



DIAGNOSTIC BRIEF

STATE OF INNOVATION IN KWAZULU-NATAL 2025/26

2025/26 EDITION

INTRODUCTION

ABOUT THIS BRIEF

KWAZULU-NATAL IS GOOD AT MAKING THE INGREDIENTS FOR INNOVATION. IT IS LESS GOOD AT PRODUCING THE MEAL.

This brief sets out what the State of Innovation in KwaZulu-Natal 2025/26 Technical Report found, what it implies, and what should be done. It is the seventh edition of a publication series that has measured the provincial innovation system since 2019. The Technical Report itself runs to approximately 140 pages and assembles 40 active indicators across five categories. This brief carries the analytical findings and the priorities for action in standalone form.

The argument the Technical Report makes is that the central challenge in KwaZulu-Natal is not scale but conversion. The province produces the country's largest school-leaving cohort, holds third place on R&D spending, and runs a research university that ranks second nationally on per-capita output. The province also has the country's largest cohort of young people not in employment, education or training (NEET), has lost approximately 42% of its real business R&D spending power in nine years, and has the eighth worst completion rate in TVET engineering of nine provinces. Both readings are true at the same time. They describe one province at two different layers of the same system.

This brief is one of three documents in the 2025/26 publication. The Technical Report carries the full evidence base. The Innovators of KwaZulu-Natal document showcases the practitioners producing innovation in the province through case-based profiles. The Diagnostic Brief, presented here, lifts the analytical findings and priorities for action from the Technical Report and presents them for senior decision-makers in government, industry, the universities and civil society.

WHAT'S IN THIS BRIEF?

1. What's going on in KwaZulu-Natal
2. The conversion gap
3. Where activity is concentrated
4. How activity is configured
5. Where the pipeline loses people
6. What the system keeps
7. What needs to happen
8. The work ahead

KEY CONSIDERATIONS

The Technical Report uses analytical terms (BERD, HHI, KIS, SET) that are standard in innovation measurement. This brief uses them sparingly and defines them where they appear. Anyone unfamiliar with the language should be able to read this brief without needing to consult the Technical Report.

For formal citations and references, please consult the Technical Report

Statistical data included in this report reflects information available up to March 2026

WHAT'S GOING ON IN KWAZULU-NATAL

THE HEADLINE NUMBERS, BEFORE THE ANALYSIS

742,000

young people in KZN aged 15-24 are not in employment, education or training. The largest absolute provincial NEET cohort in the country.

32.3%

official unemployment rate in KZN at Q4:2025. Broad labour underutilisation reaches 49.1% when discouraged work-seekers are included.

21.6%

real fall in monthly wages in the province's Finance and Insurance sector since 2014. Young workers in the sector have lost 29% in real terms.

These are the conditions the provincial innovation system is being asked to operate within. Approximately one in three adults of working age in KwaZulu-Natal is without work. The largest cohort of young people anywhere in the country is sitting outside both work and education. Real wages in the sectors where innovation work happens are contracting. The labour market is one of exclusion rather than informal absorption: people who fall out do not consistently re-enter through another route.

Alongside these conditions sit substantial provincial strengths. KwaZulu-Natal produced the country's largest 2025 school-leaving cohort at 171,368 candidates. Its NSC Bachelor pass rate of 52.0% leads the country. The University of KwaZulu-Natal ranks second nationally on per-capita research output. The province holds third place on absolute Gross Expenditure on R&D and leads the country on mobile internet penetration at 80.0%. Not-for-Profit R&D activity has grown faster in KZN than any other R&D performer nationally over the nine-year window. The medium-high-technology manufacturing base, anchored by the automotive sector, has added jobs over the period.

**The challenge is not scale. The province has the inputs.
It is not turning them into outputs at the rates the inputs predict.**

This brief is about the gap between those two readings. It does not deny the strengths. It does not deny the conditions. It asks the question that joins them: when a province assembles the ingredients of an innovation system at this scale and gets these outcomes, what is going wrong in the middle? Section 9 of the Technical Report calls this the conversion gap. The four sections of this brief that follow set out the four ways the gap appears in the data, and the five priorities the gap implies for the people who hold the levers.

THE CONVERSION GAP

FOUR WAYS THE GAP SHOWS UP IN THE DATA.

