
SYSTEMS THINKING
RESEARCH & LEADERSHIP
DEVELOPMENT INSTITUTE
THE NATIONAL STRATEGY FIRM
STRLDi

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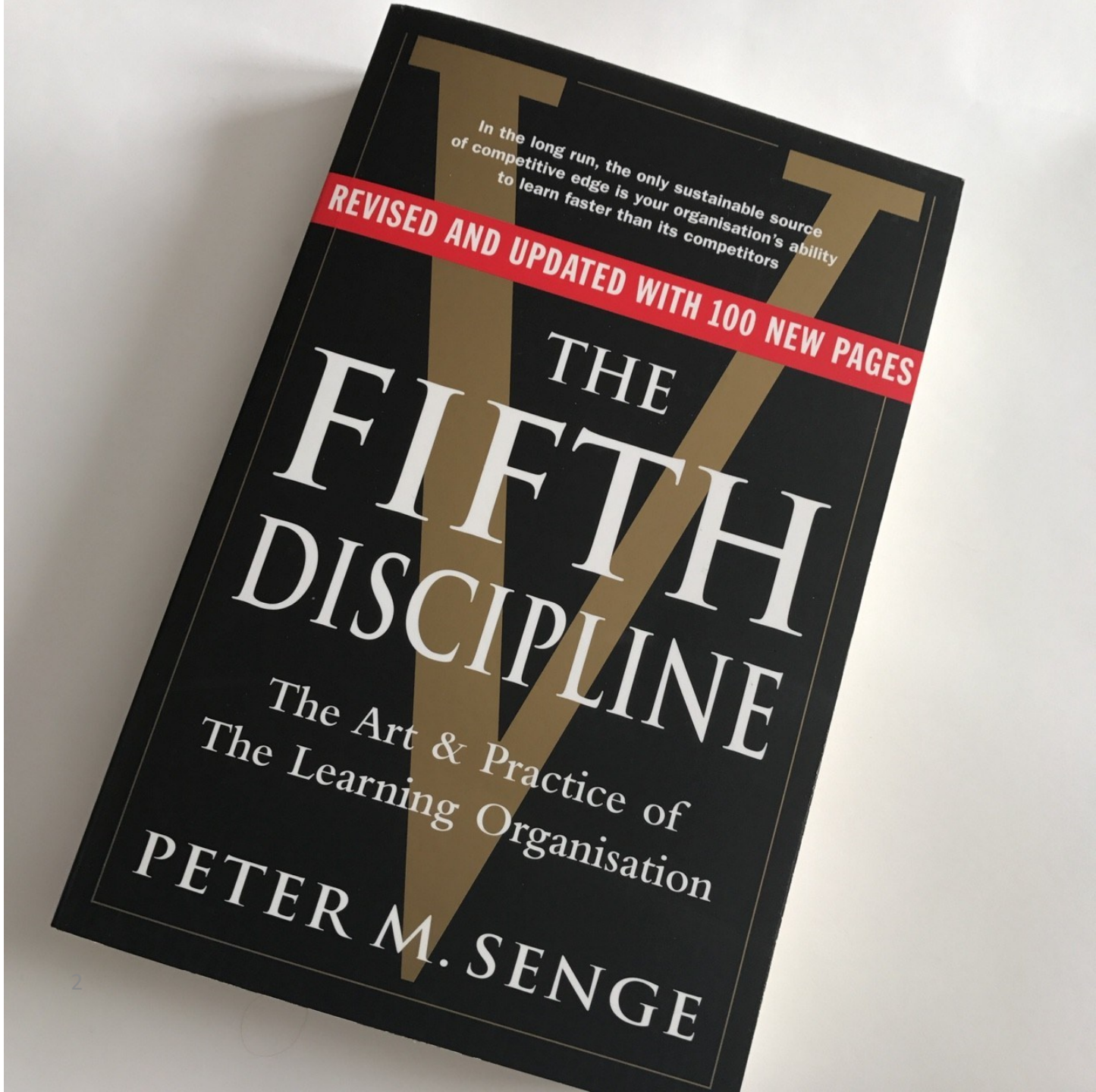
LEAD CONSULTANT

SYSTEMS **T**HINKING
RESEARCH & **L**EADERSHIP
DEVELOPMENT **I**NSTITUTE
(STRLDi), BOTSWANA



PROFILE

STRLDi

- Systems Thinking Research Institute
- Leadership Development Institute
- On contract with Office of the President from 2008-2012, taught public servant leadership across the country The Fifth Discipline, pending study and strategy formulation for NDP input

PINNACLE FOODS:

- Food manufacturing & franchising (2012 in development)
- Commercial horticulture seedlings production (2020 – 2023)
- Farmers' Learning Centre – short-term workshops for horticulture farmers (2022 – present)

STRLDi UNEMPLOYMENT STUDY PRESENTATION ROADMAP

1. Botswana's Historical Response to Unemployment
2. Why the Problem Persists Despite 50 Years of Intervention
3. Systems Thinking and the Study Methodology
4. Behaviour Over Time: What the Data Reveals
5. **Structural Drivers of Persistent Unemployment**
6. **Productive Sector Analysis:**
   - **Agriculture • Manufacturing • Retail • Government**
7. **STEM Capability and Labour Absorption Constraints**
8. **Household Stability and Long-Term Capability Formation**
9. The STRLDi Structural Recommendations
10. National Implementation Pathway
11. National Systemic Integration & NDP Alignment
12. Discussion: Implications for Botswana's Future Development Strategy

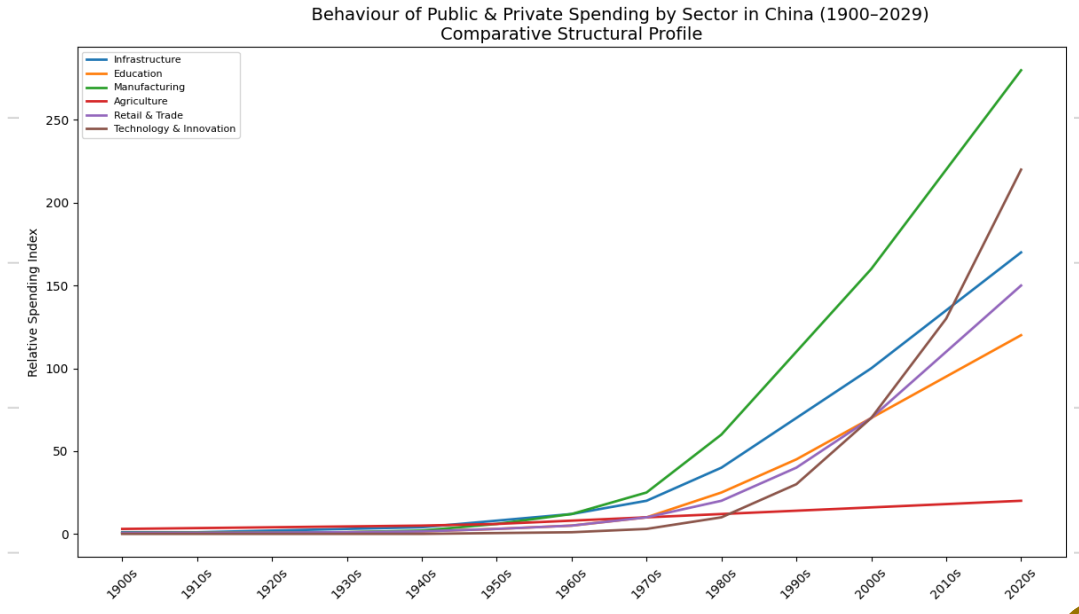
BOTSWANA: TYPICAL UNEMPLOYMENT STRATEGIES ADOPTED OVER THE PAST 50 YEARS

- Public Sector Expansion
- Education Expansion Strategy
- Youth & Labour-Based Public Works Programmes
- Citizen Economic Empowerment Schemes
- Economic Diversification Strategy
- Foreign Direct Investment (FDI) Attraction
- Agricultural Support Programmes
- Infrastructure-Led Development
- Poverty Alleviation & Social Protection Programmes
- National Planning & Reform Approaches

All figures are approximate long-horizon estimates expressed in Constant 2025 Botswana Pula Billions (BWP bn) for systems observation purposes.

		SOCIAL / ADMINISTRATIVE SECTORS							CORE PRODUCTIVE SECTORS			
Years / Period		Education	Health	Infrastructure	Public Administration	Social Justice Programmes	Social Support Systems	Judiciary Systems	Agriculture	Manufacturing	Mining	Retail & Trade
1900–1909	Public Sector Spending	0.2	0.1	0.3	0.3	0	0	0.1	0.4	0	0	0.1
	Private Sector Spending	0	0	0.3	0	0	0	0	1	0	0.3	0.2
	Total Spending	**0.2**	**0.1**	**0.6**	**0.3**	**0**	**0**	**0.1**	**1.4**	**0**	**0.3**	**0.3**
1910–1919	Public Sector Spending	0.3	0.2	0.4	0.5	0	0	0.1	0.6	0	0	0.2
	Private Sector Spending	0	0	0.5	0	0	0	0	1.4	0	0.5	0.3
	Total Spending	**0.3**	**0.2**	**0.9**	**0.5**	**0**	**0**	**0.1**	**2**	**0**	**0.5**	**0.5**
1920–1929	Public Sector Spending	0.5	0.3	0.6	0.7	0	1	0.2	0.8	0	0.1	0
	Private Sector Spending	0	0	0.8	0	0	2.9	0	1.8	0	0.8	0
	Total Spending	**0.5**	**0.3**	**1.4**	**0.7**	**0**	**3.9**	**0.2**	**2.6**	**0**	**0.9**	**0**
1930–1939	Public Sector Spending	0.6	0.4	0.8	0.9	0	0	0.5	1	0	0.1	0.4
	Private Sector Spending	0	0	1.1	0	0	0	0	1.7	0	1	0.6
	Total Spending	**0.6**	**0.4**	**1.9**	**0.9**	**0**	**0**	**0.5**	**2.7**	**0**	**1.1**	**1**
1940–1949	Public Sector Spending	0.9	0.7	1.3	1.4	0.1	0.1	0.4	1.4	0.1	0.2	0.5
	Private Sector Spending	0	0	1.7	0	0	0	0	2	0	1.5	0.8
	Total Spending	**0.9**	**0.7**	**3**	**1.4**	**0.1**	**0.1**	**0.4**	**3.4**	**0.1**	**1.7**	**1.3**
1950–1959	Public Sector Spending	1.5	1.1	2.3	2	0.2	0.2	0.6	1.8	0.2	0.3	0.8
	Private Sector Spending	0.1	0	2.4	0	0	0	0	2.4	0.1	2.5	1.2
	Total Spending	**1.6**	**1.1**	**4.7**	**2**	**0.2**	**0.2**	**0.6**	**4.2**	**0.3**	**2.8**	**2**
1960–1969	Public Sector Spending	4	3	7	5	0.6	0.5	1	3	0.6	1	2
	Private Sector Spending	0.4	0.1	7	0.1	0	0	0	2.8	0.5	22.3	2.5
	Total Spending	**4.4**	**3.1**	**14**	**5.1**	**0.6**	**0.5**	**1**	**5.8**	**1.1**	**23.3**	**4.5**
1970–1979	Public Sector Spending	10	7	16	9	1	1	2	4	1	2	4
	Private Sector Spending	2	0.4	12	0.3	0	0	0	5.9	1.3	51	6
	Total Spending	**12**	**7.4**	**28**	**9.3**	**1**	**1**	**2**	**9.9**	**2.3**	**53**	**10**
1980–1989	Public Sector Spending	18	12	22	13	2	2	3	5	2	3	7
	Private Sector Spending	4	1.3	17	1	0	0	0	6	2	71	10
	Total Spending	**22**	**13.3**	**39**	**14**	**2**	**2**	**3**	**11**	**4**	**74**	**17**
1990–1999	Public Sector Spending	28	20	28	18	5	5	5	6	3	4	10
	Private Sector Spending	5	2	22	1	0	0	0	7	3	98	15
	Total Spending	**33**	**22**	**50**	**19**	**5**	**5**	**5**	**13**	**6**	**102**	**25**
2000–2009	Public Sector Spending	42	32	38	25	10	10	7	8	4	5	15
	Private Sector Spending	7	3	30	2	0	0	0	8	4	123	23
	Total Spending	**49**	**35**	**68**	**27**	**10**	**10**	**7**	**16**	**8**	**128**	**38**
2010–2019	Public Sector Spending	58	45	50	35	15	15	10	10	5	6	22
	Private Sector Spending	9	4	37	2	0	0	0	9	5	149	34
	Total Spending	**67**	**49**	**87**	**37**	**15**	**15**	**10**	**19**	**10**	**155**	**56**
2020–2029*	Public Sector Spending	72	58	65	45	22	22	13	12	6	8	30
	Private Sector Spending	11	4	44	3	0	0	0	10	6	170	45
	Total Spending	**83**	**62**	**109**	**48**	**22**	**22**	**13**	**22**	**12**	**178**	**75**
Rank		3	5	2	6	8	8	10	7	10	1	4
TOTAL		**P274.50**	**P194.60**	**P407.50**	**P165.20**	**P55.90**	**P59.70**	**P42.90**	**P113.00**	**P43.80**	**P720.60**	**P230.60** **P2308.3B**

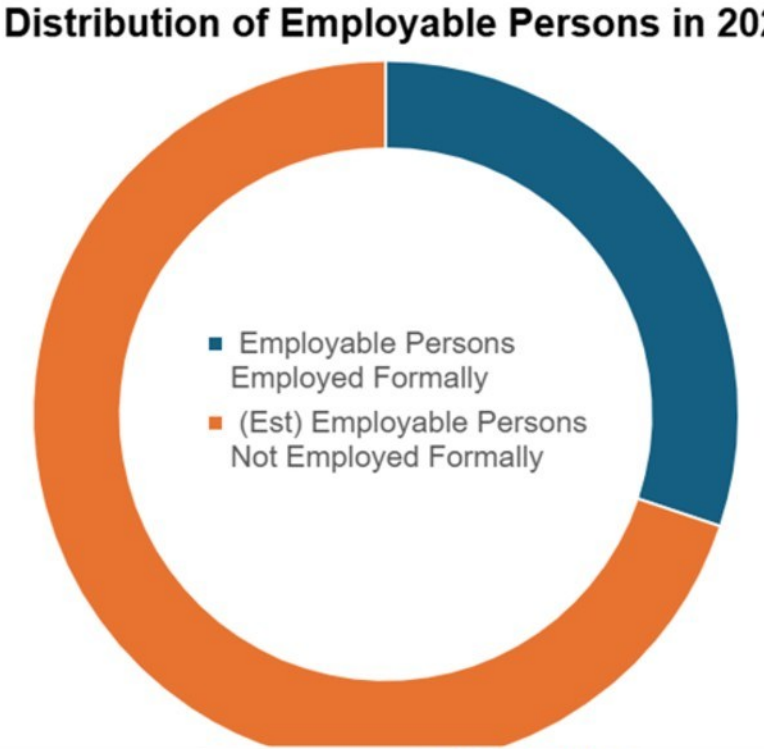
Behavior of Public & Private Spending By Sector in Botswana 1900 -2029



Relative Spending Index

	1900–1909	1910–1919	1920–1929	1930–1939	1940–1949	1950–1959	1960–1969	1970–1979	1980–1989	1990–1999	2000–2009	2010–2019	2020–2029*
Infrastructure	0.6	0.9	1.4	1.9	3	4.7	14	28	39	50	68	87	109
Education	0.2	0.3	0.5	0.6	0.9	1.6	4.4	12	22	33	49	67	83
Retail & Trade	0.3	0.5	0	1	1.3	2	4.5	10	17	25	38	56	75
Health	0.1	0.2	0.3	0.4	0.7	1.1	3.1	7.4	13.3	22	35	49	62
Public Administration	0.3	0.5	0.7	0.9	1.4	2	5.1	9.3	14	19	27	37	48
Agriculture	1.4	2	2.6	2.7	3.4	4.2	5.8	9.9	11	13	16	19	22
Social Justice Programmes	0	0	0	0	0.1	0.2	0.6	1	2	5	10	15	22
Social Support Systems	0	0	3.9	0	0.1	0.2	0.5	1	2	5	10	15	22
Judiciary Systems	0.1	0.1	0.2	0.5	0.4	0.6	1	2	3	5	7	10	13
Manufacturing	0	0	0	0	0.1	0.3	1.1	2.3	4	6	8	10	12
Mining	0.3	0.5	0.9	1.1	1.7	2.8	23.3	53	74	102	128	155	178

THE CAPACITY OF THE ECONOMY TO EMPLOY WORKING AGE POPULATION, 2011 AND ONWARDS



Indicator	Population	Employable Population	(Est) Population Employed (Formal + Informal) @ 60%	Employable Persons Employed Formally	(Est) Population That is Working in the Informal Sector @70% Total Employed	(Est) Employable Persons Not Employed Formally	Unemployed	% Employed Formally	% YTY Change for Persons Not Employed Formally
Census 2011	2,024,904	1,349,936	809,962	378,900	566,973	971,036	404,063	28.1%	
Dec-21		1,544,648	926,789	494,457	648,752	1,050,191	401,439	32.0%	+ 8 %
Mar-22	2,346,179	1,564,119	938,472	486,432	656,930	1,077,687	420,757	31.1%	+ 2 %
Mar-24	2,763,338	1,842,225	1,105,335	555,212	773,735	1,287,013	513,279	30.1%	+ 19 %

OBJECTIVE OF OUR RESEARCH STUDIES

Understanding Why Persistent Conditions Persist

- **Focus on persistent national, regional, and global conditions** such as unemployment, poverty, economic stagnation, declining institutional performance, environmental degradation, health outcomes, educational outcomes, and social fragmentation.
- **Study Behaviour Over Time** to distinguish recurring patterns from isolated events and identify how conditions reproduce themselves across years, decades, and generations.
- **Move beyond symptoms, events, and root causes** to uncover the reinforcing structures, feedback processes, systemic archetypes, and mental models sustaining persistence.
- **Help leaders develop structural understanding** of the conditions they seek to change, strengthening their ability to identify leverage points for lasting improvement.
- **Build capability while conducting research**, enabling participants to learn the tools, disciplines, and practices required to continue systemic inquiry independently.
- **Support cross-sector *strategy* development**, recognising that persistent conditions rarely originate within a single institution, ministry, industry, or stakeholder group.
- **Generate transferable learning** so that lessons from one region, nation, sector, or challenge can inform understanding elsewhere.

