United Nations
Economic Commission for Africa

Growth in a world that has changed

Why economies must grow differently — and why growth theory must integrate resilience

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ideas for a prosperous Africa

IdeastoAction

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The post-war growth recipe relied on exceptional conditions

Growth benefited from expanding markets and capabilities — and from a less disrupted climate.

CHEAP ENERGY

Energy-dense, portable fossil fuels

EXPANDING MARKETS

Trade integration and growing global demand

CAPITAL & TECHNOLOGY

Savings, FDI and cross-border diffusion

RELATIVE STABILITY

Predictable rules and global governance

FAVOURABLE DEMOGRAPHICS

Expanding working-age populations

LESS CLIMATE DISRUPTION

Lower warming; less pronounced impacts on many climate extremes.

Climate was not only overlooked in economic analysis: it was also less disrupted than it is today.

These were enabling conditions — not permanent laws of economic development.

The classical pathway assumed a broadly linear transition

Accumulate factors, upgrade production and move closer to the technological frontier.

01

FACTOR ACCUMULATION

Capital, infrastructure, labour

02

STRUCTURAL TRANSFORMATION

Shift towards more productive activities

03

INDUSTRIAL UPGRADING

Climb value chains

04

INNOVATION LEADERSHIP

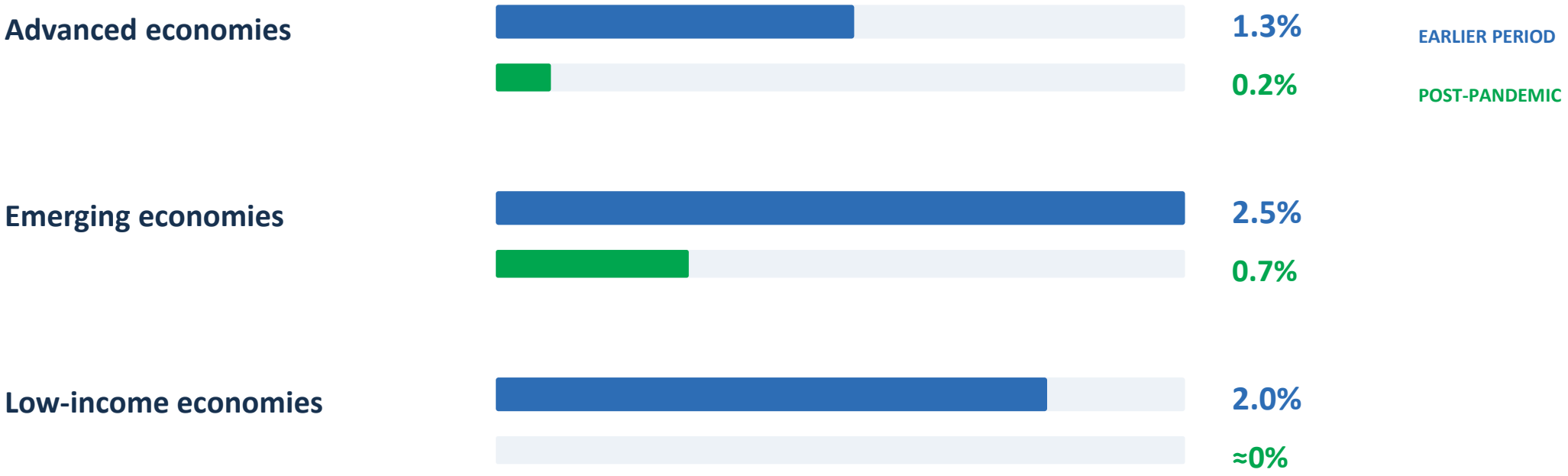
Create new technologies

Implicit assumption: the next phase is accessible through investment, upgrading and policy reform.

The question now is whether this sequence remains feasible under new systemic constraints.

Productivity growth was weakening before the new disruptions intensified

Growth depends increasingly on harder-to-generate efficiency and innovation gains.



Research density: 4,149 researchers per million in high-income economies vs 48 in low-income economies.

Maintaining growth by simply extending the previous recipe is becoming harder.

Climate change attacks the very foundations of growth

Physical risk propagates from climate shocks to productive capacity and public finances.

