Kribi-Lolabé motorway	Motorway between Kribi town and the port	In service	Workforce and local access to the zone	[S111]
Édéa-Kribi road	Reconstruction of 110 km of trunk road to the Douala-Yaoundé axis	International tender signed 24 February 2025; completion date not published	Outbound products to Douala and Yaoundé; inbound scrap	[S27] [S48]
Lolabé-Campo road	Coastal road south towards Campo and Equatorial Guinea	Named as a priority by the AfDB, September 2024	Southern market access	[S48]
Édéa-Kribi-Lolabé-Campo railway	About 185 km; feasibility to operation	MoU signed 4 June 2026	Heavy outbound and inbound flows by rail	[S41]
Mbalam-Kribi railway and mineral terminal	Ore railway, corridor reported at 659 km (540 km in Cameroon; 510 km in the 2011 study); multimodal mineral terminal	PPP contract and terminal concession, 25 February 2022; terminal MoU 4 November 2025	Ore to the coast; bulk berth for the steel cluster	[S34] [S32] [S170] [S171]
Mineral terminal at Kribi	125 Mt a year on about 330 ha, phased	MoU 4 November 2025; structuring in 4 to 6 months; completion within five to six years (PAK, March 2026)	Dry-bulk capacity for iron units and ore	[S32] [S33] [S03]

Project	Scope	Latest public milestone	Relevance to steel	Source
Iron-ore programme 2026 to 2030	Mbalam, Bipindi-Grand Zambi, Kribi-Lobé	Programme of about 1,748 bn FCFA announced February 2026	Future local feed for direct reduction	[S43]

Source: as listed; status as of 10 October 2026.

ORE RAILWAY, MINERAL TERMINAL AND STEEL CLUSTER ARE ONE SYSTEM. IF THEY ARE DESIGNED SEPARATELY, THE STEEL CLUSTER WILL BE THE PART THAT IS LEFT OUT.

Cameroon Steel

6.5 A more contested regional market

Logistics advantages matter more because the regional market is becoming more competitive. Africa imported about 32.9 Mt of steel in 2025, of which about 19.4 Mt came from China [S95], and billets from China and Russia were offered at about US\$465 to 480 per tonne free on board on 3 October 2026 (China 465 to 470, Russia 470 to 480) [S165]. Within the region, new capacity is arriving. The Douala group Prometal has opened a rebar plant in Gabon's Nkok special economic zone, reported at between 120,000 and 170,000 t a year [S166]; the Fokou group has launched a new steel unit at Port-Gentil [S162]; and Gabon has cut value-added tax on locally made rebar from 10 to 3% to support local producers [S161]. Further afield, new bar and wire-rod mills of about 300,000 t a year each have been ordered for Tanzania and Côte d'Ivoire [S163][S164].

Three conclusions follow for a Kribi platform. First, delivered cost will decide market share, and delivered cost is where a port-side location pays: iron units arrive without an inland leg, and coastal customers can be served by sea. Second, the products that face the least regional competition are those the region does not yet make: semi-finished steel to feed existing re-rollers, heavier sections, and iron units. Rebar is not among them: Cameroon's rebar capacity of about 627,000 t a year already exceeds demand of about 180,000 t [S97], so a first melt shop's tonnage has to displace imports of billets and wire rod and reach CEMAC export markets (White paper 04, Chapter 9). Whether a Kribi billet can be made below the delivered cost of an import is assessed, with its uncertainty, in White paper 04, section 8.6, and competitiveness more broadly in White paper 09, Chapter 7. Third, regional integration cuts both ways: CEMAC's internal market and the African Continental Free Trade Area open neighbouring markets to Kribi, and open Kribi's home market to neighbours. A platform that combines a deep-water quay, firm power and short coastal routes is better placed than most to compete on those terms.

6.6 Designing logistics for a cluster, not a tenant

The corridor projects are being prepared by different promoters on different timetables. A steel cluster needs them to fit together at four points.

Inside the port domain. The quay, the mineral terminal and the steel plants should be linked by private haul roads or covered conveyors that keep bulk traffic off public roads. Reserving these corridors now, before plots are allocated around them, costs little; retrofitting them later is expensive.

At the rail interface. The Édéa-Kribi-Lolabé-Campo railway should be designed with sidings that can serve heavy tenants in the zone, and with a gauge and axle load that allow interchange with the ore railway, or at least transshipment at a shared yard.

At the road interface. The Édéa-Kribi road reconstruction should be specified for heavy axle loads and include a truck staging area near the zone, so that steel traffic does not queue on the public road.

At the border. Exports to Equatorial Guinea, Gabon and the interior depend on simple and predictable treatment of intra-CEMAC goods. The steel cluster should work with the customs administration on procedures for products that meet the community's rules of origin.



ILLUSTRATIVE Illustrative view. Generated image of an ore train on a forest railway; not a photograph of any project, place or person.

CHAPTER FINDING

Kribi is well placed for the coastal markets of the Gulf of Guinea and for Yaoundé and Douala, and its existing road links are adequate for a first steel phase. A cluster needs the Édéa-Kribi road rebuilt for heavy traffic, the June 2026 railway agreement turned into a funded line with sidings in the zone, and the ore railway, mineral terminal and steel cluster designed as one system. Until rail arrives, one 1 Mtpa works alone would put about 110 to 120 truck loads a day on the public road to Édéa, out of about 245 movements a day if every flow, including those inside the port domain, went by road.

CHAPTER 7

A STEEL ANCHOR TURNS KRIBI'S INDUSTRIAL ZONE INTO A CLUSTER THAT FEEDS ITSELF

A steel works is rarely the largest employer in an industrial zone, but it is often the business that makes others viable. It buys oxygen, electrodes, refractories, maintenance and transport; it sells slag to road builders and cement makers, scrap demand to collectors, and bars, rods and sections to fabricators. At 1 Mtpa a single works would generate about 185,000 t a year of by-products and need about 37 million Nm³ of oxygen [S112]. The world steel association estimates that every two jobs in steel support about thirteen in its supply chain [S107]. Kribi already hosts several of the industries a steel cluster would trade with, including a 1 Mt a year cement plant inaugurated in 2024 and a second 1 Mt a year cement project [S35][S37]. Designing the zone so that these exchanges happen across a fence rather than across a country is one of the cheapest ways to raise every tenant's competitiveness.

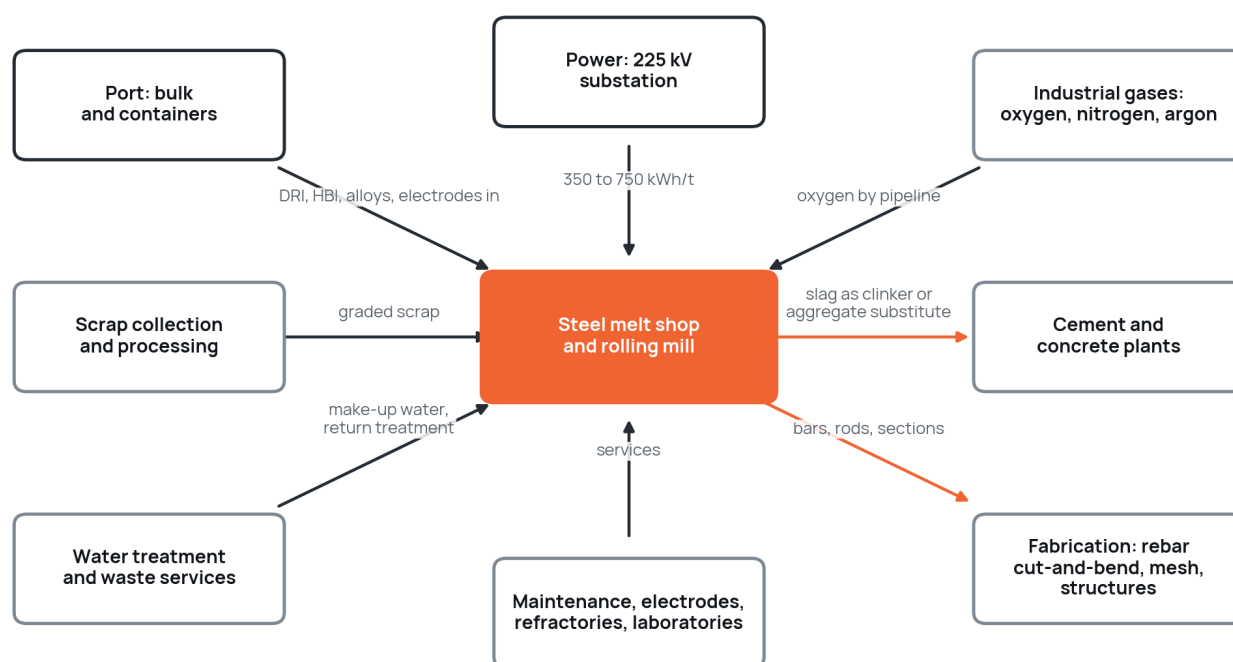
7.1 Why clusters matter more in Central Africa

Industrial clusters reduce costs in three ways: tenants share infrastructure that none could justify alone; the by-products of one become the inputs of another; and suppliers locate nearby because there is enough demand to sustain them. These effects are strongest where the alternative is long and expensive. In Central Africa, a maintenance contractor, a gas supplier or a slag processor that is not on site may be a day's drive or a sea voyage away. A steel plant that must import every service carries the cost of spares inventories, idle time and expatriate specialists. A cluster that can support local suppliers lowers those costs for every tenant.

Figure 7.1 maps the main flows around an arc-furnace works in an industrial-port zone. None of them is speculative: each corresponds to a service that existing steel plants buy or a by-product that they sell. What varies is whether the counterpart is in the same zone.

A steel mill anchors a cluster of supplier and customer businesses

Material and service flows around an arc-furnace works in an industrial-port zone (schematic)



ILLUSTRATIVE Figure 7.1. Material and service flows around an arc-furnace steel works in an industrial-port zone (schematic).

Source: Cameroon Steel analysis; quantities in the text.

7.2 What Kribi's first tenants show

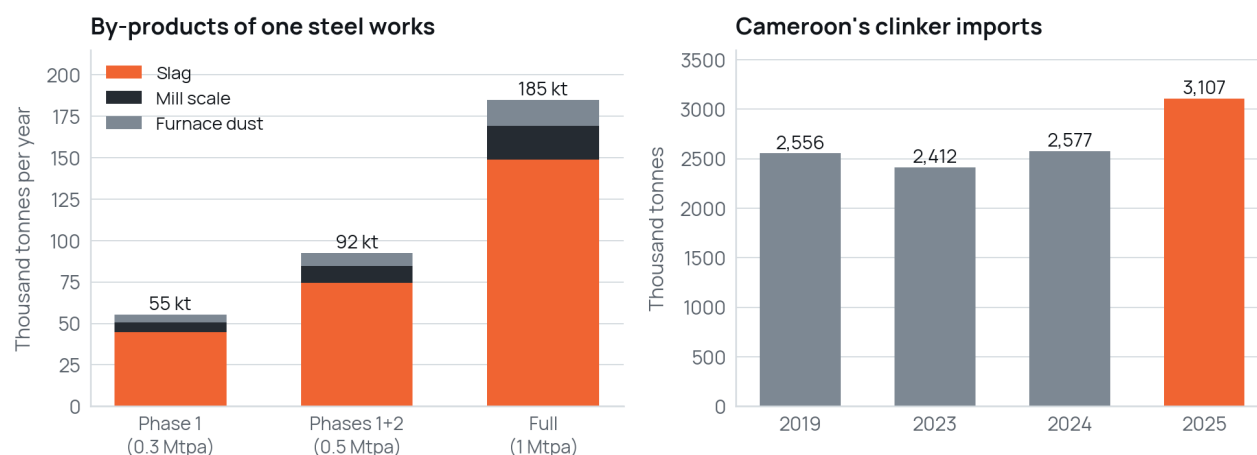
The zone already has a cluster logic, built around raw materials that arrive or leave by sea. By May 2025, 53 companies had been authorised to settle in the industrial-port zone and industrial operators had invested about 400 bn FCFA there since 2018, in cocoa processing, cement, flour milling and logistics [S20]. By March 2026 about 300 ha were operational with more than 60 companies installed or installing [S03]. A cement plant and a flour mill are among the first tenants [S35][S20]; a bitumen plant with a small refinery has been allocated about 60 ha and received a refining licence in April 2026 [S36]; and an agro-industrial terminal for grain and oils was agreed in October 2026 [S19].

The common thread is that each of these businesses moves heavy, low-value material across the quay and adds value close to it. Steel fits that pattern better than almost any other industry: it imports iron units and consumables in bulk, exports heavy products, and creates by-products that its neighbours can use. It also brings something the existing tenants do not: a large, continuous demand for power, gases and technical services that justifies investment in them for the whole zone.

7.3 Slag: from waste to road stone and cement raw material

Electric arc furnaces produce about 110 to 180 kg of solid waste, mostly slag, per tonne of liquid steel [S75]. At 1 Mtpa, one works would produce about 149,000 t a year, and with mill scale and furnace dust its by-products would total about 185,000 t a year (Figure 7.2) [S112]. IFC's guidelines for the sector note that steel slag can be sold for civil engineering, road construction and cement manufacture [S75]. In Europe, where steel slag markets are mature, about 72% of the 16.3 Mt of steelworks slag produced in 2018 was reported as recovered, with the balance stored or landfilled [S155].

One 1 Mtpa works yields 185 kt of by-products; cement imports 3.1 Mt of clinker



DERIVED Figure 7.2. By-products of one steel works at three capacities, and Cameroon's imports of cement clinker.

Source: IFC solid-waste benchmark [S75]; dust planning range [S76][S112]; Cameroon Steel indicative balance [S112]; INS foreign-trade notes for 2019, 2023, 2024 and 2025 (provisional) [S93].

At Kribi, slag has two natural outlets. The first is **construction aggregate**. After crushing, screening and weathering to stabilise its volume, EAF slag makes a hard, skid-resistant aggregate for road bases and asphalt. The zone's own internal roads, the reconstruction of the 110 km Édéa-Kribi road and the platforms of new tenants will need large quantities of aggregate over the next decade [S27][S18]. A slag-processing yard in the zone, producing certified aggregate, would turn a disposal cost into revenue and reduce quarrying.

The second outlet is **cement**. Cement plants can use steel slag as an iron-bearing component of their raw meal and, in some formulations, as a mineral addition. Granulated blast-furnace slag, the main cement substitute in Europe and Asia, comes from blast furnaces, which the Kribi platform is not expected to have; EAF slag's role in cement is narrower. Even so, the proximity matters because Kribi has an unusually large cement presence for its size. The CIMPOR cement plant in the zone, with a capacity of 1 Mt a year, was inaugurated by the Prime Minister on 19 July 2024 as the first plant of the industrial-port zone [S35], and the Atlantic Group signed an amended investment agreement on 19 February 2026 for a second cement plant of 1 Mt a year at Kribi [S37].

Cameroon's cement industry depends heavily on imported clinker, the intermediate product that is ground with gypsum and additions to make cement. Clinker imports rose to about 3.1 Mt in 2025, up about 20% on 2024 (Figure 7.2) [S93], and Nigerian producers alone exported about 1 Mt of clinker to Cameroon and Ghana in 2025 [S105]. Every tonne of mineral addition that replaces clinker in the cement mix reduces imports and the carbon footprint of cement. Steel slag will not solve the clinker deficit, but a cluster in which cement plants and steel plants share raw-material handling, testing laboratories and, potentially, a slag-processing yard is more efficient than two industries working apart.

7.4 Scrap: a supply chain to build

Scrap is the cheapest iron unit for an arc furnace and the one in shortest supply in Central Africa. Cameroon's existing steel mills already import about 60% of their metallic needs as billets, and local scrap was reported in September 2026 to cover only about 40% of the sector's needs [S98]. The only national estimate of scrap arising, 53,000 to 62,000 t a year in 2006, is small against these needs [S168]. Recorded exports of ferrous scrap from Cameroon have fallen to almost nothing since 2019, which suggests that most collected scrap is now used at home [S94].

A Kribi cluster can enlarge the scrap supply in two ways. Locally, the port, the industrial zone, the construction sites of a fast-growing coastal region and the end-of-life vehicles and equipment of the South Region generate scrap that is not collected systematically today. A licensed scrap-processing yard in the zone, with shears, balers and radiation and contamination screening, would raise its quality and value. Regionally, coastal shipping can bring scrap from neighbouring ports to Kribi's deep-water quay in bulk. Both create jobs in collection, sorting and transport, much of it in small enterprises.

7.5 Industrial gases, electrodes, refractories and maintenance

An arc furnace uses oxygen to accelerate melting and refine the steel, typically about 25 to 45 Nm³ per tonne of liquid steel [S112]. At 1 Mtpa, one works would need about 37 million Nm³ a year [S112]. At this scale gas companies normally build an air-separation unit beside the anchor customer, under a long-term supply contract, and sell surplus nitrogen, argon and oxygen to other users: fabricators, hospitals, food processors and laboratories. An anchor steel tenant is therefore how a zone acquires an industrial-gas supply.

Graphite electrodes are consumed at about 2 to 6 kg per tonne of steel in European arc furnaces [S76], refractories line every furnace and ladle, and rolling mills consume rolls, guides and lubricants. These are imported products, but their storage, handling, refurbishment and the skilled maintenance around them are local services. A cluster of two or three melt shops and several mills would sustain on-site workshops for machining, roll grinding, electrical repair and refractory installation, and a testing laboratory accredited to Cameroonian and international product standards.

7.6 Downstream fabrication: what the region still imports

The clearest test of downstream potential is what the region imports in finished form. UN Comtrade data for Cameroon show substantial imports in 2023 of steel products that are made from bars, rods and sections, or that a coastal steel cluster could make (Table 7.1).

Table 7.1 SOURCED Selected Cameroonian imports of steel products and the cluster activities that could supply them, 2023

Product (HS code)	Imports, 2023	Cluster activity that could supply it	Link to a melt shop and mills	Source
Structures and parts of structures (7308)	25.7 kt; US\$58.0 million	Structural fabrication: frames, towers, bridges, warehouses	Uses sections, angles and plate	[S94]
Sections, angles and shapes (7216)	US\$26.3 million	Sections mill	Direct product of a sections line	[S94]
Welded tubes and pipes (7306)	9.5 kt; US\$26.0 million	Tube welding from strip	Needs strip; later-phase option	[S94]
Wire of iron or steel (7217)	3.6 kt; US\$5.1 million	Wire drawing, nails, mesh, fencing	Uses wire rod	[S94]
Cold-rolled flat products (7209)	47.5 kt; US\$52.0 million	Not a long-products activity	Indicates future flat-steel demand	[S94]
Billets and other semi-finished steel (7207)	161.4 kt; US\$151.7 million	Merchant billets from a melt shop	Direct product of a melt shop; the largest single steel import	[S94]

Source: UN Comtrade public API, Cameroon as reporter, 2023 (latest year reported) [S94]. Values as declared; tonnages where reported.

The largest line is billets, which the existing re-rollers import for about 60% of their charge [S98]: a melt shop at Kribi can sell merchant billets to them as well as rolling its own wire rod and rebar, which is how its tonnage displaces imports rather than adding to a rebar market that is already saturated (White paper 04, Chapter 9).