The conversion gap is not a single failure at a single point. It appears in four structurally different forms across the indicator data, and each form requires a different response. The Technical Report calls these four forms **mechanisms**, which sounds more technical than it needs to. They are the four ways the data shows the system losing ground between input and output.

Concentration is the pattern of provincial activity being anchored on single nodes. One university produces most of the doctoral training. One metropole holds most of the knowledge-intensive employment. One sub-sector carries the medium-high-technology manufacturing growth. The dominant nodes are themselves productive; the system around them is thin enough that downturns at any one of them cannot be absorbed elsewhere.

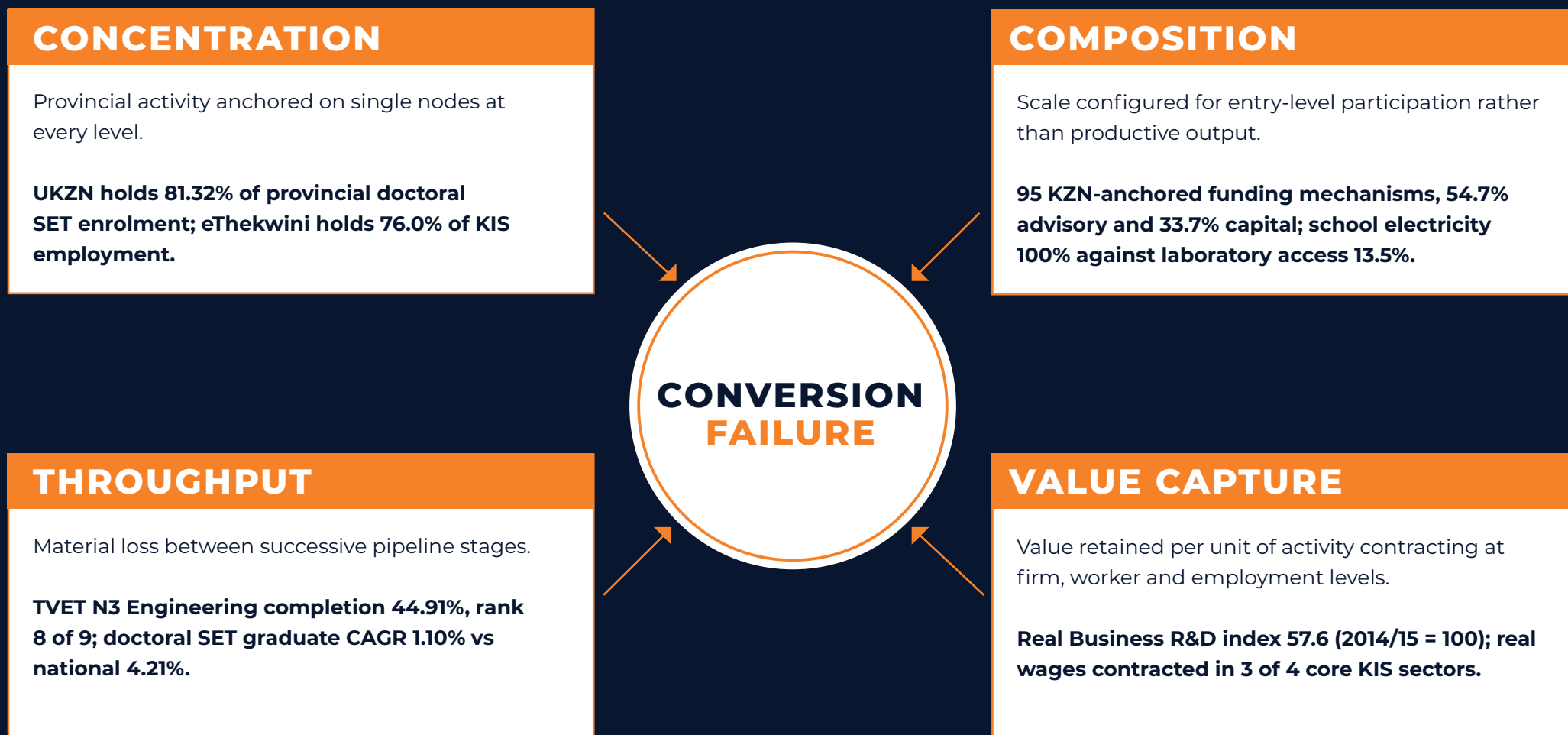
Composition is the pattern of provincial scale being configured for entry-level participation rather than for productive output. Connectivity is mobile-led, which supports browsing and messaging but is less suited to research workloads. School infrastructure delivers electricity to every school but laboratories to one in seven. The funding directory is weighted toward advice rather than capital.

