

Measuring Device Affordability

A scalable framework for cross-country comparisons

Report summary

Context | Evidence | Methodology | Proposed framework



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Why Device Affordability Matters

The upfront cost of a device is a major barrier in the regions with the largest offline populations.

2.2bn

people offline globally in 2025

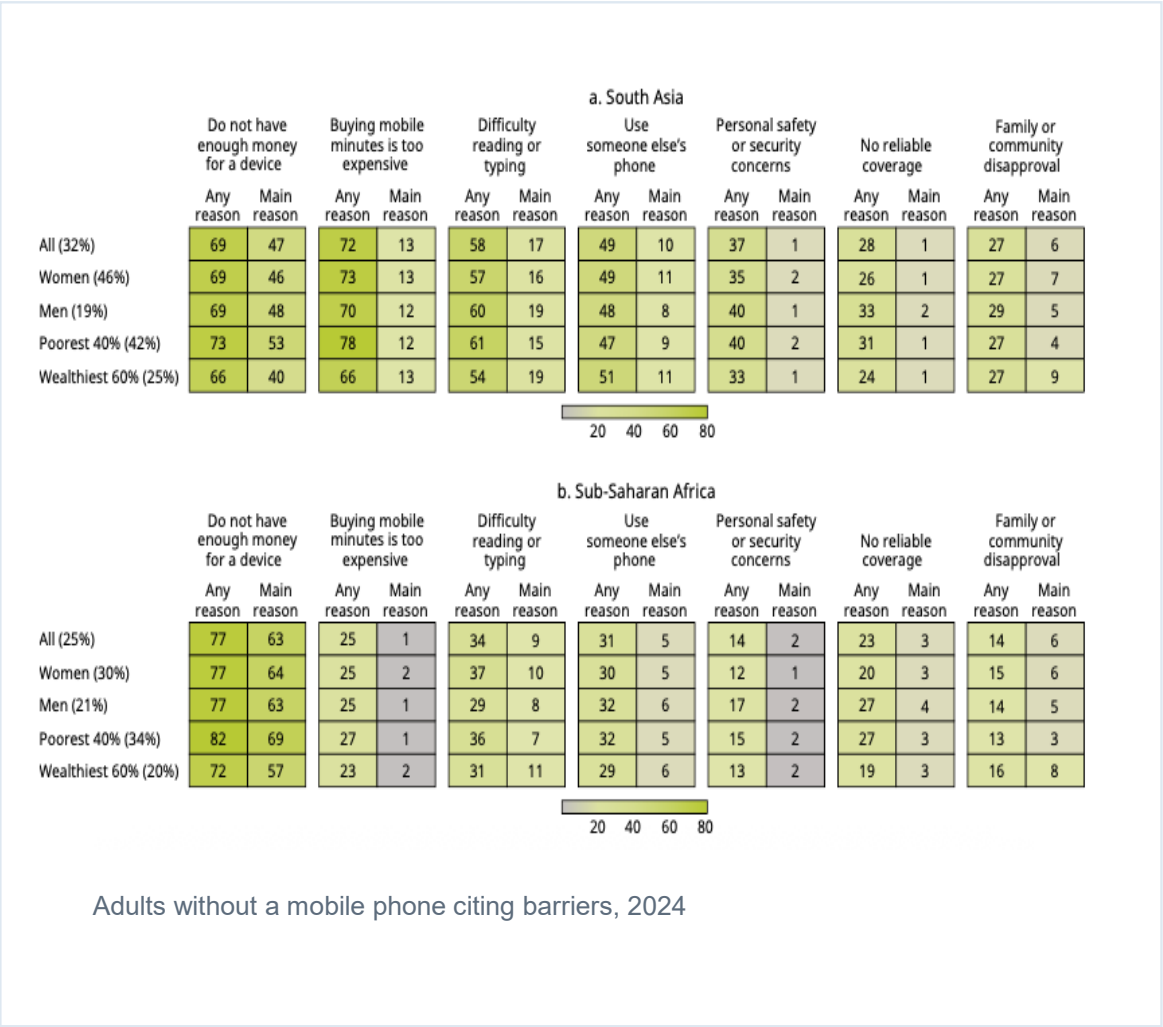
47%

South Asia: device cost barrier

67%

Sub-Saharan Africa: device cost barrier

- Device affordability complements service affordability.



