H HEURISTICS

POLICY BRIEF

Sustainable Convergence

Closing the gaps between rich and poor economies without repeating the mistakes of the past

Hunter Hughes, Founder, H Heuristics · H Heuristics Policy Brief · November 2026 researchreports.hheuristics.com

Most of humanity lives in economies that are still far behind the rich world. The 131 low- and middle-income economies of the Global South hold 83% of the world's people, yet their average income is less than a quarter of the high-income level. Closing that gap without wrecking the climate, the air and the systems everyone depends on is the central development task of this century. **Sustainable Convergence**, a concept developed by Hunter Hughes, Founder of H Heuristics, treats them as a single task (Hughes, 2026a).

23%	78%	12 of 91	819 Gt
Global South income as a share of the high-income level in 2024, up from 13% in 2000	of people in developing economies live where catch-up since 2000 has been carbon-intensive	growing developing economies cut CO_2 in 2010–22, against 34 of 45 rich ones	world CO_2 to 2100 on a sustainable catch-up path, against 3,084 Gt on a fossil path

SUMMARY

Key messages

- **Catch-up is real but uneven.** Global South income rose from 13% to 23% of the high-income level since 2000, mostly thanks to China and India. Low-income countries fell further behind.
- **Improvement is not the same as convergence.** Even as the ratio rose, the dollar gap per person widened from about $36,000 to $45,000.
- **So far, most catch-up has followed the old, carbon-heavy path.** Only 6% of people in developing economies live in countries that converged with slow-growing or falling emissions.
- **A cleaner path is now cheaper.** Solar modules cost about 1,101 times less than in 1975, and latecomers already emit less on the way up than pioneers did.
- **The next twenty years decide the outcome.** The same income gains to 2100 can stay within the 2°C carbon budget or blow through it nearly three times, depending on how they are powered and financed.
- **Finance is the main lever.** Capital for clean energy costs two to three times more in developing economies than in rich ones; lowering it would make the clean path the cheapest path.
- **The aim is not to grow less, but to grow differently,** with rich countries cutting their own emissions fastest and helping to finance clean, resilient development.

What Sustainable Convergence means

The concept joins two ideas usually discussed separately. *Economic convergence* asks whether poorer economies are catching up with richer ones (Barro and Sala-i-Martin, 1992); *sustainable development* asks whether progress protects the needs of future generations (WCED, 1987). Sustainable Convergence asks both questions at once, and makes a distinctive claim: that catching up and sustainability can **reinforce** each other. Clean power can drive industrialisation while cutting pollution; digital public infrastructure can widen markets while strengthening government; healthier, better-educated people are more productive; resilient infrastructure protects what growth builds. It complements Polycrisis Resilience, H Heuristics' first concept: resilience is the overarching objective, and Sustainable Convergence is a development pathway towards it (Hughes, 2026b). Progress is tracked across seven dimensions (Table 1).

Sustainable Convergence

The process through which emerging and developing economies progressively narrow economic, technological, institutional, and human-development gaps with advanced economies while pursuing environmentally sustainable, socially inclusive, and systemically resilient development pathways. It integrates economic convergence with sustainable development to support long-term improvements in productivity, living standards, technological capacity, environmental quality, and resilience to interconnected global risks.

Concept developed by Hunter Hughes, Founder of H Heuristics (Hughes, 2026a)

What the evidence shows

Catch-up has happened, but it is concentrated. Average income in the Global South rose from 13% of the high-income level in 2000 to 23% in 2024. Without China and India the figure moved only from 18% to 20%, and low-income countries slipped from 4.2% to 3.7% (World Bank, 2026). Access has converged faster than income: the number of people in the Global South without electricity fell from 1.3 billion to 0.69 billion between 2000 and 2022, though 2.1 billion still cook with polluting fuels.