Throughput is the pattern of the human-capital pipeline losing volume between successive stages. The province has the largest school-leaving cohort in the country and the eighth worst TVET engineering completion rate of nine provinces. School pass rates are at record highs whilst science and engineering graduation rates are below their 2015 starting point. Doctoral enrolment has been contracting since 2019.

Value capture is the pattern of the system retaining less value per unit of activity than it used to. Real business R&D has lost approximately 42% of its purchasing power in nine years. Real wages have fallen in three of the four core knowledge-intensive services sectors. High-technology manufacturing employment has lost 23% of its 2014 base. The system continues to produce volume; the value extracted from that volume is contracting.

FIGURE 1. Four-Mechanism Architecture

Visual summary of the brief's central diagnostic.



Source: KZN State of Innovation 2025/26 Technical Report, Section 9.1.

WHERE ACTIVITY IS CONCENTRATED

SINGLE NODES AT EVERY LEVEL.

KwaZulu-Natal has three productive nodes that anchor most of the formal innovation system this report measures. One university, the University of KwaZulu-Natal, holds 71.5% of provincial research output and 81.3% of provincial doctoral training in science, engineering and technology. One metropole, eThekweni, holds 76.0% of knowledge-intensive services employment and 82.1% of locally anchored funding mechanisms. One manufacturing sub-sector, Motor Vehicles and Trailers, accounts for the entire 6.4% growth in medium-high-technology employment over the eleven-year window; the other four sub-sectors in the tier lost 5,222 jobs between them.

The three nodes are individually strong. UKZN ranks second nationally on per-capita research output. eThekweni hosts the strongest provincial digital connectivity and the densest concentration of university and ecosystem infrastructure. Motor Vehicles is the strongest medium-high-technology manufacturing performer in the province. The diagnosis at the system level sits at a different layer. A provincial system in which every productive layer depends dominantly on a single node has limited capacity to absorb the loss or under-performance of any one of them.

A test case is currently in motion. UKZN doctoral enrolment in science, engineering and technology has been contracting since 2019. The first observable signal at the graduation end appeared in 2023, when UKZN dropped from rank one to rank four nationally. This is the most time-sensitive finding in the report.

THE CONCENTRATION NUMBERS

UKZN holds 71.5% of provincial research output.

UKZN holds 81.3% of provincial doctoral SET enrolment.

