URBAN ECONOMICS · CASE STUDY

Lubumbashi

How mining rents shape urban form in a resource-dependent city

Abdul Sanderson, Matthew Mangan & Oge Onubogu

Johns Hopkins SAIS · Urban Economics for the Developing World · Fall 2025

The Lubumbashi pattern, in one slide

~75%

of Lubumbashi's workforce is employed in non-tradable sectors — the signature of a 'Consumption City.'

3–5 m

median building height in the densest neighborhoods — a horizontal, low-verticality urbanism.

~74%

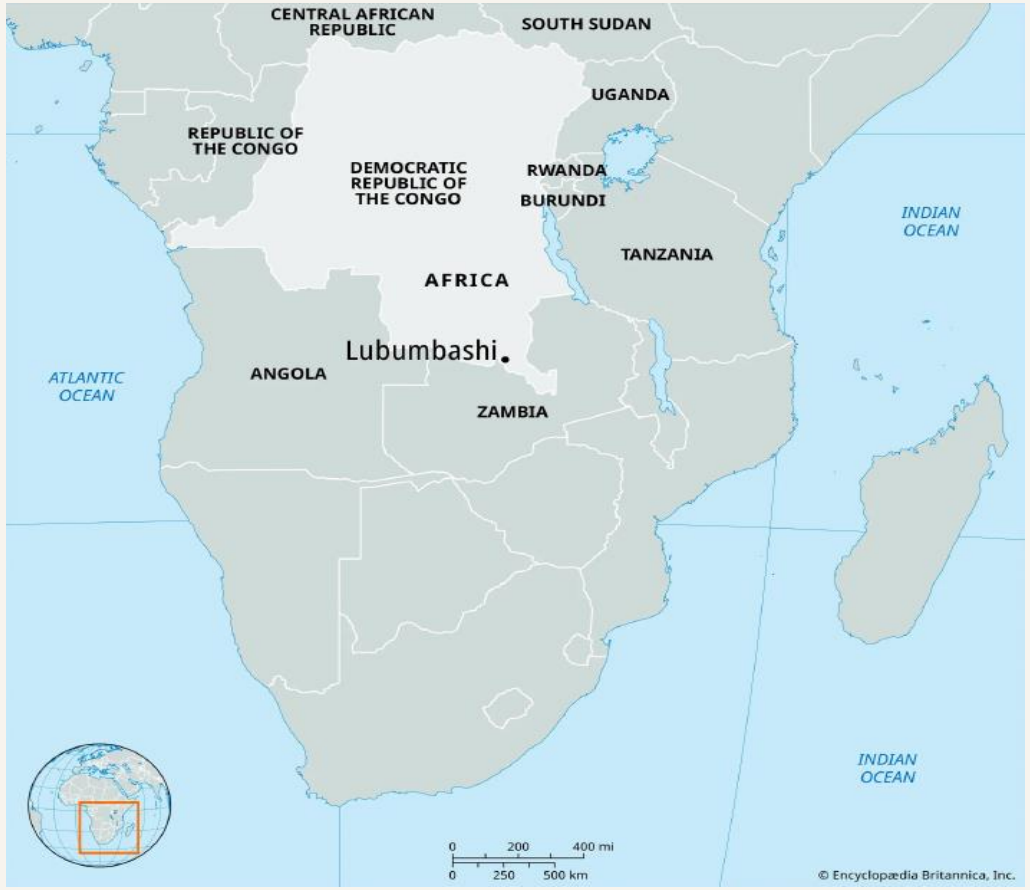
of global cobalt supply originates in the DRC; Lubumbashi is its administrative & logistics core.

99%

of fenceline fishers & farmers in nearby communities report sharp livelihood collapse from mining pollution.

Bottom line: A century of mining specialization locked Lubumbashi into a low-density, segmented urban form — with predictable economic, spatial, and human costs.

Lubumbashi — the heart of the DRC Copperbelt



Sub-Saharan Africa: Lubumbashi sits in the south-eastern DRC, 30 km from the Zambian border.