Core Research Question

- What structures, behaviours, assumptions, and feedback processes continue reproducing this condition across time — and what leverage exists to change its trajectory?

STRLDi Principle

- Persistent conditions cannot be understood through events alone. Systems Thinking begins by learning to see patterns before events, and structures before interventions.

THE INTENT OF THE FIVE DISCIPLINES

- **Why Peter Senge Called Them Disciplines**
- The Five Disciplines are called disciplines because they require **continuous practice**. They are not techniques to be learned once, but capacities that develop over a lifetime.
- Their purpose is not simply organisational improvement. Their deeper purpose is to expand our ability to **see, learn, and act within complex human systems**.
- The disciplines work together to help individuals, teams, organisations, and societies move beyond reacting to events toward understanding the structures producing those events.

What the Disciplines Help Us See

- Without disciplined practice, **attention** naturally gravitates toward:
  - Events
  - Crises
  - Symptoms
  - Operational pressures
  - Immediate fixes
- The disciplines **help us** develop the capacity to see:
  - Behaviour Over Time
  - reinforcing and balancing feedback
  - systemic archetypes
  - mental models shaping perception’
  - shared futures worth creating

Why This Matters Today

- Many institutions have become highly sophisticated at managing **detailed complexity**.
- Far fewer have developed the capacity to recognise **dynamic complexity** — the reinforcing structures and delayed consequences that quietly reproduce conditions across years, decades, and generations.
- As a result:
  - we often respond to consequences rather than causes
  - we treat recurring patterns as isolated events
  - we become trapped in cycles of reaction and intervention

The Deeper Purpose of the Five Disciplines

- The Five Disciplines help build the capacity to:
  - think systemically
  - learn collectively
  - surface assumptions
  - strengthen long-term vision
  - recognise recurring structures
  - act from understanding rather than reaction

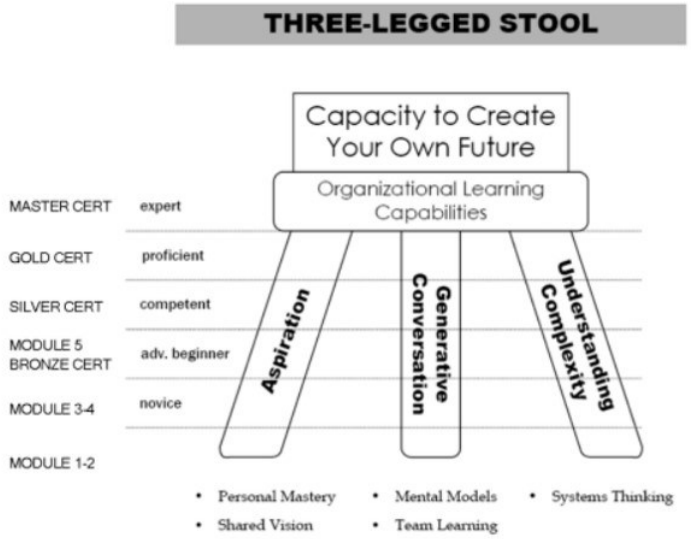
The Core Insight

- Systems Thinking begins by learning to see patterns before events.
- The Five Disciplines exist to help human beings develop that capacity together.

TOOLS OF THE FIFTH DISCIPLINE

THE FIFTH DISCIPLINE OVERVIEW – INTENT: MANAGE CHANGE SEAMLESSLY

Incredible Tools for Unlocking The Secret To Understanding & Learning To Work With Our Realities



THE CAPABILITIES OF A LEARNING ORGANIZATION

TOOLS OF A LEARNING ORGANIZATION

TOOLS OF THE LEARNING ORGANISATION!

A ONE-PAGE SUMMARY OF THE FIFTH DISCIPLINE, THE ART AND PRACTICE OF THE LEARNING

Personal Mastery	*Shared Vision*	*Mental Models*	*Team Learning*	*Systems Thinking*
PRACTICES AND PRINCIPLES:				
• CLARIFYING PERSONAL VISION • HOLDING CREATIVE TENSION (FOCUSON RESULTS AND SEEK CURRENT REALITY) • MAKING CHOICES	• VISIONING PROCESS • ACKNOWLEDGING CURRENT REALITY	• DISTINGUISHING "DATA" FROM ABSTRACTION BASED ON DATA • TESTING ASSUMPTIONS • "LEFT-HAND COLUMN"	• SUSPENDING ASSUMPTIONS • ACTING AS COLLEAGUES • SURFACING OWN DEFENSIVENESS • "PRACTICING"	• SYSTEM ARCHETYPES • SIMULATION
PRACTICE TOOLS:				
□ Personal Mastery goes beyond proficiency □ Creative Tension Model □ Personal Vision □ Holding Creative Tension □ Structural Conflict □ Commitment to the Truth □ Using the subconscious □ Integrating Reason and Intuition □ Seeing our connectedness to the world □ Compassion □ Commitment to the Whole □ Centering long enough to focus on what we want □ Crafting the Purpose Statement – 1ºChoice	□ Encouraging Personal Vision □ From Personal to Shared Visions □ Spreading Visions □ Enrolment □ Commitment □ Compliance □ Guidelines for enrollment and commitment □ Anchoring Vision to Purpose and Values □ Positive versus Negative Vision □ Creative tension and commitment to the truth □ Why visions die prematurely	□ Planning as learning □ Managing mental models at personal and interpersonal levels □ Reflection Skills □ Leaps of Abstraction or Ladder of Inference □ Left Hand Column □ Inquiry Skills □ Balancing Inquiry and Advocacy □ Espoused Theory versus Theory-in-Use □ Double Loop Learning	□ Dialogue and Discussion □ Participants suspend their assumptions □ Seeing each other as colleagues □ There must be a facilitator who "holds" the context □ Dealing with Current Reality: Conflict and defensive □ The Missing Link: Practice □ Learning how "to practice"	□ 11 laws of complexity □ Seeing circles of causality □ Balancing Loop □ Reinforcing Loop □ Delays □ Archetypes □ Accidental Adversaries □ Balancing Loop with Delays □ Drifting Goals □ Escalation □ Fixes that Backfire □ Growth and Underinvestment □ Limits to Success □ Shifting the Burden □ Success to the Successful □ Tragedy of the Commons □ Behavior Time Graphs □ Leverages
THE ESSENCE OF THE DISCIPLINE:				
The essence of Personal Mastery is learning how to generate and sustain creative tension in our lives	Shared Vision is a force of "impressive power" that emerges when people share a desire to be connected in an important undertaking.	The essence of Mental Models is Learning to uncover deeply held internal images we have about how the world works, altering forever the way we think and create new ideas.	Team Learning is the process of aligning and developing the capacity of a team to create the results it truly desire.	The Art of seeing the forest and the trees! Seeing through complexity to the underlying structures generating change.

As presented by Peter Senge in his signature book (compiled by Sheila)

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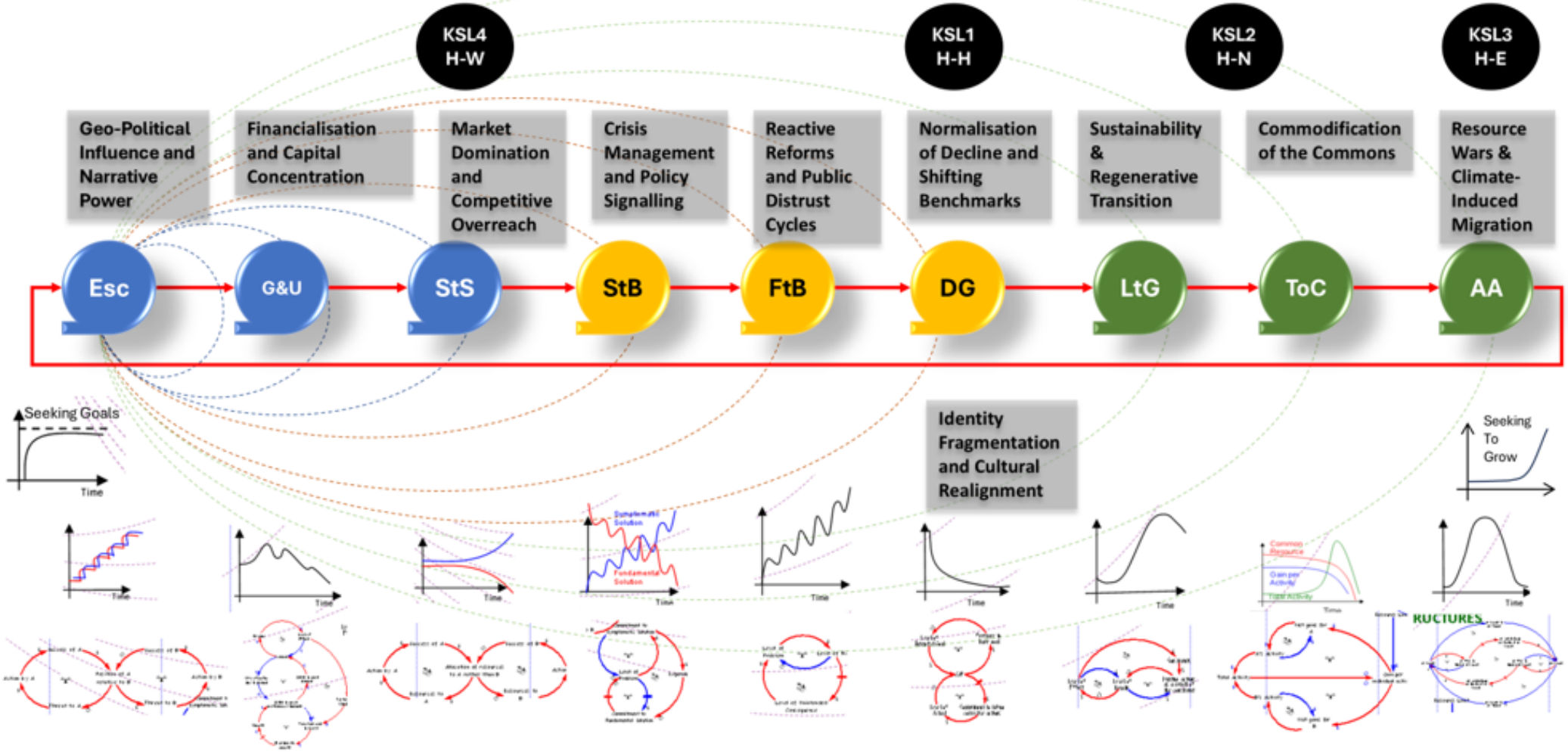
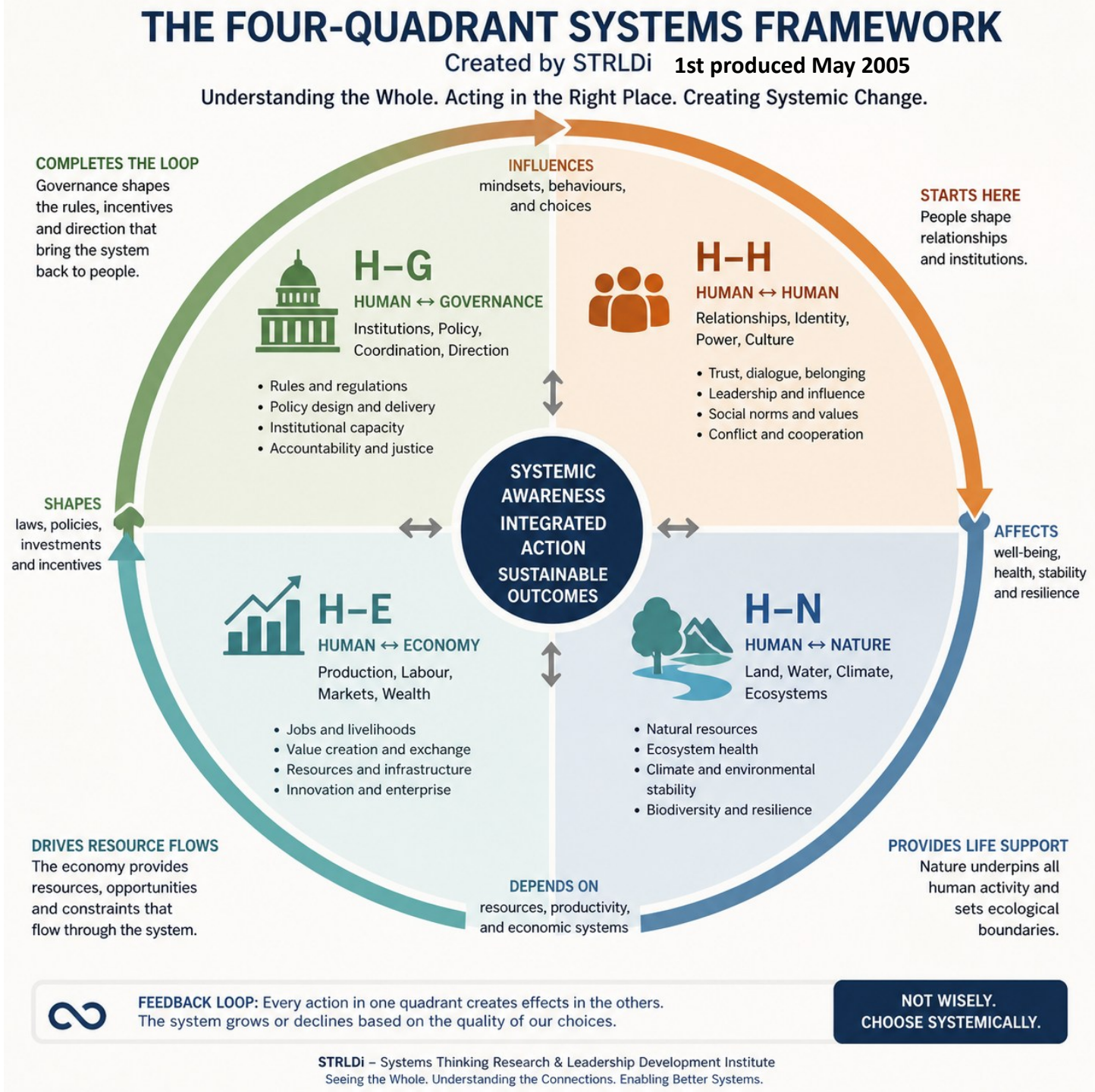
THE SYSTEMIC ONION FRAMEWORK