Sources: Global Findex Database 2025; ITU Global Connectivity Report 2025.

Existing Approaches

A4AI / GDIP

Collected prices for the cheapest internet-capable feature phone and cheapest smartphone.

Strength: simple, scalable, public raw data.

Weakness: largest MNO source; no quality adjustment.

GSMA MCI

Tracks the cheapest internet-enabled handset as part of the Mobile Connectivity Index.

Strength: institutional production and broader collection.

Weakness : raw prices not public; MNO channel still central.

World Bank pilot

Defines an entry-level app-enabled internet device below a USD 50 threshold.

Strength: aligned with app-enabled connectivity.

Weakness : limited coverage; threshold requires updating.

Shared gap: no current approach fully solves cross-country quality heterogeneity.

Why 'Cheapest Device' Is Hard to Compare

IsoCode	Country	Operator	smartBrand	smartType	smartOdm	smartOS	Smart_USD
AAA	Guernsey	Airtel-Vodafone (Bharti)	Microsoft	Lumia 550 256GB	FALSE	Windows	134.17
ABW	Aruba	Digicel	DIGICEL	DL4	TRUE	ANDROID	83.24
AGO	Angola	Unitel	UNITEL	SUNMAX Y (SP116E)	TRUE	ANDROID	102.88
AIA	Anguilla	Flow (Liberty Latin America)	ZTE	BLADE A3	FALSE	ANDROID	73.7
ALB	Albania	Vodafone	MLS	Range	FALSE	Android	66.27
ARE	United Arab Emirates	Etisalat	Energy	Energy E500S	FALSE	Android	53.74
ARG	Argentina	Movistar (Telefonica)	ALCATEL	1	FALSE	ANDROID	131.47
ARM	Armenia	Beeline (Telecom Armenia)	Itel	Itel A48	FALSE	Android	86.14
ASC	Ascension	Sure (Batelco)	IMO	IMO Q3 Plus	FALSE	ANDROID	87.21
ASM	American Samoa	BlueSky Communications (AT	BLU	J6	FALSE	ANDROID	109
ATG	Antigua and Barbuda	Digicel	DIGICEL	DL4	TRUE	ANDROID	110.74
AUS	Australia	Telstra	TELSTRA	ESSENTIAL SMART 2.1	TRUE	ANDROID	49.91
AZE	Azerbaijan	Azercell (Azintelecom)	iPhone	iPhone SE	FALSE	iOS	734.71
BEL	Belgium	BASE (Telenet)	Samsung	Galaxy A03 4G 64GB Black	FALSE	ANDROID	167.13
BEN	Benin	MTN	MTN	Touch RIO	TRUE	ANDROID	27.38
BFA	Burkina Faso	Orange	Wiko	Wiko Sunny	FALSE	Android	34.22

A4AI dataset excerpt: cheapest recorded models can vary sharply in specifications