EXTREME HEAT & WATER STRESS

Labour productivity and human capital

DAMAGE TO CAPITAL STOCK

Infrastructure and productive assets

ECOSYSTEM DEGRADATION

Agriculture, biodiversity and natural services

FISCAL PRESSURE

Revenue losses, debt and adaptation costs

Climate shocks are not just temporary output fluctuations: they can reduce future productive capacity.

Growth pathways must become robust to cumulative and potentially irreversible losses.

Climate damage can reshape the long-run growth path

PERMANENT +1°C WARMING

>20%

Lower world GDP in the long run

ADDITIONAL +2°C BY 2100

–46%*

World GDP in 2100

SOCIAL COST OF CARBON

>$1,200

Per additional tonne of CO_2 emitted

Discounted global damages; not a carbon-market price

WHY THE ESTIMATES ARE LARGER

Global temperature is more closely linked to damaging extremes than local temperature alone.

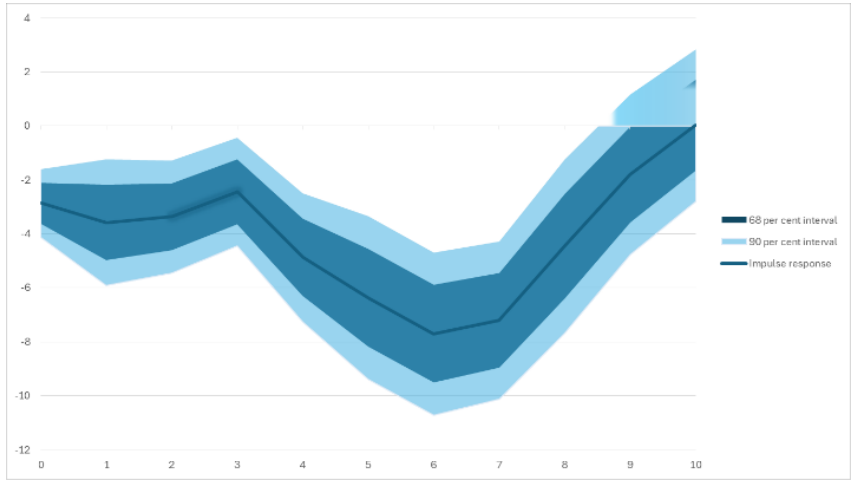
Sources: Bilal & Känzig (2026), QJE 141(2), 889–944, doi:10.1093/qje/qjag011; author manuscript, pp. 1–6.

* –46%: Adrien Bilal interview, Polytechnique Insights, 28 Oct. 2026. Source distinction retained in notes.

Historical temperature shocks leave persistent GDP scars

ECA local projections: estimated GDP-per-capita responses following a +1°C global temperature shock.