Understanding How Systemic Archetypes Drive Persistent Patterns of Growth, Decline, and Renewal

Developed by Ms Sheila Damodaran, STRLDi, integrating and extending the seminal systems archetype work of Peter Senge and his MIT team

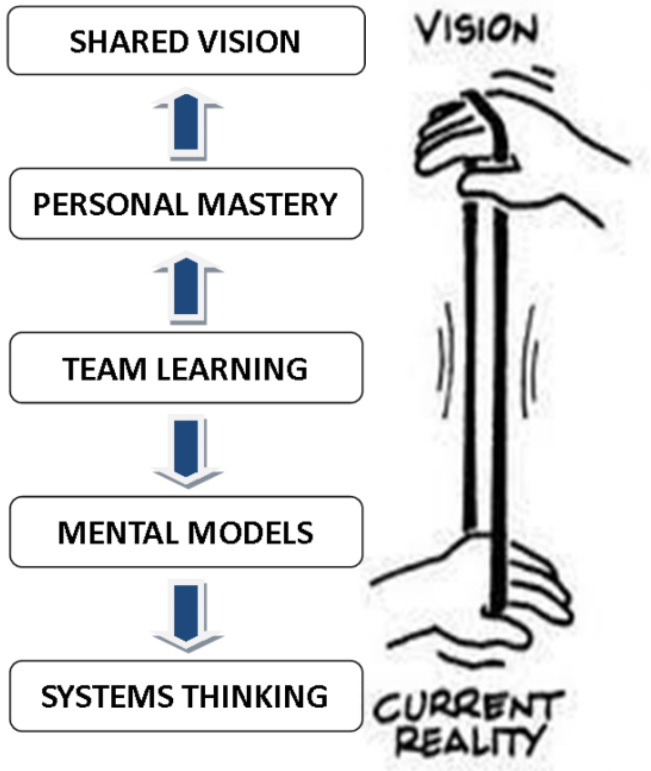


Uncovered & Tested by Ms. Sheila Damodaran, 2002
First Global Presentation @ Pegasus Conference 2006
Updated 2018, 2019

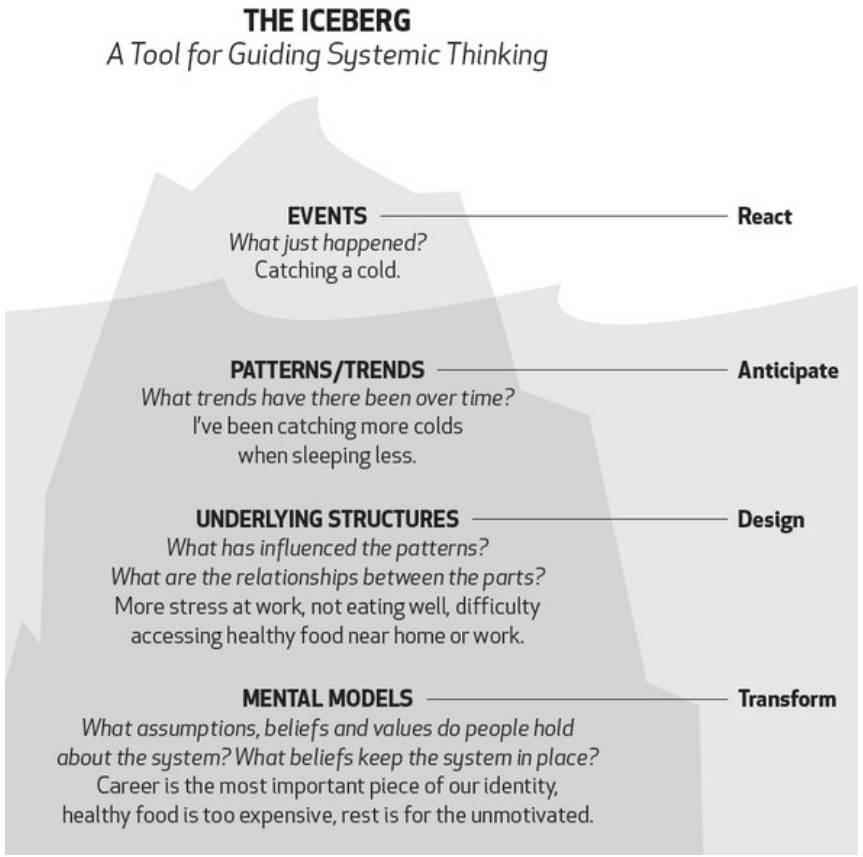

THE FOUR-QUADRANT SYSTEMS FRAMEWORK
Created by STRLDi
1st produced May 2005
Understanding the Whole. Acting in the Right Place. Creating Systemic Change.
COMPLETES THE LOOP
Governance shapes the rules, incentives and direction that bring the system back to people.
INFLUENCES
mindsets, behaviours, and choices
STARTS HERE
People shape relationships and institutions.
H–G
HUMAN ↔ GOVERNANCE
Institutions, Policy, Coordination, Direction
• Rules and regulations
• Policy design and delivery
• Institutional capacity
• Accountability and justice
H–H
HUMAN ↔ HUMAN
Relationships, Identity, Power, Culture
• Trust, dialogue, belonging
• Leadership and influence
• Social norms and values
• Conflict and cooperation
SYSTEMIC AWARENESS
INTEGRATED ACTION
SUSTAINABLE OUTCOMES
SHAPES
laws, policies, investments and incentives
AFFECTS
well-being, health, stability and resilience
H–E
HUMAN ↔ ECONOMY
Production, Labour, Markets, Wealth
• Jobs and livelihoods
• Value creation and exchange
• Resources and infrastructure
• Innovation and enterprise
H–N
HUMAN ↔ NATURE
Land, Water, Climate, Ecosystems
• Natural resources
• Ecosystem health
• Climate and environmental stability
• Biodiversity and resilience
DRIVES RESOURCE FLOWS
The economy provides resources, opportunities and constraints that flow through the system.
DEPENDS ON
resources, productivity, and economic systems
PROVIDES LIFE SUPPORT
Nature underpins all human activity and sets ecological boundaries.
FEEDBACK LOOP: Every action in one quadrant creates effects in the others. The system grows or declines based on the quality of our choices.
NOT WISELY. CHOOSE SYSTEMICALLY.
STRLDi – Systems Thinking Research & Leadership Development Institute
Seeing the Whole. Understanding the Connections. Enabling Better Systems.

KEY POINTS OF PRACTICE

CREATIVE TENSION MODEL



THE ICEBERG



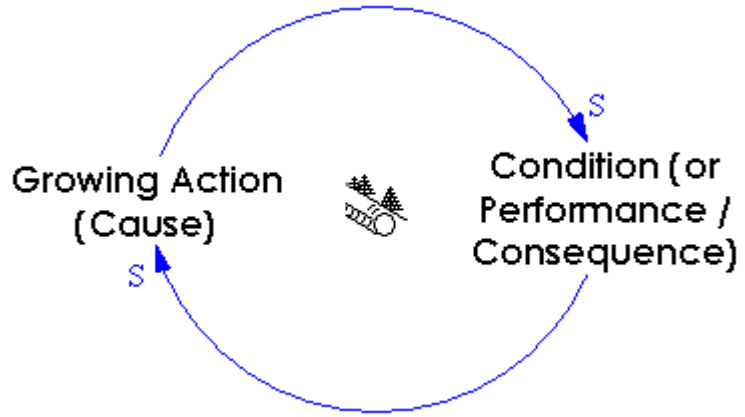
DEFINITION OF SYSTEMS THINKING

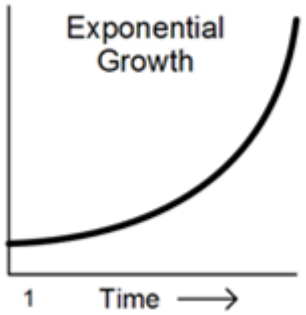
- Systems Thinking is **to discipline us in seeing and understanding patterns** – looking beyond events – to deeper "structures" that control events and, discovering the leverage that lies hidden in these structures.
- The **essence** of the discipline lies in a shift of mind (pg 68):
  - See **interrelationships** rather than linear cause-effect chains, and
  - See **processes of change** rather than snapshots

THERE ARE TWO DISTINCT PATTERNS IN SYSTEMS THINKING

REINFORCING LOOP

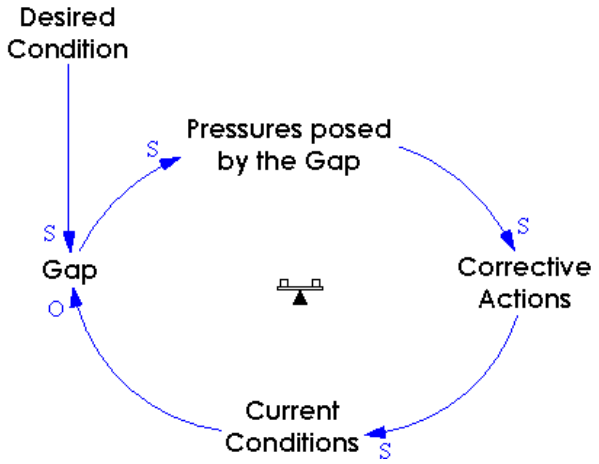
SEEKS TO GROW (NOT STABILISE)

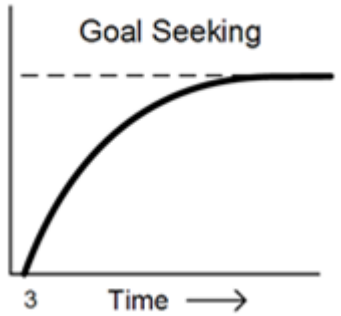




BALANCING LOOP

SEEKS TO STABILISE (NOT GROW)





TIMELINE OF STUDY & RESULTS

- APR 2008 **STUDY FIRST MOOTED**
- MAR 2012 **RESEARCH GROUP FIRST FORMED**
- 2012-2018 RESEARCH ON HOLD PENDING STATISTICS BOTSWANA FORMATION
- AUG 2018 RE-INITIATION OF STUDY
- DEC 2018 DATA RECEIVED FROM STATISTICS BOTSWANA
- JAN 2019 **STUDY COMPLETED (in 2 weeks)**
- MAY 2019 PRESENTATION AT PS's FORUM, OFFICE OF THE PRESIDENT
- OCT 2019 NATIONAL ELECTIONS
- APR 2020 – AUG 2021 COVID LOCKDOWNS
- DEC 2021 ANNOUNCEMENT OF IMPORT BAN OF HORTICULTURE PRODUCE
- JUL 2024 IMPORT BAN LIST IS EXPANDED AND PERIOD EXTENDED TO DEC 2025
- NOV 2024 CHANGE OF PARTY POLITICAL SYSTEMS
- MAY 2026 PRESENTATION TO NPC LEADERSHIP

BOTSWANA: PAST UNEMPLOYMENT STRATEGIES vs STRLDI STRUCTURAL RECOMMENDATIONS

FROM

- PUBLIC SECTOR EXPANSION
- EDUCATION EXPANSION
- YOUTH & PUBLIC WORKS PROGRAMMES
- CITIZEN EMPOWERMENT SCHEMES
- ECONOMIC DIVERSIFICATION POLICIES
- FDI ATTRACTION
- AGRICULTURAL SUPPORT PROGRAMMES
- INFRASTRUCTURE-LED DEVELOPMENT
- POVERTY & SOCIAL SUPPORT PROGRAMMES
- NATIONAL PLANNING & REFORMS

TO

→ PRODUCTIVE-SECTOR DEEPENING

→ STEM & PRODUCTIVE CAPABILITY STABILISATION

→ LONG-HORIZON LABOUR ABSORPTION DESIGN

→ PRODUCTIVE VALUE-CHAIN DEVELOPMENT

→ STRUCTURAL DIVERSIFICATION CAPABILITY

→ PRODUCTIVE-STRUCTURE READINESS

→ AGRICULTURE–MANUFACTURING INTEGRATION

→ PRODUCTIVE ECONOMIC ECOSYSTEMS

→ REDUCING STRUCTURAL PRESSURE SOURCES

→ SYSTEMS COORDINATION & BEHAVIOURAL LEARNING

THE OPPORTUNITY COST OF UNEMPLOYMENT
Botswana's Largest Untapped Economic Asset

TODAY'S STRUCTURE

Average Wage: P1,655

Current Per-Capita Monthly Income

25% of population in formal employment

FULL PRODUCTIVE PARTICIPATION

P10,344

Potential Per-Capita Monthly Income

Working-age population fully productively engaged

WHAT THE COUNTRY GAINS

- **6.25× HIGHER PER-CAPITA PROSPERITY**
- 🏭 Higher National Production
- 🛒 Stronger Consumer Demand
- 💰 Higher Government Revenue
- 📈 Higher GDP Growth
- 👫 Stronger Household Prosperity

STRATEGIC INSIGHT

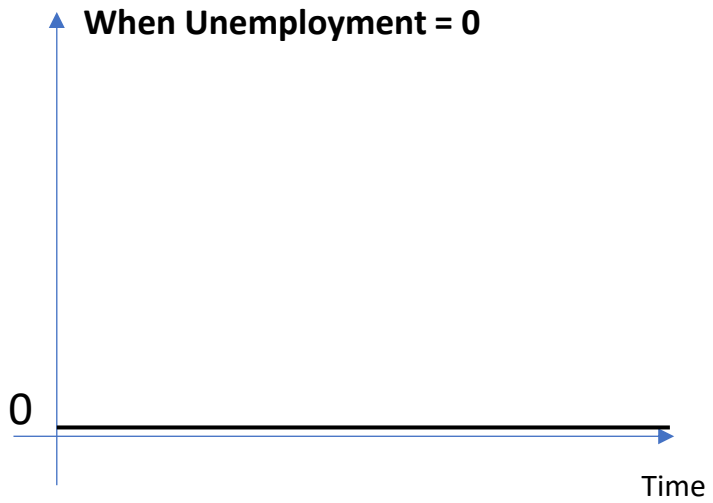
- Unemployment is not merely a labour-market issue.
- It is one of the largest opportunity costs to national productivity, household income, fiscal sustainability, and economic growth.

WHAT CAUSES PERSISTENT UNEMPLOYMENT

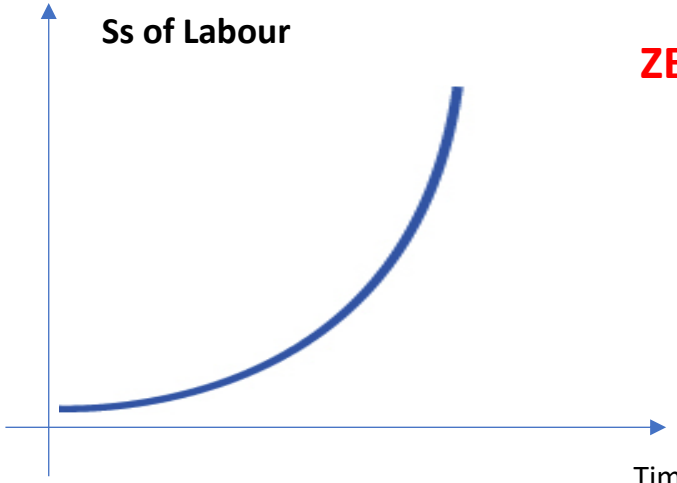
SELF WORK. QUESTIONS:

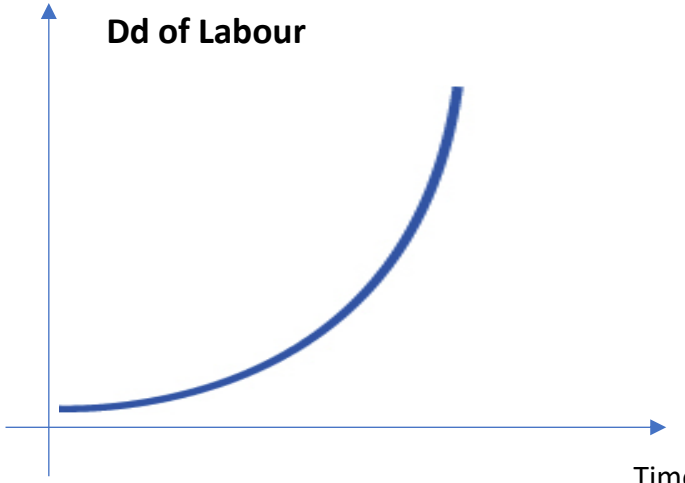
- IDENTIFY ORGANISATIONAL (GOVT, PTE, COMMUNITY, PROFESSIONALS) STAKEHOLDERS
- WHAT FILTERS TODAY MAY HAVE STOPPED THEM FROM LEARNING ABOUT THESE ALREADY?
- IDENTIFY IMPACT OF CAUSES THAT IMPACT YOUR ORGANISATION.