Beyond billets, two activities stand out. **Rebar processing** (cut-and-bend services, welded mesh, prefabricated cages) moves value from construction sites into factories, improves quality and reduces waste; it is a natural neighbour of a rebar and wire-rod mill. **Structural fabrication** of steel frames, warehouses, transmission towers and bridges uses sections and plate, and Cameroon imported about US\$58 million of fabricated structures in 2023 [S94]. Both are labour-intensive and suited to Cameroonian small and medium enterprises if they can buy steel locally and on credit.

EVERY TWO JOBS IN STEEL SUPPORT ABOUT THIRTEEN IN ITS SUPPLY CHAIN. A ZONE CAPTURES THAT MULTIPLIER ONLY IF THE SUPPLIERS CAN LOCATE INSIDE IT.

Cameroon Steel, drawing on worldsteel and Oxford Economics, 2019 [S107]

7.7 Jobs and skills

Steel's employment case rests on its linkages more than on its direct jobs. A global study for the world steel association estimated that every two jobs in the steel industry support about thirteen in its supply chain [S107]. Such multipliers are upper bounds for Cameroon, where supply chains are thinner, but they show where the jobs are: in transport, maintenance, scrap collection, construction and services. For one tenant, Cameroon Steel's indicative planning figures show about 500 direct jobs (450 to 550) and about 1,000 indirect jobs (800 to 1,500) in a first phase, and about 1,100 direct jobs (900 to 1,300) at full capacity [S112]. KPIZ's target of up to 150,000 direct and indirect jobs across the whole zone over fifteen years assumes many such anchors [S03].

The constraint is skills. Cameroon has engineering schools and technical institutes, but few if any dedicated programmes in ferrous metallurgy; the national polytechnic school in Yaoundé, for example, lists no metallurgy department [S156]. A cluster creates the scale at which a shared training centre with the region's universities and equipment suppliers becomes viable. The 2025 investment ordinance requires investors to present a programme of local skills development, technology transfer and local hiring [S23]; a cluster can meet that requirement more effectively together than tenant by tenant.

Table 7.2 DERIVED Cluster services for a Kribi steel platform: who provides them and what the zone should do

Service	Demand created by one 1 Mtpa works	Typical provider	Zone action
Oxygen, nitrogen, argon	About 37 million Nm ³ a year of oxygen [S112]	Gas company with an on-site air-separation unit	Reserve a plot beside the steel cluster; allow pipeline corridors
Slag processing	About 149 kt a year of slag [S112]	Specialist processor or joint venture with a cement plant	Designate a slag yard; adopt an aggregate standard for zone roads
Scrap processing	Several hundred thousand tonnes a year of scrap at full capacity [S112]	Licensed scrap merchants	Licensed scrap yard with screening; coastal-shipping berth access
Hazardous-waste management	About 16 kt a year of furnace dust [S112]	Licensed operator	Shared secure cell or export route (Chapter 5)
Maintenance and workshops	Continuous; shutdown peaks	Local and international contractors	Light-industry plots near the steel cluster
Testing and certification	Every heat and every product batch	Accredited laboratory	Shared laboratory with cement and construction-materials tenants

Service	Demand created by one 1 Mtpa works	Typical provider	Zone action
Training	Hundreds of operators and technicians per phase	Universities, institutes, equipment vendors	Shared training centre in the zone

Source: quantities from Cameroon Steel indicative planning figures [S112]; zone actions are Cameroon Steel recommendations.

7.8 Designing for exchange

Clusters do not arise from proximity alone. The zone can make them more likely by four choices made early:

- **Adjacency in the master plan.** Put the steel cluster next to the bulk berth and the high-voltage substation, the slag yard and gas plant next to the steel cluster, cement within conveyor distance of the slag yard, and fabrication near the zone gate and the road to Douala.
- **Corridors for pipes and conveyors.** Reserve rights of way between plots for oxygen pipelines, slag conveyors and power cables before plots are allocated.
- **A by-product exchange register.** Publish, with tenants' consent, the by-products each produces and the inputs each needs, as zones in Asia and Europe do, so that exchanges are found early.
- **Shared services under one contract.** Let KPIZ tender laboratories, training, fire response and hazardous-waste management once for the whole zone rather than tenant by tenant.

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A steel anchor gives Kribi's zone a cluster logic: about 185,000 t a year of slag, scale and dust from one 1 Mtpa works, a demand for about 37 million Nm³ of oxygen, and a supply of bars, rods and sections for fabricators. Kribi already hosts cement plants that can use slag and a construction programme that can absorb aggregate. The zone captures these exchanges only if its master plan places complementary tenants next to each other, reserves corridors for pipes and conveyors, and provides shared services once.

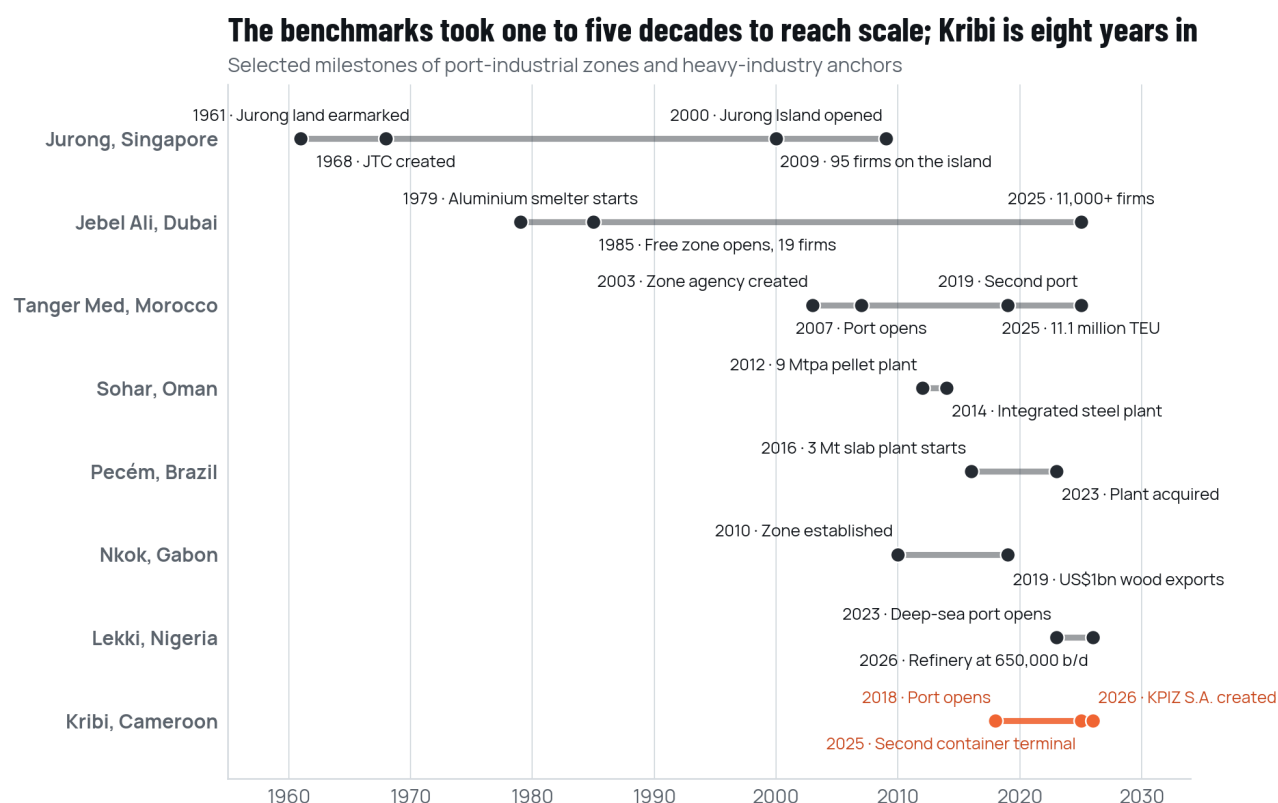
CHAPTER 8

SUCCESSFUL PORT-INDUSTRIAL ZONES BUILT INFRASTRUCTURE AHEAD OF DEMAND AND ORGANISED AROUND ANCHORS

The port-industrial zones that have become regional platforms share four traits. A single authority controlled both the port and the land around it; infrastructure, especially power, water and berths, was delivered ahead of or alongside the first tenants; one or more anchor industries arrived early and pulled suppliers in after them; and policy pushed raw materials towards local processing. Tanger Med, Jebel Ali, Jurong and Lekki illustrate the general model; Sohar and Pecém show how steel itself has been organised at deep-water ports; Nkok in Gabon, developed by one of KPIZ's shareholders, shows the model working in Central Africa. They also carry warnings: success took one to five decades, and where gas or power was not planned for industry, downstream ambitions stalled. Kribi has the first trait in KPIZ and the beginnings of the second; the steel cluster can supply the third.

8.1 Why look abroad

Benchmarks do not prove that Kribi will succeed; the conditions of each zone are specific. They are useful for two purposes. They show what the elements of a successful port-industrial platform are, and in what order they were put in place. And they give orders of magnitude, for land, firms, jobs and time, against which Kribi's plans can be tested. The selection here mixes general port-industrial zones (Tanger Med, Jebel Ali, Jurong, Lekki), steel-specific port clusters (Sohar, Pecém) and an African zone developed by one of KPIZ's own shareholders (Nkok). Figure 8.1 places their main milestones on a single time line.



SOURCED Figure 8.1. Selected milestones of benchmark port-industrial zones and heavy-industry anchors, 1961 to 2026.

Source: National Library Board, Singapore [S126]; Ministry of Trade and Industry, Singapore, 2009 [S125]; Emirates Global Aluminium [S124]; Khaleej Times, 2025 [S123]; Wikipedia (tertiary, background dates only) and Morocco World News for Tanger Med dates [S132][S133]; Tanger Med Port Authority, 2026 [S121]; CCSI, 2016 [S127]; ArcelorMittal, 2023 [S128]; AllAfrica, 2024 and Africa Finance Corporation [S130][S129]; Lekki Port [S120]; Tekedia, 2026 [S131]; Kribi sources [S117][S57][S02].

8.2 Tanger Med: one authority for port and zones

Tanger Med, on Morocco's Strait of Gibraltar coast, is the clearest African example of a port and industrial zones planned and run together. A special agency was created in 2003 to develop the port and its zones [S132] (tertiary); the first port opened in 2007 and a second, Tanger Med 2, was inaugurated in June 2019, taking container capacity above 9 million TEU [S133]. In 2025 the port complex handled 11,106,164 TEU and 161 Mt of cargo [S121]. Its economic zones extend over about 3,000 ha and host more than 1,500 companies with about 145,000 jobs; industrial business volume reached about US\$18.8 billion in 2025, of which automotive accounted for about US\$12.5 billion [S122].

The anchor was a car plant. In 2025 the port exported 327,569 vehicles from Renault's plants at Melloussa and Casablanca and 126,874 from Stellantis's plant at Kenitra [S121]. The automotive cluster then pulled in component suppliers, logistics and services.

The lesson for Kribi is about governance more than cargo. Tanger Med is not a heavy-bulk port: its dry-bulk traffic was only about 0.5 Mt in 2025 [S121]. What it shows is the value of a single authority that plans port capacity, land, utilities and investor services together and markets them as one product, which is the model that KPIZ's Director General has been described as wanting to replicate at Kribi [S134].

8.3 Jebel Ali: the heavy anchor came first

Jebel Ali in Dubai is now best known for its free zone, JAFZA, which grew from 19 companies when it opened in 1985 to more than 11,000 companies from 157 countries by 2025 [S123]. The heavy-industry story came before the free zone. The Jebel Ali aluminium smelter, now part of Emirates Global Aluminium (EGA), began production in 1979 with three potlines and 135,000 t a year of capacity, and after eight expansions has a nameplate capacity of about 1 Mt a year [S124]. It has its own power station of 2,974 MW, a desalination plant producing about 136,000 m³ of water a day, and two dedicated berths at Jebel Ali Port for its raw-material imports [S124].

The lesson for Kribi is direct. A power-intensive anchor with its own power, water and berths came first, and the wider free zone grew around the infrastructure it justified. Kribi will not replicate a smelter's captive power plant, but the principle that the anchor's utilities and berths should be planned at the scale of the anchor, and then shared, is the same.

8.4 Jurong: plan the cluster and its corridors

Singapore's industrial development began in 1961, when about 6,500 ha of land at Jurong was recommended for industrial development; the Jurong Town Corporation (JTC) was created in 1968 to develop it [S126]. The country's chemicals cluster was later concentrated on Jurong Island, created by reclaiming land between seven southern islands and opened in 2000 [S126]. When reclamation was completed in 2009, the island had grown from less than 1,000 ha to about 3,000 ha and hosted 95 energy and chemical companies with more than S\$31 billion of fixed assets [S125].

What made Jurong Island effective was integration. The responsible minister described a cluster in which upstream plants supply feedstock to downstream manufacturers and companies share common facilities; when one tenant expanded, the authorities realigned a stretch of the island's highway together with 17 pipelines and four fibre-optic cables to accommodate it [S125]. The lesson for Kribi is that corridors for pipes, conveyors and cables, and adjacency between complementary tenants, have to be planned before plots are allocated (Chapter 7).

EVERY BENCHMARK BUILT ITS UTILITIES AT THE SCALE OF ITS ANCHORS, THEN SHARED THEM. NONE WAITED FOR DEMAND TO PROVE ITSELF FIRST.

Cameroon Steel

8.5 Lekki: deep water and a mega-tenant in West Africa

Lekki, east of Lagos, is the closest benchmark in geography and timing. The Lekki Deep Sea Port, owned by China Harbour Engineering Company, the Tolaram group, the Lagos State Government and the Nigerian Ports Authority, has been fully operational since 1 April 2023, with container, dry-bulk and liquid-bulk terminals [S120]. Nearby, in the Lekki Free Zone, the Dangote refinery reached its full capacity of 650,000 barrels a day in a single train in early 2026, on about 2,500 ha [S131].

Lekki shows what a deep-water port and a very large tenant can do for a coastal zone in a few years. It also shows a dependency: very large tenants have often had to provide their own supporting infrastructure where public provision could not keep pace, as EGA's captive power station at Jebel Ali illustrates [S124]. A steel cluster at Kribi is far smaller than a 650,000 barrel-a-day refinery, and should not need to do the same, provided the zone's power, water and berths keep pace.

8.6 Steel at deep-water ports: Sohar and Pecém

Two benchmarks show how steel itself has been organised around deep-water ports.

Sohar, Oman. Sohar developed a steel and iron-ore cluster in its industrial port and free zone. Vale commissioned a pelletising plant of 9 Mt a year, in two lines of 4.5 Mt, in early 2012, together with a distribution centre for 40 Mt of iron ore and a dedicated deep-water terminal about 1.5 km long; a case study for Columbia University's Center on Sustainable Investment noted that Sohar was the only deep-water port in the Gulf states able to receive very large ore carriers [S127]. Jindal Shadeed operates gas-based direct-reduction plants of 1.5 and 1.8 Mt a year and commissioned an integrated steel plant of about 2 Mt a year in 2014 [S127]. The same study warned that poor planning had led to shortages of natural gas, which limited the strategy of downstream diversification [S127].

Pecém, Brazil. The Companhia Siderúrgica do Pecém in Ceará, commissioned in 2016, has a blast furnace of about 3 Mt a year of slab capacity linked by conveyors to the deep-water Port of Pecém about 10 km away, and operates within Brazil's first export processing zone; ArcelorMittal completed its acquisition in March 2023 at an enterprise value of about US\$2.2 billion [S128]. Pecém shows the value of a dedicated conveyor link between quay and plant, and of a legal regime that lets an export-oriented plant operate competitively.

The cautionary side of the steel record is also instructive. Midrex's statistics list idle direct-reduction plants in Africa, including Delta Steel at Warri in Nigeria and ArcelorMittal South Africa's plant at Saldanha [S101]. Steel plants at the coast fail when their inputs, power or markets fail, not because the coast is wrong.

8.7 Nkok: the model of a KPIZ shareholder in Central Africa

The Gabon Special Economic Zone at Nkok, near Libreville, was established in 2010 as a public-private partnership between the government of Gabon and Arise IIP, which is now a shareholder of KPIZ [S130][S04]. It covers about 1,126 ha across three sites and hosts 144 companies from 17 countries in 22 sectors, with more than 20,000 jobs [S130]. Its wood cluster made Gabon Africa's leading exporter of tropical veneer; the Africa Finance Corporation reports that wood-product exports rose from about US\$350 million in 2010 to about US\$1 billion in 2019 [S129][S130].

The policy behind Nkok is the closest analogue to Kribi's steel ambition. Gabon restricted exports of raw logs to push processing into the country, and the zone gave processors the land, power and services to respond [S129]. Cameroon's Mining Code, which requires mining conventions to provide for at least 15% of production to be made available for local transformation [S24], creates a comparable policy push for iron ore. KPIZ, with Arise IIP among its shareholders, has direct access to the experience of delivering a zone that answered such a push.

Table 8.1 SOURCED Benchmark port-industrial zones compared

Zone	Country	Key dates	Scale	Anchor	Infrastructure lesson	Source
Tanger Med	Morocco	Agency 2003; port 2007; second port 2019	161 Mt and 11.1 million TEU (2025); about 3,000 ha of zones; 1,500+ firms; about 145,000 jobs	Car assembly (Renault)	One authority for port, zones and investor services	[S121] [S122] [S132] [S133]
Jebel Ali and JAFZA	United Arab Emirates	Smelter 1979; free zone 1985	11,000+ firms (2025); smelter about 1 Mtpa	Aluminium smelter with 2,974 MW captive power	Anchor's power, water and berths came first	[S123] [S124]

Zone	Country	Key dates	Scale	Anchor	Infrastructure lesson	Source
Jurong and Jurong Island	Singapore	1961; JTC 1968; island 2000	About 3,000 ha island; 95 firms; S\$31bn+ fixed assets (2009)	Refining and petrochemicals	Integrated cluster planning; shared facilities and corridors	[S125] [S126]
Lekki	Nigeria	Port operational 2023	Refinery of 650,000 b/d on about 2,500 ha	Oil refinery	Deep water attracts a mega-tenant; tenant self-supply when public infrastructure lags	[S120] [S131]
Sohar	Oman	Pellet plant 2012; steel plant 2014	9 Mtpa pellets; 40 Mt ore depot; DRI 1.5 and 1.8 Mtpa	Iron ore and steel	Dedicated deep-water terminal; gas shortage limited downstream growth	[S127]
Pecém	Brazil	Steel plant 2016	About 3 Mtpa slab	Integrated steel plant	Conveyor link to a deep-water port; export processing zone	[S128]
Nkok	Gabon	2010	About 1,126 ha; 144 firms; 20,000+ jobs	Wood processing	Policy push for local processing plus zone delivery	[S129] [S130]

Source: as listed; figures are those reported by the sources and are not independently audited.

8.8 What the benchmarks do not show

The comparisons have limits that should be stated plainly. Jebel Ali and Sohar were built on cheap and plentiful Gulf gas; Kribi's gas is available but its long-term volume is uncertain [S69]. Singapore and Morocco combined their zones with strong state capacity and very large markets within a few days' shipping; Central Africa's markets are smaller and its land transport slower. Tanger Med's anchor was car assembly, not heavy industry, and its dry-bulk traffic is small [S121]. Several of the figures quoted are operators' own statements and are not independently audited.

None of this weakens the main lessons, which concern sequence and organisation rather than scale. It does mean that Kribi should be judged against its own trajectory, by whether each enabling step arrives on time, and not against the absolute size of zones that have had decades to grow.