Population	~2.6 M (2nd-largest city in DRC)
Density	~3,000 people / km²
Founded	1910 as Élisabethville (Belgian colonial)
Role	Capital of Haut-Katanga; copper-cobalt admin hub
Global stake	DRC supplies ~74% of cobalt, >11% of copper
Mines nearby	Tenke Fungurume (~190 km), Kolwezi (~240 km)

The research question

> *How do mining rents shape urban form in resource-dependent cities like Lubumbashi?*

THEORY

Consumption-city, urban-inequality & resource-urbanism literature

EVIDENCE

Employment data, satellite imagery, building heights, wage surveys

OUTCOMES

Urban form, inequality, environmental & human-development indicators

Resource booms create 'Consumption Cities'

Mechanism

In resource-dependent economies, two forces re-allocate labor away from manufacturing and agriculture toward non-tradable services:

1

Income effect

Resource rents raise wages → urban migration from rural areas.

2

Productivity in tradables

Capital-intensive extraction needs few workers → released labor shifts to non-tradable services.

Result

A 'Consumption City'

Cities urbanize without industrializing: they produce mostly non-tradables and use commodity rents to import the tradables they consume.

Predicted form:

- Horizontal sprawl
- Informal settlements
- Weak manufacturing base

Source: Jedwab, Gollin & Vollrath (2013), Urbanization with and without Structural Transformation.

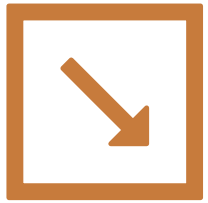
Mining lifts averages, but widens local gaps

Higher consumption

Producing districts see higher household consumption and lower poverty rates than peers.

Wider inequality

Within those same districts, inequality rises sharply — gains accrue to a more-educated, often migrant, workforce.



No spillovers

Benefits attenuate with distance from mines; neighboring districts see little to no gain.

Why governance matters: commodity booms can raise local means while deepening spatial inequality — unless rents are channeled into city-wide public goods (infrastructure, services, skills).

Sources: Loayza & Rigolini (2016); Rubbers (2020).

Form follows resources — and form decides outcomes

Cross-country evidence shows resource endowments shape urban morphology, and morphology — density, land-use mix, transport supply — is what actually drives resource efficiency and equity outcomes.

Land-scarce coastal hubs

Hong Kong · Singapore

- Compact, high-rise core
- Transit-oriented; metro + rail-property integration
- Mixed land use, walkable
- Low per-capita transport energy

Resource-abundant cities

Kuwait · Abu Dhabi

- Low-density villas, sprawling
- Highway-led, car-centric
- Spatially segregated by citizenship/income
- High cooling + transport energy