DRILLING DOWN PERSISTENT NATIONAL UNEMPLOYMENT

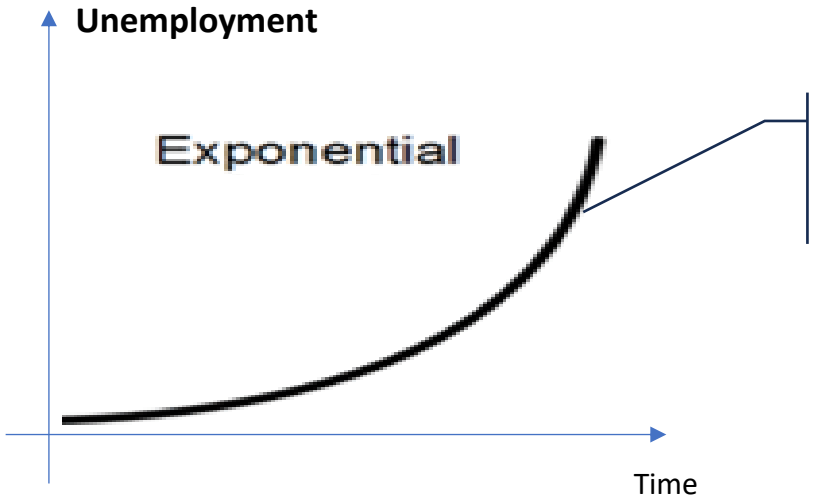


SS = DD MEANS
FULL EMPLOYMENT
ZERO UNEMPLOYMENT

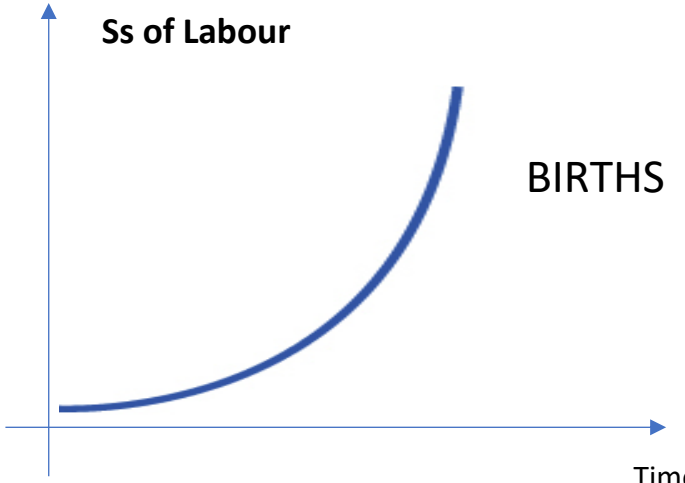




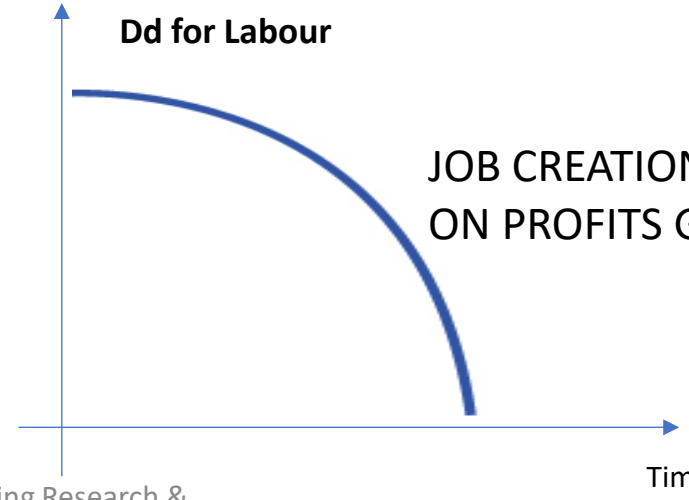
DRILLING DOWN PERSISTENT NATIONAL UNEMPLOYMENT



These graphs are indicating that a reinforcing causal loop structures are at play that are seeking to grow.

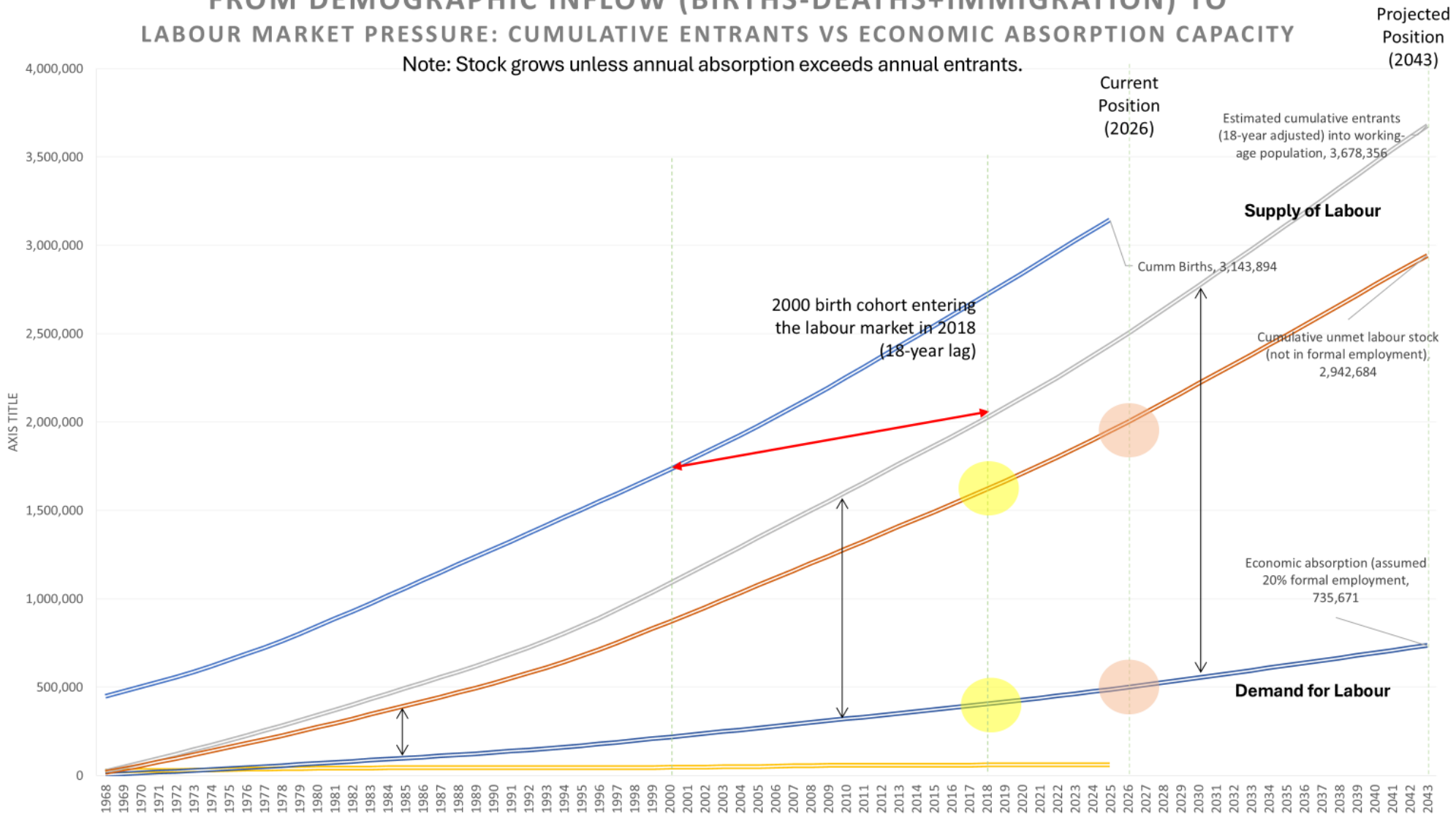


BIRTHS



JOB CREATION DEPENDS ON PROFITS GENERATED

FROM DEMOGRAPHIC INFLOW (BIRTHS-DEATHS+IMMIGRATION) TO
LABOUR MARKET PRESSURE: CUMULATIVE ENTRANTS VS ECONOMIC ABSORPTION CAPACITY

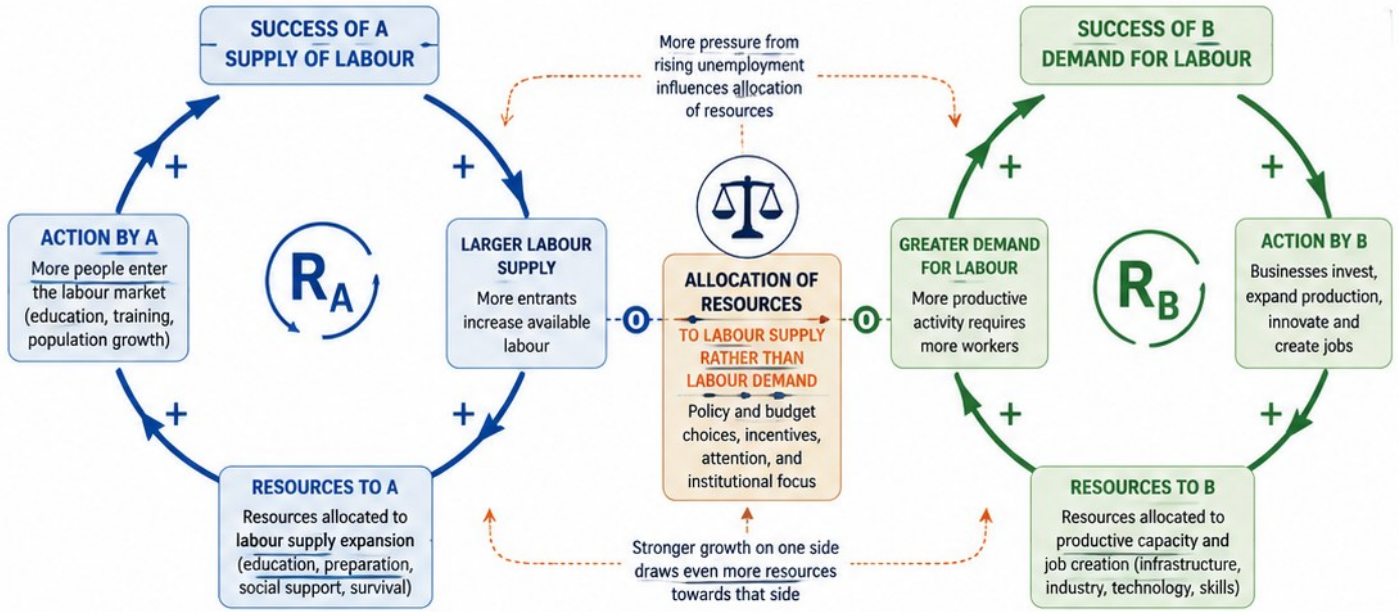


SUCCESS TO THE SUCCESSFUL (StS) ARCHETYPE

SUPPLY OF LABOUR vs DEMAND FOR LABOUR

When more resources are allocated to the side that is already growing, the gap widens over time.

LEGEND
- R — Reinforcing Loop
- O — Resource Allocation Choice Point



RESULTING CONSEQUENCES OVER TIME

EMPLOYMENT RATE ↓
Falls as labour demand lags behind labour supply

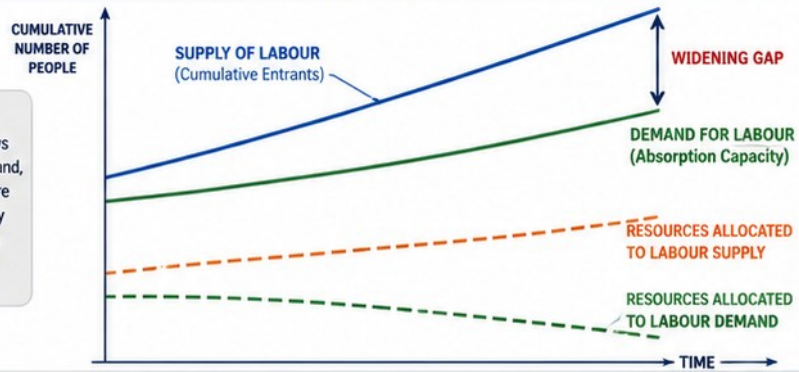
UNEMPLOYMENT RATE ↑
Rises as the gap between supply and demand widens

SOCIAL PRESSURE & CRIME ↑
Increases as economic opportunities fall short

INVESTMENT CONFIDENCE ↓
Weakens when markets are small and growth is slow

ECONOMIC GROWTH & WEALTH CREATION ↓
Slower growth, lower incomes, weaker tax base

BEHAVIOUR OVER TIME



KEY INSIGHT
As labour supply grows faster than labour demand, and more resources are allocated to the supply side, the system locks into a path where the gap keeps widening.

RELEVANCE FOR BOTSWANA & SOUTHERN AFRICA

High labour supply from demographics and education expansion meets **slower** job creation in the productive sector.