8.9 What the benchmarks mean for Kribi

Table 8.2 DERIVED Lessons from the benchmarks and their implications for a Kribi steel platform

Lesson	Where it was learned	Implication for Kribi
One authority should plan port capacity, land, utilities and investor services together	Tanger Med	Give KPIZ a clear mandate and a single investor interface; complete the PAK to KPIZ transition quickly
Size utilities and berths to the anchor, then share them	Jebel Ali	Plan the second power stage, water and a steel-cluster berth to the steel anchor's needs
Plan corridors and adjacency before allocating plots	Jurong Island	Reserve pipe, conveyor and cable corridors; place steel, slag, gases and cement next to each other
A dedicated quay-to-plant link pays	Sohar, Pecém	Plan private haul roads or covered conveyors between the bulk berth and the steel cluster
Gas must be planned for industry, not left over	Sohar	Decide early how much of Kribi's gas can be committed to industry after July 2026

Lesson	Where it was learned	Implication for Kribi
Policy can push raw materials into local processing, if the zone is ready to receive them	Nkok	Align the Mining Code's local-transformation requirement with serviced land and power at Kribi
Scale takes decades	All	Judge Kribi on sequence and momentum, not on its first five years

Source: Cameroon Steel analysis of the benchmarks above.

CHAPTER FINDING

The benchmarks agree on four conditions: one authority for port and zone, utilities built ahead of or with the first tenants, anchor industries that pull suppliers in, and policy that pushes raw materials towards local processing. Kribi has the first in KPIZ, the beginnings of the second in the 225 kV line and water plant, a policy push in the Mining Code, and a candidate anchor in steel. The warnings are equally clear: success took one to five decades, and where gas or power was not planned for industry, downstream growth stalled.

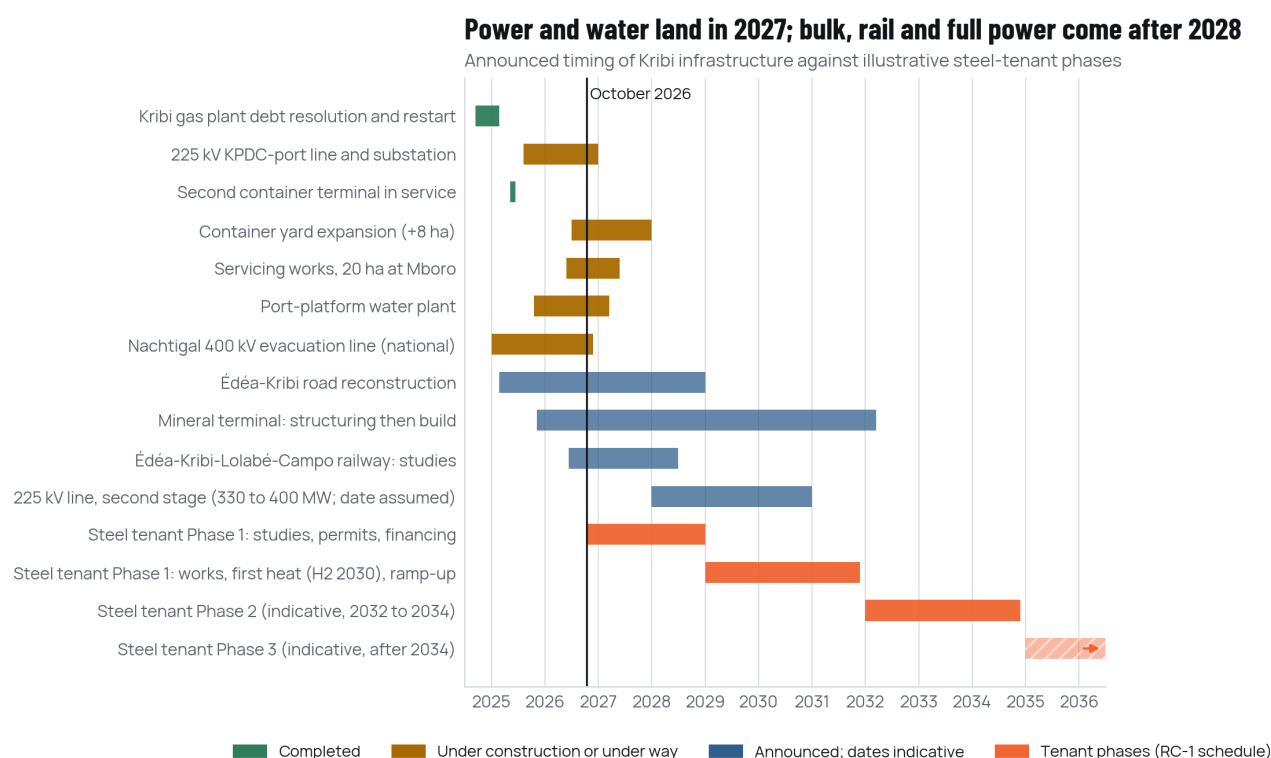
CHAPTER 9

THE RISK AT KRIBI IS SEQUENCE: EACH STEP MUST ARRIVE BEFORE THE INDUSTRY THAT DEPENDS ON IT

Kribi does not lack any attribute that cannot be supplied. Its risk is that the attributes arrive in the wrong order: a melt shop ready before the substation, a cluster growing before the second power stage, a direct-reduction plan before gas and a bulk berth, or industrial growth before the zone has assessed what its coast, air and communities can carry. Four constraints need active management: the timing of public infrastructure, which has slipped on comparable projects in Cameroon; the environmental carrying capacity of a coast with a marine national park about 11 km south of the port; the transition of land governance from the port authority to KPIZ; and the industrial services that do not yet exist. None is a reason to delay. Each is a reason to plan the platform as a sequence with explicit preconditions for every step.

9.1 Sequence is the strategy

Heavy industry has hard dependencies. A melt shop cannot be commissioned without a firm high-voltage supply and a power-quality solution. A direct-reduction module cannot run without a long-term gas contract and a dry-bulk berth for pellets. A cluster of several heavy tenants cannot grow on a first power stage of about 100 MW. Rail is valuable but not a precondition for a first phase; firm power is. Figure 9.1 sets the announced timing of Kribi's main infrastructure projects against illustrative phases for a steel tenant.



DERIVED Figure 9.1. Announced timing of Kribi infrastructure against illustrative steel-tenant phases. Bars for announced projects use published start dates and, where none is published, indicative end dates.

Source: Business in Cameroon, 27 February 2025 [S71]; PAK, 6 August 2025 and 19 August 2026 [S25][S26]; Business in Cameroon, 12 May 2025 and 18 May 2026 [S57][S52]; Investir au Cameroun, 8 October 2026 [S30]; EcoMatin, 11 May 2026 [S18]; Business in Cameroon, 9 October 2026 [S61]; PAK, 13 March 2025 [S27]; PAK, 4 November 2025 [S32]; Investir au Cameroun, 4 March 2026 [S03]; PAK, 4 June 2026 [S41]. Steel-tenant phases follow the schedule of the Cameroon Steel reference configuration RC-1 (planning estimate) [S112] and are illustrative.

The figure shows a favourable window. The two utilities that a first steel phase needs, the 225 kV supply and the port-platform water plant, are under construction and due in late 2026 and early 2027 [S25][S26]. The utilities and corridors that a cluster needs, the second power stage, the mineral terminal and rail, are announced but not yet funded or scheduled in detail. A first steel phase whose works start in 2029, with a first heat in the second half of 2030 and ramp-up in 2031 as in Cameroon Steel's reference configuration [S112], can therefore rely on infrastructure that is already being built, while the larger investments are prepared in parallel.

9.2 Infrastructure timing: plan for slippage

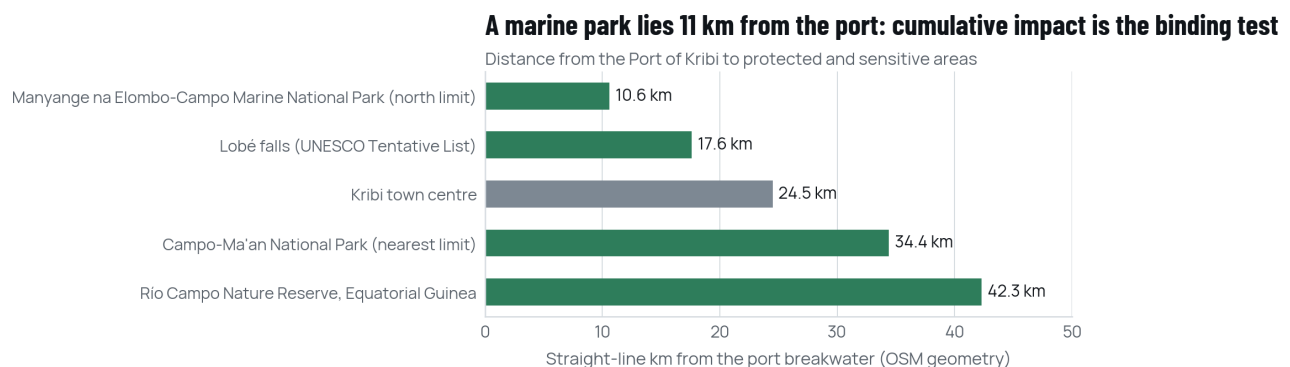
Large public infrastructure in Cameroon has a mixed record on timing, as it does in most countries. The evacuation line from the Nachtigal hydro plant has left about 150 MW of industrial demand unmet while it waits for completion, now expected in November 2026 [S61]. The first exports of iron ore from Mbalam were moved from the end of 2025 to early 2026 [S46], and the developer of the Lobé deposit near Kribi has deferred its first exports to 2027 [S154]. The Kribi gas plant was offline for five months from September 2024 over unpaid invoices [S71]. The mineral-terminal partners gave themselves four to six months from November 2025 to complete structuring [S32]; by October 2026 no financial close had been reported in the sources reviewed for this paper, and PAK's Director General expected completion within five to six years of March 2026 [S03]. The Édéa-Kribi road has no published completion date [S27].

None of this is unusual for projects of this scale, but it has a clear implication for a steel platform: **each phase of industrial investment should be designed to work on the infrastructure that exists, or is under construction, when the phase is committed**, with the next public step treated as an upside rather than a precondition. In practice:

- a first melt shop and rolling mill should be sized to the first 100 MW stage and to the existing multipurpose and container terminals, with a power-quality solution of its own;
- a second phase should be committed only when the second power stage has a financing agreement and a construction contract;
- a direct-reduction module should be committed only when a long-term gas contract backed by audited reserves, a bulk berth for pellets and a supply of direct-reduction-grade feed are all in place.

9.3 Environmental carrying capacity

The Kribi coast is not an empty industrial site. It combines a deep-water port and a growing town with a marine national park, nesting beaches, a cultural landscape on UNESCO's Tentative List and one of the largest forest national parks in Central Africa. Figure 9.2 shows the distances from the port to the main protected and sensitive areas.



DERIVED Figure 9.2. Straight-line distances from the Port of Kribi to protected and sensitive areas.

Source: Cameroon Steel calculation from OpenStreetMap geometry [S111]; Décret n° 2021/4804/PM (marine national park) [S84]; Décret n° 2000/004/PM (Campo-Ma'an) [S85]; UNESCO Tentative List, ref. 6330 [S86].

Four pressures need to be assessed at the level of the zone, not plant by plant:

The coast. Studies of the Kribi shoreline find that it moved from slight accretion before 2000 to average retreat of about 0.9 m a year in 2000 to 2015 and about 2 m a year in 2015 to 2020, with local retreat of 45 to 70 m a year near Lolabé in 2013 to 2017, a change the authors link to sediment trapping by port structures [S80]. A 2025 study rated about 68% of the 31.5 km Kribi coast as highly vulnerable [S81]. Global sea level is projected to rise by 0.44 to 0.76 m by 2100 under an intermediate emissions scenario [S82]. Plant platforms on the coastal plateau are not exposed, but jetties, conveyors, intakes and outfalls are, and must be designed for a moving shoreline.

Air. Modelled background concentrations of fine particles (PM_{2.5}) around the port were about 10 µg/m³ in 2024 to 2025, already above the World Health Organization's 2021 annual guideline of 5 µg/m³, largely because of seasonal Saharan dust and biomass smoke [S92][S113]. If confirmed by monitoring, this would make the airshed "degraded" in lender terms and tighten the emissions allowed to each new source. A zone-wide air-quality monitoring network, started before the first furnace, would establish the baseline and allocate the remaining headroom fairly.

Biodiversity and the sea. The northern limit of the Manyange na Elombo-Campo Marine National Park, created in 2021, lies about 11 km south of the port [S84]. Its beaches are used by nesting marine turtles, and communities and conservationists have raised concerns about cumulative pressure from port and industrial development on the park and its fishing villages [S91]. Effluent, lighting, dredging and ship traffic from the industrial zone all reach this coast.

Carbon. An arc-furnace works on Cameroon's hydro-dominated grid has a low carbon intensity by world standards. Cameroon Steel's reference configuration puts its Scope 1 emissions and its Scope 2 emissions from purchased electricity at an estimated 0.32 t of CO₂ per tonne of product in Phase 1 (about 0.33 t at full build-out) [S112], on a narrower boundary that excludes the upstream emissions of imported iron units, against world averages of 1.47 t per tonne of crude steel for the DRI-EAF route and 2.34 t for the blast-furnace route [S77]. That advantage has commercial value: steel exported to the European Union now carries a carbon-border charge, with a certificate price of €82.32 per tonne of CO₂ in the third quarter of 2026 [S103]; the mechanism and its effect on Cameroonian steel are analysed in White paper 06, Chapter 5. But a cluster at full scale would still emit hundreds of thousands of tonnes a year, and any project above 100,000 t of CO₂ equivalent a year must, under the Equator Principles, carry out a climate risk assessment and report its emissions publicly [S89].

KRIBI'S ENVIRONMENTAL CAPACITY IS A SHARED, FINITE ASSET. IF THE ZONE DOES NOT ALLOCATE IT, THE FIRST TENANTS WILL CONSUME IT.

Cameroon Steel

The legal framework already points to a zone-level approach. A 2016 order of the environment ministry requires a strategic environmental assessment for industrial zones and industrial-port complexes, and a detailed environmental and social impact assessment for metal production [S87]. The 2013 decree on impact assessment sets out the procedure, including public consultations and hearings, and provides that the certificate of environmental compliance lapses if a project has not started within three years [S88]. International lenders will apply the IFC Performance Standards in full, including those on community health, land acquisition, indigenous peoples and biodiversity [S90]. A strategic environmental assessment of the whole zone, with a cumulative-impact plan that allocates air, water and coastal capacity among future tenants, is the single most useful step the zone could take to accelerate every heavy-industry permit within it.

9.4 Land governance in transition

The second structural constraint is institutional. Responsibility for the zone is moving from PAK to KPIZ, and with it the contractual framework under which tenants occupy land. Under the arrangements announced in May 2026, PAK remains the administrative and contractual counterpart of existing occupants while KPIZ takes over operations, and occupancy titles are being reviewed before a new framework under KPIZ is introduced [S10] [S11]. PAK and KPIZ have committed to transparency and legal certainty during the transition [S12].

For a new heavy-industry tenant, the questions are practical: which entity signs, on what template, for what term, at what price, and with what protection if the authority needs the land back. The most recent published agreement in the port domain gave a twenty-year renewable authorisation over 9.2 ha for an agro-industrial terminal [S19]. Steel plants are financed over fifteen to twenty years and operate for forty or more; lenders will look for terms that outlast the debt by a comfortable margin, renewal rights and compensation on early termination.

Land governance also has a history. The port land was declared of public utility in 2009 and compensation for those affected was set by decree in 2010 [S157]. Lenders applying the IFC Performance Standards will ask how that process treated the people who used the land, including any indigenous Bagyeli communities of the Océan department, and whether any residual claims remain [S90]. A zone-level review of land history, completed once by KPIZ and shared with tenants, would answer those questions faster and more consistently than separate reviews by each investor.

9.5 Services and social infrastructure

The third constraint is the absence of services that a heavy-industry cluster takes for granted elsewhere: a hazardous-waste facility (Chapter 5), an industrial-gas supplier (Chapter 7), a zone fire and emergency service equipped for molten metal and industrial gases, accredited testing laboratories and a training centre. The fourth is social infrastructure for a growing workforce: housing, schools and health care. The South Region has the highest HIV prevalence among adults in Cameroon, 5.8% in the latest demographic and health survey, and high malaria prevalence among young children [S158]. A construction workforce of hundreds per project, and permanent workforces of thousands across the zone, need worker accommodation, health services and community programmes planned at zone scale.

Table 9.1 DERIVED Constraint register for a Kribi steel platform

Constraint	Evidence	Consequence if unmanaged	Primary owner	Mitigation	Rating
Second power stage late	First stage 100 MW; second stage 330 to 400 MW not yet scheduled [S25]	Cluster growth capped at one heavy tenant	MINEE, SONATREL, PAK, KPIZ	Fix financing and date for the second stage now; second 225 kV source	High
Power quality	Arc furnaces need strong connection points; no published short-circuit levels [S72][S74]	First furnace consumes network tolerance	KPIZ, SONATREL, tenants	Power-quality code; compensation at each tenant	High
Bulk berth not dedicated	Mineral terminal at MoU stage (4 November 2025); completion within five to six years of March 2026; designed for ore exports [S32][S03]	Steel imports compete with ore for berth time	PAK, terminal consortium	Steel-cluster berth or berth-time allocation in terminal design	Medium
Road capacity	Édéa-Kribi reconstruction without published completion date [S27]	Congestion and road safety risk as traffic grows	MINTP	Heavy-axle design; truck staging; rail	Medium
Environmental capacity	Marine park about 11 km from the port; coast eroding; PM2.5 above WHO guideline [S84][S80][S92]	Permits delayed or refused; lender withdrawal	KPIZ, MINEPDED	Zone strategic environmental assessment; cumulative-impact plan; monitoring	High
Land contractual framework	Transition from PAK to KPIZ; titles under review [S10][S11]	Uncertainty over signatory, term and price	PAK, KPIZ	Publish heavy-industry framework and template agreements	Medium
Hazardous waste	No facility identified in public sources	Stockpiling; reputational damage	KPIZ, licensed operator	Shared secure cell or export route before first heat	High
Gas availability	Hilli departure frees gas; reserves not publicly certified [S67][S68][S69]	Direct reduction or captive power cannot be financed	SNH, MINEE	Reserve audit; long-term gas allocation policy for industry	Medium

Constraint	Evidence	Consequence if unmanaged	Primary owner	Mitigation	Rating
Social infrastructure	High HIV and malaria burden in the South Region [S158]	Workforce health and community tension	KPIZ, ministries, tenants	Zone health and housing plan; influx management	Medium

Source: Cameroon Steel assessment from the sources listed. Ratings combine likelihood and impact for a steel cluster.

9.6 Preconditions for each step

The register translates into a short list of preconditions. Table 9.2 sets them out as a checklist that a zone authority, a lender or an investor can use to decide whether the next step is ready.