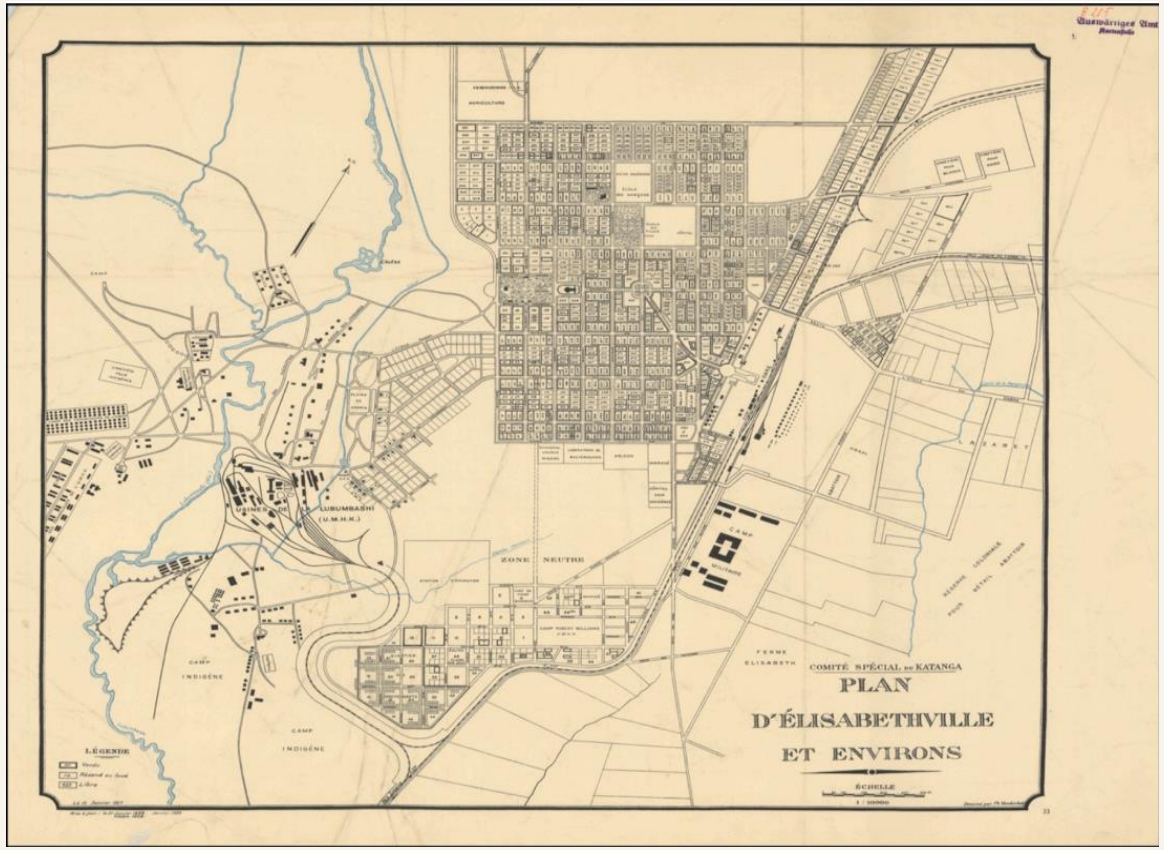
Bottom line: Resource endowments set the means of urbanization; morphology is the proximate driver of long-run outcomes.

Sources: Rode et al. (2017), LSE Cities · Resource Urbanisms (Bertaud and others, 2018).

What we should see if the theory holds in Lubumbashi

H1	A workforce concentrated in non-tradables, with imports dominating tradable consumption — the 'Consumption-City' signature.
H2	An urban form characterized by horizontal spread, low verticality, and informal peri-urban settlements.
H3	Within-city inequality elevated by the segmented mining labor market and weak fiscal redistribution.

Colonial spatial logic — built before independence



Élisabethville urban plan, 1930.

Global commodities → local form

City founded to extract copper for global markets; mine geography dictated street geometry.