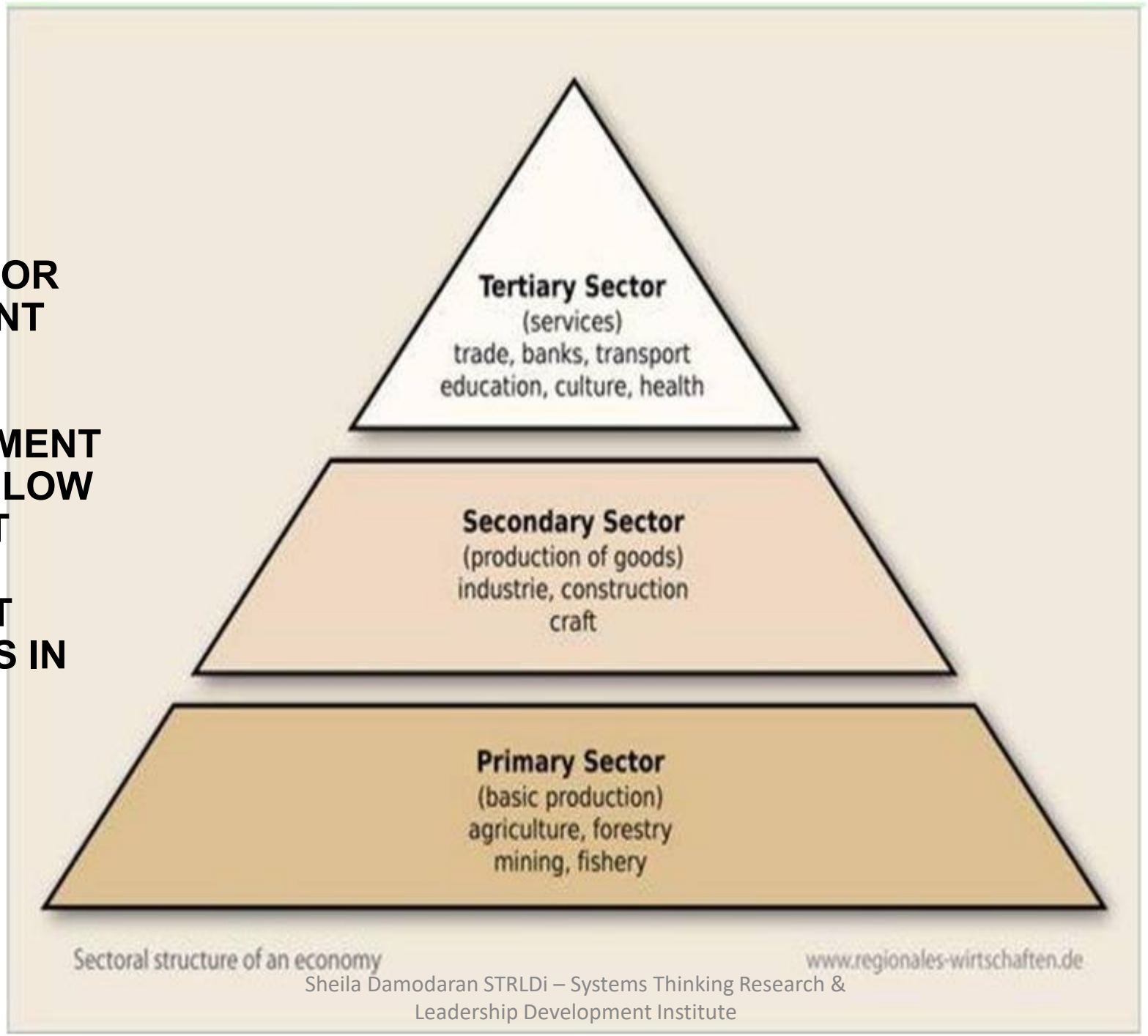
Shifting resources towards productive capacity, innovation, and market expansion is essential to close the gap and create **shared prosperity.**

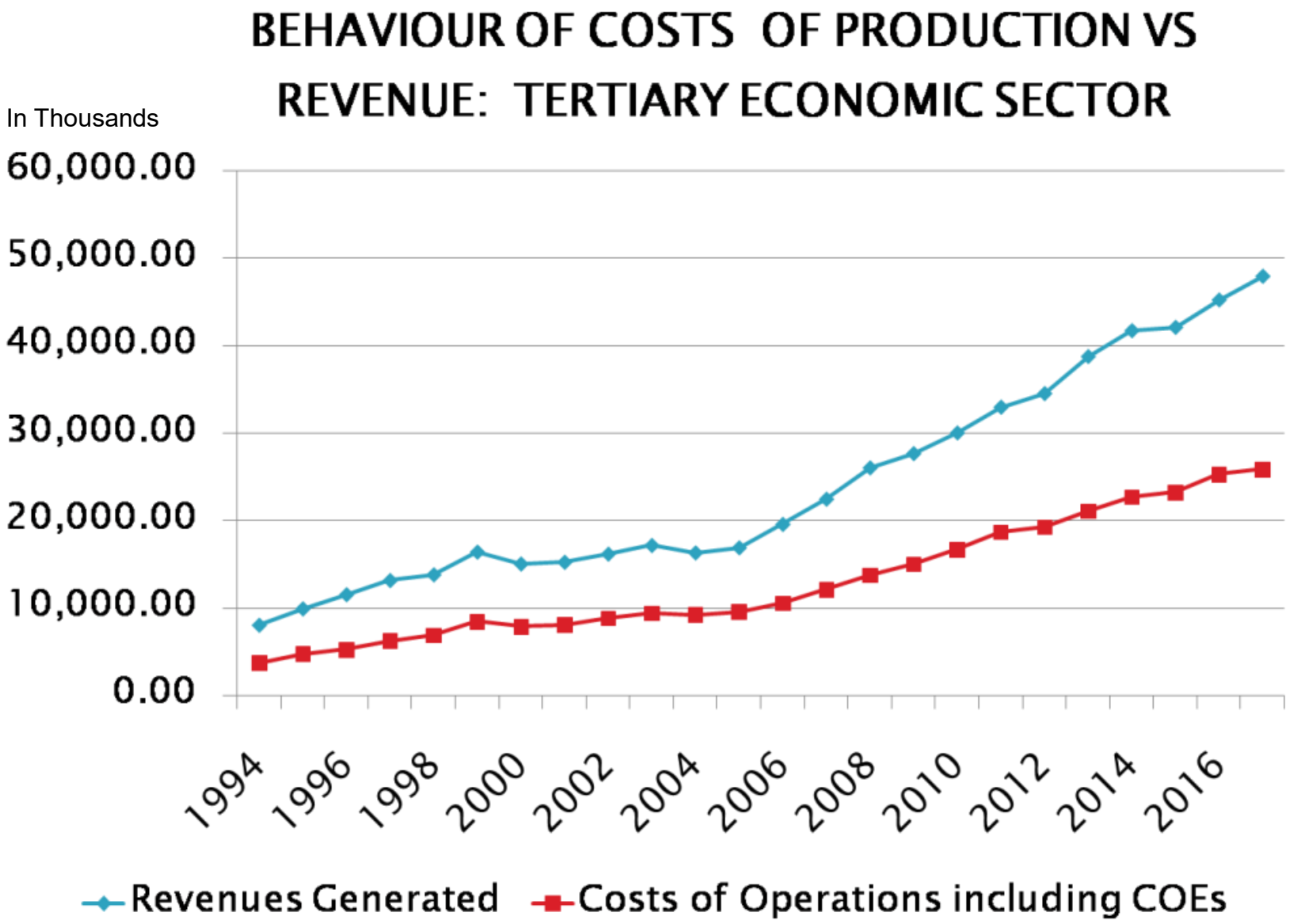
THE SHIFT From managing unemployment to building productivity.
From resources to survival, to resources for opportunity.

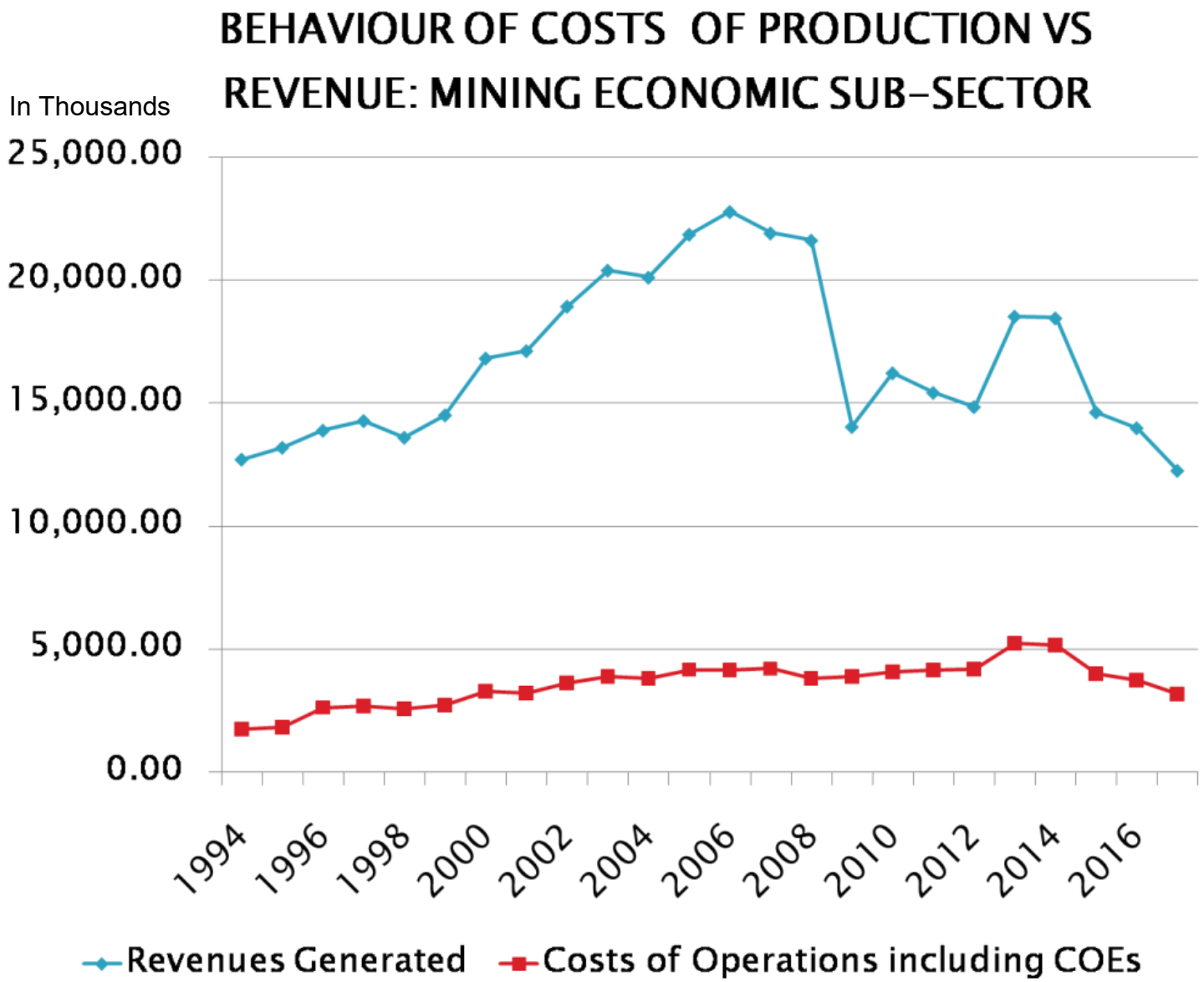
STRLDi
SYSTEMS THINKING FOR RELEVANT LEADERSHIP & DEVELOPMENT INSTITUTE

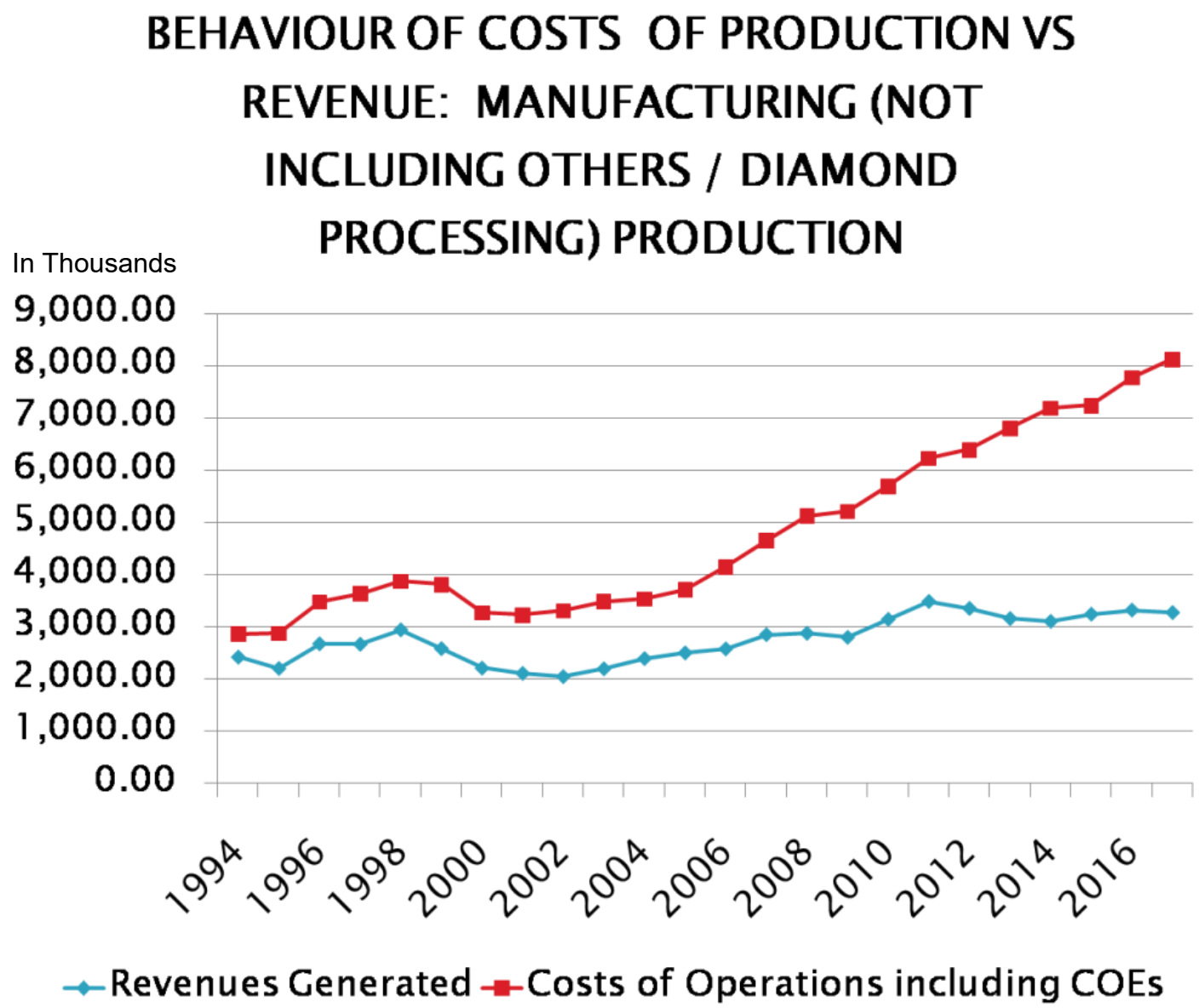
Balanced resource allocation today determines our labour market, our economy and our future.

CAPACITY FOR EMPLOYMENT BY SECTOR WHEN UNEMPLOYMENT RATES ARE LOW & A ROBUST RESOURCE DEPENDANT ECONOMY IS IN PLACE



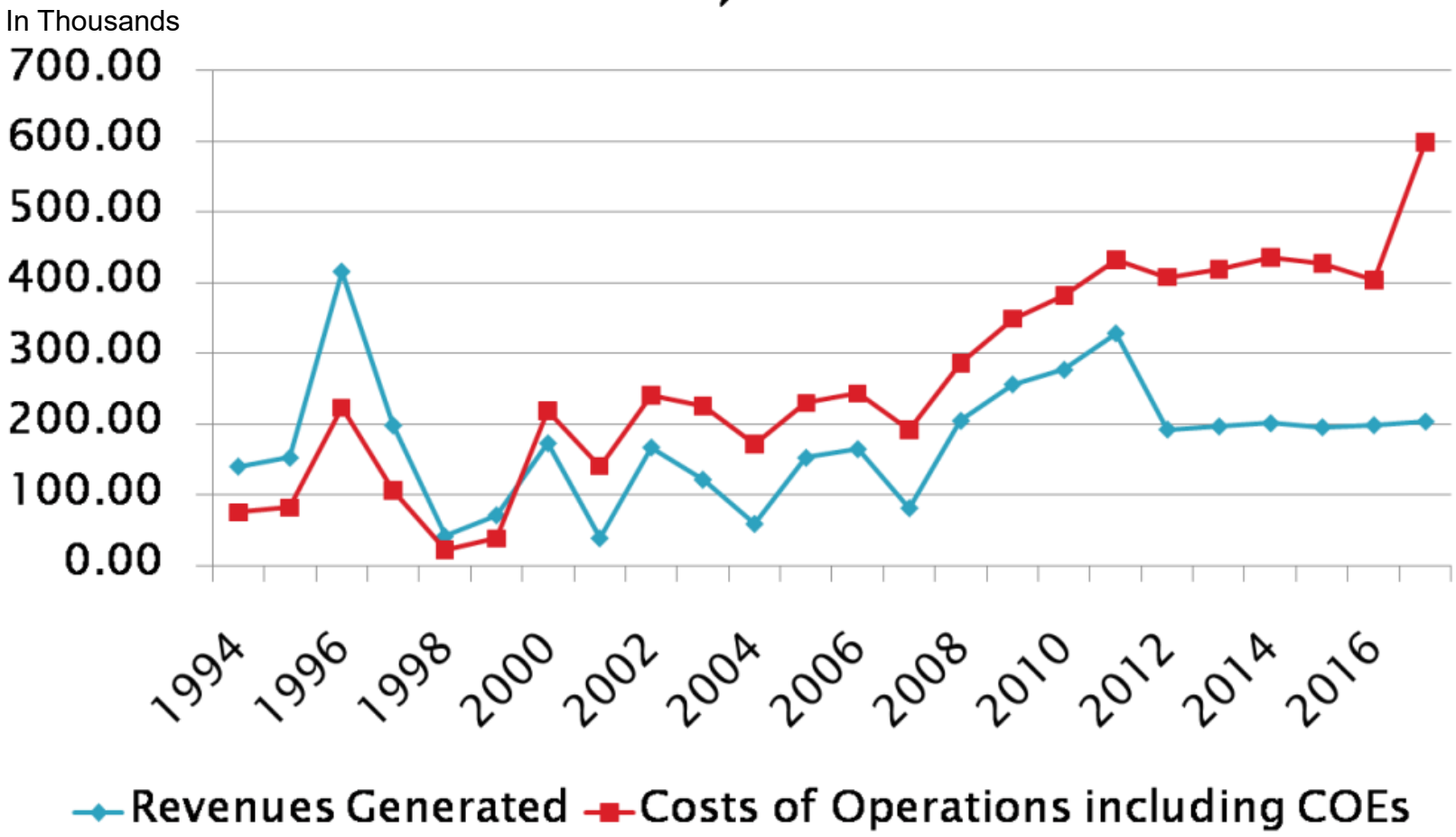

BEHAVIOUR OF COSTS OF PRODUCTION VS REVENUE: TERTIARY ECONOMIC SECTOR
In Thousands
60,000.00
50,000.00
40,000.00
30,000.00
20,000.00
10,000.00
0.00
1994
1996
1998
2000
2002
2004
2006
2008
2010
2012
2014
2016
Revenues Generated
Costs of Operations including COEs