Table 9.2 DERIVED **Preconditions for each step of a Kribi steel platform**

Step	Must be true before commitment	Evidence that it is true
First melt shop and rolling mill	225 kV substation commissioned; tenant bay and connection study agreed; power-quality solution designed; water supply contracted; hazardous-waste route identified; land agreement signed	Commissioning certificate; connection agreement; water contract; waste licence
Second heavy tenant or second melt line	Second power stage financed and under construction; zone power-quality code in force; slag and gas services contracted	Financing agreement; published code; supply contracts
Direct-reduction module	Long-term gas contract backed by audited reserves; bulk berth for pellets; DR-grade pellet supply secured; carbon strategy agreed with lenders	Gas sales agreement; terminal agreement; offtake and supply contracts
Cluster at scale	Zone strategic environmental assessment approved; rail to Édéa financed; shared services operating	Assessment approval; rail financing; service contracts

Source: Cameroon Steel analysis.

CHAPTER FINDING

Kribi's constraints are manageable if they are managed in sequence. A first steel phase can rely on infrastructure already under construction. A cluster needs, in this order: a financed second power stage and a power-quality code; a zone strategic environmental assessment that allocates the coast's carrying capacity; a published heavy-industry land framework from KPIZ; hazardous-waste and industrial-gas services; and a dedicated bulk berth and rail link. Each later step should be committed only when the step before it is financed.

CHAPTER 10

A THREE-STEP ROADMAP CAN MAKE KRIBI A STEEL AND METALS PLATFORM BY 2040

The roadmap in this chapter is illustrative: it is Cameroon Steel's view of the order in which things need to happen, not a plan adopted by any authority. It has three steps, an analytical sequence distinct from the phases of any one project.

Enable, 2026 to 2028: commission the power and water already under construction, publish the zone's heavy-industry framework and codes, and permit and finance a first melt shop and rolling mill that can run on existing port facilities.

Anchor, 2028 to 2032: bring the first melt shop into production, bring the second power stage, the first stage of the mineral terminal, industrial gases, slag processing and a second heavy tenant into service, and finance the railway. **Integrate, 2032 to 2040:** make iron from Cameroonian ore at the coast, connect the zone to the national railway and the interior, and export steel and iron units into regional and carbon-regulated markets. Each step has measurable milestones, and each can be reached only if the previous one is financed.

THE DECISIONS THAT MAKE A 2040 STEEL PLATFORM POSSIBLE ARE THE ONES TAKEN IN 2026 AND 2027.

Cameroon Steel

10.1 Five principles

The roadmap rests on five principles drawn from the previous chapters.

1. **Build on what exists.** Each industrial step should rely on infrastructure that is already in service or under construction when it is committed, so that public delays do not strand private capital (Chapter 9).
2. **Plan the cluster, not the tenant.** Power stages, berths, water, waste and corridors should be sized for the zone's heavy-industry load, not for the first applicant (Chapters 4 to 7).
3. **Publish the rules.** A heavy-industry land framework, a power-quality code, an industrial water tariff and a zone environmental plan reduce every investor's risk and every lender's diligence (Chapters 3 to 5).
4. **Finance the enablers together.** The zone's development-finance package from the AfDB, the EU and the IFC [S07] is the natural vehicle for the shared enablers: the second power stage, the bulk berth design, the strategic environmental assessment and the waste facility.
5. **Measure and report.** Milestones should be public and dated, so that investors can see the platform advancing and authorities can see where it stalls.

Three steps: enable to 2028, anchor to 2032, integrate to 2040

Illustrative roadmap for a Kribi steel and metals platform, by workstream

	Step 1 · Enable 2026 to 2028	Step 2 · Anchor 2028 to 2032	Step 3 · Integrate 2032 to 2040
Port and bulk	Container yard +8 ha; plan a bulk berth for DRI, HBI and scrap	Mineral terminal first stage; dry-bulk handling for metallics	Export capacity for steel products and iron units
Power	225 kV line, 100 MW stage; tenant bays; power-quality code	330 to 400 MW stage; second 225 kV source into the zone	Renewable and gas firming for a zone load of 500 MW or more
Water and services	Water plant online; industrial water tariff; wastewater rules	Hazardous-waste cell; industrial-gas supplier on site	Shared recycling, slag-processing and scrap yard
Land and governance	KPIZ contractual framework; one-stop shop; steel cluster plan	Strategic environmental assessment; cumulative-impact plan	Further zone phases released against demand
Corridors	Édéa-Kribi road works; railway feasibility studies	Railway financing and construction start	Rail in service to Édéa and the interior
Steel and metals	First melt shop and rolling mill permitted and financed; works from 2029	First heat 2030: billets and wire rod; then sections and fabrication	Direct-reduced iron from Cameroonian ore; metals cluster

ILLUSTRATIVE Figure 10.1. Illustrative roadmap for a Kribi steel and metals platform, by workstream and step.

Source: Cameroon Steel analysis. Not a plan adopted by any authority.

10.2 Step 1, enable (2026 to 2028)

The first step converts infrastructure already under way into a working platform for one heavy tenant and prepares the cluster.

Power. Commission the 225 kV KPDC-port line and the 225/30 kV substation, due at the end of 2026 [S25], with a heavy-tenant bay and published short-circuit levels at the 225 kV and 30 kV busbars. Adopt a power-quality code for arc furnaces and other fluctuating loads, based on international practice [S74]. Agree a long-term tariff structure for loads above 10 MW with the regulator, the utility and the generator.

Water and services. Bring the port-platform water plant into production in early 2027 [S26], with capacity reserved for industry and an industrial tariff. Identify a licensed route for hazardous furnace dust before the first heat: a secure cell in the zone or a contracted export route for recycling.

Land and governance. Complete the transition from PAK to KPIZ and publish KPIZ's contractual framework for new tenants, including a heavy-industry template with a long term, renewal rights, a tariff based on hectares and throughput rather than turnover, and compensation on early termination (Chapter 3). Launch the strategic environmental assessment of the zone required for industrial-port complexes [S87], with a baseline air-quality and coastal monitoring network.

Port. Complete the container yard expansion due by the end of 2027 [S30]. Agree berth windows and covered storage for steel inputs at the multipurpose terminal. Write a steel-cluster berth, or an allocation of berth time and covered storage, into the design of the mineral terminal agreed in November 2025 [S32].

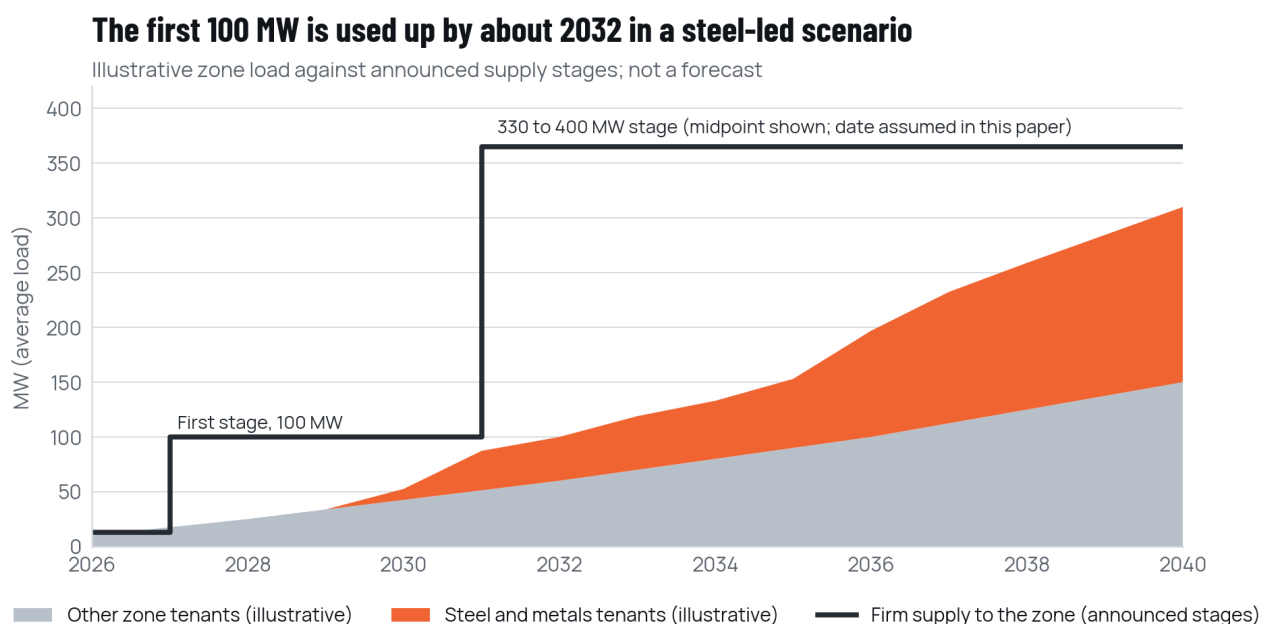
Corridors. Advance the reconstruction of the Édéa-Kribi road [S27] with heavy-axle specifications and a truck staging area; complete the feasibility study for the Édéa-Kribi-Lolabé-Campo railway agreed in June 2026 [S41], including sidings to the heavy-industry area.

Steel. Permit, finance and design a first melt shop and rolling mill sized to the first power stage. Cameroon Steel's complex at Mboro is one example: in its reference configuration, Phase 1 works start in the first quarter of 2029, after the environmental certificate, with a first heat in the second half of 2030, ramp-up in 2031 and an expected sustained output of 270,000 to 300,000 t a year from a 0.3 Mtpa nameplate [S112]. Its melt shop makes billets, with output flexible between wire rod, rebar and merchant billets for existing re-rollers (White paper 03, Chapter 9).

10.3 Step 2, anchor (2028 to 2032)

The second step brings the first melt shop into production and turns one heavy tenant into a cluster.

Power. Bring the second stage of the 225 kV system, 330 to 400 MW [S25], into service by about 2031, before the first stage is fully used in a steel-led scenario, which happens by about 2032 (Figure 10.2), together with a second high-voltage source into the port substation for N-2 security. Decide how Kribi's gas will be used by industry, whether for an extension of the Kribi gas plant, captive generation or direct reduction, now that the floating liquefaction vessel has left [S68].



ILLUSTRATIVE Figure 10.2. Illustrative zone-wide electrical load against the announced supply stages, 2026 to 2040.

Source: supply stages from PAK, 6 August 2025 [S25], with the 330 to 400 MW stage drawn from 2031 (date assumed in this paper; none is published); steel load from the Cameroon Steel reference configuration RC-1 (planning estimate), with a first heat in the second half of 2030, Phase 2 indicatively 2032 to 2034 and Phase 3 after 2034 [S112]; other tenants illustrative. Not a forecast.

Port. Bring into service the first stage of the mineral terminal, agreed in a memorandum of understanding on 4 November 2025 and expected by PAK's Director General in March 2026 to be completed within five to six years [S32][S03], with dry-bulk handling for iron units and covered storage.

Services. Attract an industrial-gas supplier with an on-site air-separation unit beside the steel cluster; establish a slag-processing yard producing certified aggregate for the zone and the Édéa-Kribi road; open a shared testing laboratory and a training centre with universities and equipment vendors (Chapter 7).

Corridors. Reach financial close and start construction of the Édéa-Kribi-Lolabé-Campo railway.

Steel. Direct the first melt shop's tonnage at imports of billets and wire rod and at CEMAC exports (White paper 04, Chapter 9); then add a second melt line or second heavy tenant, a sections mill for the angles, channels and beams the region imports, and downstream fabrication: cut-and-bend, mesh, wire drawing and structural steel (Chapter 7).

STEP 1 READIES THE PLATFORM. STEP 2 BUILDS A MILL AND A CLUSTER AROUND IT. STEP 3 MAKES KRIBI THE PLACE WHERE CAMEROONIAN IRON BECOMES STEEL.

Cameroon Steel

10.4 Step 3, integrate (2032 to 2040)

The third step links the platform to Cameroon's iron ore and to wider markets.

Iron from Cameroonian ore. Direct reduction is the route by which Cameroonian ore can become iron for the steel cluster, and by which the Mining Code's requirement that at least 15% of production be made available for local transformation can be met at scale [S24]. It requires three things not yet in place: direct-reduction-grade feed, because current direct-reduction processes need high-grade ore, typically at least 64% iron, which is under 20% of global supply [S159]; a pellet plant or a supply of pellets; and about 10 GJ of gas per tonne of DRI, or, in time, hydrogen [S116]. The government's 2026 to 2030 iron-ore programme for Mbalam, Bipindi-Grand Zambé and Kribi-Lobé [S43] and the mineral terminal at Kribi together create the conditions for a concentration and pelletising step at the coast, from which a direct-reduction module could draw.

Carbon-competitive exports. Steel and iron units exported to the European Union are now subject to the carbon border adjustment mechanism, with a certificate price of €82.32 per tonne of CO₂ in the third quarter of 2026 [S103] (see White paper 06, Chapter 5). Iron made with gas, and later with hydrogen produced from Cameroon's hydropower, on a grid that was about 90% hydro in 2025 [S60], could become a competitive low-carbon export as well as a domestic input.

Rail and the interior. With the railway in service to Édéa, steel from Kribi can reach the interior and the CEMAC corridors by rail, and scrap and other inputs can return.

Zone expansion. Release further phases of the zone against demonstrated demand, using the extensible character of the 4,000 ha integrated zone [S15].

10.5 Financing the enablers

The enabling infrastructure is not cheap, but it is small relative to the industry it would make possible, and most of it has an identifiable payer. Published costs give a sense of scale: about 35 bn FCFA for the 225 kV line and substation [S25], about 21.5 bn FCFA for the container yard expansion [S30], about 3.5 bn FCFA to service 20 ha of plots at Mboro [S18], about US\$2 billion reported for the mineral terminal at full scale [S33], and €795 million for KPIZ's fifteen-year zone plan [S04].

Three financing principles fit Cameroon's situation. **Users should pay where a user is identifiable.** A tenant's own high-voltage bay, compensation equipment, siding or covered berth section can be financed by the tenant or recovered through a dedicated tariff. **Shared public goods should be financed by the zone and its development partners.** The strategic environmental assessment, the stormwater system, the hazardous-waste facility and the transmission reinforcements for the second power stage benefit every tenant and are suited to the AfDB-led package, which is designed to mobilise about €411 million of public finance to catalyse

about €384 million of private investment [S07]. **Anchor tenants should commit early to de-risk the shared assets.** Long-term take-or-pay commitments for power capacity, water and berth time give lenders to the shared infrastructure the revenue certainty they need.

Fiscal space is limited. In October 2026 the IMF described Cameroon as at high overall risk of debt distress [S167]. That argues for structures in which the State's direct contribution is concentrated on land, regulation and coordination, while infrastructure is financed through concessions, development-finance loans and user charges. The 2025 investment ordinance already conditions incentives on proof of financing, local skills programmes and job creation [S23], which aligns private commitments with the zone's public objectives.

10.6 Milestones and indicators

Table 10.1 ILLUSTRATIVE Illustrative milestones and indicators for a Kribi steel platform

Step	Milestone	Indicator	Indicative date	Lead
Enable	225 kV substation commissioned	Energised; 100 MW available to the zone	End 2026 [S25]	PAK, SONATREL
Enable	Port-platform water plant in production	Production started; industrial tariff published	Early 2027 [S26]	PAK, KPIZ
Enable	KPIZ heavy-industry framework published	Template agreement and tariff schedule public	2027	KPIZ
Enable	Power-quality code in force	Short-circuit levels and emission limits published	2027	KPIZ, SONATREL, ARSEL
Enable	Container yard expansion complete	Static storage 34,000 TEU	End 2027 [S30]	KCT
Enable	Zone strategic environmental assessment launched	Terms of reference approved; monitoring network operating	2027	KPIZ, MINEPDED
Enable	First melt shop and rolling mill permitted and financed	Environmental certificate; land agreement; financing	End 2028 (illustrative)	Tenant
Anchor	First melt shop and rolling mill in production	Works from 2029; first heat; ramp-up	First heat second half of 2030; ramp-up 2031 (planning estimate) [S112]	Tenant
Anchor	Second power stage in service	330 to 400 MW available; second 225 kV source	By about 2031	MINEE, SONATREL, PAK
Anchor	Mineral terminal first stage	First dry-bulk vessel handled	Completion within five to six years of March 2026 [S03]	Terminal consortium, PAK
Anchor	Gas and slag services	Air-separation unit and slag yard operating	2029 to 2031	Suppliers, KPIZ
Anchor	Railway financed	Financial close; construction started	2030 to 2032	Government, promoters
Integrate	Direct-reduction module	First DRI from Cameroonian or imported pellets	After 2032 (illustrative)	Tenants, SNH
Integrate	Rail in service	First freight train Kribi to Édéa	2033 to 2036 (illustrative)	Railway operator
Integrate	Regional exports	Share of cluster output sold in CEMAC and AfCFTA markets	2032 to 2040	Tenants

Source: dated milestones from the sources cited; other dates are illustrative and reflect the sequencing logic of Chapter 9.

10.7 Who does what

Table 10.2 DERIVED Roles in building the Kribi steel platform

Actor	Role in the roadmap
Port Autonome de Kribi (PAK)	Owner of the port domain; port infrastructure; terminal concessions; 225 kV line and substation; water plant; transition to KPIZ [S25][S26][S10]
Kribi Port Industrial Zone S.A. (KPIZ)	Zone master plan; contractual framework; servicing; one-stop shop; shared services; strategic environmental assessment [S01][S03]
Ministry of Water and Energy, SONATREL and the electricity regulator ARSEL	Second power stage; transmission reinforcements; connection and power-quality rules; tariff framework above 10 MW [S26][S60]
Ministries of Transport and Public Works	Édéa-Kribi road; railway agreement and concession [S27][S41]
Ministry of Environment (MINEPDED)	Strategic environmental assessment; impact assessments; monitoring [S87][S88]
Ministry of Mines and the mines-metallurgy integration committee	Local-transformation obligations; ore supply to local steelmakers [S24][S44]
SNH and gas producers	Gas reserves, allocation and long-term supply to industry [S67][S69]
AfDB, EU, IFC and other lenders	Finance for shared enablers; environmental and social standards [S07][S90]
Steel and metals tenants	Plants, plot-level utilities, power-quality equipment, skills programmes, reporting [S23]

Source: Cameroon Steel analysis of mandates described in the sources cited.

10.8 What a platform would look like in 2040

If the three steps are delivered, Kribi in 2040 would host several melt shops and rolling mills, a direct-reduction module using Cameroonian ore, a sections mill, and a ring of suppliers and fabricators, served by a dedicated bulk berth, a firm high-voltage supply of several hundred megawatts, a railway to Édéa and the interior, and shared water, waste and gas services. It would supply Cameroon's and its neighbours' construction with steel made in the region, replace a large part of the region's imports of billets and sections, and export iron units and steel along the Gulf of Guinea and to carbon-regulated markets. It would also be the place where a share of Cameroon's iron ore is transformed at home, as the Mining Code intends.

None of this is assured. But each step has a precedent in the port-industrial zones that have succeeded elsewhere (Chapter 8), and each depends on decisions that can be taken in the next two years.

CHAPTER FINDING

A Kribi steel and metals platform can be built in three steps: enable (2026 to 2028), anchor (2028 to 2032) and integrate (2032 to 2040). The first step rests on infrastructure already under construction and on rules the zone can publish quickly; the second brings a first melt shop into production and needs the second power stage, the mineral terminal, industrial services and rail finance; the third links the cluster to Cameroonian ore through direct reduction and to regional and carbon-regulated markets. The decisive actions fall in the next two years.