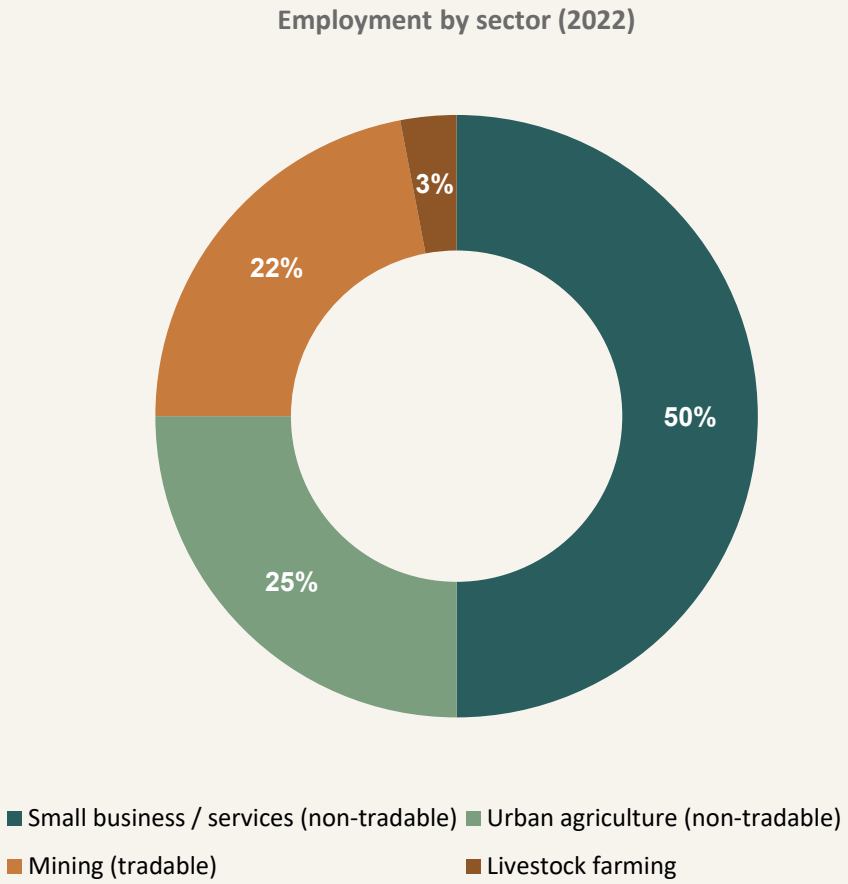
Coerced urbanization

Belgian rule used taxation & forced labor to draw Africans from villages into mining-camp cities.

Segregation by design

European and African neighborhoods were spatially separated — a fragmentation that still shapes service access today.

75% of jobs are in non-tradables — and food is imported



Food import dependence

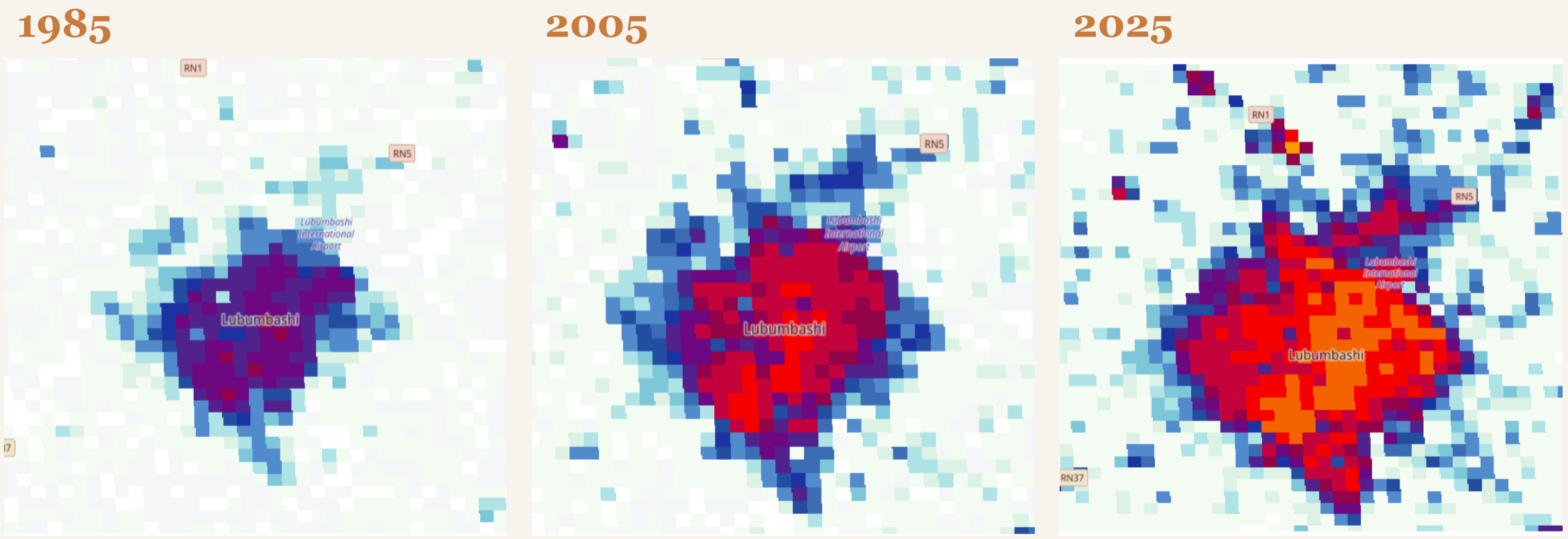
Even basic foodstuffs come mostly from abroad — the textbook consumption-city profile.