Table 1 Seven dimensions of Sustainable Convergence

Dimension	What converges	Example indicators
Economic	Income, productivity, industrial capacity	GDP per person; output per worker
Environmental	Air quality, emissions, clean energy (towards safe thresholds, not rich-country levels)	PM2.5; CO_2 per person and per $ of GDP; renewable power
Technological	Access to digital and productive technology	Internet use; broadband
Human development	Health, education, nutrition, living standards	Life expectancy; child mortality; schooling
Infrastructure	Electricity, clean cooking, water, sanitation	Access rates
Institutional	Governance and public-service delivery	Government effectiveness; regulatory quality
Resilience	Vulnerability and capacity to cope with shocks	INFORM vulnerability and coping capacity

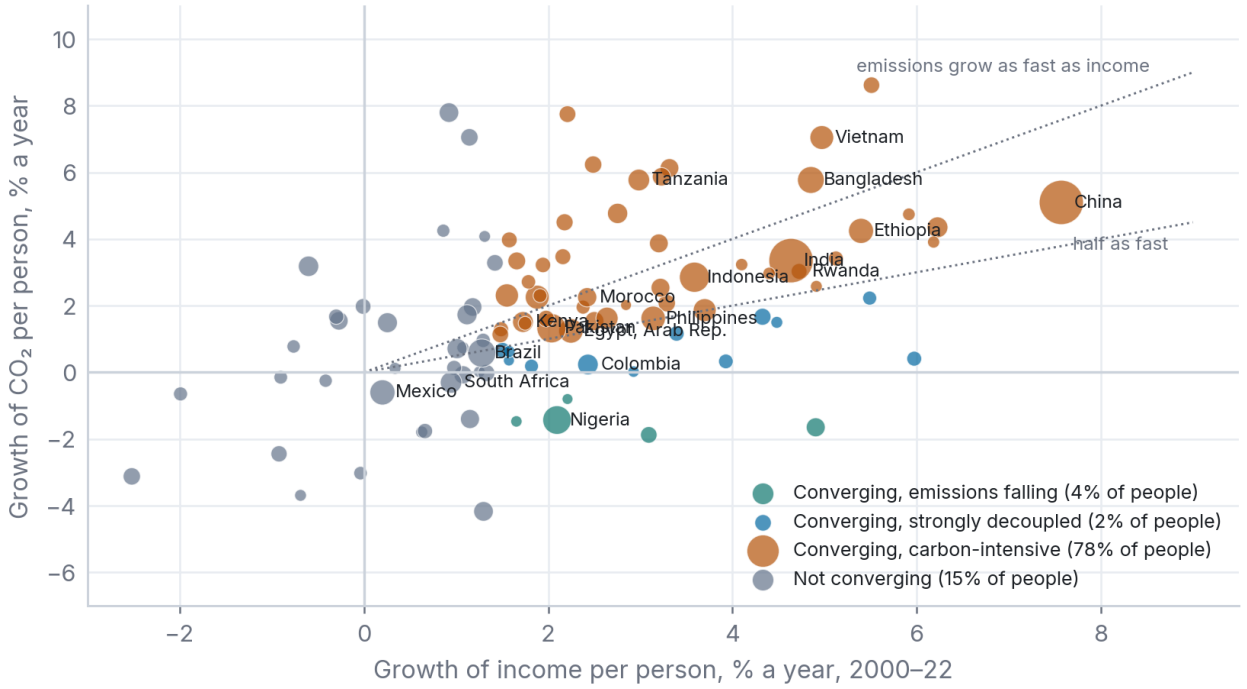
Source: H Heuristics, building on the five dimensions of Hughes (2026a) (Hughes, 2026a; World Bank, 2026).

Absolute progress is not convergence. Because rich countries keep growing, the dollar distance between the average person in the Global South and in a high-income country widened from about $35,820 to $44,695. Of 102 developing economies, 90 became richer, but the absolute gap widened for 99.

Most catch-up has been carbon-intensive. Between 2000 and 2022, 78% of people in developing economies lived in countries whose income converged while emissions per person grew at least half as fast as income, including China, India, Indonesia, Bangladesh and Vietnam (Figure 1). Only 6% lived in countries that converged with slow-growing or falling emissions, and 15% in countries that did not converge at all.

Figure 1 Most of the developing world converged on a carbon-intensive path

Annual growth of income per person and of CO_2 per person, developing economies, 2000–2022



Source: H Heuristics calculations from World Development Indicators (World Bank, 2026). Bubble size reflects population; dotted lines show emissions growing as fast as, and half as fast as, income.