CHAPTER 11

TWELVE FACTS WOULD CHANGE THIS ASSESSMENT; MOST CAN BE SETTLED WITHIN A YEAR

This paper relies on public sources available on 10 October 2026. Some facts that matter for a steel platform at Kribi are not yet public, are reported inconsistently, or have not been measured. This chapter lists them, explains why each matters, and proposes how and by whom it could be resolved. None of the gaps reverses the paper's central finding, that Kribi has the hard attributes of a steel platform and needs its enabling infrastructure to arrive in sequence. Several of them, however, determine how fast and how large that platform can become.

11.1 How the gaps were identified

Each chapter's evidence was graded as it was assembled. A fact was treated as **established** when it came from a primary source, such as a decree, a regulator's report or an official statement, or from two independent reputable sources that agree. It was treated as **reported** when only one secondary source was available, and as a **gap** when no public source was found or when sources conflict without a way to reconcile them. Figures that are Cameroon Steel's own planning assumptions are marked as indicative throughout and are not counted as gaps; they are explained in Annex A.

11.2 The gaps that matter most

Power system data. The short-circuit level that the new 225/30 kV substation at the port will offer at its busbars has not been published, nor have the rules for connecting large fluctuating loads. These numbers decide how large an arc furnace can be connected without compensation, and how much compensation each tenant must install (Chapter 4). The timing and financing of the second stage of the 225 kV system, from about 100 MW to 330 to 400 MW, are also not public [S25].

Gas availability. How much gas from the fields offshore Kribi can be committed to industry for twenty years after the departure of the Hilli floating liquefaction vessel in July 2026 is not known, because reserves are not publicly certified and the larger Yoyo-Yolanda resource has not reached a final investment decision [S67][S68][S69]. This is decisive for any direct-reduction module and for captive or extended gas-fired generation.

Water plant capacity. The capacity of the port-platform water plant due in early 2027, and the share reserved for industry, have not been published [S26].

Bulk berth design. The technical design, phasing and user-allocation rules of the mineral terminal agreed in a memorandum of understanding on 4 November 2025 are not public, and no financial close has been reported in the sources reviewed; the only dated public statement is that completion is expected within five to six years of March 2026 [S32][S33][S03].

Land framework and tariffs. KPIZ's new contractual framework for tenants, the entity that will sign new agreements, standard terms for heavy industry, and whether the 2018 tariff book, including its commercial levy of 3% of turnover, will continue to apply have not been published [S10][S11][S114].

Environmental baseline. There are no measured air-quality, noise or receiving-water data for the zone; the background fine-particle figure used in this paper is modelled [S92]. No strategic environmental assessment of the zone has been published.

Hazardous-waste capacity. No licensed hazardous-waste facility or zinc-recovery route was identified in public sources for the region (Chapter 5).

Road and rail timetables. The Édéa-Kribi road reconstruction has no published completion date [S27], and the June 2026 railway agreement has no published timetable for studies, financing or construction [S41].

Table 11.1 DERIVED Evidence gaps, their consequences and how to resolve them

#	Gap	Why it matters	How to resolve	Who	When
1	Short-circuit levels at the port substation; connection rules for fluctuating loads	Sets maximum furnace size and compensation needs	Grid study by SONATREL; publication in a zone power-quality code	SONATREL, KPIZ, ARSEL	Before commissioning, end 2026
2	Timing and financing of the second 225 kV stage (330 to 400 MW)	Caps the cluster at one heavy tenant until resolved	Financing plan and procurement schedule	MINEE, PAK, lenders	2027
3	Long-term industrial gas availability after July 2026	Decides direct reduction and captive generation	Independent reserve audit; gas allocation policy	SNH, MINEE	2027
4	Capacity of the port-platform water plant and industrial share	Sizes plant water systems and tariffs	Publication by PAK and KPIZ	PAK, KPIZ	Early 2027
5	Mineral-terminal design and berth allocation	Determines whether steel imports have a berth	Publication of design basis; user-allocation rules	Terminal consortium, PAK	2027
6	KPIZ contractual framework and tariffs for heavy industry	Determines whether lenders can finance long-lived plants	Publication of template agreements and tariff schedule	KPIZ	2027
7	Consistent port traffic series by cargo type	Bulk planning; benchmark credibility	Annual statistics by terminal and cargo	PAK	Next annual report
8	Measured environmental baseline for the zone	Permits and lender diligence	Zone monitoring network; strategic environmental assessment	KPIZ, MINEPDED	Start 2027
9	Hazardous-waste route	Licence condition for an arc furnace	Feasibility of shared secure cell and export route	KPIZ, licensed operators	Before first heat
10	Édéa-Kribi road completion date	Outbound logistics and road safety	Publication of works programme	MINTP	2027
11	Railway timetable	Cluster-scale logistics	Feasibility study and financing plan	Government, promoters	2027 to 2028

#	Gap	Why it matters	How to resolve	Who	When
12	Independent verification of benchmark zone statistics	Calibration of targets	Use of audited or third-party data where available	Researchers	Ongoing

Source: Cameroon Steel assessment.

11.3 How Cameroon Steel will update this paper

This is a first edition. Cameroon Steel intends to update it when material new facts become public, in particular the commissioning of the 225 kV substation, the publication of KPIZ’s contractual framework, and decisions on the mineral terminal and the railway. Corrections and additional sources are welcome and will be acknowledged in later editions.

CHAPTER FINDING

The largest unknowns are the strength and second-stage timing of the Kribi power supply, the long-term availability of gas for industry, the design of the bulk berth and KPIZ’s contractual framework for heavy industry. Each can be resolved by publication or study within about a year, and each would allow investors and lenders to move from interest to commitment.

ANNEX A

METHOD, ASSUMPTIONS AND CALCULATIONS

This annex explains how the evidence in the paper was gathered and graded, how derived figures were calculated, and which planning assumptions were used, with their ranges. The data behind every chart are published with the web edition of the paper as JSON files, one per chart, with their sources and status.

A.1 Evidence and status codes

The research for this paper used public sources available on or before 10 October 2026: legal texts, regulators' reports, statements and documents of the Port Autonome de Kribi (PAK) and of Kribi Port Industrial Zone S.A. (KPIZ), statistics from Cameroon's national statistics institute (INS) and from UN Comtrade, reports of international organisations, peer-reviewed studies and reputable business press. Documents of PAK are cited by title and date, without web links.

Every figure and table carries one of four status codes:

- **Sourced**: the number was read in the cited source.
- **Derived**: the number is Cameroon Steel's arithmetic on sourced inputs; the calculation is shown below.
- **Assumed**: the number is a stated planning assumption, with a range.
- **Illustrative**: the exhibit shows a scenario or a schematic, not a measurement or a forecast.

Where sources conflict, the paper says so in the text and states which figure it uses, preferring primary over secondary sources and the most recent edition of a dataset. Cameroon Steel's own planning figures, drawn from the Cameroon Steel reference configuration RC-1 (planning estimate) for a 1 Mtpa electric-arc-furnace long-products works, are cited as [S112] and described as indicative; they are not design values and do not represent commitments. The phased pathway of that configuration is described in White paper 03, Chapter 9.

A.2 Planning assumptions for one steel tenant

Table A.1 **ASSUMED** Indicative planning assumptions for one electric-arc-furnace long-products works, with ranges

Parameter	Central value	Range	Status	Basis
Capacity, first phase	0.3 Mtpa finished product (nameplate)	Expected sustained output 270,000 to 300,000 t a year	Assumed	Cameroon Steel planning [S112]
Capacity, first and second phases	0.5 Mtpa	0.45 to 0.5	Assumed	[S112]
Capacity, full	1.0 Mtpa	0.85 to 1.0	Assumed	Public record of design capacity [S40]; [S112]
EAF electricity	450 kWh per tonne of liquid steel; about 490 kWh/t with 30% DRI or HBI (upper planning value)	347 to 500	Sourced	IFC EHS Guidelines, 2007 [S75]; [S112]

Parameter	Central value	Range	Status	Basis
Rolling electricity	110 kWh per tonne of product	70 to 140	Sourced	[S75]
Auxiliaries (ladle furnace, caster, oxygen, utilities)	70 kWh per tonne of liquid steel	50 to 100	Assumed	[S112]
Induction billet heating, first-phase line	300 kWh per tonne of billet, applied to the tonnage rolled	150 to 400	Assumed	[S112]
Operating basis for average load	8,000 hours a year	n/a	Assumed	[S112]
Metallic yield	0.88 t liquid per t metallics	0.85 to 0.91	Assumed	[S112]
Casting and rolling yield	0.94 t product per t liquid	0.92 to 0.96	Assumed	[S112]
Share of DRI or HBI in the charge	30%	20 to 50	Assumed	[S112]
Domestic scrap available to one tenant	30,000 t a year	0 to 60,000	Assumed	Bounded by the national estimate of 53,000 to 62,000 t a year, 2006 [S168]; [S112]
Water make-up, closed loop	2.0 m ³ per tonne of product	1.5 to 3.0	Assumed	worldsteel 2024 averages [S77]; [S112]
Oxygen	35 Nm ³ per tonne of liquid steel	25 to 45	Assumed	[S112]
EAF slag	140 kg per tonne of liquid steel	110 to 180	Derived	IFC gives 110 to 180 kg of solid waste per tonne for EAF steelmaking [S75], taken here as mostly slag
EAF dust	15 kg per tonne of liquid steel	10 to 20	Assumed	Planning range [S112]; the European reference document reports 10 to 30 kg [S76]
Mill scale	20 kg per tonne of product	15 to 25	Assumed	[S112]
Maximum electrical demand, first phase	55 MVA	45 to 65	Assumed	[S112]
Maximum electrical demand, full	160 MVA	130 to 190	Assumed	[S112]
Truck payload; working days	30 t; 300 days a year	n/a	Assumed	[S112]
Consumables (lime, alloys, electrodes, refractories)	6% of finished output	n/a	Assumed	[S112]
Phase 1 schedule	Works from the first quarter of 2029; first heat in the second half of 2030; ramp-up in 2031	n/a	Assumed	[S112]
Grid carbon intensity	226 g CO ₂ per kWh	200 to 300	Sourced	Ember via Our World in Data, 2024 [S78]; kept as a conservative planning value
Exchange rates	655.957 FCFA per euro (fixed); 600 FCFA per US dollar (planning)	560 to 650 FCFA per US dollar	Assumed	Fixed parity; planning rate

Source: as listed.

With these assumptions the indicative annual balances are: at 0.3 Mtpa, about 289 GWh of electricity (36 MW average), 0.6 million m³ of make-up water, about 45 kt of slag and about 351 kt of port-linked inbound cargo; at 0.5 Mtpa, about 422 GWh (53 MW), 1.0 million m³ and about 604 kt; at 1.0 Mtpa, about 753 GWh (94 MW), 2.0 million m³, about 149 kt of slag, 16 kt of dust, 37 million Nm³ of oxygen and about 1.24 Mt of port-linked inbound

cargo [S112]. Port-linked inbound cargo is the metallic charge less domestic scrap, plus consumables. The electricity of the first phase is $0.319 \text{ Mt of liquid steel } (0.3 \text{ Mt} \div 0.94) \times 520 \text{ kWh/t} + 0.3 \text{ Mt rolled} \times 410 \text{ kWh/t} = 289 \text{ GWh}; \div 8,000 \text{ h} = 36 \text{ MW}$. The induction heating applies to the first-phase line only, so each further tonne of product adds about 663 kWh ($520 \div 0.94 + 110$). At the upper planning value of 490 kWh/t for the furnace, the first phase's average load would be about 1.5 MW higher.

A.3 Derived calculations

Table A.2 DERIVED Derived figures used in the paper and how they were calculated

Figure in the paper	Calculation	Result
Average value of chapter 72 imports, 2025	$170,094 \text{ million FCFA} \div 412,049 \text{ t}; \div 655.957 \text{ FCFA per euro}$	413 FCFA/kg; about €630/t
Total material moved at 1 Mtpa (Figure 1.1)	Imported scrap 816 kt + domestic scrap 30 kt + DRI 363 kt + consumables (6% of finished output) 60 kt + products 1,000 kt + slag 149 kt + scale 20 kt + dust 16 kt	About 2.45 Mt
Port-linked inbound cargo	Metallic charge minus domestic scrap plus consumables: 1,209 minus 30 plus 60 kt at 1 Mtpa; 363 minus 30 plus 18 kt for a first phase	About 1.24 Mt and 351 kt
Truck-km by distance (Figure 1.2)	$(\text{Port-linked inbound} + 0.5 \times \text{outbound}) \div 30 \text{ t} \times 2 \times \text{distance}$	11.6 million truck-km at 1 Mtpa and 100 km
Truck movements if all flows went by road (Figure 6.3)	$(\text{Metallic charge} + \text{finished output}) \div 30 \text{ t} \div 300 \text{ days}$	74, 123 and 245 a day at 0.3, 0.5 and 1 Mtpa
Of which inside the port domain	$\text{Imported metalics (metallic charge minus domestic scrap)} \div 30 \text{ t} \div 300 \text{ days}$	37, 64 and 131 a day
Of which on the public road	$(\text{Finished output} + \text{domestic scrap}) \div 30 \text{ t} \div 300 \text{ days}$	37, 59 and 114 a day; 20, 31 and 59 if half the output ships by sea
Train equivalents of public-road flows	$\text{Public-road loads} \div 30 \text{ t} \div 1,500 \text{ t}$	0.7, 1.2 and 2.3 trains a day
Melting cost of a 10 FCFA/kWh tariff difference	$450 \text{ to } 490 \text{ kWh/t} \times 10 \text{ FCFA/kWh}$	About 4,500 to 4,900 FCFA per tonne of liquid steel
Capacity margin, 2025	$2,033 \text{ MW installed minus } 1,278 \text{ MW peak}$	755 MW
Kribi gas plant capacity factor, 2025	$559.67 \text{ GWh} \div (216 \text{ MW} \times 8,760 \text{ h})$	About 30%
Average legacy high-voltage price, 2025	$17.80 \text{ bn FCFA} \div 969.03 \text{ GWh}$	18.4 FCFA/kWh
All-in price, 9 to 10 MW band, 2026	Demand charge 15,500 FCFA/kW/month and energy 9 FCFA/kWh (2023 base), each escalated by 10% a year in 2024, 2025 and 2026; 650 hours a month	About 43.7 FCFA/kWh
Transmission charge	$(16.18 \text{ million FCFA/MW/year} \times 100 \text{ MW}) \div (100 \text{ MW} \times 8,760 \text{ h} \times 0.8) + 0.41 \text{ FCFA/kWh}$	About 2.7 FCFA/kWh
KPIZ plan per hectare	$\text{€}795 \text{ million} \div 4,000 \text{ ha}$	About €199,000/ha
Servicing cost per hectare at Mboro	$3.5 \text{ bn FCFA} \div 20 \text{ ha}$	About 175 million FCFA/ha
Ratio of land requested to land allocated	$3,883 \text{ ha} \div 196 \text{ ha}$	About 20
Lobé minimum flow as annual volume	$3.5 \text{ m}^3/\text{s} \times 31.5 \text{ million s}$	About 110 million m ³

Figure in the paper	Calculation	Result
Town equivalent of 8.5 million m ³ a year	$8.5 \text{ million m}^3 \div (0.15 \text{ m}^3 \text{ per person per day} \times 365)$	About 155,000 people
Rainwater harvest (Chapter 5)	$\text{Area} \times 10,000 \text{ m}^2/\text{ha} \times 2.836 \text{ m} \times \text{run-off coefficient } 0.8$	0.11, 0.23 and 0.45 million m ³ for 5, 10 and 20 ha
Gas for 1 Mtpa of DRI	$1 \text{ Mt} \times 10 \text{ GJ/t}$; about 1.09 PJ per billion cubic feet	About 10 PJ, about 9 bcf

Source: inputs as cited in the chapters; arithmetic by Cameroon Steel.

A.4 Maps and distances

The Kribi map (Figure 2.1) was drawn from an OpenStreetMap extract downloaded through the Overpass API with a data base of 24 July 2026, projected to UTM zone 32N. It shows coastline, roads, rivers, residential and industrial land use, protected-area limits and named places as mapped by OpenStreetMap contributors [S111]. The 225 kV line is drawn as a straight schematic between the gas power plant and the port, and the substation position is indicative. The regional map (Figure 6.2) uses Natural Earth admin-0 boundaries [S110]; corridors are schematic lines through the cities they serve, and the Mbalam-Nabeba deposits are placed approximately. No project boundary or parcel is shown on any map.

Straight-line distances (Figures 6.1 and 9.2) are geodesic distances on the WGS84 ellipsoid. City distances are measured between approximate city-centre positions; distances to protected areas are measured from the centroid of the port breakwater as mapped in OpenStreetMap to the nearest vertex of each protected-area boundary. Road distances are longer.

A.5 Scenario in Figure 10.2

The zone-load scenario is illustrative. Steel and metals load follows one tenant's phases on the schedule of Cameroon Steel's reference configuration [S112]. It is zero until the first heat of Phase 1 in the second half of 2030, averages about 10 MW in 2030 and reaches 36 MW in 2031. Phase 2 (second melt line and light/medium sections mill), indicatively 2032 to 2034, is drawn as a ramp from the start of 2032, giving annual averages of about 40 MW in 2032 and 53 MW in 2034. Phase 3 (melt-shop expansion and heavy-section mill), after 2034, takes the tenant to about 94 MW in 2037. A second metals tenant from the mid-2030s brings steel and metals load to about 120 MW in 2037 and 160 MW in 2040. Other tenants' load rises from 10 MW in 2026 to 150 MW in 2040. Total load reaches the first stage's 100 MW in 2032. Supply follows the announced stages: about 13 MW locally available before 2027, 100 MW from 2027 and the midpoint of 330 to 400 MW from 2031. No date has been published for that second stage: 2031 is assumed in this paper and is the date it recommends. The purpose is to show the timing problem, not to forecast demand.

A.6 Limitations

The paper is a desk study. It does not include site measurements, interviews with the authorities or confidential information, and it does not assess any individual project's economics. Statistics from operators and the press were used where official series are not available, and conflicts are reported. Readers should treat the indicative figures as orders of magnitude for planning.

ANNEX B

GLOSSARY AND ABBREVIATIONS

The terms below are used in the sense given here. Units follow the International System; "t" is the metric tonne, "Mt" a million tonnes and "Mtpa" a million tonnes a year.

Steel and process terms**Arc furnace (EAF)**

An electric arc furnace melts scrap, DRI or HBI with an electric arc between graphite electrodes and the charge. It is the main steelmaking route in Africa and the route assumed in this paper.

Billet

A semi-finished steel product of square section, cast in a continuous caster and rolled into bars, rods or light sections.

Direct-reduced iron (DRI)

Iron produced by removing oxygen from iron-ore pellets or lump ore in the solid state, usually with natural gas, and in future with hydrogen.

Hot-briquetted iron (HBI)

DRI compacted at high temperature into dense briquettes that are safer to ship and store.

Ladle furnace

A secondary steelmaking unit that adjusts the temperature and chemistry of liquid steel before casting.

Long products

Steel products that are long relative to their cross-section: reinforcing bar, wire rod, angles, channels and beams.

Phase and step

In this series, a "phase" (Phase 1, 2 or 3) is an investment phase of one project; a "step" is part of the analytical sequence of the zone roadmap in Chapter 10.

Mill scale

The iron-oxide layer that forms on hot steel and is removed during rolling; it is recycled or sold.

Slag

The non-metallic by-product of steelmaking, formed from lime and oxides; EAF slag can be processed into aggregate.

