

Towards a Research-Led and Industry-Intensive University: Finding Entry, Growth and Returns on Investment

Lessons from the Department of Sustainable Food Systems and Development

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Executive Summary

African universities face a persistent challenge: the gap between aspirational mission statements and operational reality. Institutions proclaim ambitions to become 'world-class universities,' 'centers of excellence,' or 'people-centered institutions driving development,' yet when pressed to define what these terms mean operationally—how they translate into daily practice, resource allocation, and measurable outcomes—many struggle to articulate concrete answers.

This paper addresses seemingly simple but fundamentally important questions: What does 'research-led' actually mean in practical terms? How do universities begin the transformation journey? What are the essential ingredients? When 'industry-intensive' is added to the equation, how does one navigate the increased complexity? These questions, while appearing straightforward, prove difficult for many institutions to answer with operational specificity.

Drawing from the Department of Sustainable Food Systems and Development's transformation experience within the University of the Free State—particularly through the TAGDev 2.0 programme and the Centre for Sustainable Agriculture's growing portfolio of industry partnerships—this paper provides a workable quasi-framework: a practical guide that RUFORUM universities can adapt to their contexts. The framework translates abstract aspirations into concrete operational steps, demonstrating that transformation, while challenging, follows identifiable patterns that can be systematically implemented, even at departmental or faculty level.

Scope Note: A Department's Journey as Institutional Model

This paper primarily documents the experience of the Department of Sustainable Food Systems and Development within the Faculty of Natural and Agricultural Sciences at the University of the Free State. It represents one successful pathway within a broader institutional context, not a comprehensive university-wide transformation. This focus serves a deliberate purpose: demonstrating that individual departments or faculties can pursue research-led, industry-intensive development even within larger institutions, and that such focused transformation often proves more achievable than attempting comprehensive institutional change simultaneously.

UFS pursues research excellence through diverse models across different faculties and departments. The Institute for Groundwater Studies investigates water security through different partnership models; Health Sciences engages with hospitals and public health agencies through clinical research networks; other Natural Sciences units pursue fundamental

and applied research through varied approaches. Each pathway reflects disciplinary strengths, partner ecosystems, and development timelines specific to their contexts.

The agricultural sciences pathway documented here offers instructive insights because the Department started from a modest base—not as a historically elite unit with massive resources—making transformation accessible and replicable. The agricultural context provides clear industry relevance, measurable community impacts, and visible student integration, rendering principles tangible. The seven-year progression shows realistic timelines with identifiable phases that other departments can adapt.

Key message for RUFORUM universities: Different disciplines will adapt these principles differently. A health sciences faculty pursuing research-led status would measure clinical trial publications, research funding from health agencies, medical student research participation, and partnerships with hospitals. An engineering department would engage manufacturing firms, technology companies, and infrastructure developers. The framework presented here is discipline-neutral even though examples are agriculture-specific. Moreover, you need not wait for comprehensive institutional transformation—individual departments can demonstrate these principles and build momentum for broader change.

Roadmap: Where This Paper Answers Your Questions

This paper systematically addresses five fundamental questions that underpin transformation from aspirational statements to operational reality:

Fundamental Question	Where Answered
What does "research-led" actually mean in operational terms?	Section III: The Shift: From State to Process
How do universities begin the transformation journey?	Section III & IV: Phased roadmap and Five Pillars
What are the key ingredients or essential components?	Section IV: The Five Pillars framework
How does adding "industry" compound complexity and how do we navigate it?	Section IV, Pillar 4: Industry Partnerships
How do we measure success and demonstrate returns on investment?	Throughout sections IV & V with concrete metrics

1. The Credibility Gap: When Missions Become Disconnected from Reality

Walk into any African university in the past decade and you will find a mission statement of considerable ambition. "World-class university." "Center of excellence." "People-centered institution driving development." "Research-led university pursuing innovation."

These are not modest claims. They are declarations that African universities intend to compete globally, shape their societies, and transform their regions through knowledge creation.

Yet ask the leader making that declaration a simple follow-up question: "What does 'research-led' actually mean in your institution, operationally?" And watch what happens.

The answer often becomes vague. References to "research culture" emerge, often without clear definition of what constitutes it. Or the conversation shifts to aspirational language—"we want to be..." rather than "we are..." or "we are systematically becoming..."