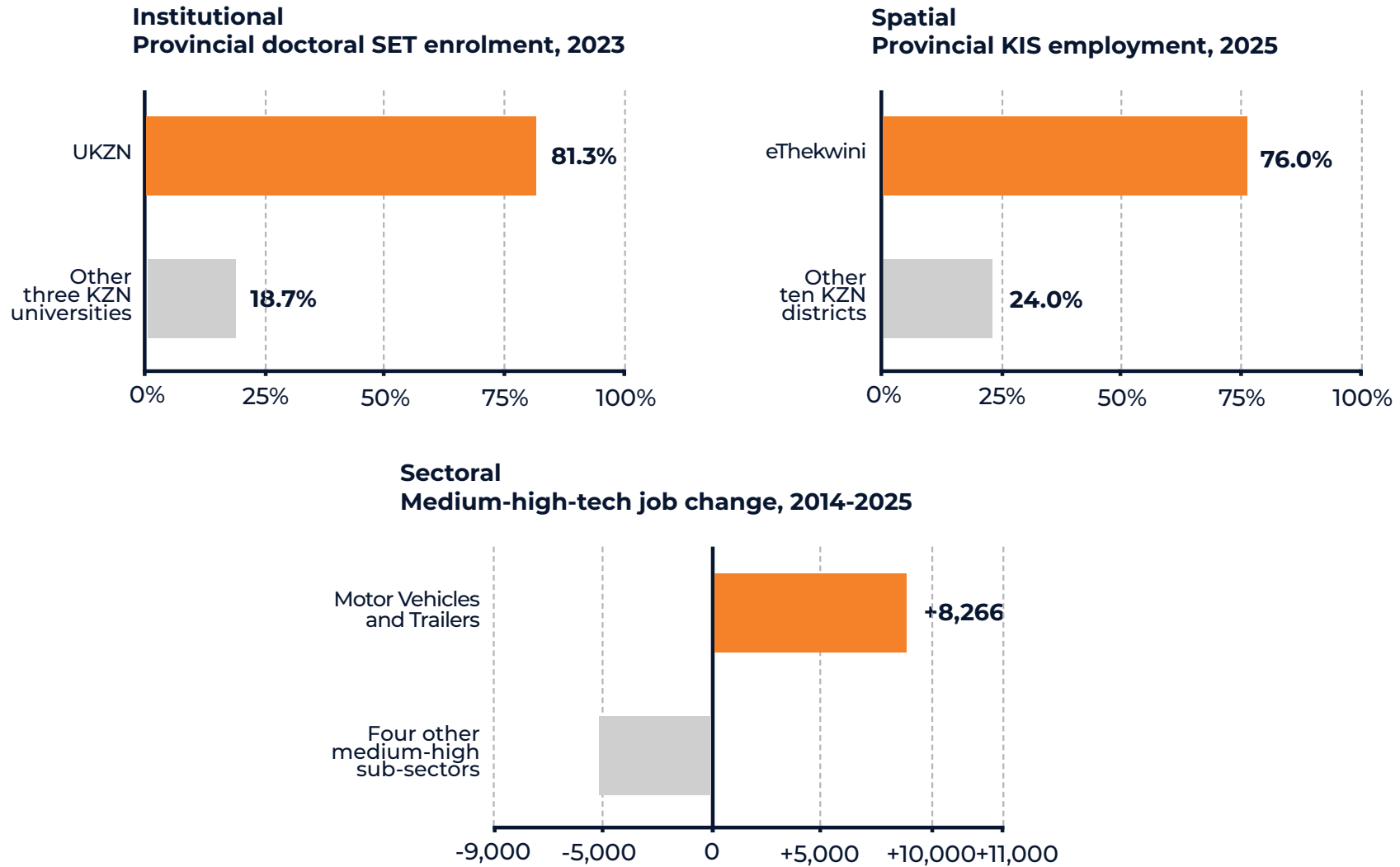
eThekweni holds 76.0% of provincial knowledge-intensive services employment.

eThekweni holds 82.1% of locally anchored funding mechanisms.

Five of eleven districts have no confirmed innovation facility presence.

FIGURE 2. Single-node share at three levels

The same single-node concentration pattern appears at institutional, spatial and sectoral levels.



Source: DHET HEMIS; SEAD platform. KZN State of Innovation 2025/26 Technical Report, Section 9.2.

HOW ACTIVITY IS CONFIGURED

SCALE FOR ENTRY, LESS SCALE FOR PRODUCTIVE USE.

The second feature of the conversion gap is about the shape of provincial scale rather than its size. Where KwaZulu-Natal has scale, the scale tends to support entry-level participation rather than the kind of activity that converts participation into innovation output. The same structural move shows up across four indicator families.

In connectivity, the composition is mobile-led. Mobile internet penetration leads the country at 80.0%. Fixed-home internet sits at 7.5%, nearly ten percentage points below the national average and almost forty points below the Western Cape. Mobile connectivity carries browsing, messaging, mobile payment and video well. It carries large dataset transfer, sustained research workloads and cloud-based collaborative work less well. The connectivity scale supports the activity that has expanded most visibly in South African digital life; the activity that supports innovation work directly is on the smaller channel.

In schools, every public ordinary school in KwaZulu-Natal has electricity. One in seven has a laboratory. One in four has a library. One in three has a computer centre. The infrastructure platform delivers universal access at the most basic layer and falls away sharply at the layers that support science, engineering and the rest of the STEM pipeline at school level.

In funding, the local directory shows 95 mechanisms anchored in the province. Advisory mechanisms (mentoring, navigation, business support) account for 54.7% of the entries. Capital-deploying mechanisms account for 33.7%. The remaining 11.6% are infrastructure or other. The province has access to advice; the patient capital and technology-transfer-facing finance that converts advice into business activity is under-represented.

In R&D, the provincial mix tilts toward Higher Education and Not-for-Profit work, which produce public-good research and mission-led knowledge well, and away from the Business sector that drives commercial innovation. KwaZulu-Natal's Business R&D share sits below the national 35%, and its Not-for-Profit share sits well above the national 4%. The composition is widening: Business R&D contracted at -5.94% per annum in real terms over the nine-year window, whilst Not-for-Profit R&D expanded at +4.55%.