Imported share of urban food supply, Lubumbashi

Maize flour	44.1%
Rice	65.0%
Sugar	78.3%
Cooking oil	96.6%
Potatoes	94.7%
Fish & meat	55.0%

Sources: UN Industrial Development Organization (2022); Tshomba et al. (2020).

Forty years of horizontal spread



From a compact 1985 core, the city has sprawled outward four-fold — most growth is 4–20 km from the centre, along the NE corridor toward the airport and mines.

Source: Global Human Settlement Layer (EU); Sikuzani et al. (2018).

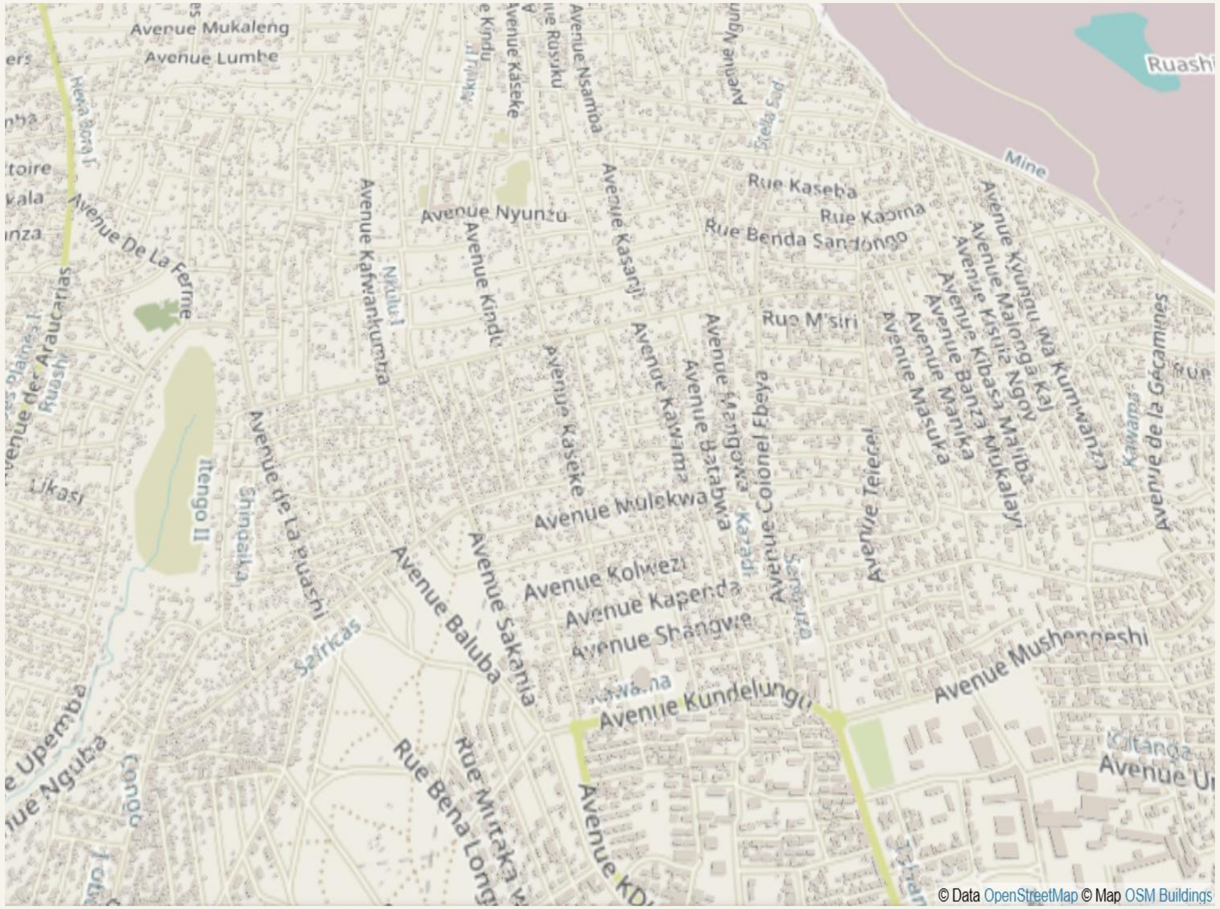
Density without height — a horizontal city