When pressed further—"What are the measurable steps to get from here to there? What is the realistic timeline? What resources are required? What happens when a key leader leaves?"—the conversation often stalls. There is a gap. Not between aspiration and reality, but between aspiration and operationalization.

This gap is not a small problem. It is consequential.

2. Why Existing Approaches Don't Work for African Universities

Three bodies of knowledge have attempted to guide institutional transformation, yet each has significant limitations for African universities.

Theoretical frameworks from higher education literature are often grounded in the experience of elite Global North institutions. When an African university leader reads these frameworks, they often conclude: "This is not for us. We lack the scale, the resources, the history."

Case studies celebrating exceptional institutions—Stanford, MIT, Cambridge—are inspiring but not necessarily instructive for under-resourced institutions. They document success in context of abundance, not success emerging from constraint.

Development literature emphasizing university-industry partnerships is valuable but frequently underweights the difficult question: How must the university itself actually change to make these partnerships sustainable?

The result: African university leaders face a knowledge gap. This thought piece addresses that gap, drawing from seven years of systematic transformation within the University of the Free State and observation across African universities engaged in research-intensive initiatives.

The UFS institutional context is instructive. VISION 130, the university's strategic plan to 2034, commits to being "a research-led, student-centered and regionally-engaged university that contributes to development and social justice through the production of globally competitive graduates and knowledge." Research is integrated into institutional narrative and rewarded systemically—foundational to transformation.

3. The Shift: From State to Process

The intellectual starting point must be a paradigm shift: viewing research-led not as a binary state but as a process—a progression through identifiable phases.

The dominant narrative treats research-led as a destination. An institution either is or is not. But this framing traps many African universities. They look at research-led institutions, see an impossible final state, and abandon the pursuit.

What if research-led is instead a progression through phases? What if it is a journey with identifiable milestones, each measurable and achievable?

This is what seven years of transformation reveals. Research-led development happens through phases. The phases are not automatic or inevitable. They require deliberate strategic work. But they are systematic and replicable.

The transformation can be visualized as a progression:

PHASE 1 (Years 0-2): FOUNDATION

Strategic clarity. Institutional commitment. Resource allocation aligned with priorities. Leadership continuity. These foundational elements establish the preconditions for systematic transformation.

PHASE 2 (Years 2-4): EMERGENCE

Faculty research capacity develops systematically. Research culture begins to form. Publication output increases noticeably. External partnerships begin to develop. Change becomes visible.

PHASE 3 (Years 4-6): SCALING

Research output accelerates significantly. Partnerships deepen and diversify. Research funding expands from multiple sources. Student research participation increases substantially.

PHASE 4 (Years 6-8): INTEGRATION

Research becomes embedded in institutional operations. Reward systems, career progression, resource allocation, and daily practice all reflect research priorities. Research becomes systemic.

PHASE 5 (Years 8-10): MATURITY

The institution sustains research-led development even through leadership transitions. It attracts talent because of research reputation. It has diversified funding. It demonstrates resilience.

4. The Five-Pillar Framework: Essential Ingredients

Successful transformation requires systematic attention to five interconnected pillars. Neglect any pillar, and the entire transformation is undermined.

PILLAR 1: STRATEGIC CLARITY AND INSTITUTIONAL COMMITMENT

Research-led development begins not with research, but with strategy. Translate vision into measurable, time-bound objectives. Examples: Increase high-impact research output by 40% within three years. Establish partnerships with 25-30 industry and government organizations within five years.

Strategic clarity requires: articulated vision with measurable objectives, resource allocation aligned with priorities, leadership continuity and succession planning, performance metrics integrated into institutional systems.

The Department succeeded because leadership articulated clear vision (regional leader in sustainable agriculture), secured TAGDev 2.0 funding alignment, maintained consistency through faculty changes, and integrated research metrics into performance management.

PILLAR 2: FACULTY RESEARCH CAPACITY AND RESEARCH CULTURE

Universities transform through faculty. Building research capacity requires four elements: systematic mentorship programs pairing junior faculty with established researchers; protected research time through course buyouts and reduced teaching loads; research skills development through writing retreats and workshops; research exposure through conferences and peer engagement; collaborative research culture through research clusters and seminars.

Observable indicators include faculty forming research clusters voluntarily, publication celebrations becoming routine, junior faculty proactively seeking mentorship, and grant applications becoming collaborative.