Furnace dust

Fine particles captured by the furnace's filters; it contains zinc and lead and is classified as hazardous waste.

Wire rod

Hot-rolled long product of small round section, supplied in coils and drawn into wire, nails and mesh.

Power and utilities**Flicker**

Rapid fluctuation of voltage that causes visible variation in lighting; arc furnaces are a classic source.

Short-circuit power

A measure of the strength of an electrical network at a point; the higher it is, the less a fluctuating load disturbs the voltage.

SVC and STATCOM

Static var compensator and static synchronous compensator: power-electronic devices that supply or absorb reactive power rapidly to stabilise voltage and reduce flicker.

N-2 redundancy

A supply arrangement designed to remain available with two components out of service.

Schedulable load

A load whose timing can be planned around the grid's needs, as an arc furnace's melting can be moved away from peaks; distinct from an interruptible load, which the grid operator can cut at short notice.

Capacity factor

Energy actually generated by a plant in a period divided by the energy it would generate running at full capacity throughout.

Closed-loop cooling

Cooling-water circuits in which water is cooled and reused, so that only losses and blowdown need to be replaced.

Institutions and places

AfDB

African Development Bank.

AGL

Africa Global Logistics, part of the MSC group; a shareholder of KPIZ S.A. and of the Kribi container terminal.

ARSEL

Agence de Régulation du Secteur de l'Électricité, Cameroon's electricity regulator.

CEMAC

Communauté Économique et Monétaire de l'Afrique Centrale: Cameroon, the Central African Republic, Chad, Congo, Equatorial Guinea and Gabon.

CIPK

Complexe Industriale-Portuaire de Kribi, the overall land reserve classified for the port and its industrial hinterland.

KCT

Kribi Conteneurs Terminal, the operator of the container terminals at the Port of Kribi.

KPDC

Kribi Power Development Corporation, owner and operator of the 216 MW Kribi gas power plant.

KPIZ S.A.

Kribi Port Industrial Zone S.A., the company created on 26 February 2026 to develop and manage the integrated industrial zone of the Port of Kribi.

MINEE, MINEPDED, MINT, MINTP

Ministries of Water and Energy; Environment, Nature Protection and Sustainable Development; Transport; and Public Works.

PAK

Port Autonome de Kribi, the public-capital company that owns and manages the port and its domain.

SNH

Société Nationale des Hydrocarbures, Cameroon's national hydrocarbons company.

SONATREL

Société Nationale de Transport de l'Électricité, operator of Cameroon's transmission network.

ZIIPK and ZIPK

Zone Industrielle Intégrée du Port de Kribi (the integrated zone of about 4,000 ha developed by KPIZ) and Zone Industriale-Portuaire de Kribi (the port authority's usual name for the industrial area of the port domain).

Trade, finance and environment

AfCFTA

African Continental Free Trade Area.

CBAM

The European Union's carbon border adjustment mechanism, which prices the embedded emissions of imported steel and other goods.

DWT

Deadweight tonnage, the carrying capacity of a ship.

Equator Principles

A risk-management framework adopted by financial institutions for environmental and social risk in projects.

HS code

Harmonized System code used to classify traded goods; chapter 72 covers iron and steel and chapter 73 articles of iron or steel.

IFC Performance Standards

The environmental and social standards of the International Finance Corporation, applied by many development lenders.

MoU

Memorandum of understanding.

Strategic environmental assessment

An assessment of the environmental effects of a plan or programme, such as an industrial zone, rather than of a single project.

TEU

Twenty-foot equivalent unit, the standard measure of container volume.

ANNEX C

SOURCES

Every source cited in this paper is listed below by its identifier. Documents of the Port Autonome de Kribi are cited by title and date, without web links. Web addresses were accessed on or before 10 October 2026. Cameroon Steel planning figures are cited as [S112], the Cameroon Steel reference configuration RC-1 (planning estimate); they are indicative values with ranges, labelled with their status where they are used and explained in Annex A. Two tertiary sources, marked as such, are used only for dates.

Table C.1 SOURCED Sources cited, by identifier

ID	Title	Publisher	Date	Web address
S01	La Lettre du PAK n°264: Lancement de Kribi Port Industrial Zone, l'avenir a commencé	Port Autonome de Kribi (newsletter)	February 2026	No link: cited by title and date
S02	Lancement de la Kribi Port Industrial Zone: l'avenir a commencé	Port Autonome de Kribi	26 February 2026	No link: cited by title and date
S03	Zone industrialo-portuaire de Kribi (KPIZ): jusqu'à +8 points de croissance et 150 000 emplois attendus sur 15 ans	Investir au Cameroun	4 March 2026	https://www.investiraucameroun.com/gestion-publique/0403-23163-zone-industrialo-portuaire-de-kribi-kpiz-jusqu-a-8-points-de-croissance-et-150-000-emplois-attendus-sur-15-ans
S04	Port de Kribi: AGL, Arise IIP et Belmont s'allient au PAK pour une zone industrielle de 521 milliards FCFA sur 4 000 ha	Investir au Cameroun	20 February 2026	https://www.investiraucameroun.com/gestion-publique/2002-23123-port-de-kribi-agl-arise-iip-et-belmont-s-allient-au-pak-pour-une-zone-industrielle-de-521-milliards-fcfa-sur-15-000-ha
S05	Kribi KPIZ seen lifting Cameroon's growth by 5 to 8 points, adding 150,000 jobs	Business in Cameroon	3 March 2026	https://www.businessincameroun.com/public-management/0303-15837-kribi-kpiz-seen-lifting-cameroon-s-growth-by-5-8-points-adding-150-000-jobs
S06	KPIZ officially launched: a new economic hub for Cameroon and CEMAC	AGL (press release)	February 2026	https://aglgroup.com/en/News/lancement-KPIZ
S07	Cameroon: African Development Bank Group supports development of integrated industrial zone at the Port of Kribi	African Development Bank (via AllAfrica)	2 March 2026	https://allafrica.com/stories/202603100682.html
S08	Cérémonie officielle de lancement de Kribi Port Industrial Zone	Autorité Portuaire Nationale (APN)	3 March 2026	https://www.apn.cm/en/2026/03/03/ceremonie-officielle-de-lancement-de-kribi-port-industrial-zone/
S09	Official launch of the Kribi Port Industrial Zone (KPIZ): driving the economic transformation of Cameroon and the CEMAC sub-region	Ports Africa	2026	https://www.portsafrica.com/official-launch-of-the-kribi-port-industrial-zone-kpiz-driving-the-economic-transformation-of-cameroon-and-the-cemac-sub-region/
S10	Gestion de la zone industrielle du Port de Kribi: une nouvelle organisation mise en place	Cameroon Tribune	28 May 2026	https://cameroon-tribune.cm/article.html/77128/fr.html/details_2

ID	Title	Publisher	Date	Web address
S11	Kribi Port unveils new management framework for industrial-zone transition	Business in Cameroon	1 June 2026	https://www.businessincameroon.com/public-management/0106-16249-kribi-port-unveils-new-management-framework-for-industrial-zone-transition
S12	Le PAK et la KPIZ renforcent le dialogue avec leurs amodiataires	Port Autonome de Kribi	26 August 2026	No link: cited by title and date
S13	Africa CEO Forum 2026: PAK and KPIZ showcase Kribi's industrial vision	Port Autonome de Kribi	15 May 2026	No link: cited by title and date
S14	PROMOTE 2026: le Port Autonome de Kribi confirme son ambition industriel-portuaire	Port Autonome de Kribi	18 June 2026	No link: cited by title and date
S15	Zone industrielle intégrée de Kribi: les atouts dévoilés	Cameroon Tribune	17 June 2026	https://www.cameroon-tribune.cm/article.html/77752/en.html/zone-industrielle-integree-de-kribi-les-atouts-devoiles
S16	Le PAK tient enfin son titre foncier	Port Autonome de Kribi	26 June 2023	No link: cited by title and date
S17	AMI n°013/AMI/PAK/2026 (Port Workers' City)	Agence de Régulation des Marchés Publics (ARMP)	30 January 2026	https://www.armp.cm/details?type_publication=AMI&id_publication=6073
S18	Cameroon: le port de Kribi engage 3,5 milliards FCFA pour préparer l'arrivée de nouveaux industriels	EcoMatin	11 May 2026	https://ecomatin.net/cameroon-le-port-de-kribi-engage-35-milliards-fcfa-pour-preparer-larrivee-de-nouveaux-industriels
S19	Port de Kribi: un protocole d'accord signé pour un terminal agro-industriel de 50 milliards de FCFA	Investir au Cameroun	9 October 2026	https://www.investiraucameroun.com/gestion-publique/0910-23942-port-de-kribi-un-protocole-daccord-signe-pour-un-terminal-agro-industriel-de-50-milliards-de-fcfa
S20	Zone industrielle Kribi: 400 milliards FCFA investis et 53 entreprises autorisées à s'implanter depuis 2018	Investir au Cameroun	20 May 2025	https://www.investiraucameroun.com/gestion-publique/2005-22033-zone-industrielle-kribi-400-milliards-fcfa-investis-et-53-entreprises-autorisees-a-s-implanter-depuis-2018
S21	Présentation du Port Autonome de Kribi (brochure)	Port Autonome de Kribi	October 2018	No link: cited by title and date
S22	Guide du Port de Kribi	Port Autonome de Kribi	August 2020	No link: cited by title and date
S23	Ordonnance n° 2025/002 du 18 juillet 2025 fixant les incitations à l'investissement en République du Cameroun	Presidency of the Republic (copy published by GECAM)	18 July 2025	https://legecam.cm/wp-content/uploads/2025/08/ordonnance_n_2025_002_du_18_07_2025.pdf
S24	Loi n° 2023/014 du 19 décembre 2023 portant Code minier (Article 40(4), local transformation)	Republic of Cameroon (FAOLEX)	19 December 2023	https://faolex.fao.org/docs/pdf/cmr223180.pdf
S25	Kribi franchit la ligne électrique 225 kV	Port Autonome de Kribi	6 August 2025	No link: cited by title and date
S26	Énergie et infrastructures: un nouvel élan pour la compétitivité du Port de Kribi	Port Autonome de Kribi	19 August 2026	No link: cited by title and date
S27	Bilan et perspectives: les voyants sont au vert	Port Autonome de Kribi	13 March 2025	No link: cited by title and date
S28	Port de Kribi: la performance au service de la Nation (opinion article by the Director General)	Port Autonome de Kribi	21 April 2026	No link: cited by title and date
S29	Le Port affine sa feuille de route pour 2026	Port Autonome de Kribi	9 September 2025	No link: cited by title and date

ID	Title	Publisher	Date	Web address
S30	Port de Kribi: 21,5 milliards de FCFA pour accroître de 30% les capacités du terminal à conteneurs	Investir au Cameroun	8 October 2026	https://www.investiraucameroun.com/infrastructures/0810-23934-port-de-kribi-21-5-milliards-de-fcfa-pour-accroitre-de-30-les-capacites-du-terminal-a-conteneurs
S31	Kribi Port's net profit exceeds CFA4 billion after strong year for cargo traffic	Business in Cameroon	29 June 2026	https://www.businessincameroon.com/transport/2906-16378-kribi-port-s-net-profit-exceeds-cfa4-billion-after-strong-year-for-cargo-traffic
S32	Port de Kribi: un terminal minéralier d'avenir	Port Autonome de Kribi	4 November 2025	No link: cited by title and date
S33	Kribi Deep Sea Port, investors partner to construct 125-million-tonne mineral terminal worth \$2 billion	Business in Cameroon	5 November 2025	https://www.businessincameroon.com/transport/0511-15300-kribi-deep-sea-port-investors-partner-to-construct-125-million-tonne-mineral-terminal-worth-2-billion
S34	Chemin de fer Mbalam-Kribi et terminal minéralier: un tournant pour l'intégration régionale	Port Autonome de Kribi	25 February 2022	No link: cited by title and date
S35	La ZIPK rayonne avec l'inauguration de la cimenterie CIMPOR	Port Autonome de Kribi	19 July 2024	No link: cited by title and date
S36	Cameroon speeds up Kribi bitumen plant with tax breaks and refining licence	Business in Cameroon	10 June 2026	https://www.businessincameroon.com/public-management/1006-16302-cameroon-speeds-up-kribi-bitumen-plant-with-tax-breaks-and-refining-license
S37	Cameroon: Atlantic Group amends investment agreement for 1-million-tonne Kribi cement plant	Ecofin Agency	27 February 2026	https://www.ecofinagency.com/news-industry/2702-53339-cameroon-atlantic-group-amends-investment-agreement-for-1-mln-ton-kribi-cement-plant
S38	À Kribi, Patrice Melom, DG du PAK, conduit une tournée d'inspection de trois jours dans les chantiers relevant du domaine portuaire	Bougna	8 April 2026	https://bougna.net/2026/04/08/contact/a-kribi-patrice-melom-dg-du-pak-conduit-une-tournee-dinspection-de-trois-jours-dans-les-chantiers-relevant-du-domaine-portuaire/
S39	Kribi: le Premier ministre, chef du gouvernement est là	Cameroon Tribune	30 December 2024	https://cameroon-tribune.cm/article.html/68499/fr.html/details_2
S40	Industrialisation: la voie royale de l'émergence	Cameroon Tribune	2 January 2025	https://cameroon-tribune.cm/article.html/68558/fr.html/details_2
S41	Ligne ferroviaire Édéa-Kribi-Lolabé-Campo: une nouvelle étape pour la connectivité du Port de Kribi	Port Autonome de Kribi	4 June 2026	No link: cited by title and date
S42	Grand Zambi: le fer de Bipindi au service de l'essor du PAK	Port Autonome de Kribi	17 January 2025	No link: cited by title and date
S43	Cameroon plans \$3.1B iron ore push starting 2026	Daba Finance	14 February 2026	https://dabafinance.com/en/news/cameroon-mining-investment-2026-2030
S44	Cameroon reviews metals industry to address supply and energy constraints	Business in Cameroon	29 April 2026	https://www.businessincameroon.com/public-management/2904-16094-cameroon-reviews-metals-industry-to-address-supply-and-energy-constraints
S45	Le Cameroun prépare l'exportation de son acier vers les marchés de la ZLECAf	EcoMatin	16 April 2026	https://ecomatin.net/le-cameroun-prepare-l'exportation-de-son-acier-vers-les-marches-de-la-zlecaf
S46	Mbalam iron ore mine delays first exports to early 2026	Business in Cameroon	13 December 2025	https://www.businessincameroon.com/public-management/1312-15495-mbalam-iron-ore-mine-delays-first-exports-to-early-2026

ID	Title	Publisher	Date	Web address
S47	CNPS, G-Stones join Kribi port mineral terminal project	Business in Cameroon	7 November 2025	https://www.businessincameroon.com/mining/0711-15312-cnps-g-stones-join-kribi-port-mineral-terminal-project
S48	Coopération financière: la BAD soutient le développement du Port de Kribi	Port Autonome de Kribi	13 September 2024	No link: cited by title and date
S49	Port de Kribi: une dynamique industrielle portée par les financements publics	Journal du Cameroun	20 April 2026	https://fr.journalducameroun.com/port-de-kribi-une-dynamique-industrielle-portee-par-les-financements-publics/
S52	Kribi port plans 8-hectare expansion to raise container capacity to 34,000 TEUs	Business in Cameroon	18 May 2026	https://www.businessincameroon.com/public-management/1805-16177-kribi-port-plans-8-hectare-expansion-to-raise-container-capacity-to-34-000-teus
S53	Kribi port revenue up 24% as cargo traffic reaches 12.7mln tons in 2024	Business in Cameroon	1 July 2025	https://www.businessincameroon.com/public-management/0107-14810-kribi-port-revenue-up-24-as-cargo-traffic-reaches-12-7mln-tons-in-2024
S54	Douala port faces severe congestion, impacting West African trade	Business in Cameroon	1 September 2025	https://www.businessincameroon.com/public-management/0109-14940-douala-port-faces-severe-congestion-impacting-west-african-trade
S55	Douala memories: salvage expert from gateway to Central Africa	Gard	6 May 2015	https://gard.no/insights/douala-memories-salvage-expert-from-gateway-to-central-africa
S56	Port de Kribi: l'explosion du trafic commence à saturer le terminal à conteneurs	EcoMatin	5 October 2026	https://ecomatin.net/port-de-kribi-lexplosion-du-traffic-commence-a-saturer-le-terminal-a-conteneurs
S57	Cameroon's Kribi port triples capacity with launch of second container terminal	Business in Cameroon	12 May 2025	https://www.businessincameroon.com/infrastructures/1205-14650-cameroon-s-kribi-port-triples-capacity-with-launch-of-second-container-terminal
S60	Rapport d'activités 2025 de l'ARSEL	Agence de Régulation du Secteur de l'Électricité (ARSEL)	7 September 2026	https://arsel-cm.org/wp-content/uploads/2026/09/Rapport-ARSEL-2025.pdf
S61	Nachtigal power line delays leave 150 MW of industrial demand unmet	Business in Cameroon	9 October 2026	https://www.businessincameroon.com/public-management/0910-16939-nachtigal-power-line-delays-leave-150-mw-of-industrial-demand-unmet
S62	Décision fixant le montant de la RMA ENEO au titre de l'exercice 2025 (réajustée)	ARSEL	19 December 2025	http://arsel-cm.org/wp-content/uploads/2026/01/Decision-fixant-le-Montant-de-le-RMA-Eneo-au-titre-de-lexercice-2025-du-19-12-2025.pdf
S63	Tableaux tarifaires, Décision ARSEL N°00000427 (clients MT 2023 à 2025)	ARSEL	January 2026	http://arsel-cm.org/wp-content/uploads/2026/01/TABLEAUX-TARIFAIRES-decision-MT-2023-2025.pdf
S64	Kribi Power Development Corporation (project summary)	MIGA, World Bank Group	2014	https://www.miga.org/project/kribi-power-development-corporation-0
S65	The AfDB praises the impacts of the planned extension of the Kribi gas-fired power plant	Business in Cameroon	1 July 2020	https://www.businessincameroon.com/energy/0107-10486-the-afdb-praises-the-impacts-of-the-planned-extension-of-the-kribi-gas-fired-power-plant
S66	Au Cameroun, l'État veut reprendre les centrales de Kribi et Dibamba à Globeleq	Forbes Afrique	11 August 2026	https://forbesafrique.com/au-cameroun-letat-veut-reprendre-les-centrales-de-kribi-et-dibamba-a-globeleq/
S67	Données pétrolières 2025	Société Nationale des Hydrocarbures (SNH)	June 2026	https://snh.cm/wp-content/uploads/2026/06/Donnees-petrolieres-2025.pdf
S68	Cameroon FLNG Terminal	Global Energy Monitor (GEM.wiki; tertiary)	October 2026	https://www.gem.wiki/Cameroon_FLNG_Terminal