The configuration is not wrong at the activity layer where each component sits. It is mismatched to the conversion task that follows.

WHERE THE PIPELINE LOSES PEOPLE

THREE TRANSITIONS, THREE DIFFERENT MECHANISMS.

The third feature of the conversion gap is throughput: the rate at which the human-capital pipeline carries people from one stage to the next. The province has the country's largest school-leaving cohort, an NSC Bachelor pass rate that leads the country at 52%, and SET enrolment that ranks third nationally. The throughput losses sit downstream of these strong entry-stage numbers.

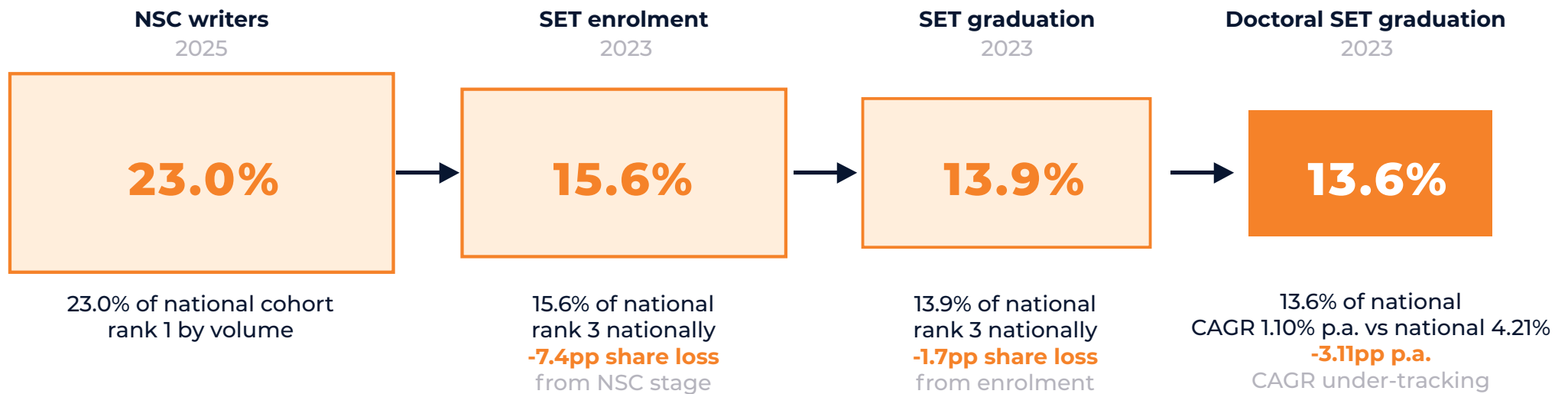
At the TVET engineering assessment stage, the province has the second-largest national share of N3 registrations and the eighth-place national rank on N3 completion. The shortfall is concentrated at the exam itself, not at the registration-to-examination stage. Students are reaching the assessment and not passing it. This is the most compressed expression of throughput failure in the report: a second-largest registration cohort that converts at rank eight of nine.

At the school-to-post-school transition, the binding constraint is Mathematics participation at school. Only 37% of NSC candidates choose Mathematics over Mathematical Literacy, which caps the pool of school leavers eligible for SET-stream programmes regardless of how the headline pass rate moves. NSC pass rates have risen from 69.7% in 2014 to 90.6% in 2025. SET enrolment has not recovered from its 2019 peak. SET graduation per 100,000 of population sits below its 2015 level. The school stage is improving and the post-school destination is contracting. The two trajectories are diverging materially across the series.

At the doctoral stage, the contraction has not yet fully arrived. Enrolment peaked in 2019 and has been falling since. Graduation effects follow enrolment by approximately four to six years. The first signal appeared in 2023 when UKZN dropped from rank one to rank four on doctoral SET graduates. The contraction will work through the graduation series over the years immediately following this publication, and the research-output series in the years after that. Decisions on doctoral support taken now determine outcomes through the late 2020s and into the 2030s.

FIGURE 3. Human-capital pipeline: KZN provincial share by stage

From 23.0% to the national NSC cohort to 13.6% of national doctoral SET graduates, with the largest CAGR under-tracking concentrated at the doctoral graduation stage.



Highlighted stage: doctoral SET graduation, the point of largest provincial under-tracking against national CAGR.