Quality

RAM, storage, chipset, connectivity

Channel

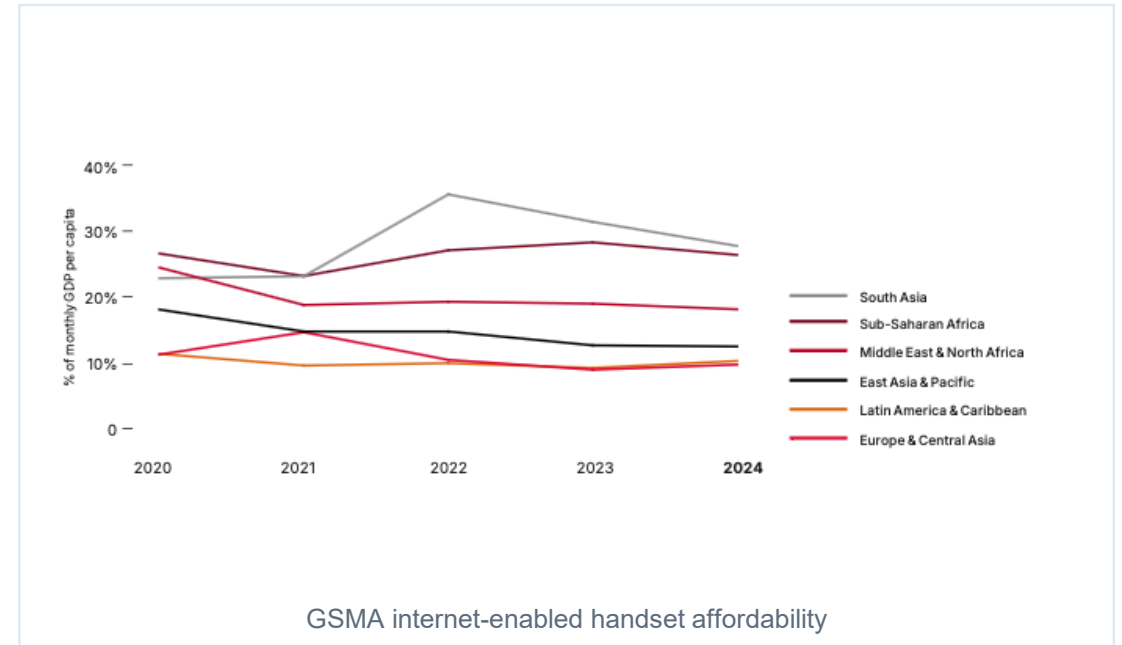
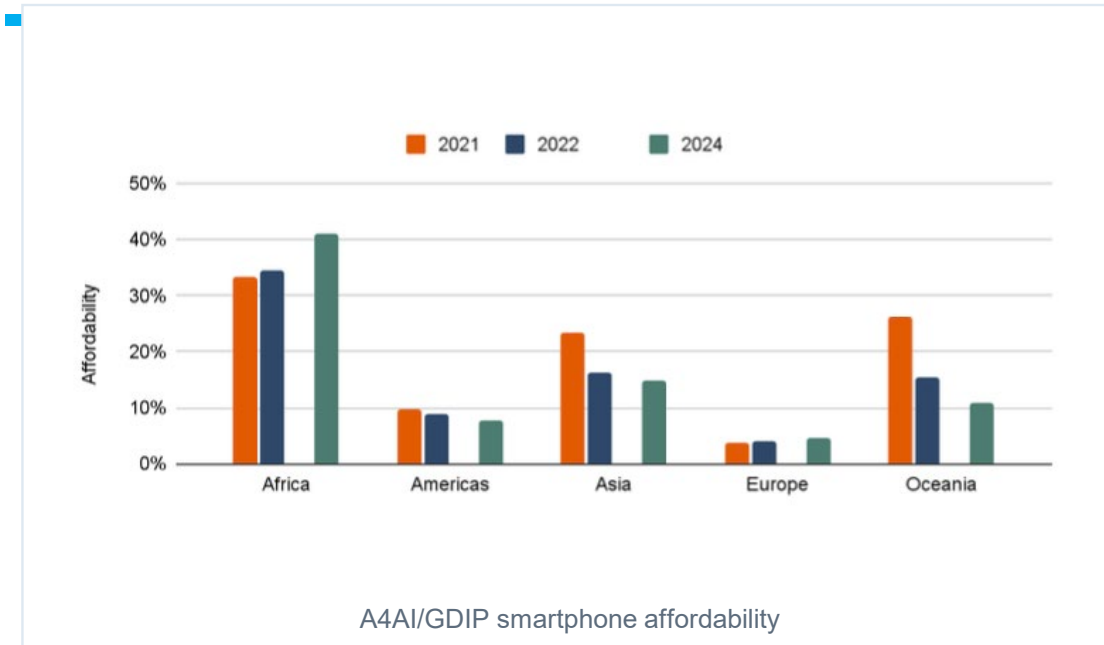
MNO vs retailer portfolios

Turnover

Models appear and disappear quickly

A low price can reflect true affordability, lower quality, or a different retail channel.