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S69	Cameroon's SNH eyes Yoyo-Yolanda and new exploration blocks to sustain gas growth	Business in Cameroon	6 July 2026	https://www.businessincameroon.com/energy/0607-16422-cameroon-s-snh-eyes-yoyo-yolanda-and-new-exploration-blocks-to-sustain-gas-growth
S71	Kribi gas power plant resumes operations after debt resolution	Business in Cameroon	27 February 2025	https://www.businessincameroon.com/energy/2702-14501-kribi-gas-power-plant-resumes-operations-after-debt-resolution
S72	Electric arc furnace modeling for voltage flicker evaluation (PQSoft case study, document PQS0313)	Electrotek Concepts, Inc. (copy published by PowerQuality.blog, 28 February 2022)	16 April 2003	https://powerquality.blog/2022/02/28/electric-arc-furnace-modeling-for-voltage-flicker-evaluation/
S73	Gerdau Steel: static var compensator for arc furnace operation (customer reference)	Hitachi Energy	n.d. (project 2007)	https://www.hitachienergy.com/in/en/news-and-events/customer-stories/reference-gerdau-steel
S74	IEC TR 61000-3-7, Ed. 2.0: Assessment of emission limits for the connection of fluctuating installations to MV, HV and EHV power systems	International Electrotechnical Commission	February 2008	https://webstore.iec.ch/en/publication/4155
S75	Environmental, Health, and Safety Guidelines for Integrated Steel Mills	IFC, World Bank Group	30 April 2007	https://www.ifc.org/content/dam/ifc/doc/2000/2007-integrated-steel-mills-ehs-guidelines-en.pdf
S76	Best Available Techniques Reference Document for Iron and Steel Production (EUR 25521)	European Commission, Joint Research Centre	2013	https://bureau-industrial-transformation.jrc.ec.europa.eu/sites/default/files/2019-11/IS_Adopted_03_2012.pdf
S77	Sustainability Indicators 2025 report	worldsteel	November 2025 (updated February 2026)	https://worldsteel.org/wider-sustainability/sustainability-indicators/
S78	Carbon intensity of electricity generation (Ember data)	Our World in Data	accessed October 2026	https://ourworldindata.org/grapher/carbon-intensity-electricity
S79	Monographie du Nyong et des fleuves côtiers, Tome 1 (J.-C. Olivry)	ORSTOM	July 1979	https://horizon.documentation.ird.fr/exl-doc/pleins_textes/divers11-03/01948.pdf
S80	Weakening of coastlines and coastal erosion in the Gulf of Guinea: the case of the Kribi coast (Fendoung, Tchindjang and Hubert-Ferrari), Land 11:1557	MDPI	2022	https://doi.org/10.3390/land11091557
S81	Geomatics-based assessment of coastal vulnerability in Kribi (Perabi et al.), Urban Resilience and Sustainability 3(4)	AIMS Press	November 2025	https://www.aimspress.com/aimspress-data/urs/2025/4/PDF/urs-03-04-012.pdf
S82	Climate Change 2021: The Physical Science Basis, Summary for Policymakers	IPCC	2021	https://www.ipcc.ch/report/ar6/wg1/downloads/report/IPCC_AR6_WGI_SPM.pdf
S83	ERA5 reanalysis, daily precipitation 1991 to 2020 for the ERA5 grid cell nearest Kribi (via the Open-Meteo archive API)	ECMWF Copernicus / Open-Meteo	accessed October 2026	https://archive-api.open-meteo.com/v1/archive
S84	Décret n° 2021/4804/PM portant création du Parc National Marin Manyange na Elombo-Campo	Prime Minister's Office (FAOLEX)	9 July 2021	https://faolex.fao.org/docs/pdf/cmr220623.pdf
S85	Décret n° 2000/004/PM portant création du Parc National de Campo-Ma'an	Prime Minister's Office (FAOLEX)	6 January 2000	https://faolex.fao.org/docs/pdf/cmr26727.pdf
S86	Le paysage culturel des chutes de la Lobé (Tentative List, ref. 6330)	UNESCO World Heritage Centre	2018	https://whc.unesco.org/fr/listesindicatives/6330/

ID	Title	Publisher	Date	Web address
S87	Arrêté n° 00001/MINEPDED fixant les catégories d'opérations soumises à évaluation environnementale stratégique ou à étude d'impact environnemental et social	MINEPDED (FAOLEX)	8 February 2016	https://faolex.fao.org/docs/pdf/cmr172054.pdf
S88	Décret n° 2013/0171/PM fixant les modalités de réalisation des études d'impact environnemental et social	Prime Minister's Office (FAOLEX)	14 February 2013	https://faolex.fao.org/docs/pdf/cmr179401.pdf
S89	The Equator Principles EP4	Equator Principles Association	July 2020	https://equator-principles.com/app/uploads/The-Equator-Principles_EP4_July2020.pdf
S90	IFC Performance Standards on Environmental and Social Sustainability	IFC	1 January 2012	https://www.ifc.org/en/insights-reports/2012/ifc-performance-standards
S91	Unchecked development threatens Cameroon's Manyange na Elombo-Campo marine park	Global Voices	22 November 2025	https://globalvoices.org/2025/11/22/unchecked-development-threatens-camerouns-manyange-na-elombo-campo-marine-park/
S92	Copernicus Atmosphere Monitoring Service global reanalysis, PM2.5 for the grid cell nearest the Port of Kribi, 2024 to 2025 (via the Open-Meteo air-quality API)	ECMWF Copernicus / Open-Meteo	accessed October 2026	https://air-quality-api.open-meteo.com/v1/air-quality
S93	Évolution du commerce extérieur en 2025 (version provisoire)	Institut National de la Statistique (INS), Cameroon	February 2026	https://ins-cameroun.cm/wp-content/uploads/2026/04/Note-sur-le-commerce-exterieur-en-2025-version-provisoire_FR.pdf
S94	UN Comtrade public API: Cameroon and CEMAC members, HS 72 and 73 imports, 2019 to 2024	United Nations Statistics Division	accessed October 2026	https://comtradeapi.un.org/public/v1/preview/C/A/HS
S95	World Steel in Figures 2026	worldsteel	4 June 2026	https://worldsteel.org/data/world-steel-in-figures/world-steel-in-figures-2026/
S96	worldsteel Short Range Outlook April 2026	worldsteel	14 April 2026	https://worldsteel.org/media/press-releases/2026/worldsteel-short-range-outlook-april-2026/
S97	Production: les acteurs en présence	Cameroon Tribune	11 May 2026	https://cameroon-tribune.cm/article.html/76600/fr.html/details_2
S98	Cameroon: le groupe Prometal décroche 26 milliards FCFA auprès d'Afreximbank pour renforcer sa production d'acier	Sikafinance	30 September 2026	https://www.sikafinance.com/marches/cameroon-le-groupe-prometal-decroche-26-milliards-fcfa-aupres-dafreximbank-pour-renforcer-sa-production-dacier-et-conquerir-de-nouveaux-marches
S99	Stratégie Nationale de Développement 2020 à 2030 (SND30)	Republic of Cameroon, MINEPAT (FAOLEX)	2020	https://faolex.fao.org/docs/pdf/cmr211554.pdf
S100	2024 Investment Climate Statements: Cameroon	US Department of State	2024	https://www.state.gov/reports/2024-investment-climate-statements/cameroon/
S101	2025 World Direct Reduction Statistics	Midrex Technologies	September 2026	https://www.midrex.com/world-dri-statistics/
S102	Pedal to the Metal 2026	Global Energy Monitor	May 2026	https://globalenergymonitor.org/report/pedal-to-the-metal-2026/
S103	Price of CBAM certificates	European Commission, DG TAXUD	5 October 2026	https://taxation-customs.ec.europa.eu/carbon-border-adjustment-mechanism/price-cbam-certificates_en
S105	Dangote exported 1Mt of clinker from Nigeria to Cameroon and Ghana in 2025	Global Cement	27 March 2026	https://www.globalcement.com/news/20591-dangote-exported-1mt-of-clinker-from-nigeria-to-cameroon-and-ghana-in-2025

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S107	Economic and social impact of the global steel industry	worldsteel / Oxford Economics	May 2019	https://worldsteel.org/wp-content/uploads/Steel-social-and-economic-impact.pdf
S108	Status of AfCFTA ratification	tralac	7 September 2026	https://www.tralac.org/resources/infographic/13795-status-of-afcfta-ratification.html
S110	Natural Earth 1:50m Cultural Vectors, Admin 0 countries (version 5)	Natural Earth	accessed October 2026	https://www.naturalearthdata.com/
S111	OpenStreetMap extract for the Kribi area (Overpass API, data base 24 July 2026), © OpenStreetMap contributors, ODbL	OpenStreetMap Foundation	24 July 2026	https://www.openstreetmap.org/copyright
S112	Cameroon Steel reference configuration RC-1 (planning estimate), edition 10 October 2026	Cameroon Steel	10 October 2026	Planning figures with ranges; each value is labelled with its status where it is used
S113	WHO global air quality guidelines: particulate matter (PM2.5 and PM10), ozone, nitrogen dioxide, sulfur dioxide and carbon monoxide	World Health Organization	22 September 2021	https://www.who.int/publications/i/item/9789240034228
S114	Recueil général des tarifs applicables aux prestations rendues par le Port Autonome de Kribi (homologated by the APN, 2018)	Port Autonome de Kribi / Autorité Portuaire Nationale	2018	No link: cited by title and date
S115	Port de Kribi: le trafic conteneurisé bondit de 82% un an après la mise en service du 2e terminal	EcoMatin	14 May 2026	https://ecomatin.net/port-de-kribi-le-traffic-conteneurise-bondit-de-82-un-an-apres-la-mise-en-service-du-2e-terminal
S116	ENERGIRON technology: DRI-EAF production route using natural gas or hydrogen	European Commission, Innovation Centre for Industrial Transformation	February 2026	https://innovation-centre-for-industrial-transformation.ec.europa.eu/innovative-techniques/energiron-technology-drieaf-production-route-using-natural-gas-or-h2
S117	Cameroon: malgré un bond de son activité, les bénéfices du port de Kribi chutent de 38% en 2023	EcoMatin	2 July 2024	https://ecomatin.net/cameroon-malgre-un-bond-de-son-activite-les-benefices-du-port-de-kribi-chutent-de-38-en-2023
S118	Décret n° 2020/251 du 5 mai 2020 portant réorganisation et fonctionnement du Port Autonome de Kribi	Presidency of the Republic of Cameroon	5 May 2020	No link: cited by title and date
S119	Tarif de transport et du gestionnaire du réseau de transport (Décision 0000017D)	ARSEL	17 January 2025	http://arsel-cm.org/wp-content/uploads/2026/01/TARIF-TRANSPORT-ET-GRT-1.pdf
S120	Lekki Deep Sea Port: company website (terminals, shareholders, operations since 1 April 2023)	Lekki Port LFTZ Enterprise	accessed October 2026	https://www.lekkiport.com/
S121	Port activity report in 2025: Tanger Med surpasses the 11 million containers mark (press release)	Tanger Med Port Authority	2 February 2026	https://www.tangermed.ma/wp-content/uploads/press-releases/2026/CP-TMPA-PORT-ACTIVITY-REPORT-IN-2025.pdf
S122	Tanger Med industrial activity hits \$18.8 billion in 2025	Morocco World News	14 April 2026	https://www.moroccoworldnews.com/2026/04/286977/tanger-med-industrial-activity-hits-18-8-billion-in-2025/
S123	Dubai: Jafza marks 40 years	Khaleej Times	5 May 2025	https://www.khaleejtimes.com/business/dubai-jafza-40-year-anniversary
S124	Jebel Ali smelter (operations page)	Emirates Global Aluminium	accessed October 2026	https://www.ega.ae/en/about-us/operations/jebel-ali

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S125	Speech by Mr Lim Hng Kiang at the Jurong Island reclamation completion ceremony	Ministry of Trade and Industry, Singapore	25 September 2009	https://www.mti.gov.sg/newsroom/mr-lim-hng-kiang-at-the-jurong-island-reclamation-completion-ceremony-25-sep-09/
S126	Jurong reclamation (Infopedia article)	National Library Board, Singapore	2010	https://eresources.nlb.gov.sg/infopedia/articles/SIP_1076_2010-05-14.html
S127	Downstream beneficiation case study: Oman (J. Talkin), CCSI policy paper	Columbia Center on Sustainable Investment	March 2016	https://ccsi.columbia.edu/sites/default/files/content/docs/our%20focus/Oman_Iron-ore-Downstream-Beneficiation-Case-Study_March-2016_-_CCSI.pdf
S128	ArcelorMittal completes acquisition of CSP in Brazil (press release)	ArcelorMittal (via Euronext)	9 March 2023	https://live.euronext.com/en/products/equities/company-news/2023-03-09-arcelmittal-completes-acquisition-csp-brazil
S129	The ARISE special economic zone model: value creation and development impact	Africa Finance Corporation	n.d.	https://www.africafc.org/news-and-insights/insights/the-arise-special-economic-zone-model
S130	À Nkok, une zone économique moteur du dynamisme économique gabonais (partner content)	AllAfrica (InfoWire)	1 June 2024	https://fr.allafrica.com/stories/202406030353.html
S131	Dangote Petroleum Refinery hits full 650,000 bpd capacity in single-train milestone	Tekedia	13 February 2026	https://www.tekedia.com/dangote-petroleum-refinery-hits-full-650000-bpd-capacity-in-single-train-milestone/
S132	Tanger Med (encyclopaedia entry; background dates of creation and port openings only) (tertiary)	Wikipedia	accessed October 2026	https://en.wikipedia.org/wiki/Tanger_Med
S133	Tanger Med 2: Morocco inaugurates port extension (Crown Prince inaugurates Tanger Med 2, 28 June 2019)	Morocco World News	29 June 2019	https://www.moroccoworldnews.com/2019/06/79229/moroccan-port-mediterranean-tanger-med/
S134	Yves Roger Melingui, l'homme qui veut répliquer le succès de Tanger Med au Cameroun	Jeune Afrique	25 March 2026	https://www.jeuneafrique.com/1775106/economie-entreprises/yves-roger-melingui-lhomme-qui-veut-repliquer-le-succes-de-tanger-med-au-cameroun/
S151	Environmental and Social Review Summary, Kribi power project (project 25978)	IFC	2010	https://disclosures.ifc.org/project-detail/ESRS/25978/kribi
S152	Décret n° 2012/2809/PM fixant les conditions de tri, de collecte, de stockage, de transport, de récupération, de recyclage, de traitement et d'élimination finale des déchets	Prime Minister's Office (FAOLEX)	26 September 2012	https://faolex.fao.org/docs/pdf/cmr195749.pdf
S153	Kribi-Lobé: les travaux préparatoires lancés	Cameroon Tribune	25 October 2023	https://cameroon-tribune.cm/article.html/61036/fr.html/details_2
S154	Cameroun: Sinosteel reporte les exportations du fer de Kribi-Lobé à 2027	EcoMatin	11 March 2026	https://ecomatin.net/cameroun-sinosteel-reporte-les-exportations-du-fer-de-kribi-lobe-a-2027-malgre-120-milliards-fcfa-deja-investis
S155	Slag recycling: valuable by-products (Euroslag 2018 statistics for steelworks slag)	ReCOVERY magazine	February 2020	https://www.recovery-worldwide.com/en/artikel/slag-recycling-3528047.html
S156	École nationale supérieure polytechnique de Yaoundé: departments (homepage)	ENSP Yaoundé, University of Yaoundé I	accessed October 2026	https://polytechnique.cm/

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S157	Le port de Kribi: force ou menace pour la proposition d'inscription des chutes de la Lobé sur la liste du patrimoine mondial (dissertation; cites Arrêté n° 156/MINDAF of 6 February 2009 and Décret n° 2010/3312/PM of 30 November 2010)	Mémoire Online	2021	https://www.memoireonline.com/12/21/12599/m_Le-port-de-Kribi-Force-ou-menace-pour-la-proposition-dinscription-des-chutes-de-la-lobe-sur20.html
S158	Enquête Démographique et de Santé du Cameroun 2018 (EDSC-V), final report FR360	Institut National de la Statistique and ICF (DHS Program)	2020	https://dhsprogram.com/pubs/pdf/FR360/FR360.pdf
S159	Climate change and the production of iron and steel (policy paper)	worldsteel	accessed 10 October 2026	https://worldsteel.org/climate-action/climate-change-and-the-production-of-iron-and-steel/
S160	Guideline on carriage of direct reduced iron (DRI)	Skuld (P&I club)	26 March 2025	https://www.skuld.com/topics/cargo/dangerous/guideline-on-carriage-of-direct-reduced-iron-dri/
S161	Le Gabon réduit la TVA sur le fer à béton local pour stimuler son industrie sidérurgique	EcoMatin	4 August 2026	https://ecomatin.net/le-gabon-reduit-la-tva-sur-le-fer-a-beton-local-pour-stimuler-son-industrie-siderurgique
S162	Gabon: le groupe Fokou lance une nouvelle unité d'acier à Port-Gentil	EcoMatin	18 September 2026	https://ecomatin.net/gabon-le-groupe-fokou-lance-une-nouvelle-unite-dacier-a-port-gentil
S163	GSM Tanzania selects Danieli for new rebar and wire-rod mill	Danieli	14 September 2026	https://www.danieli.com/en/GSM-Tanzania-selects-Danieli-for-new-rebar-and-wirerod-mill_37_1098.htm
S164	B5Plus Group awards Danieli bar and wire-rod mill project	Danieli	23 September 2026	https://www.danieli.com/en/B5Plus-Group-awards-Danieli-bar-and-wirerod-mill-project_37_1099.htm
S165	Weekly steel prices (archive 40468)	Arab Iron and Steel Union (AISU)	3 October 2026	https://aisusteel.org/en/archives/40468
S166	Prometal obtient 26 milliards FCFA d'Afreximbank pour soutenir son expansion industrielle	EcoMatin	30 September 2026	https://ecomatin.net/prometal-obtient-26-milliards-fcfa-dafreximbank-pour-soutenir-son-expansion-industrielle
S167	IMF staff concludes Post-Financing Assessment mission to Cameroon (press release 26/314)	International Monetary Fund	1 October 2026	https://www.imf.org/en/news/articles/2026/10/01/pr26314-imf-staff-concludes-assesment-cameroon
S168	La récupération et le recyclage des déchets ferromagnétiques: analyse de la situation au Cameroun (Déchets, Revue francophone d'écologie industrielle n°48)	Bidoung J., Fomethe A., Yantio G., Melo U. (ENSP Yaoundé / MIPROMALO)	2007	https://eid.episciences.org/7942/pdf
S169	Electricity production by source (Ember and Energy Institute data), Cameroon	Our World in Data	accessed October 2026	https://ourworldindata.org/grapher/electricity-prod-source-stacked
S170	Mbalam-Nabeba: production de fer lancée, exportations retardées en 2026	Afrik.com	7 April 2026	https://www.afrik.com/mbalam-nabeba-production-de-fer-lancee-exportations-retardees-en-2026-au-cameroun-congo
S171	Mbalam Iron Ore Project: Stage 1 definitive feasibility study and Stage 2 pre-feasibility study (ASX release)	Former holder of the Mbalam-Nabeba project (ASX-listed)	6 April 2011	https://sdl.live.irmau.com/irm/PDF/2074_0/SDLDeliversPositiveFeasibilityStudies

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ANNEX D

DATA TABLES

This annex gives the values plotted in every figure of the paper, with units, status and sources, so that readers can check and reuse them. The same data are published with the web edition as one JSON file per chart. Status codes are those defined in Annex A: sourced, derived, assumed and illustrative. Cameroon Steel planning figures [S112] are indicative.