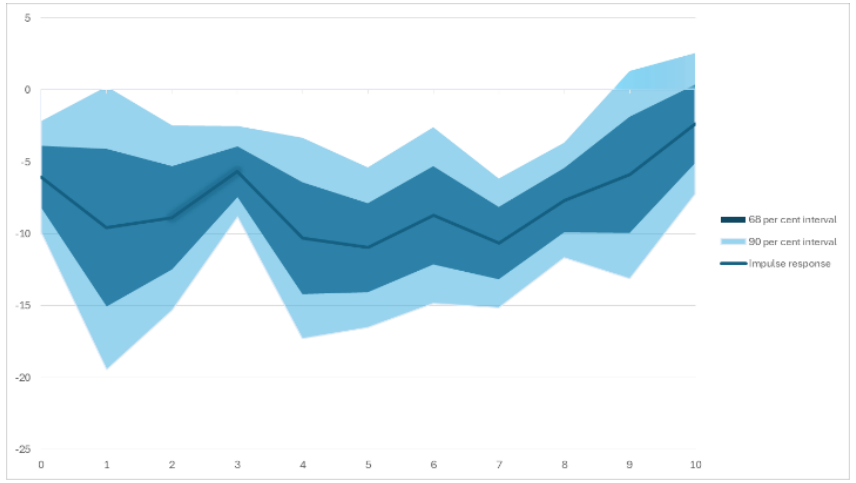
AFRICA



−7.8%

Estimated cumulative effect after about 6 years

NORTH AFRICA



−10.9%

Estimated cumulative effect after about 5 years

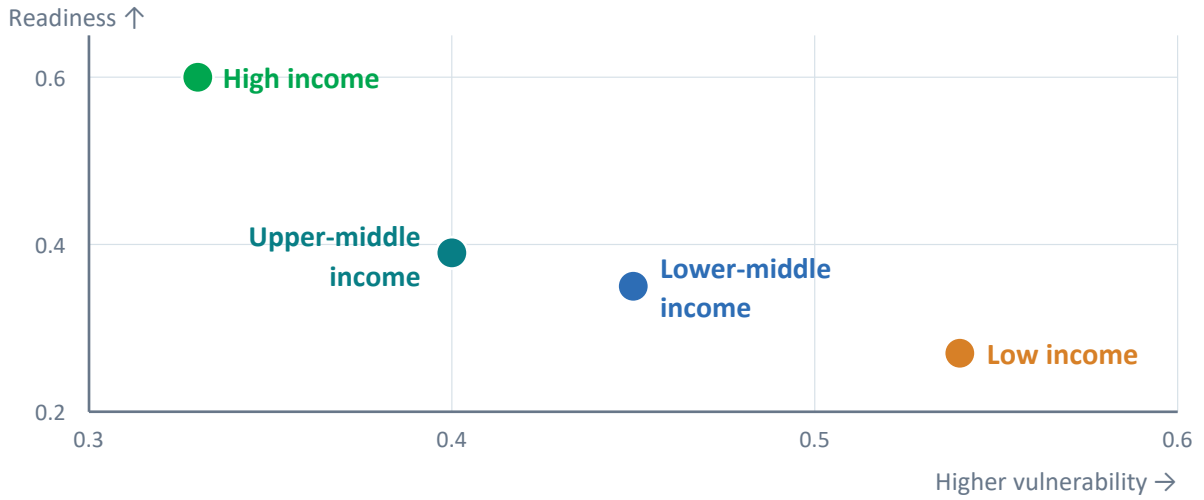
These are historical-response estimates with uncertainty bands — not forecasts of a permanently +1°C warmer world.

Climate vulnerability and low resource productivity create a double development challenge

Protect productive capabilities from climate damage — and generate more value from resource use.

CLIMATE: UNEQUAL VULNERABILITY AND READINESS

Income-group averages · ND-GAIN indices



Protect productive assets and strengthen adaptive capacity.

RESOURCES: LOW VALUE PER UNIT

Material productivity (GDP / material use)
Relative index: world = 100

≈44	100
Africa	World

Africa uses fewer materials per person (5.5 t vs 12.4 t globally), but generates less value per unit of material use.

Raise value added and resource efficiency.

The response must combine climate resilience with resource-efficient, sustainable production.

AI gains need capabilities; skilled jobs remain exposed

60% Advanced economies

40% Emerging economies

26% Low-income economies

Share of workers exposed to AI—not a forecast of job losses.

JOB CREATION IS NOT GUARANTEED

SUBSTITUTION
Cognitive tasks and skilled jobs can be displaced.

AUGMENTATION
Remaining tasks can become more productive.

NEW ACTIVITIES
New tasks may not absorb all displaced workers.

PRODUCTIVITY NEEDS COMPLEMENTS

Cloud, data, internal R&D
and reliable energy.

Skills, regulation and diffusion across firms.

Complementary services and organizational change.

NORTH AFRICA | Weak job creation can leave displaced skilled workers without productive alternatives.

Unprepared economies may face job losses without reaping the full productivity gains.

Source: UNECA report, section 2.2.2, pp. 10–12. Exposure estimates cited there: Cazzaniga et al. (2024).

Fragmentation and concentrated AI deepen dependence

Technology access is shaped by local capabilities, provider power and geopolitical restrictions.

>2×
Trade restrictions
since 2019

–11–12%
Trade and investment
between rival blocs

3.4 → 2.5%
FDI / world GDP
before 2008 vs 2021

01

CAPABILITY GAPS

Weak skills, infrastructure and local R&D limit the absorption and adaptation of advanced technologies.

02

CONCENTRATED TECHNOLOGY

A few providers can control access, concentrate economic and political power, and extract surplus.

03

FRAGMENTED ACCESS

Trade blocs and restrictions slow technology diffusion, limit investment and weaken industrial upgrading.

Sovereign innovation and cooperation become part of the development strategy.