Evidence from Existing Data



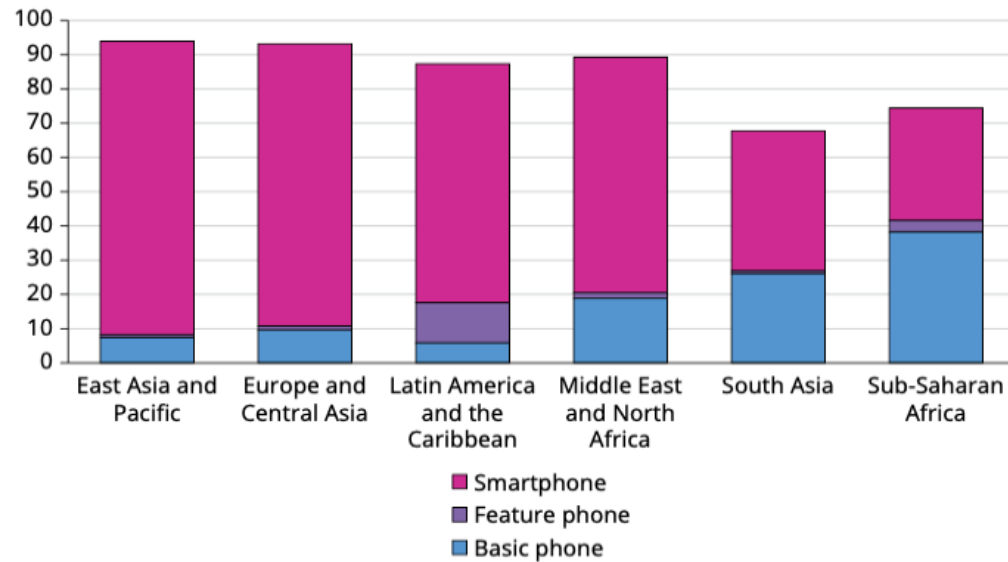
Reported levels differ

A4AI/GDIP and GSMA point to the same broad issue but produce different regional affordability levels.

Interpretation requires caution

Different collection channels, eligibility rules, and country coverage affect the headline numbers.

Device Categories



Adults with a phone by phone type, 2024

Basic phones

Voice and SMS; little or no usable internet access.

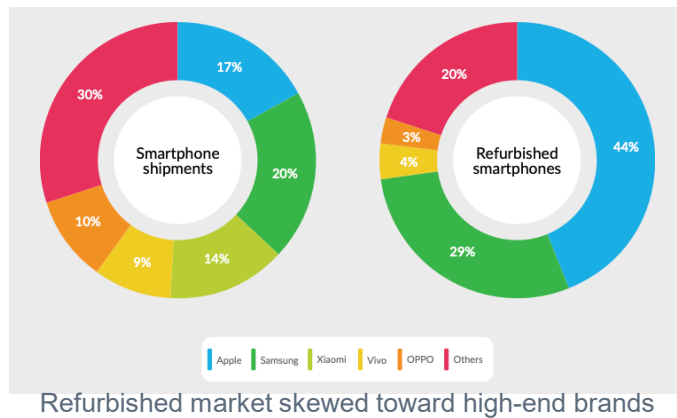
Feature phones

Limited internet; sometimes lightweight app ecosystems such as KaiOS.

Smartphones

Full operating system, app store, browser, touchscreen, and mobile data capability.

Second-Hand and Refurbished Markets



- Pre-owned devices can reduce the upfront price barrier.
- Refurbished markets are more formal but often concentrated in premium brands.
- Used markets are important but harder to measure because transactions are often informal.
- Survey evidence suggests pre-owned acquisition shares of roughly 12-22% in four LMICs.

Destination	Pre-owned from business	Pre-owned from family or friends	Total pre-owned from any location	Total new from any location
Colombia	7	25	32	205
Nigeria	37	22	59	225
Pakistan	40	22	62	217
Rwanda	44	19	63	236

Pre-owned acquisition evidence from four LMICs

Technical Characteristics That Determine Quality

Network

3G/4G/5G capability and meaningful internet use

CPU

Chipset and benchmark performance

RAM

Responsiveness and multitasking

Storage

Space for OS, apps, photos, and updates

Display

Screen size and resolution for usability

Battery

Reliability where electricity access is limited

These characteristics are used both to define minimum eligibility and to support quality adjustment.

Foundational Choices in the Framework

Price source

Prioritise the leading online retailer or e-commerce platform in each country.

Use MNO websites as a fallback where no independent retailer has adequate coverage.

Document sources in metadata.