Source: DHET HEMIS; DBE NSC Examination Reports. KZN State of Innovation 2025/26 Technical Report, Sections 4.1 to 4.11

WHAT THE SYSTEM KEEPS

LESS VALUE PER UNIT OF ACTIVITY AT THREE LAYERS.

The fourth feature of the conversion gap is what the system keeps from the volume it produces. The data shows contraction in three different forms at three different layers, all moving in the same direction over the same period.

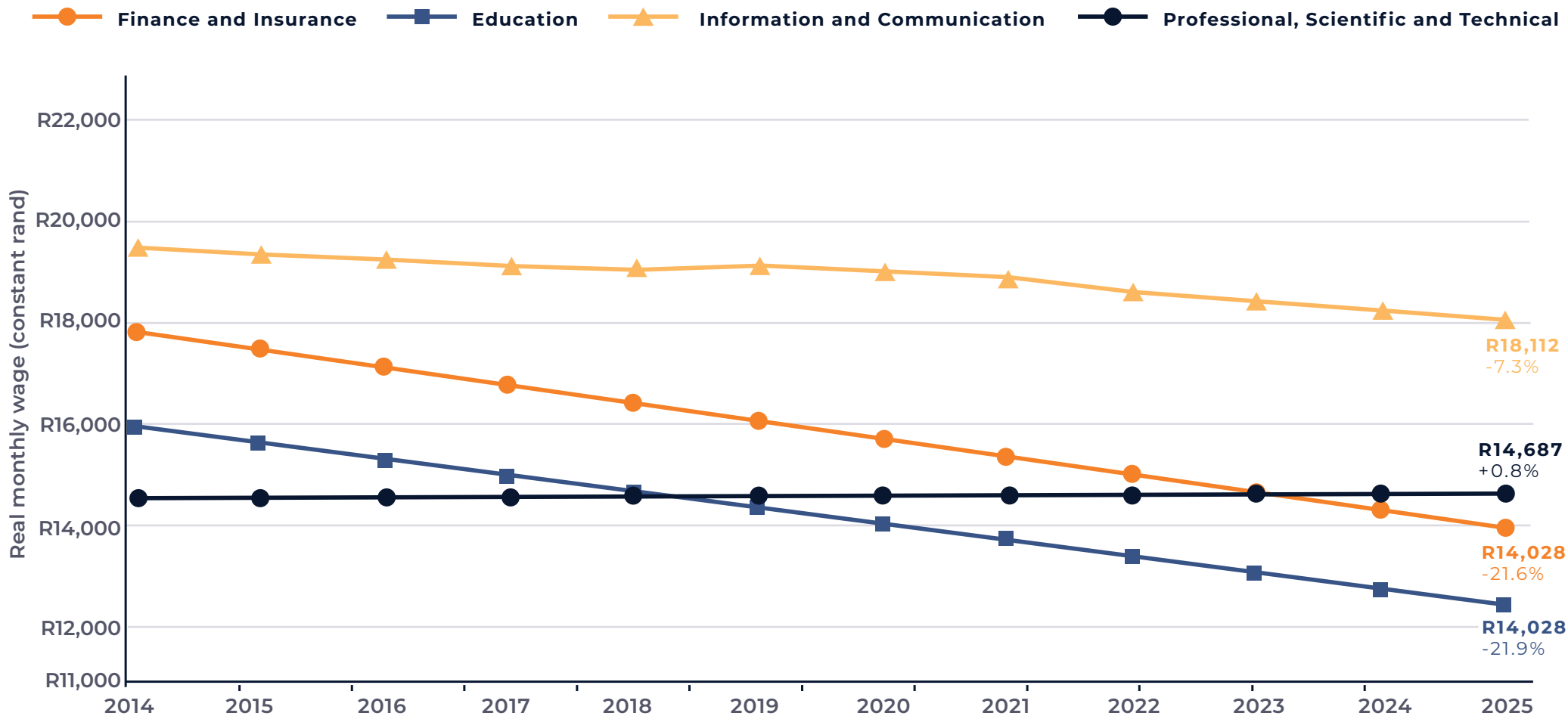
At firm level, real Business R&D in KwaZulu-Natal has fallen at -5.94% per annum over the nine-year window 2014/15 to 2023/24. The national rate is -3.73% over the same period; the KZN contraction is approximately 1.6 times the national rate. The 2023/24 real index sits at 57.6 against a 2014/15 base of 100, which means provincial business R&D has lost approximately 42% of its real purchasing power in nine years. The Western Cape has gained 11.9 percentage points of national BERD share over the same window, moving past KZN in the three largest performing sectors.