BEHAVIOUR OF COSTS OF PRODUCTION VS REVENUE: MINING ECONOMIC SUB-SECTOR
In Thousands
25,000.00
20,000.00
15,000.00
10,000.00
5,000.00
0.00
1994
1996
1998
2000
2002
2004
2006
2008
2010
2012
2014
2016
Revenues Generated
Costs of Operations including COEs


BEHAVIOUR OF COSTS OF PRODUCTION VS REVENUE: MANUFACTURING (NOT INCLUDING OTHERS / DIAMOND PROCESSING) PRODUCTION
In Thousands
9,000.00
8,000.00
7,000.00
6,000.00
5,000.00
4,000.00
3,000.00
2,000.00
1,000.00
0.00
1994
1996
1998
2000
2002
2004
2006
2008
2010
2012
2014
2016
Revenues Generated
Costs of Operations including COEs

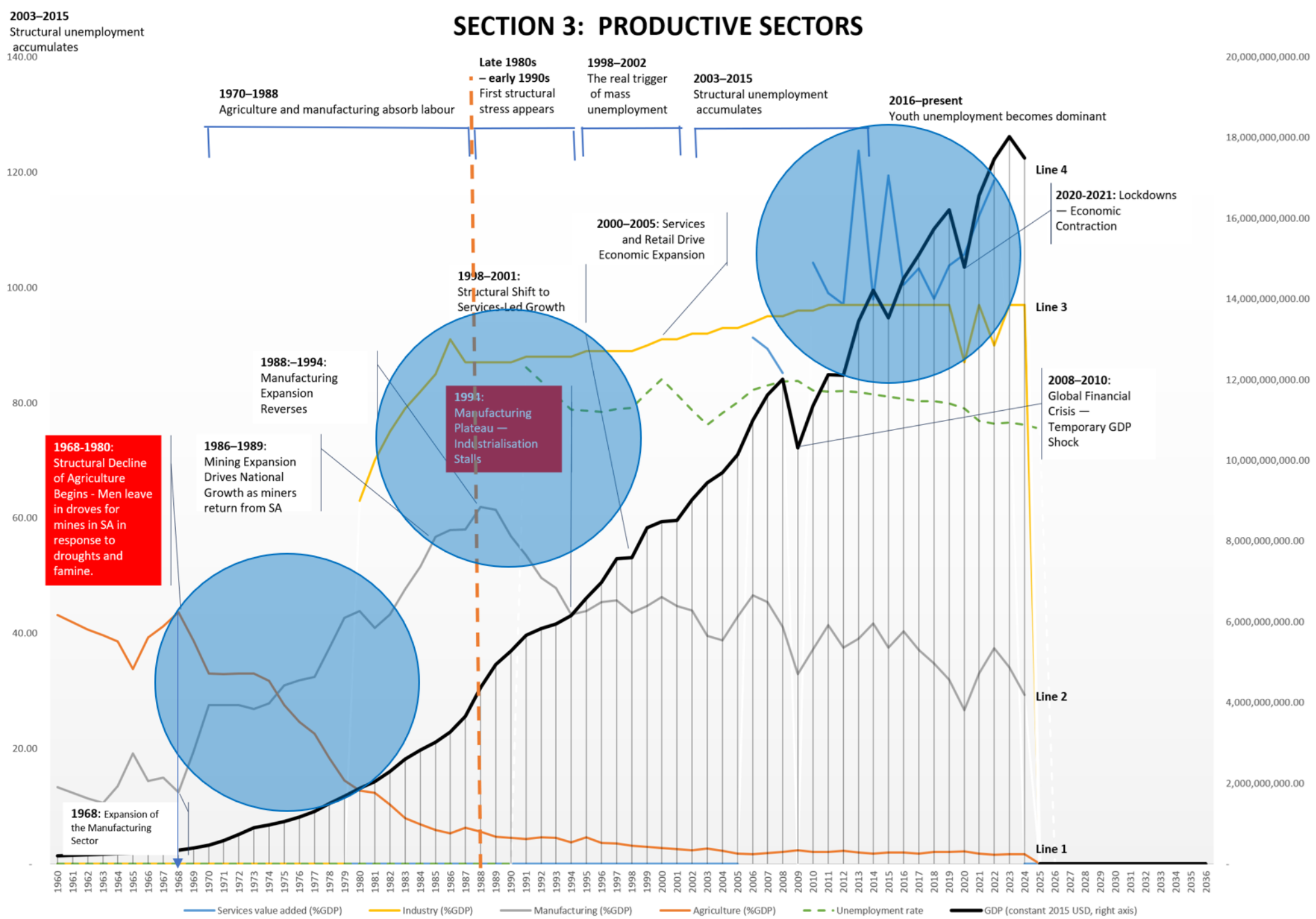
[LtG]

BEHAVIOUR OF COSTS OF PRODUCTION VS REVENUE: PLANT (CROP+HORTICULTURE +FORESTRTY) PRODUCTION

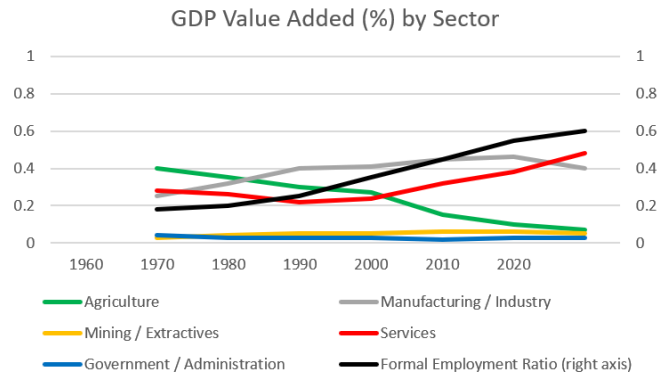


[LtG]

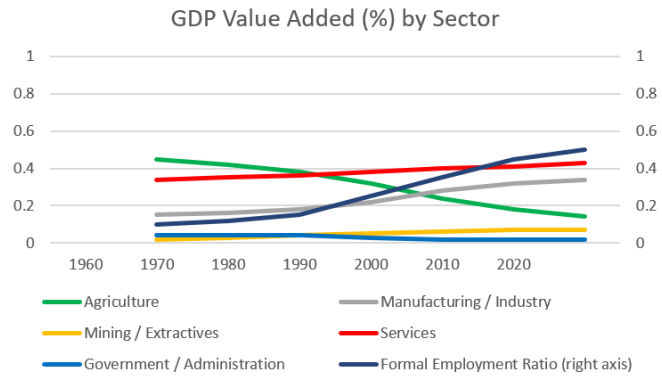
SECTION 3: PRODUCTIVE SECTORS



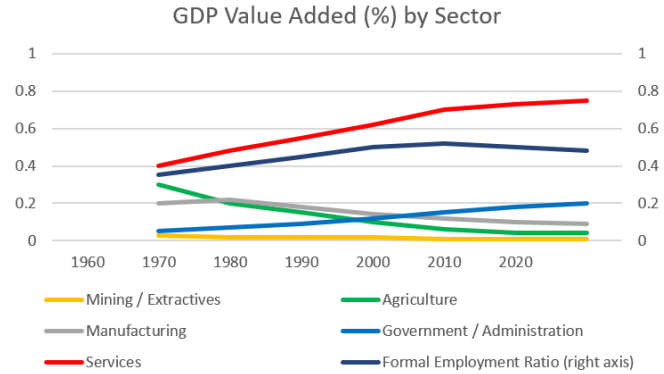
China – Pop: 1,41bil, GDP per capita: $10.5K



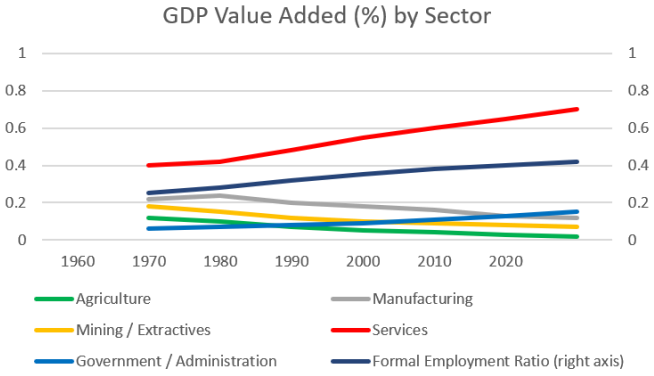
Vietnam – Pop: 97mil, GDP per capita: $2.8K



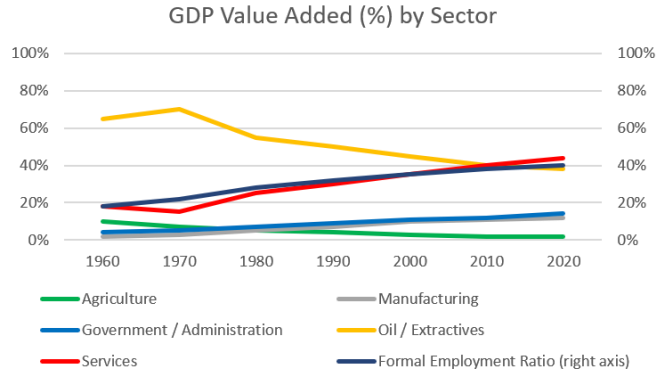
Greece – Pop: 10.7mil, GDP per capita: $19K



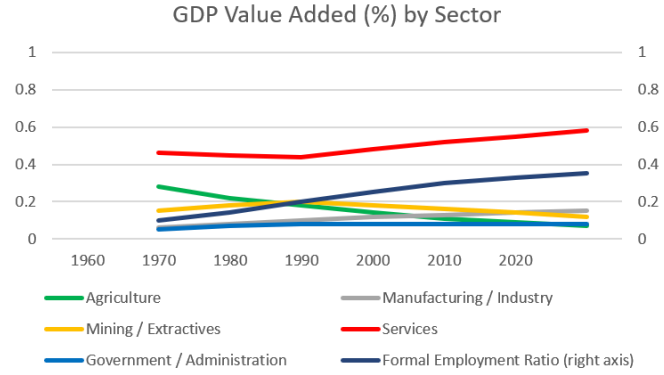
South Africa – Pop: 59mil, GDP per capita: $6K



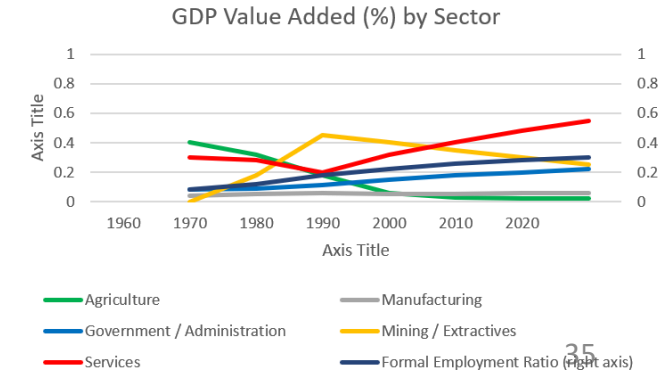
Saudi Arabia – Pop: 35mil, GDP per capita: $20K



Namibia – Pop: 2.5mil, GDP per capita: $4.7K



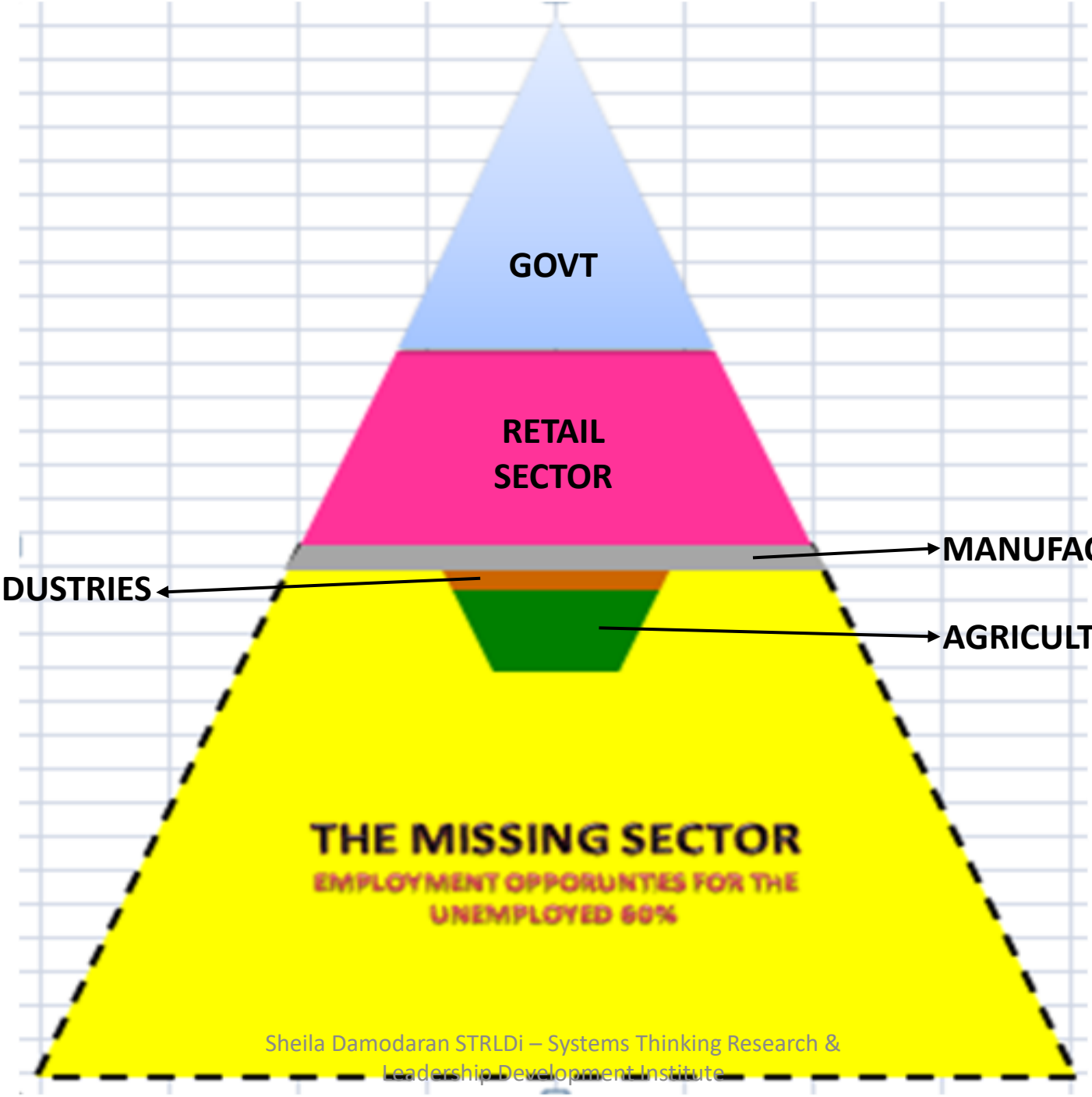
Botswana – Pop: 2.4mil, GDP per capita: $6.8K



Before We Model the System, Did We First Look at Its Behaviour?

https://www.linkedin.com/pulse/before-we-model-system-did-first-look-its-behaviour-sheila-damodaran-ycjsf/?trackingId=NBUVjQJ9QY6ItDBS9QZg9w%3D%3D

EMPLOYMENT BY SECTOR TODAY



CONCLUSION:

THAT THE RETAIL SECTOR IS GROWING **AT THE EXPENSE OF** MANUFACTURING & AGRICULTURE ECONOMIC SECTORS BUT **NOT AS A RESULT OF THE GROWTH OF THE TWO SECTORS**.