3–5 m

median building height in the densest neighborhoods

By contrast, peer mid-density African cities like Nairobi or Addis routinely host 6–10 storey residential cores. Lubumbashi has chosen — through colonial street grids, weak land-use enforcement, and abundant peri-urban land — to grow outward rather than upward.

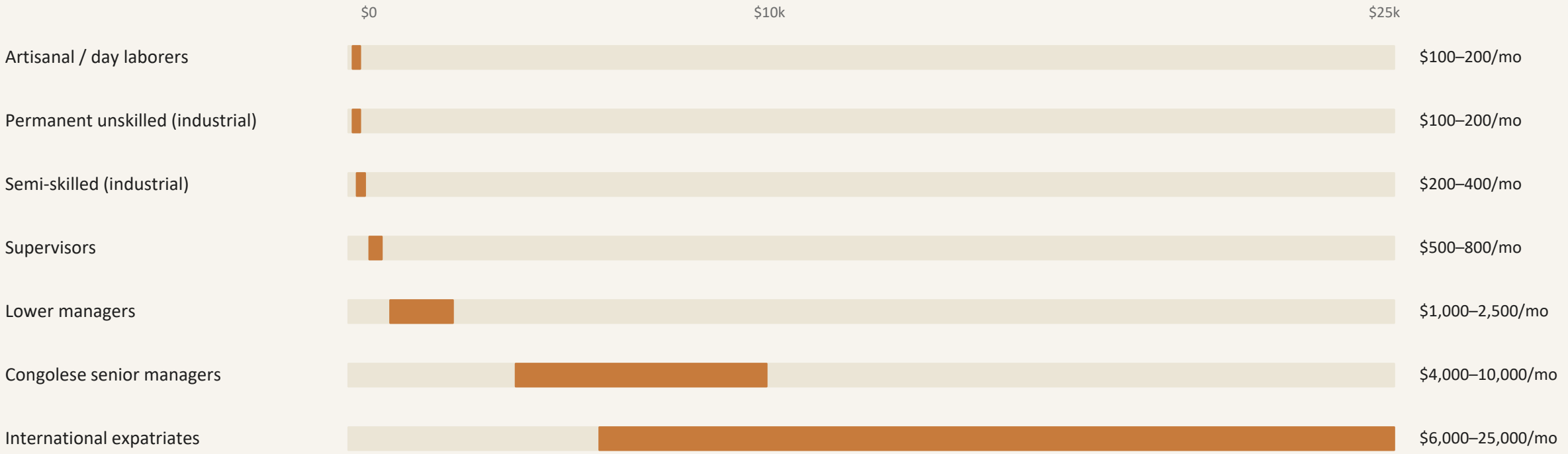
Source: OSM Buildings; author analysis.



Building-footprint density, 2025 — concentrated, but flat.

A steep, segmented wage ladder

Lubumbashi's mining labor market is sharply stratified — from artisanal day-laborers to expatriate managers earning 100× more.



Inequality channel: selective in-migration of better-educated workers lifts averages but widens local Gini — the pattern Loayza & Rigolini (2016) document across Peruvian mining districts.