At worker level, real wages have contracted in three of the four core knowledge-intensive services sectors over the eleven years to 2025. Finance and Insurance: -21.6%. Education: -21.9%. Information and Communication: -7.3%. Professional, Scientific and Technical was effectively flat at +0.8%. Younger workers have lost more than the all-worker average: the 25-to-34 cohort in Finance and Insurance has lost 29% in real terms. Employment in these sectors has grown; the wages attached to that employment have not.

At productive-employment level, high-technology manufacturing employment in KZN has lost 23% of its 2014 base over the eleven years to 2025. The medium-high-technology growth identified earlier in the brief is a single-sector story (Motor Vehicles) and does not extend to the high-technology tier above it, where no equivalent positive offset exists. The system is producing volume in services and assembly; it is retaining less value at the wage layer and losing capacity at the high-technology employment layer.

FIGURE 4. Real wage trajectory, for KIS sectors

Real wages contracted in three of the four core knowledge-intensive service sectors over 2014-2025.



Real wages contracted in three of four sectors over 2014-2015; the youth (25-34) cohort recorded steeper declines.
 Source: Statistics South Africa Quarterly Labour Force Survey; SEAD platform. KZN State of Innovation 2025/26 Technical Report, Section 8.3.

WHAT NEEDS TO HAPPEN

FIVE PRIORITIES, AND WHERE THE LEVERS SIT.

The Technical Report identifies five priorities that follow from the diagnostic. Each is anchored on a specific finding in the data and names a specific intervention. The priorities are not equivalent in scale or urgency, and they are not independent of one another. The province's lead actor in this space is the KZN Department of Economic Development, Tourism and Environmental Affairs (EDTEA); effective execution requires alignment with the Department of Higher Education and Training, the Department of Science and Innovation, the Department of Trade Industry and Competition, local government the four KZN universities, science councils, and entities including Innovate Durban. The absence of a current provincial innovation strategy is itself a structural gap that these priorities presume will be addressed.

1. SPATIAL INCLUSION: BUILD SUPPLEMENTARY CAPACITY OUTSIDE ETHEKWINI

Addresses concentration. Anchor at least one university or science council presence in the most economically active of the five currently underserved districts (uThukela, iLembe, uMkhanyakude, Zululand, Amajuba). Establish a provincial Fab Lab outside eThekweni, since KZN currently has none, the only top-four province in this position. Design the next generation of funding-support mechanisms with explicit non-metro eligibility so that proximity to the metropole does not function as a de facto filter. Lead actor: provincial EDTEA with DHET, DSI and provincial Education.

2. CAPITAL ARCHITECTURE: REVERSE THE BUSINESS R&D TRAJECTORY

Addresses composition and value capture. The 42% real contraction in provincial business R&D is the most pronounced finding in the report. Use targeted incentives, matched-funding mechanisms and sector-specific R&D support directed at the comparative-advantage sectors: agro-processing, logistics technology, and the automotive supply chain. Recalibrate ecosystem support to the actual private-sector base that exists, not the larger and more R&D-intensive base the province once had. Lead actor: DTIC and National Treasury on incentive design; provincial EDTEA on coordination.

3. COMMERCIALISATION INFRASTRUCTURE: CLOSE THE MISSING MIDDLE

Addresses composition and value capture. The provincial research base produces volume; the system extracts proportionately less commercial IP per unit of that volume than the national pattern. UKZN sits at 0.68 patent applications per 100 DHET research output units, rank 19 of 23 nationally against a median of 3.12. A KZN Research Commercialisation and Prototype Fund is the most direct supply-side instrument. A provincial Testbed and Demonstration Network, with provincial government acting as first customer for KZN-developed innovations, closes the missing middle from the demand side. Lead actor: provincial EDTEA with DSI, the four KZN universities, and Innovate Durban.

4. DIGITAL CONNECTIVITY: FIXED-LINE WHERE INNOVATION WORK HAPPENS

Addresses composition. KZN leads on mobile internet penetration and trails materially on fixed-home internet. Mobile carries consumption-side activity well; production-side workloads require sustained bandwidth and stable connections. The structural response is targeted fixed-line capacity expansion at universities, university precincts, TVET colleges, science councils, and secondary urban centres outside eThekweni. This is not a shift from mobile to fixed at the consumer level; it is a deliberate addition of fixed-line capability at the institutional and productive-use layer. Lead actor: ICASA, provincial Department of Public Works and Infrastructure, with university and TVET stakeholders.