Executive summary

Table D.1 DERIVED Data for Figure ES.1: readiness of ten platform attributes (Cameroon Steel assessment)

Attribute	Basis	Oct 2026	End 2028	2032
Deep water	16 m at the quay; 600 m turning circle	In place	In place	In place
Container capacity	Second terminal May 2025; yard expansion to 2027	Under way or partial	In place	In place
Dry-bulk and mineral terminal	MoU Nov 2025; completion in 5 to 6 years (PAK, Mar 2026)	Announced or planned	Announced or planned	Under way or partial
Organised industrial land	KPIZ S.A. created Feb 2026; ZIIPK about 4,000 ha	Under way or partial	Under way or partial	In place
Grid power, first stage (100 MW)	225 kV line and substation due end 2026	Under way or partial	In place	In place
Grid power, second stage (330 to 400 MW)	Announced; date and financing not published	Announced or planned	Announced or planned	Announced or planned
Industrial water	Water plant due early 2027; capacity not published	Under way or partial	Under way or partial	Under way or partial
Road to Douala and Yaoundé	Édéa-Kribi road reconstruction (110 km)	Under way or partial	Under way or partial	In place
Rail	Édéa-Kribi-Lolabé-Campo MoU, June 2026	Gap	Announced or planned	Announced or planned
Industrial services	Gases, hazardous waste, maintenance: not yet present	Gap	Announced or planned	Under way or partial

Source: Cameroon Steel assessment on announced schedules [S22][S57][S52][S32][S03][S02][S25][S26][S27][S41][S18].

Chapter 1: location

Table D.2 DERIVED Data for Figure 1.1: annual material flows of a 1 Mtpa arc-furnace long-products works

Flow	Tonnes per year
Iron units in: imported scrap	816,228
Iron units in: domestic scrap	30,000

Flow	Tonnes per year
Iron units in: DRI or HBI	362,669
Consumables in: lime, alloys, electrodes, refractories	60,000
Finished long products out	1,000,000
Slag out (to aggregate or cement)	148,936
Mill scale out	20,000
Furnace dust out (hazardous)	15,957
Total	2,453,791

Source: Cameroon Steel reference configuration RC-1 (planning estimate), balance at full capacity; consumables 6% of finished output; domestic scrap 30,000 t a year [S112][S75].

Table D.3 DERIVED Data for Figure 1.2: truck-kilometres of port-linked flows by distance from the quay (million truck-km per year)

Capacity	0 km	10 km	25 km	50 km	100 km	150 km	200 km
Phase 1 (0.3 Mtpa)	0.00	0.33	0.84	1.67	3.34	5.01	6.68
Phases 1+2 (0.5 Mtpa)	0.00	0.57	1.42	2.85	5.69	8.54	11.39
Full (1 Mtpa)	0.00	1.16	2.90	5.80	11.59	17.39	23.19

Source: 30 t payload; loaded and empty legs; half of output by sea [S112].

Table D.4 SOURCED Data for Figure 1.3: electricity benchmarks by process step (kWh per tonne)

Process step	Low	High	Source
EAF melting, EU plants	404	748	[S76]
EAF melting, IFC benchmark	347	500	[S75]
EAF melting, RC-1 planning values	450	490	[S112]
Ladle furnace, caster, oxygen and utilities	50	100	[S112]
Bar and rod rolling	70	140	[S75]
Gas-based direct reduction (power only)	60	80	[S112]

Source: Benchmarks from [S75] and [S76]; auxiliaries, direct reduction and the RC-1 planning values (450 kWh/t; 490 kWh/t with 30% DRI or HBI) are Cameroon Steel planning values [S112].

Chapter 2: port

Table D.5 DERIVED Content of Figure 2.1: map of the Kribi coast

Layer or feature	Content	Source
Coastline, roads, rivers	OpenStreetMap ways in the Kribi area	[S111]
Industrial and residential land use	OpenStreetMap land-use polygons	[S111]
Protected-area limits	Marine national park, buffer zone and Campo-Ma'an limits as mapped	[S111][S84][S85]
Kribi gas power plant	Position of the plant at Mpolongwe as mapped	[S111][S64]
225 kV line	Straight schematic between plant and port substation; 42 km by route	[S25][S26]

Layer or feature	Content	Source
Port substation	Indicative position at the port	[S25]
Projection	UTM zone 32N; OpenStreetMap data base 24 July 2026	[S111]

Source: Cameroon Steel drawing from the sources listed; no project boundary or parcel is shown.

Table D.6 SOURCED Data for Figure 2.2: Port of Kribi traffic as reported

Measure	Period	Value	Unit	Source
Total cargo	2023	10.7	Mt	Business in Cameroon [S53]
Total cargo	2024	10.84	Mt	PAK, 13 Mar 2025 [S27]
Total cargo	2024	12.7	Mt	Business in Cameroon [S53]
Total cargo	2025	12.7	Mt	PAK, 21 Apr 2026 [S28]
Containers	12 months to May 2025	412,087	TEU	[S52][S28]
Containers	Calendar 2025	555,398	TEU	[S52][S28]
Containers	12 months to May 2026	750,000	TEU	[S52][S28]
Container capacity	Phase 1	about 300,000	TEU a year	[S53]
Container capacity	Target by 2028	1,000,000 to 1,200,000	TEU a year	[S52]

Source: As listed; sources disagree on 2024 tonnage (see Chapter 2).

Chapter 3: zone

Table D.7 SOURCED Data for Figure 3.1: nested land figures for the Kribi industrial-port complex

Area	Hectares	Source
Kribi industrial-port complex (CIPK), gross reserve	26,300	[S21]
Public port domain (decree of 23 June 2023)	15,000	[S16]
Integrated industrial zone (ZIIPK) entrusted to KPIZ S.A.	4,000	[S02]
Land requested by investors (150 requests, mid-2025)	3,883	[S17]
Land already operational (March 2026)	300	[S03]
Land allocated under 48 occupation authorisations (mid-2025)	196	[S17]
Serviced plots tendered at Mboro (May 2026)	20	[S18]

Source: As listed.

Chapter 4: power

Table D.8 SOURCED Data for Figure 4.1: Cameroon's power system, 2025

Item	Value	Unit	Share
Installed capacity	2,033	MW	
Peak demand	1,278	MW	
Generation: Hydro	7,272.4	GWh	89.6%

Item	Value	Unit	Share
Generation: Gas	559.7	GWh	6.9%
Generation: Light fuel oil	153.9	GWh	1.9%
Generation: Heavy fuel oil	66.7	GWh	0.8%
Generation: Solar	67.2	GWh	0.8%
Generation: total	8,119.9	GWh	100%

Source: ARSEL, activity report 2025 [S60].

Table D.9 ILLUSTRATIVE Content of Figure 4.2: simplified single-line view of the Kribi zone supply

Element	Description	Status
KPDC gas plant	216 MW, Mpolongwe	In service [S64]
225 kV double-circuit line	42 km, KPDC to port	Under construction [S25]
225/30 kV substation	3 x 60 MVA at the port; 100 MW initially, 330 to 400 MW later	Under construction [S25] [S26]
Southern interconnected grid	N-2 back-up through the national grid	Announced design [S25]
30 kV zone network	Distribution to zone tenants	Partly tendered [S18]
Heavy tenant bay	Dedicated feeder and transformer	Assumed
SVC or STATCOM and filters	Power-quality plant at the tenant	Assumed

Source: PAK [S25] [S26]; tenant elements are Cameroon Steel assumptions.

Table D.10 DERIVED Data for Figure 4.3: power available to the zone against the indicative load of one steel tenant

Item	Low	High	Unit	Source
Kribi thermal output available locally, May 2025	13	13	MW	[S20]
225 kV KPDC-port line, first stage (end 2026)	100	100	MW	[S25]
Kribi gas plant (KPDC), installed	216	216	MW	[S64]
225 kV line, later stage	330	400	MW	[S25]
Steel mill, phase 1 (0.3 Mtpa), average load	36	36	MW	[S112]
Steel mill, phase 1, maximum demand (MVA)	45	65	MVA	[S112]
Steel mill, 1 Mtpa, average load	94	94	MW	[S112]
Steel mill, 1 Mtpa, maximum demand (MVA)	130	190	MVA	[S112]

Source: As listed; steel loads from the Cameroon Steel reference configuration RC-1 (planning estimate) [S112].

Chapter 5: water

Table D.11 SOURCED Data for Figure 5.1: mean monthly rainfall at Kribi station (mm)

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
92	118	201	261	343	274	112	231	502	492	201	94

Source: Olivry, ORSTOM, 1979; homogenised annual mean 2,835.8 mm; sum of monthly means 2,921 mm [S79].

Table D.12 DERIVED Data for Figure 5.2: annual water need by capacity and practice (million m³ per year)

Practice	0.3 Mtpa	0.5 Mtpa	1.0 Mtpa
Withdrawal at the 2024 sector average (8.5 m ³ /t)	2.55	4.25	8.50
Consumption at the 2024 sector average (2.3 m ³ /t)	0.69	1.15	2.30
Closed-loop make-up target (2.0 m ³ /t, assumed)	0.60	1.00	2.00

Source: worldsteel 2024 averages [S77]; closed-loop target assumed [S112].

Chapter 6: logistics

Table D.13 DERIVED Data for Figure 6.1 (left): straight-line distance from Kribi

City	Kilometres
Bata	120
Douala	125
Ebolowa	138
Malabo	154
Yaoundé	206
Libreville	287
Lagos	821
Pointe-Noire	881
Bangui	974
Brazzaville	996
N'Djamena	1,161

Source: Geodesic distance between city centres; road distances are longer [S110].

Table D.14 SOURCED Data for Figure 6.1 (right): imports of iron and steel (HS 72) by CEMAC member, 2023

Country	US\$ million
Cameroon	310.4
Chad	73.4
Gabon	68.5
Congo	33.9
Equatorial Guinea	11.6
Central African Rep.	3.4

Source: UN Comtrade; Chad and Equatorial Guinea from partner (mirror) data [S94].

Table D.15 DERIVED Content of Figure 6.2: regional map

Layer	Content	Source
Boundaries	Natural Earth admin-0 countries; CEMAC members shaded	[S110]
Transit corridors	Douala-Yaoundé-Ngaoundéré-N'Djamena; Yaoundé-Bertoua-Bangui (schematic)	Cameroon Steel

Layer	Content	Source
Regional links	Kribi-Ebolowa-Libreville and Bata; Bertoua-Brazzaville (schematic)	Cameroon Steel
Planned railways	Mbalam-Kribi; Édéa-Kribi-Lolabé-Campo (schematic)	[S34][S41]
Iron deposits	Mbalam-Nabeba, approximate position	[S43]

Source: As listed; corridor lines are schematic, not surveyed alignments.

Table D.16 DERIVED Data for Figure 6.3: daily truck movements of one steel works if all flows went by road

Capacity	Inside the port domain	Public road	Total	Public road if half the output ships by sea	Equivalent 1,500 t trains (public-road flows)
Phase 1 (0.3 Mtpa)	37	37	74	20	0.7
Phases 1+2 (0.5 Mtpa)	64	59	123	31	1.2
Full (1 Mtpa)	131	114	245	59	2.3

Source: Cameroon Steel reference configuration RC-1 (planning estimate); 30 t payload, 300 working days a year [S112].

Chapter 7: cluster

Table D.17 ILLUSTRATIVE Content of Figure 7.1: material and service flows around an arc-furnace works

From	To	Flow
Port: bulk and containers	Steel melt shop and rolling mill	DRI, HBI, alloys, electrodes in
Power: 225 kV substation	Steel melt shop and rolling mill	350 to 750 kWh/t
Industrial gases: oxygen, nitrogen, argon	Steel melt shop and rolling mill	oxygen by pipeline
Steel melt shop and rolling mill	Cement and concrete plants	slag as clinker or aggregate substitute
Scrap collection and processing	Steel melt shop and rolling mill	graded scrap
Steel melt shop and rolling mill	Fabrication: rebar cut-and-bend, mesh, structures	bars, rods, sections
Maintenance, electrodes, refractories, laboratories	Steel melt shop and rolling mill	services
Water treatment and waste services	Steel melt shop and rolling mill	make-up water, return treatment

Source: Cameroon Steel analysis.

Table D.18 DERIVED Data for Figure 7.2 (left): by-products of one steel works (thousand tonnes per year)

Capacity	Slag	Mill scale	Furnace dust	Total
Phase 1 (0.3 Mtpa)	44.7	6.0	4.8	55.5
Phases 1+2 (0.5 Mtpa)	74.5	10.0	8.0	92.4
Full (1 Mtpa)	148.9	20.0	16.0	184.9

Source: IFC solid-waste benchmark [S75]; dust planning range [S76][S112]; Cameroon Steel balance [S112].

Table D.19 SOURCED Data for Figure 7.2 (right): Cameroon's imports of cement clinker (thousand tonnes)

Year	Thousand tonnes
2019	2,556
2023	2,412
2024	2,577
2025	3,107

Source: INS foreign-trade notes; 2025 provisional [S93].

Chapter 8: benchmarks

Table D.20 SOURCED Data for Figure 8.1: milestones of benchmark zones

Zone	Year	Milestone	Sources
Jurong, Singapore	1961	Jurong land earmarked	[S126] [S125]
Jurong, Singapore	1968	JTC created	[S126] [S125]
Jurong, Singapore	2000	Jurong Island opened	[S126] [S125]
Jurong, Singapore	2009	95 firms on the island	[S126] [S125]
Jebel Ali, Dubai	1979	Aluminium smelter starts	[S124] [S123]
Jebel Ali, Dubai	1985	Free zone opens, 19 firms	[S124] [S123]
Jebel Ali, Dubai	2025	11,000+ firms	[S124] [S123]
Tanger Med, Morocco	2003	Zone agency created	[S132] [S133] [S121]
Tanger Med, Morocco	2007	Port opens	[S132] [S133] [S121]
Tanger Med, Morocco	2019	Second port	[S132] [S133] [S121]
Tanger Med, Morocco	2025	11.1 million TEU	[S132] [S133] [S121]
Sohar, Oman	2012	9 Mtpa pellet plant	[S127]
Sohar, Oman	2014	Integrated steel plant	[S127]
Pecém, Brazil	2016	3 Mt slab plant starts	[S128]
Pecém, Brazil	2023	Plant acquired	[S128]
Nkok, Gabon	2010	Zone established	[S130] [S129]
Nkok, Gabon	2019	US\$1bn wood exports	[S130] [S129]
Lekki, Nigeria	2023	Deep-sea port opens	[S120] [S131]
Lekki, Nigeria	2026	Refinery at 650,000 b/d	[S120] [S131]
Kribi, Cameroon	2018	Port opens	[S117] [S57] [S02]
Kribi, Cameroon	2025	Second container terminal	[S117] [S57] [S02]
Kribi, Cameroon	2026	KPIZ S.A. created	[S117] [S57] [S02]

Source: As listed.

Chapter 9: constraints

Table D.21 DERIVED Data for Figure 9.1: timing of infrastructure and illustrative tenant phases (decimal years)

Item	Start	End	Status
Kribi gas plant debt resolution and restart	2024.70	2025.15	Completed
225 kV KPDC-port line and substation	2025.60	2027.00	Under construction or under way
Second container terminal in service	2025.35	2025.45	Completed
Container yard expansion (+8 ha)	2026.50	2028.00	Under construction or under way
Servicing works, 20 ha at Mboro	2026.40	2027.40	Under construction or under way
Port-platform water plant	2025.80	2027.20	Under construction or under way
Nachtigal 400 kV evacuation line (national)	2025.00	2026.90	Under construction or under way
Édéa-Kribi road reconstruction	2025.15	2029.00	Announced; dates indicative
Mineral terminal: structuring then build	2025.85	2032.20	Announced; dates indicative
Édéa-Kribi-Lolabé-Campo railway: studies	2026.45	2028.50	Announced; dates indicative
225 kV line, second stage (330 to 400 MW; date assumed)	2028.00	2031.00	Announced; dates indicative
Steel tenant Phase 1: studies, permits, financing	2026.80	2029.00	RC-1 schedule (planning estimate); illustrative
Steel tenant Phase 1: works, first heat (H2 2030), ramp-up	2029.00	2031.90	RC-1 schedule (planning estimate); illustrative
Steel tenant Phase 2 (indicative, 2032 to 2034)	2032.00	2034.90	RC-1 schedule (planning estimate); illustrative
Steel tenant Phase 3 (indicative, after 2034)	2035.00	Open (after 2034)	RC-1 schedule (planning estimate); illustrative

Source: Sources as listed under Figure 9.1.

Table D.22 DERIVED Data for Figure 9.2: straight-line distance from the port breakwater to sensitive areas

Area	Kilometres
Manyange na Elombo-Campo Marine National Park (north limit)	10.6
Lobé falls (UNESCO Tentative List)	17.6
Kribi town centre	24.5
Campo-Ma'an National Park (nearest limit)	34.4
Río Campo Nature Reserve, Equatorial Guinea	42.3

Source: OpenStreetMap geometry [S111]; legal limits per decrees [S84][S85]; UNESCO [S86].

Chapter 10: roadmap

Table D.23 **ILLUSTRATIVE** Content of Figure 10.1: illustrative roadmap by workstream and step

Workstream	Step 1 · Enable 2026 to 2028	Step 2 · Anchor 2028 to 2032	Step 3 · Integrate 2032 to 2040
Port and bulk	Container yard +8 ha; plan a bulk berth for DRI, HBI and scrap	Mineral terminal first stage; dry-bulk handling for metallics	Export capacity for steel products and iron units
Power	225 kV line, 100 MW stage; tenant bays; power-quality code	330 to 400 MW stage; second 225 kV source into the zone	Renewable and gas firming for a zone load of 500 MW or more
Water and services	Water plant online; industrial water tariff; wastewater rules	Hazardous-waste cell; industrial-gas supplier on site	Shared recycling, slag-processing and scrap yard
Land and governance	KPIZ contractual framework; one-stop shop; steel cluster plan	Strategic environmental assessment; cumulative-impact plan	Further zone phases released against demand
Corridors	Édéa-Kribi road works; railway feasibility studies	Railway financing and construction start	Rail in service to Édéa and the interior
Steel and metals	First melt shop and rolling mill permitted and financed; works from 2029	First heat 2030: billets and wire rod; then sections and fabrication	Direct-reduced iron from Cameroonian ore; metals cluster

Source: Cameroon Steel analysis; not a plan adopted by any authority.

Table D.24 **ILLUSTRATIVE** Data for Figure 10.2: illustrative zone load against announced supply (MW)

Year	Steel and metals	Other tenants	Total load	Firm supply
2026	0	10	10	13
2027	0	18	18	100
2028	0	25	25	100
2029	0	34	34	100
2030	10	42	52	100
2031	36	51	87	365
2032	40	60	100	365
2033	49	70	119	365
2034	53	80	133	365
2035	63	90	153	365
2036	97	100	197	365
2037	120	112	232	365
2038	134	125	259	365
2039	147	138	285	365
2040	160	150	310	365

Source: Supply stages from PAK [S25], the 330 to 400 MW stage shown at its midpoint from 2031 (date assumed in this paper; none is published); steel load on the schedule of the Cameroon Steel reference configuration RC-1 (planning estimate), with a first heat in the second half of 2030, Phase 2 indicatively 2032 to 2034 and Phase 3 after 2034, plus a second metals tenant from the mid-2030s [S112]; not a forecast.

CAMEROON STEEL

FROM MINERAL RESOURCE TO INDUSTRIAL VALUE

Cameroon Steel is developing a steel complex at Mboro, in the Kribi industrial-port zone, to turn Cameroonian iron into the bars, rods and sections that Central Africa builds with. This paper is published for information and does not constitute an offer or a commitment.