Sources: Enquête 1-2-3 (Kankwanda et al., 2014); Rubbers (2020), Development & Change.

The fenceline: a concentrated human cost

99%

of fishers & farmers reported sharp yield declines from polluted rivers/wetlands

75%

couldn't afford healthcare or medicine for exposure-related illness

72%

reported recurring skin diseases after contact with contaminated water

60%

withdrew children from school due to lost income or illness

59%

reduced household food intake to one meal per day

56%

said women and girls are disproportionately affected — gynecological issues, birth defects

Survey of 144 respondents in copper-cobalt fenceline communities adjacent to industrial mines.
Source: RAID & AFREWATCH (2024), Environmental Pollution & the Human Costs of DRC's Cobalt Boom.

Hypotheses confirmed: Lubumbashi fits the model

HYPOTHESIS	LUBUMBASHI EVIDENCE	VERDICT
H1 — Non-tradables dominance + import dependence	~75% in non-tradables; 65–97% food import shares	✓ Confirmed
H2 — Horizontal spread, low verticality, peri-urban informality	4× sprawl since 1985; 3–5 m typical building heights	✓ Confirmed
H3 — Wide within-city inequality from mining labor segmentation	100× wage spread; fenceline livelihood collapse	✓ Confirmed

Mining reliance has shaped Lubumbashi's urban form to closely resemble the prototypical 'Consumption City' — with the social and spatial costs the literature predicts.

From extraction to urban productivity

If governance channels rents into city-wide public goods, the 'consumption-city' trap can be re-routed. Two complementary tracks:

Structural reforms

2018 Mining Code

Higher royalties + mandated Congolese ownership stakes.

Revenue redistribution

Direct mining royalties into fenceline water, sanitation, schools.

Environmental enforcement

Binding remediation standards; independent monitoring (Univ. of Lubumbashi).

Supply-chain accountability

EV-maker due diligence on community impacts (Tesla, VW, GM).

Urban planning responses

Buffer-zone planning

Enforce minimum residential setbacks; relocate most-exposed households.

Clean water access

Extend piped networks to peri-urban areas — only 11% of DRC has safe in-premise water.

Community grievance mechanisms

Formalize the 3+ active local court cases into a system; require company response.

Gender-responsive programs

Targeted health services for women in artisanal zones (Fair Cobalt Alliance model).

THANK YOU

A Consumption City, written by mining

Selected references

· Huang, X., Xie, Z. & You, L. (2022). Mining and urbanization in sub-Saharan Africa. J. Economic Geography.

· Kankwanda, G. et al. (2014). Enquête 1-2-3, Phase 1 — Marché du travail en RDC. IRD/Dial/INS.

· RAID & AFREWATCH (2024). Environmental Pollution and the Human Costs of DRC's Cobalt Boom.

· Rubbers, B. (2020). Mining Boom, Labour Market Segmentation & Social Inequality in the Copperbelt. Dev. & Change 51(6).

· Tshomba, K. et al. (2020). Urban agriculture and food security in Lubumbashi. Urban Agric. & Regional Food Systems.

· World Bank (2009). Reshaping Economic Geography — World Development Report.

· Jedwab, R., Gollin, D. & Vollrath, D. (2013). Urbanization with and without Structural Transformation. CSAE.

· Loayza, N. & Rigolini, J. (2016). The Local Impact of Mining on Poverty and Inequality. World Dev. 84.

· Rode, P. et al. (2017). Accessibility in Cities — Transport and Urban Form. LSE Cities, NCE Cities Paper 03.

· Sikuzani, Y.U. et al. (2018). The expansion of Lubumbashi and its impact on the miombo woodland. Intl. J. Applied Earth Obs. 71.

· UN Industrial Development Organization (2022). DRC Industrial Employment Sector Data.

· World Bank (2019). Access to safely managed drinking water — DRC. World Development Indicators.

Abdul Sanderson, Matthew Mangan & Oge Onubogu

Johns Hopkins SAIS · Urban Economics for the Developing World · Fall 2025