Distribution of economic sector depending on the stage of economic development

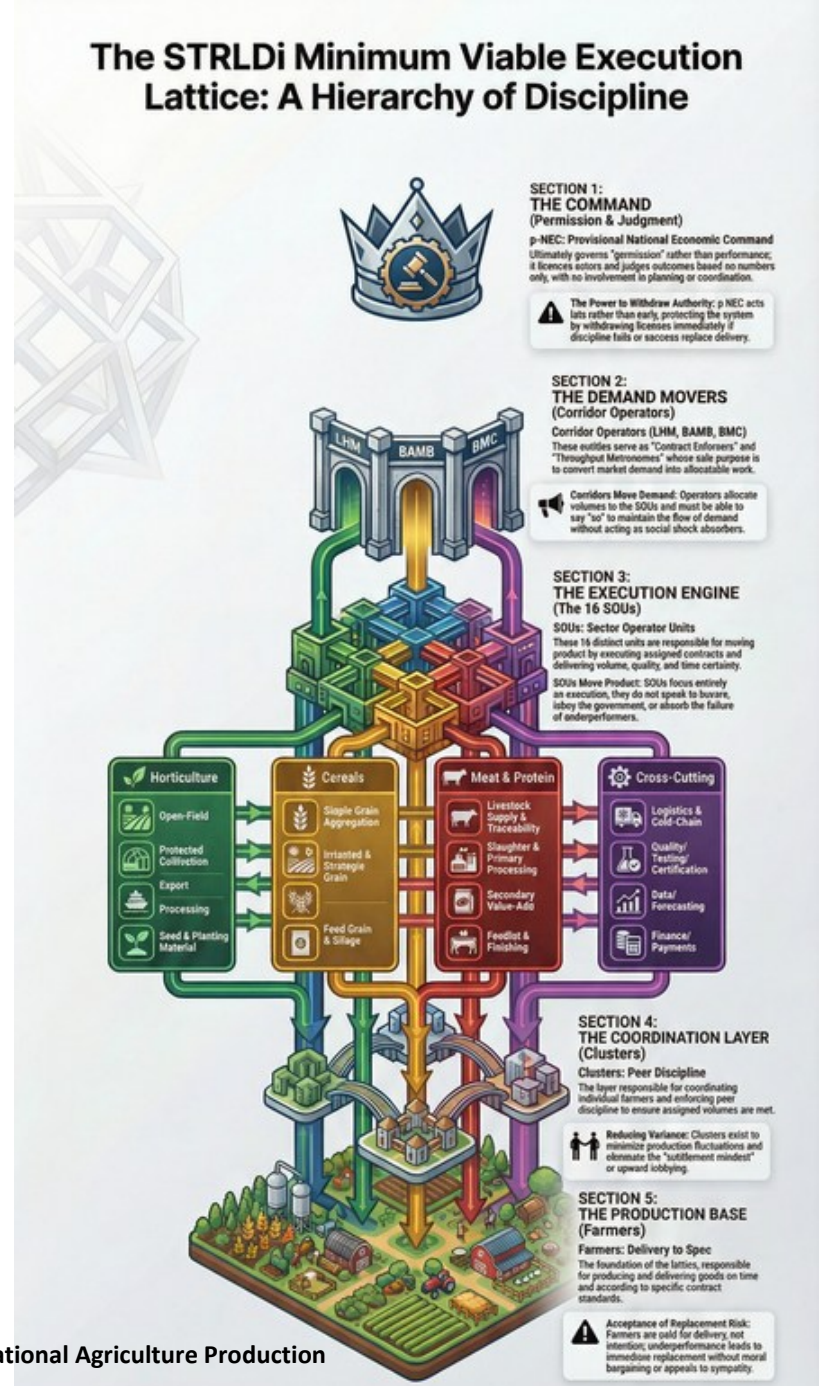
Economic Stage	Primary Sector (%)	Secondary Sector (%)	Tertiary Sector (%)
Fully Developed Economy	3–5%	15–25%	70–80%
Resource-Dependent Emerging Economy	15–25%	30–40%	35–45%
Industrialized, Value-Added Economy	5–10%	30–40%	50–60%

- In fully developed economies, services dominate the economy while manufacturing and raw material extraction have a minimal share.
- In contrast, resource-dependent emerging economies maintain a higher share of the primary sector due to ongoing reliance on raw outputs, balanced by significant manufacturing activity.
- Meanwhile, in economies driven by industrialization and value-added processing, the secondary sector is robust, with a growing service sector complementing a modest primary sector.

What is the change we want?

Economic Stage	Primary Sector (%)	Secondary Sector (%)	Tertiary Sector (%)	
Resource-Dependent Emerging Economy	25 %	40 %	35 %	100%
Botswana 2023 Comparison	23 % (2% Agric)	22 % (7% Mfg)	37 %	? %
Change That Is Needed:	? %	? %	? %	

- What policies in agriculture and manufacturing economic sectors will secure that change for the country?



National Agriculture Production

https://strldi.weebly.com/blog/agriculture-corridor-execution-lattice

ROLE DOCTRINE — WHO DOES WHAT

1. p-NEC (Provisional National Economic Command)
Composition: OP delegate, Finance, Trade, Private Sector (BB-nominated), Financiers, MoA (regulatory), Systems role.

p-NEC exists to govern permission, not performance. It does not operate the corridor. It licenses it, protects it, and withdraws authority when discipline erodes. Its mandate is narrow by design:
License corridor actors
Protect execution from interference
Judge outcomes
Withdraw authority if discipline fails.

2. Corridor Operators (LHM, BAMB, BMC)
Their mandate is execution discipline in motion.
Convert demand into allocatable work
Allocate volumes into SOUs
Enforce quality, time, and exclusion
Report numbers, not stories

3. MoA (Post-Split Doctrine)
Two faces — permanently separated.

A. Sovereign Regulator (unchanged)▪ Law, standards, enforcement
International credibility
Sanctions authority

B. Corridor Service Units (CSUs)▪ Embedded execution support
SLA-driven
Time-bound
Contract-prioritised

4. SOUs (Sector Operator Units)
SOUs exist to execute contracts — not to expand mandates.
Execute assigned contracts
Allocate work to clusters
Replace underperformers
Maintain delivery disciplineit.

5. Clusters
Clusters exist to reduce variance, not amplify complaints.
Coordinate farmers
Enforce peer discipline
Deliver assigned volumes

6. Farmers
Farmers are paid for delivery — not intention.
Deliver to spec
Deliver on time
Accept replacement risk

7. BOHOCO & Farmer Associations
Representation remains necessary — but it is structurally separate.
Representation
Readiness preparation
Absorbing social pressure
Learning & advocacy

8. Financiers
Capital is disciplined, or it destabilises the spine.
Finance contracts
Price risk explicitly
Withdraw when discipline erodes

9. Donors
Donors support the ecosystem — not the engine.
Fund readiness
Fund learning
Fund exit pathways

10. Media, Political Parties, Public Forums
They are not part of the execution spine.
Not engaged during pilots
Not briefed on execution detail
Not answered reactively
Corridors die in public before they fail in reality.
Silence, at times, is policy.

THE MISSING LAYER: THE NEXUS OPERATOR

- Not a new ministry.
  Not another committee.
  Not a regulator.
- But a neutral operating layer responsible for:
  - sequencing,
  - throughput,
  - corridor cadence,
  - infrastructure utilisation,
  - demand coordination,
  - manufacturing integration,
  - logistics timing,
  - production balancing,
  - and system learning.

THE MISSING LAYER

- **The Nexus Operator Holds:**
- Demand before production
- Contracts before planting
- Throughput before scaling
- Corridor utilisation before isolated projects
- Bottom reflection:
- Today, much of this work is happening informally through individuals.
- Industrial-scale systems cannot depend on informal coordination.

BOTSWANA AGRICULTURE LATTICE

Demand Spine → Corridors (including Infrastructure) → Supply Spine

A coordinated system that turns demand into income, jobs and food security

DEMAND SPINE

Pulling the System

LOCAL DEMAND
- Households
- Retail & Wholesalers
- Schools, Hospitals, Institutions
- Hospitality & Tourism
- Agro-processors

EXPORT DEMAND
- SADC Region
- Continental Markets (AfCFTA)
- Global Markets

DEMAND INTELLIGENCE & MARKET INFORMATION
- Market Data
- Price Signals
- Standards
- Forecasting
- Feedback

DEMAND SPINE LEADERSHIP
- MINISTRY OF INVESTMENT, TRADE & INDUSTRY
- OFFICE OF THE PRESIDENT (STRATEGIC DIRECTION)
- MINISTRY OF AGRICULTURE (FOOD SECURITY & PRODUCTION)

CORRIDOR SPINE – Converting Demand into Coordinated Production & Value

Corridors + Infrastructure + Enablers

BAMB CORRIDOR (Cereals)
- Maize • Sorghum
- Wheat • Millet • Others

BMC CORRIDOR (Horticulture)
- Vegetables • Fruits
- Pulses • Nuts • Herbs
- Others

LHM CORRIDOR (Livestock, Meat, Milk)
- Cattle • Poultry
- Smallstock • Eggs
- Milk & Dairy • Others

CORRIDOR FUNCTIONS (COMMON ACROSS ALL CORRIDORS)

Planning & Coordination | Production Aggregation | Quality & Standards | Processing & Value Addition | Storage & Post-harvest | Packaging & Grading | Logistics & Distribution | Market Access

INFRASTRUCTURE & ENABLERS (PULLING FOR SUPPLY READINESS)

Transport | Irrigation & Water | Cold Chain | Storage & Warehousing | Energy | ICT & Connectivity | R&D & Extension | Input Systems (Seeds, Feed, Fertilizer)

CORRIDOR GOVERNANCE & FACILITATION

Policy & Regulation | Standards & Certification | Finance & Incentives | Data & Information | Risk Management (Climate, Price, Biosecurity) | Dispute Resolution & Compliance

SUPPLY DEVELOPMENT SERVICES
- Extension
- Training
- Technology
- Inputs
- Finance
- Advisory
- Mentorship

SUPPLY SPINE

Pushing Quality Supply

SECTOR OPERATING UNITS (SOUs)
- Land Boards
- Marketing Boards
- Development Corporations
- Research Institutions
- Training Institutions

CLUSTERS & COOPERATIVES
- Producer Cooperatives
- Farmer Associations
- Women & Youth Groups
- Commodity Groups

FARMERS & PRODUCERS
- Smallholder Farmers
- Emerging Farmers
- Commercial Farmers
- Pastoralists

SUPPLY SPINE LEADERSHIP
- MINISTRY OF AGRICULTURE (LEAD)
- MINISTRY OF LANDS & WATER AFFAIRS
- MINISTRY OF LOCAL GOVERNMENT & TRADITIONAL AFFAIRS

OUTCOMES & IMPACTS

Food Security — Nutritious food available and affordable

Import Bill Savings — Reduced imports, stronger balance of payments

Jobs & Incomes — More jobs along the value chain, higher farmer incomes

Export Earnings — Growth in exports and foreign exchange

Agro-industrial Growth — More processing, manufacturing and value addition

Rural Development — Stronger rural economies and reduced urban pressure

Climate & Environmental Resilience — Improved soil, water, biodiversity and climate resilience

PIPELINE KEY
- Demand Pull
- Corridor Conversion
- Supply Push
- Two-way Interaction

FEEDBACK & LEARNING LOOP – Strengthening the System Over Time

Monitor (Data) → Learn (Insights) → Adapt (Actions) → Improve (Performance) → Scale (Impact)

THE LATTICE PRINCIPLES
- Connection across all parts
- Coordination for collective results
- Collaboration & trust
- Continuous learning & adaptation
- Resilience & sustainability

TOGETHER WE GROW • TOGETHER WE SUPPLY • TOGETHER WE PROSPER

THE REGIONAL ECONOMIC BELTS

- **Botswana does not scale alone.**
- **Economic Belt Logic**
- Botswana → SADC → Ports → Global Markets
- **Strategic Port & Corridor Integration**
  - Walvis Bay
  - Durban
  - Maputo
  - Beira
  - Lobito
  - AfCFTA trade corridors

THE REGIONAL ECONOMIC BELTS

What Belts Stabilise

- logistics continuity,
- export throughput,
- manufacturing scale,
- labour absorption,
- infrastructure utilisation,
- and regional trade rhythm.

Bottom reflection:

- Corridors move products.
- Economic belts sustain industrial civilisation scale.

WHAT THE SYSTEM IS ACTUALLY BUILDING

- **Not farms.**
- **Not projects.**
- **Not isolated interventions.**
- The system is increasingly building:
  - productive throughput,
  - labour absorption,
  - industrial coordination,
  - export capability,
  - manufacturing depth,
  - regional competitiveness,
  - institutional learning capacity,
  - and productive GDP.

Reflection:

- Agriculture increasingly behaves less like a social support activity and more like productive infrastructure.

WHAT CHANGES IF THE SYSTEM STRENGTHENS?

- **Possible Structural Effects**
- **Economy**
  - Reduced import leakage
  - Higher productive GDP
  - Increased exports
  - Stronger forex position
  - Expanded industrial activity
- **Employment**
  - Higher labour absorption
  - Youth participation
  - More stable income systems
  - Technical capability growth

WHAT CHANGES IF THE SYSTEM STRENGTHENS?

- **Institutions**
  - Higher infrastructure utilisation
  - Better corridor visibility
  - Faster learning loops
  - Stronger throughput discipline
- **Agriculture**
  - Predictable demand visibility
  - Reduced waste & gluts
  - Improved planning
  - More stable supply systems

Bottom reflection:

- The issue may increasingly no longer be agricultural productivity alone.
- The issue may be national productive coordination capacity.

THE REGIONAL ECONOMIC BELTS

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- Botswana → SADC → Ports → Global Markets
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Bottom reflection:

- Corridors move products.
- Economic belts sustain industrial civilisation scale.

THESE IMPLY:

WHAT SCALE MUST THE SYSTEM COORDINATE?