WHAT NEEDS TO HAPPEN (CONTINUED)

CONNECTIVITY, THE HUMAN-CAPITAL PIPELINE, AND HOW THE FIVE PRIORITIES MAP ACROSS THE FOUR MECHANISMS.

5. HUMAN-CAPITAL PIPELINE: THREE TRANSITIONS, THREE INTERVENTIONS

Addresses throughput. Each of the three transitions where the pipeline loses volume requires a different intervention. At the TVET engineering exam, the failure is at the assessment itself; the intervention runs at college level (workshop infrastructure, lecturer capacity, structured exam preparation). At the school-to-post-school transition, Mathematics participation at 37% of NSC candidates is the binding upstream constraint; any SET-expansion strategy from the innovation system must engage school-level subject choice. At the doctoral stage, the post-2019 enrolment contraction is the most time-sensitive finding in the report; the intervention is a targeted programme on doctoral SET retention and completion at KZN universities, with particular attention to UKZN. Lead actor: DHET with provincial Education and the four KZN universities.

FIGURE 5. Mapping: five priorities against four mechanisms

Filled circles indicate the principal mechanism each priority addresses.

	CONCENTRATION	COMPOSITION	THROUGHPUT	VALUE CAPTURE
1 Spatial Inclusion District-differentiated capacity	●	○	○	○
2 Capital architecture BERD reversal and base recalibration	○	●	○	●
3 Commercialisation infrastructure Supply and demand instruments	○	●	○	●
4 Digital connectivity Fixed-line at productive-use sites	○	●	○	○
5 Human-capital pipeline Three-stage throughput intervention	○	○	●	○

Filled circle = addresses mechanism. Open circle = does not address mechanism directly

Source: KZN State of Innovation 2025/26 Technical Report, Section 9.7.

THE WORK AHEAD

THE CONVERSION GAP, ON THE EVIDENCE THIS EDITION ASSEMBLES, IS THE WORK IN FRONT OF PROVINCIAL INNOVATION POLICY.

KwaZulu-Natal's innovation system shows substantial scale, institutional depth and genuine areas of provincial strength. The province produces the country's largest NSC examination cohort, holds third place on absolute R&D investment, leads the country on Bachelor pass share and on Living Lab footprint, and ranks second nationally on per-capita research output. Mobile internet penetration leads the country. Not-for-Profit R&D has expanded faster than any other provincial R&D performer over the nine-year window. The medium-high-technology manufacturing base, anchored by the automotive sector, has added jobs over the period.

The diagnosis is that the province assembles those foundations and does not consistently convert them into the throughput, intensity and value capture the framework measures at the next layer down. The conversion failure is structural, not incidental. It shows up at every layer of the system: as single-node concentration, as composition tilted toward foundational rather than productive use, as throughput losses across the human-capital pipeline, and as value capture compressed across firm investment, wages and high-technology employment.

The province has the underlying assets the diagnostic both identifies and respects. The five priorities in this brief describe what a coordinated provincial response would look like. The conversion gap is the work that sits in front of provincial innovation policy.

ABOUT THE PUBLICATION

SEVENTH EDITION

The State of Innovation in KwaZulu-Natal is now in its seventh edition. The 2025/26 publication has three documents: the Technical Report (approximately 140 pages, A4 landscape), this Diagnostic Brief, and Innovators of KwaZulu-Natal.

DATA SOURCES

Human Sciences Research Council; Department of Higher Education and Training; Department of Basic Education; Statistics South Africa (P0302 and QLFS); Independent Communications Authority of South Africa; National Treasury Spatial Economic Activity Database; Companies and Intellectual Property Commission; Innovate Durban Innovation Support Facility Register.

METHODOLOGICAL NOTE

The framework applies no composite scoring across categories or indicators. The four-mechanism diagnostic and the five priorities derive from a cross-category reading of the indicator data. The framework does not measure informal-sector innovation, which accounts for 16% to 22% of provincial employment; the diagnosis is therefore a finding about the formal innovation system rather than the full innovation economy of the province. Full methodology in Section 3 of the Technical Report.

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