Decoupling is possible, but so far a privilege of wealth. Between 2010 and 2022, 34 of 45 growing high-income economies cut their territorial CO_2 emissions, against only 12 of 91 developing ones (Our World in Data, 2025). Yet latecomers already develop more cleanly: countries that reached $10,000 per person before 1970 emitted a median 4.4 tonnes of CO_2 per person when they crossed that line, against 2.9 tonnes for those that crossed after 2000. And the economics have shifted decisively: new solar power cost about $44 per megawatt-hour in 2025, down from $408 in 2010 (Our World in Data, 2025c).

A new index shows the trade-off. The H Heuristics Sustainable Convergence Index scores 184 economies on all seven dimensions. Low-income economies average 32 out of 100, lower-middle 56, upper-middle 73 and high-income 87. Among developing economies, stronger capabilities go with weaker environmental scores (correlation -0.43) but much stronger resilience (0.88). High--income economies score only 50 on the environment: no group is yet on a fully sustainable path, so environmental convergence must happen from both ends.

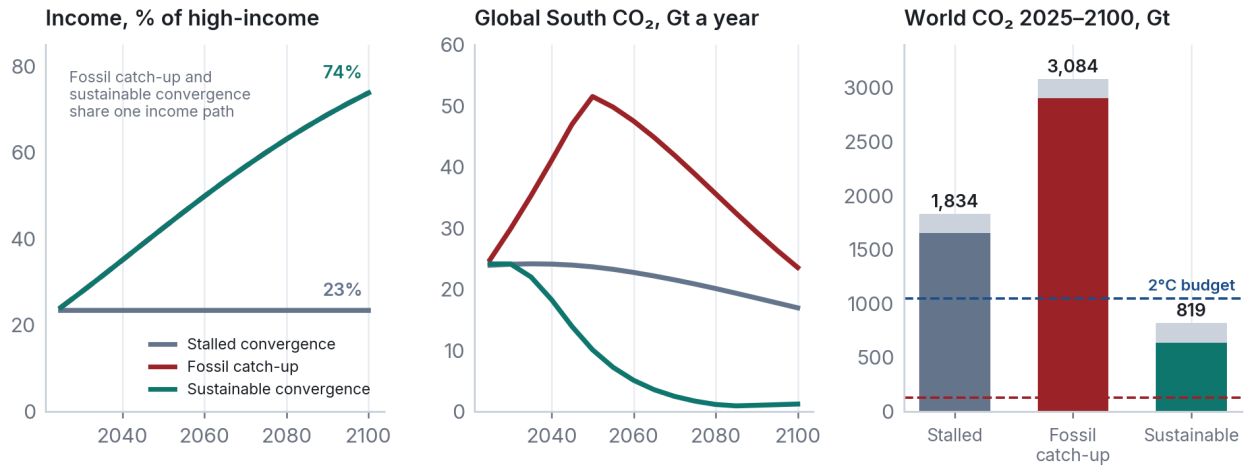
Gains reinforce each other, but not automatically. The concept's *Compounding Convergence Flywheel* holds that progress in one dimension makes progress in others easier (Hughes, 2026a). Household and firm studies find strong links, for example between electricity, connectivity, mobile money, early nutrition and later earnings. At national level the links are real but modest, which means complementarities have to be designed through coordinated investment rather than assumed.

Pathways to 2100

Three illustrative scenarios show what is at stake. In a **stalled** pathway, the Global South grows only as fast as rich countries, its income stays at about 23% of the high-income level, and world CO_2 emissions to 2100 still total about 1,834 billion tonnes. In a **fossil catch-up** pathway, it closes 2% of its income gap each year and reaches about 74% of the high-income level by 2100, but world emissions reach about 3,084 billion tonnes, nearly three times the 2°C budget of about 1,050 billion tonnes (Forster et al., 2025). In a **Sustainable Convergence** pathway, the same income gains come with rapidly falling carbon intensity, and world emissions total about 819 billion tonnes, within the 2°C budget (Figure 2).

Figure 2 The speed of convergence decides prosperity; the route decides the climate

Global South income as % of the high-income level; Global South CO_2, Gt a year; cumulative world CO_2 2025–2100, Gt



Source: H Heuristics scenarios using UN medium population projections (United Nations, 2024); carbon budgets from Forster et al. (2025) (Forster et al., 2025). High-income emissions fall linearly to zero in 2050 (grey segment). Illustrative, not forecasts.