Source: UNECA report, sections 2.2.3 and 3.3; footnote 77; tables 4–5, pp. 13–14, 20, 25 and 28.

Ageing and automation put pressure on export-led growth

The report links slower market expansion to stronger competition from automated producers.

1.0bn

People aged 60+ worldwide, 2020

1.4bn

Projected people aged 60+ in 2030

0.3%

Projected annual labour-force growth by 2030

LABOUR SUPPLY	EXPORT MARKETS	COMPETITION	EXTERNAL FINANCE
Slower workforce growth	Slower manufacturing demand growth	More automated producers	Tighter access to capital

A changing global market makes export-led industrialization harder to replicate.

Source: UNECA report, section 3.3.1 and table 4, pp. 20–21 and 25–26. Forward-looking mechanisms discussed in the report.

New constraints reshape the engines of growth

The issue is not only slower growth: the mechanisms behind past development are changing.

STRUCTURAL TRANSFORMATION	→	Automation narrows industrial job creation; higher-value services become more important.
TECHNOLOGICAL CATCH-UP	→	Concentrated AI and fragmentation restrict diffusion and increase dependence on external technologies.
GLOBAL VALUE CHAINS	→	Regionalization and geopolitical risks change where and how economies can integrate.
PRODUCTIVITY & RESOURCES	→	Environmental limits require resource-efficient production, circularity and a sustainable transition.

Transform productive systems rather than reproduce an inherited growth model.

Source: UNECA report, section 3.3, p. 20; table 4, pp. 25–26. Summary of the report's analytical argument.

Different capabilities create different development risks

The report distinguishes weak diffusion, uneven upgrading and costly transformation of inherited assets.

LOWER-MIDDLE-INCOME ECONOMIES

WEAK INDUSTRIAL & DIGITAL BASE

Low digitalization and skills constrain AI diffusion.
Limited job displacement can coexist with wider productivity gaps and climate vulnerability.

PARTIAL INDUSTRIAL / SERVICE BASE

A stronger base enables more AI adoption.
Skills and institutions still need upgrading; informality can sustain low-productivity work.

More room to leapfrog towards sustainability

UPPER-MIDDLE-INCOME ECONOMIES

ADVANCED INDUSTRIAL & DIGITAL BASE

More potential for AI, innovation and new activities.
Employment risks, dependence on foreign technology and costly decarbonization remain.

INTERMEDIATE CAPABILITIES

Limited upgrading and digital readiness increase risks of routine-job losses and weaker gains, with lost positions in global value chains.

Inherited assets can raise transition costs

Different structures call for different pathways—not a single sequence of catch-up.

Source: UNECA report, sections 3.3.2–3.3.3, pp. 22–24. Contrasts within groups, not fixed country categories.

Development priorities depend on productive structures

From unequal capabilities and dependencies to differentiated development pathways.

STARTING STRUCTURE	RISK TO THE DEVELOPMENT PATH	RESILIENCE PRIORITY
Weak productive and digital foundations	Limited AI diffusion; productivity gaps; high climate vulnerability.	Build skills and digital readiness; use locally adapted technologies.
Partial industrial and service capabilities	Informality and uneven capabilities; exclusion from productivity gains.	Upgrade skills and institutions; broaden access to technology.
Advanced industrial and digital capabilities	Imported technology; decarbonization; risk of losing value-chain positions.	Build sovereign innovation capacity; decarbonize and sustain upgrading.
Resource-concentrated economy	Low-productivity extraction; weak local innovation and value capture.	Capture more processing value; reorient development towards resilience.

Analytical profiles—not a country ranking or fixed stages of development.

Build resilient productive systems around local capabilities and sustainable well-being.

Source: synthesis of UNECA report, sections 3.3.2–3.4 and table 5, pp. 22–28.

Agriculture shows why efficiency alone is not enough

The transition can involve short-run productivity costs while restoring long-run productive capacity.

INPUT-INTENSIVE AGRICULTURE

Can raise short-run yields and measured efficiency

Specialization and monocropping
Synthetic fertilizers and pesticides
Dependence on purchased external inputs

MAIN VULNERABILITY

Soil and biodiversity loss, water stress and external inputs can weaken future capacity.