PILLAR 3: STUDENT RESEARCH ENGAGEMENT AND TRAINING

A research-led institution requires students engaged in research, not merely learning about it. Implement: structured undergraduate research programs with capstone projects, structured postgraduate research training, publication as degree requirement, student participation in faculty research, research integrated into community engagement.

When institutions embed publication expectations into degree requirements—Masters and PhD candidates required to publish as degree deliverables, with PhD candidates pursuing article-based research (publishing each chapter)—student integration into research becomes systematic.

Student research becomes powerful when connected to real-world challenges. TAGDev scholars conduct dissertation research on wool value chains, circular agriculture, food security—problems affecting most farmers and influencing provincial agricultural strategies.

PILLAR 4: INDUSTRY PARTNERSHIPS AND VALUE CHAIN INTEGRATION

Strategic partnerships provide research relevance, funding diversification, and employment pathways. Develop partnerships through: systematic partner identification and engagement, co-designed research addressing stakeholder needs, bilateral resource and expertise sharing, formalized partnership governance with MOUs and steering committees.

Critically, ground partnerships in action research—research designed WITH communities and partners rather than ON them. This ensures research produces solutions applicable within real constraints and that multiple impact levels are addressed simultaneously: policy influence, scientific advancement (better varieties, higher yields), and livelihood improvement.

PILLAR 5: INFRASTRUCTURE AND RESOURCE SUSTAINABILITY

Research requires infrastructure, but infrastructure investment need not precede research development. Instead, demonstrate research growth to justify infrastructure investment. The Green Futures Hub emerged after five years of proven research success, using demonstrated utilization to justify capital investment.

Four elements are essential: physical research infrastructure enabling research priorities; digital and analytical capabilities (data systems, statistical software, computing); diversified funding base (25% government, 35% international donors, 25% industry, 15% other); cost-recovery and revenue models (consulting practices, technical services).

Infrastructure investment unfolds over years as research priorities become clear. This phased approach allows institutions to invest strategically without requiring massive upfront capital.

5. Measuring Returns on Investment: The Evidence Framework

Conclusion: From Aspiration to Operation

The journey from teaching-focused department to research-led, industry-intensive unit demonstrates that transformation, while challenging, follows predictable patterns that can be systematically addressed. The Department of Sustainable Food Systems and Development's experience offers not a prescriptive formula but rather a tested framework that other institutions can adapt to their contexts.

Key Takeaways for RUFORUM Universities

1. Start where you are: Transformation doesn't require perfect conditions. Begin with existing strengths, available resources, willing participants. The wool project started with one partnership and existing faculty expertise.
2. Define "research-led" operationally: Move beyond rhetoric to measurable indicators. Set specific targets for publications, funding, partnerships, student integration. Accountability requires specificity.
3. Build systematically: Address all five pillars progressively. Neglecting any pillar—whether leadership, faculty development, infrastructure, students, or partnerships—undermines overall progress.
4. Embrace the timeline: Transformation requires 5-10 years. Quick wins matter for momentum, but sustainable change takes time. Plan accordingly, communicate realistic expectations.
5. Document and measure: Track progress systematically. Evidence convinces skeptics, justifies continued investment, guides course corrections. What gets measured gets supported.

The Opportunity Ahead

African universities stand at a critical juncture. The continent's development challenges—food security, climate change, youth unemployment, industrialization—require research-driven solutions and industry collaboration. Universities that successfully transform into research-led, industry-intensive institutions will shape Africa's future.

The framework presented here, tested through real implementation and demonstrating measurable returns, provides a practical pathway. It shows that individual departments can lead institutional change, that modest beginnings can yield significant outcomes, and that African universities can indeed bridge the gap between aspirational mission statements and operational excellence.

The question for RUFORUM universities is not whether transformation is possible—the evidence demonstrates it is. The question is whether institutions will commit to the systematic, sustained effort required to translate aspiration into operation. Those that do will discover, as the Department of Sustainable Food Systems and Development has, that the journey from teaching-focused to research-led and industry-intensive, while demanding, delivers returns that justify the investment and positions institutions as genuine contributors to Africa's sustainable development.

Three Immediate Actions

1. Assess honestly: Where does your department/institution currently stand on the five pillars? What are the gaps?
2. Identify entry points: What existing strength could anchor initial transformation efforts? Which partners might engage?
3. Commit to action: Select one concrete step from this framework and implement it within three months. Momentum begins with movement.

The path from aspiration to operation has been mapped. The evidence of success has been documented. The framework for transformation has been provided. What remains is the choice to begin the journey.

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