The lesson is that convergence and climate stability are compatible, but only if the carbon intensity of developing economies falls far faster than it has so far, by around 7–10% a year from the 2030s against roughly 2% historically. The decisive period is 2025–2045, when most of the power plants, factories, buildings and transport systems of a converging Global South will be built.

Recommendations

1. **Make the cheapest path the cleanest path.** Cut the cost of capital for clean energy in developing economies, today often two to three times higher than in advanced ones, through guarantees, blended finance, local-currency lending and better project preparation (IEA, 2024a).

2. **Finish the access agenda.** Deliver universal electricity, clean cooking, water and sanitation using grids together with distributed solar and mini-grids, paired with productive uses of power.
3. **Build open digital public infrastructure.** Identity, payment and data-exchange systems that are interoperable and protect privacy widen markets, speed up social transfers and strengthen tax systems.
4. **Invest early in people.** Fund nutrition in the first 1,000 days, primary health care and foundational learning, which pay returns across every dimension for decades.
5. **Build resilience in from the start.** Design infrastructure for the climate of 2050, expand early warning and adaptive social protection, and pre-arrange disaster finance.
6. **Ease debt and reform the financial system.** Faster restructuring, climate-resilient debt clauses and larger multilateral lending would free fiscal space for investment.
7. **Plan the seven dimensions together.** Coordinate energy, digital, health, education and resilience investments so each makes the others more effective, and tailor strategies to national starting points.
8. **Share the burden fairly.** High-income countries, responsible for about 63% of historical fossil CO_2, should cut their own emissions fastest and help finance clean, resilient development elsewhere. The aim is not for developing countries to grow less, but to grow differently.
9. **Measure what matters.** Track convergence and sustainability together, in relative and absolute terms, using an index such as the Sustainable Convergence Index.

SOURCES

Barro, R. J. and Sala-i-Martin, X. (1992). Convergence. *Journal of Political Economy*, 100(2), 223–251. doi.org/10.1086/261816

Forster, P. M., Smith, C., Walsh, T. et al. (2025). Indicators of Global Climate Change 2024: annual update of key indicators of the state of the climate system and human influence. *Earth System Science Data*, 17, 2641–2680. doi.org/10.5194/essd-17-2641-2025

Hughes, H. (2026a). *Sustainable Development & Economic Convergence: Sustainable Convergence*. Figshare preprint, November 2026. https://doi.org/10.6084/m9.figshare.34977568. doi.org/10.6084/m9.figshare.34977568

Hughes, H. (2026b). *Polycrisis Resilience: A General Definition and the H Heuristics Framework*. H Heuristics Research Report. researchreports.hheuristics.com

International Energy Agency (2024a). *Reducing the Cost of Capital: Strategies to Unlock Clean Energy Investment in Emerging and Developing Economies*. Paris: IEA. iea.org/reports/reducing-the-cost-of-capital

Our World in Data (2025). *CO_2 and Greenhouse Gas Emissions dataset*, based on the Global Carbon Project. Oxford: Our World in Data. github.com/owid/co2-data

Our World in Data (2025c). *Levelized cost of energy by technology*, based on IRENA. Oxford: Our World in Data. ourworldindata.org/grapher/levelized-cost-of-energy

United Nations, Department of Economic and Social Affairs (2024). *World Population Prospects 2024*. New York: United Nations. population.un.org/wpp/

World Bank (2026). *World Development Indicators*. Washington, DC: World Bank. databank.worldbank.org/source/world-development-indicators

World Commission on Environment and Development (1987). *Our Common Future*. Oxford: Oxford University Press. sustainabledevelopment.un.org/content/documents/5987our-common-future.pdf

About this brief. This brief summarises *Sustainable Convergence: Sustainable Development and Global Economic Convergence* (H Heuristics Research Report, November 2026), which gives the full data, methods and sources. Sustainable Convergence is a concept developed by Hunter Hughes, Founder of H Heuristics. Text and figures: CC BY-NC-ND 4.0. Scenario results are illustrative, not forecasts.