AGROECOLOGICAL AGRICULTURE

Can strengthen resilience of the production system

Crop diversification and rotations
Soil regeneration and biological pest control
Lower dependence on chemical inputs

MAIN STRENGTH

Water retention and ecosystem health help protect production and farm livelihoods.

Assess short-run productivity alongside resilience and long-run productive capacity.

User's agricultural comparison retained. Report, pp. 9–10: transition frictions, soil restoration, efficiency and well-being.

Growing differently means building resilience into production

Efficiency matters. So does the ability to maintain essential functions, adapt and transform.

SUSTAINABILITY

Use resources better

Use less energy and material per service delivered.

Extend product life and restore ecosystems.

Lower resource pressure and dependency.

ABSORPTIVE CAPACITY

Keep essential functions working

Diversify critical supplies and maintain buffers.

Protect water, energy and transport infrastructure.

Limit losses and preserve production and livelihoods.

ADAPTATION & TRANSFORMATION

Adapt and transform

Build skills, local innovation and institutional learning.

Shift technologies, products and vulnerable activities.

Develop viable alternatives when the old model fails.

Enablers: sovereign innovation, adaptive skills, agile institutions and regional cooperation.

Resilience protects today's capabilities — and makes tomorrow's transformation possible.

Sources: report, section 3.4 / table 5, p. 28; resilience-capacity framework retained from the IGSD note.

Africa must leapfrog towards resilient, low-footprint well-being

The continent faces severe climate impacts but also substantial room to shape new productive systems.

0.8%

Average annual per-capita GDP growth, 1970–2024

6%

SDG targets assessed as on track for 2030

$2.8tn

Africa's estimated NDC financing needs, 2020–2030

REVALUE NATURAL CAPITAL

More local processing; efficient resource use

BUILD RESILIENT INFRASTRUCTURE

Water, energy, food, transport and adaptation

IMPROVE WELL-BEING DIRECTLY

Health, education, social protection and inclusion

Africa's task is not to replicate the old model — but to mobilize a different development pathway.

Growing differently means changing both means and ends

Productivity still matters—but must be built within ecological limits and systemic uncertainty.

HISTORICAL GROWTH LOGIC

Expand inputs
Material-intensive scale and cheap energy

Optimize efficiency
Lean, specialized global production

Catch up by imitation
Rely on external technology diffusion

Respond after shocks
Treat disruptions as temporary deviations

→

RESILIENT GROWTH LOGIC

Use resources sustainably
Low-carbon, circular and efficient production

Build flexibility
Diversified and adaptable productive capabilities

Adapt and innovate locally
Technology suited to national needs and constraints

Anticipate shocks
Invest in resilience and transformative capacity

Development objective: sustained productive capabilities and sustainable human well-being.

Six complementary capabilities can make growth resilient

A policy agenda for transformation, rather than simply returning to the previous equilibrium.

01 RESILIENT PRODUCTION

Flexible, diversified and resource-efficient productive systems.

02 ADAPTIVE COMPETENCIES

Learning systems for changing work, digital and green transitions.

03 SOVEREIGN INNOVATION

Local capacity to adapt technologies, data and new solutions.

04 INSTITUTIONAL AGILITY

Anticipation, coordination and collective crisis-management capacity.
Dealing with uncetainty

05 GEOECONOMIC STRATEGY

Selective integration, regional links and strategic autonomy.

06 SUSTAINABLE WELL-BEING

Inclusion, human development and environmental stewardship.

Together, these capabilities make adaptation and transformation possible before crises become traps.

How can we build sustainable and resilient growth pathways?

From protecting current production to steering the transformation of development systems.

01 DIAGNOSE THE FOUNDATIONS OF GROWTH

Map economic, social and ecological dependencies. Identify what should be preserved, adapted or transformed.

02 ASSESS VIABILITY, NOT OUTPUT ALONE

Evaluate pathways against sustainability, resilience and equity. Identify trade-offs and risks of locking in unsustainable structures.

03 DESIGN ADAPTIVE TRANSITION PATHWAYS

Compare options across plausible futures. Sequence changes; use signals and thresholds to revise the pathway when conditions change.

04 LINK MODELS, POLICY AND LEARNING

Test approaches in productive systems. Align policies, capabilities and investment; learn from implementation and adjust.

Resilience means absorbing shocks, adapting to changing conditions, and transforming when necessary.

How can growth models help countries choose—and steer—viable development pathways?