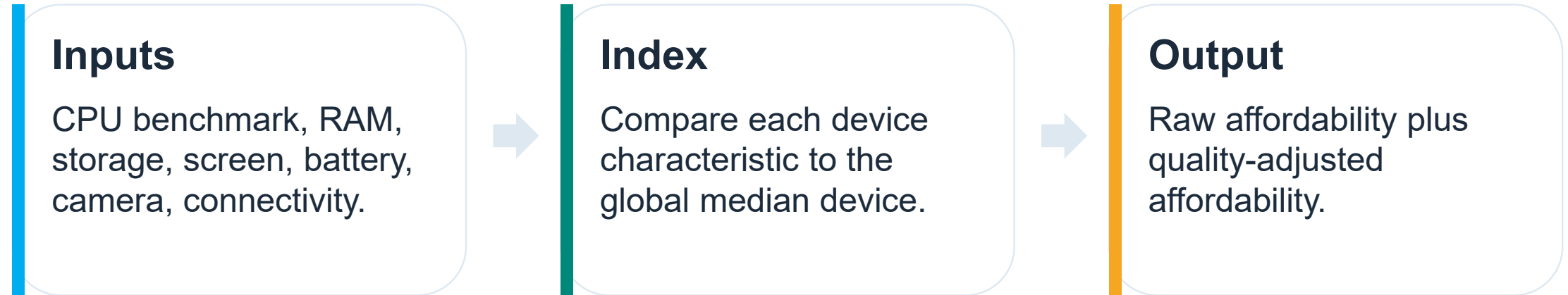
Device typology

Use smartphones as the primary benchmark because they align most closely with meaningful connectivity.

Collect feature-phone data as a supplementary indicator where feasible.

The benchmark should capture a usable device, not simply the cheapest object labelled as a phone.

Device Quality Index



The index helps distinguish low prices caused by genuine affordability from low prices caused by low device quality.

Initial weights can be equal; later weights can be based on hedonic regression coefficients.

Scenario A: Minimum-Cost Benchmark

Goal: produce a simple global headline indicator.

- Identify the cheapest smartphone that meets the minimum technical specification.
- Collect brand, model, tax-inclusive price, currency, date, source, and specifications.
- Compute raw affordability and a quality-adjusted diagnostic.
- Useful for rapid global coverage, but limited by one device per country.

Main contribution

Adds transparent eligibility rules and a quality score to the familiar cheapest-device approach.

Device Definition

Characteristic	Proposed minimum	Purpose
Network	3G / 4G	Basic meaningful internet use; 4G as forward-looking floor.
Operating system	App-store access	Supports third-party apps and modern browser use.
RAM	>= 2 GB	Usable multitasking for common apps.
Storage	>= 16 GB	Avoids constant storage constraints from OS and apps.
Touchscreen	>= 4 inches	Minimum practical usability for forms, reading, and web browsing.

Threshold governance

Review and version thresholds every 2-3 years; preserve historical series and run bridging exercises when specifications change.

Source: Report sections 4.1.1, 4.1.2, 4.2.1, and 4.3.2.

Scenario B: Device Basket with Hedonic Adjustment

Goal: compare the price of a standardised level of device quality.

- Collect the k cheapest qualifying smartphones in each country, ideally at least five.
- Use specification databases for RAM, storage, chipset, benchmark score, screen, battery, and camera.
- Estimate a hedonic price model with device characteristics, brand, country, and time effects.
- Predict the price of a reference device and express it relative to GNI per capita.

Why it matters

This is the report's main methodological improvement over raw cheapest-price comparisons.

Scenario C and Complementary Data

Scenario C

Extend the framework to used and refurbished devices.

Add condition, age, release year, and sales channel.

Historical data

First-best: data-sharing agreements with major platforms.

Second-best: archived pages where coverage is adequate.

Policy layers

Collect tariffs, VAT, and phone-specific taxes.

Use AI-assisted collection

These extensions enrich analysis but require stronger quality assurance and more resources.

Conclusion

The report recommends a scalable ITU device-affordability monitoring programme.

Start

Pilot Scenario B in 15-20 countries across regions and income groups.

Scale

Expand to 150+ countries and add feature-phone data where feasible.

Institutionalise

Move to annual or semi-annual production alongside ICT Price Baskets.

- Publish raw and quality-adjusted affordability indicators.
- Review minimum specifications every 2-3 years.
- Evaluate second-hand market coverage after the new-device pilot is validated.