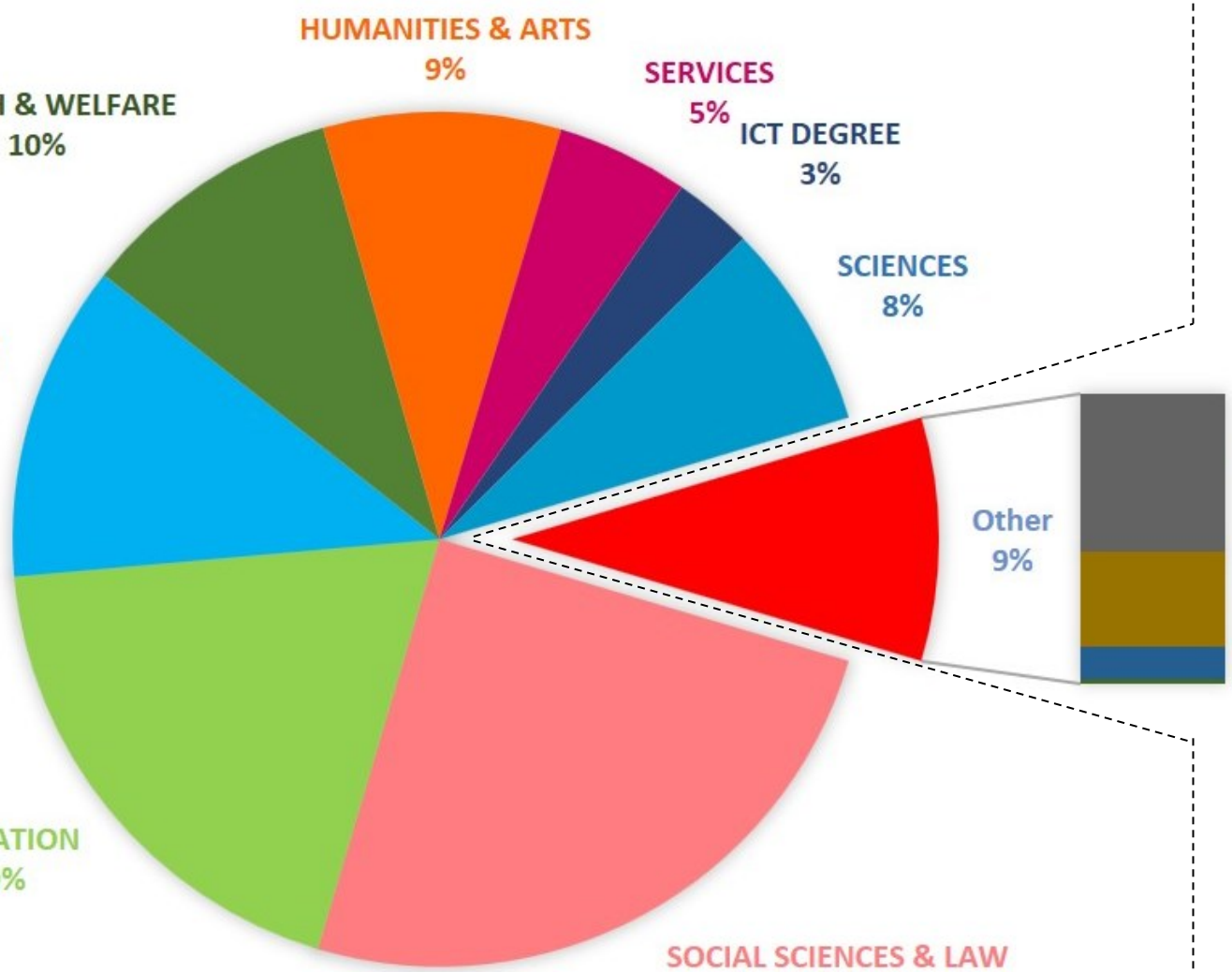
- **Indicative National Scaling Requirements**

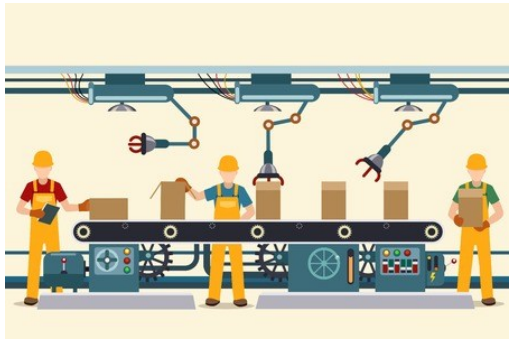
- Key reflection:
- The issue may no longer simply be increasing production.
- The issue may increasingly be coordinating industrial-scale throughput across the entire production pipeline.

SYSTEM REQUIREMENT	INDICATIVE SCALE
Farmers participating	230,000–390,000
Labour throughput	850,000–1.5 million
Productive hectares	12–17 million ha
Irrigated hectares	300,000–500,000 ha
Cluster aggregation systems	Thousands
Packhouses & storage nodes	Hundreds
Cold-chain throughput	National scale
Logistics coordination	Continuous
Feed coordination	Multi-corridor dependent
Processing throughput	Industrial scale
Demand visibility	Daily/seasonal
Agriculture GDP Contribution	~6–10%+

WHY ARE THESE NOT ALREADY HAPPENING?

DISTRIBUTION OF TERTIARY GRADUATES IN BOTSWANA BY COURSE TYPE 2009-2018



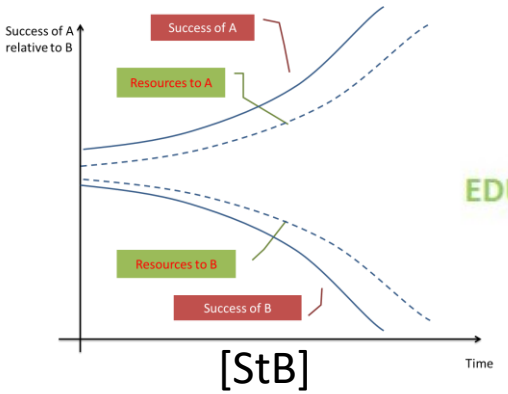


ENGINEERING & CONSTRUCTION
5%

AGRICULTURE DEGREE 3%

MANUFACTURING DEGREE 1%

INDIGENOUS SCIENCES 0%

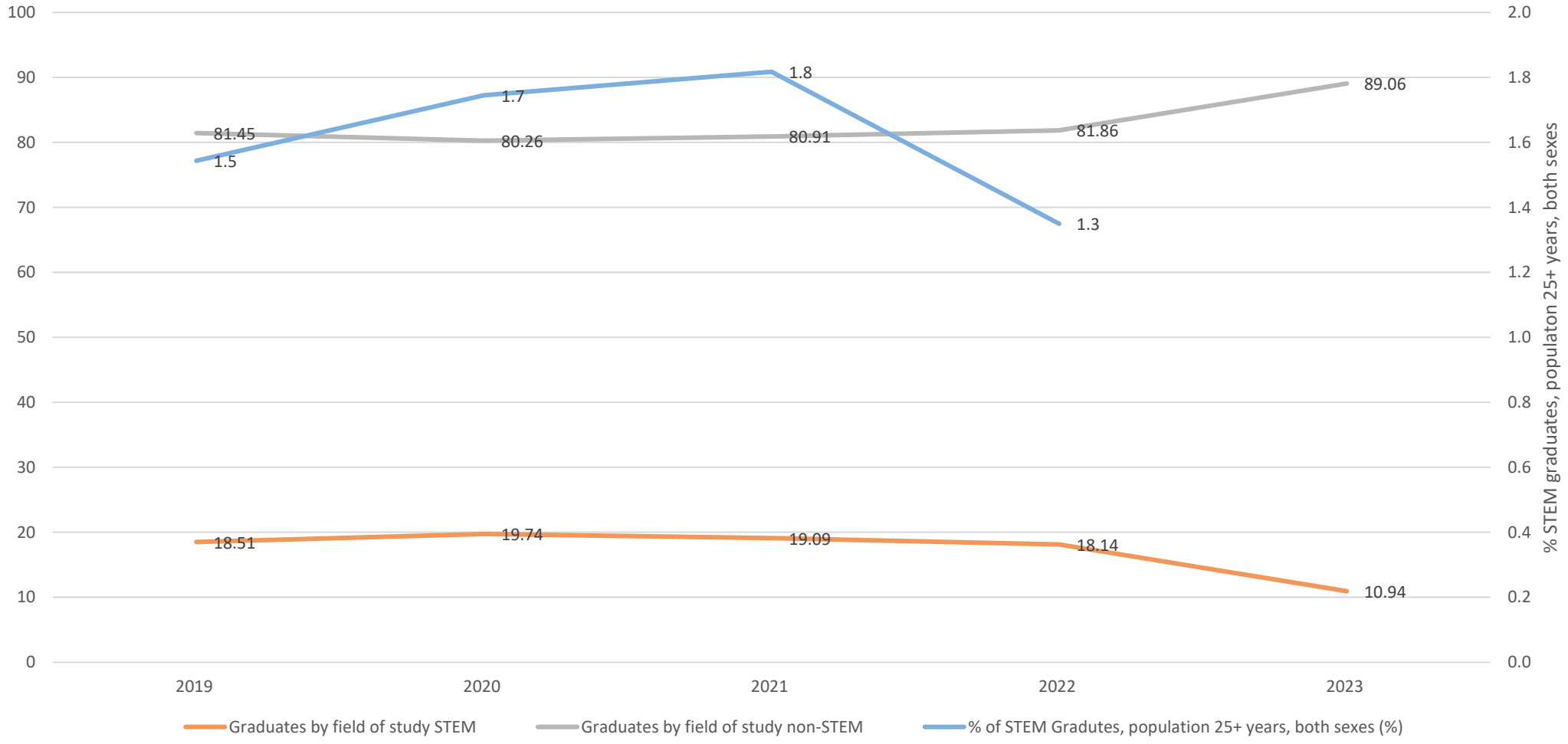


[StB]

DEMANDS STRONG ORATORICAL & WRITTEN SKILLS POSSIBLY IN SETSWANA

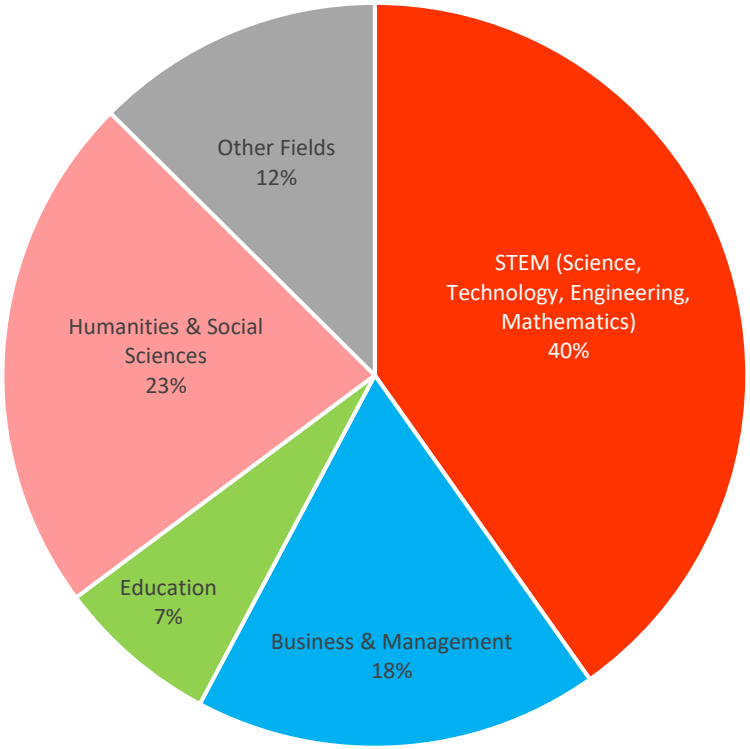
DEMANDS ENGLISH, MATHEMATICS, PHYSICS, CHEMISTRY & BIOLOGY

STEM Pipeline Composition Relative to Adult Population, Botswana 2019–2023 Source: UNESCO

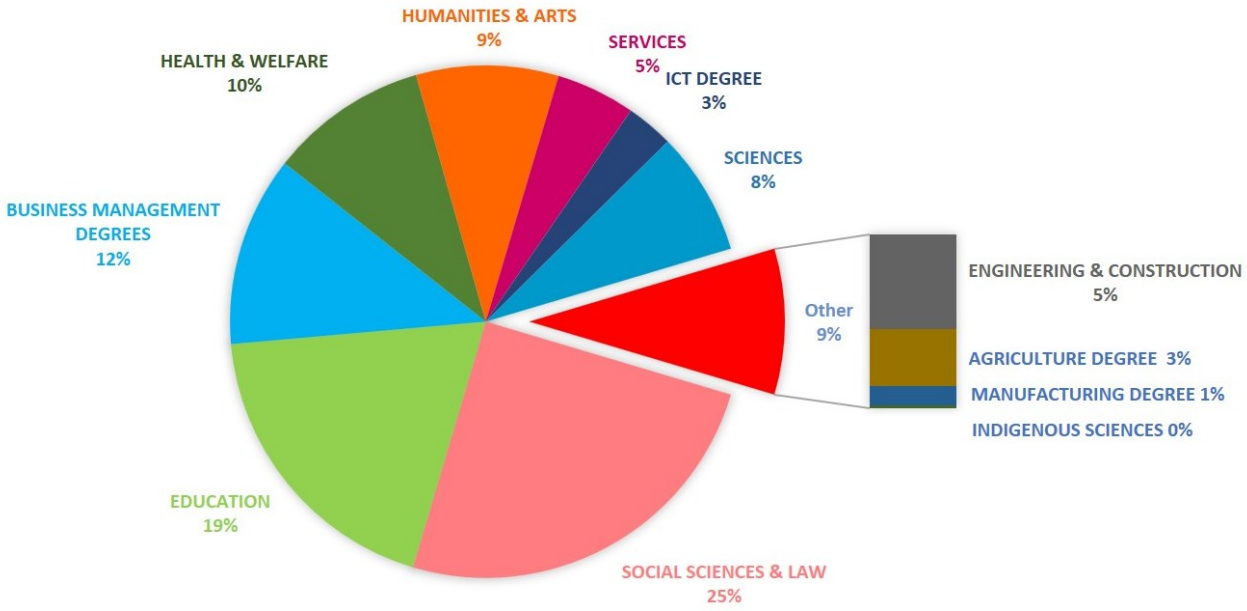


Tertiary Graduate Orientation

CHINA: Approximate Distribution Pattern (2020-2023)



BOTSWANA: Actual (2009-2018)



Education Investment: Botswana Vs China

Government Spending on Education

Indicator	Botswana	China
Education Spending (% GDP)	~8.1% (2020)	~4.0% (2022–2023)
Education Spending (% Government Budget)	~21.5%	~11%
Education Spending Per Capita	~US$509	~US$508

Sources: World Bank, CEIC, CountryEconomy. Trading Econom... +2 Trading Econom... +1

COMPARISON

Unlocking Economic Growth Through STEM Education: A Strategic Imperative

A decisive shift in our education policy towards a strong STEM (Science, Technology, Engineering, and Mathematics) foundation is not just an investment in our youth—it is the key to unlocking sustainable economic growth, job creation, and regional competitiveness. In an era where innovation drives prosperity, our ability to equip learners with critical skills in technology, engineering, and scientific problem-solving will determine our success in building industries, expanding our manufacturing base, and reducing reliance on raw material exports.

By prioritizing STEM education, we can cultivate a highly skilled workforce capable of driving industrialization, supporting local enterprises, and positioning Botswana as a leader in cutting-edge solutions across sectors. This is not just about keeping pace with global advancements; it is about leading the charge in developing homegrown solutions that create jobs, strengthen our economy, and establish Botswana as a hub of knowledge and innovation for the region.

Country	Population (approx)	Employable Labour 65%	Labor Participation Rate (approx.)	True Participation 75%	Formally Employed	Population Employed
North Macedonia	2,100,000	1,365,000	62%	47%	393,530	18.74%
Israel	9,300,000	6,045,000	62%	47%	1,742,774	18.74%
Paraguay	7,000,000	4,550,000	63%	47%	1,354,421	19.35%
Maldives	515,000	334,750	63%	47%	99,647	19.35%
Lesotho	2,100,000	1,365,000	64%	48%	419,328	19.97%
Namibia	2,500,000	1,625,000	65%	49%	514,922	20.60%
Croatia	4,100,000	2,665,000	65%	49%	844,472	20.60%
Slovakia	5,500,000	3,575,000	66%	50%	1,167,953	21.24%
Austria	9,000,000	5,850,000	66%	50%	1,911,195	21.24%
Bhutan	750,000	487,500	67%	50%	164,129	21.88%
Malta	514,000	334,100	67%	50%	112,483	21.88%
Botswana	2,400,000	1,560,000	67%	50%	525,213	21.88%
Brunei	450,000	292,500	68%	51%	101,439	22.54%
Cyprus	1,200,000	780,000	68%	51%	270,504	22.54%
Uruguay	3,500,000	2,275,000	68%	51%	788,970	22.54%
Singapore	5,700,000	3,705,000	68%	51%	1,284,894	22.54%
Panama	4,300,000	2,795,000	69%	52%	998,025	23.21%
Hungary	9,600,000	6,240,000	69%	52%	2,228,148	23.21%
Luxembourg	626,000	406,900	70%	53%	149,536	23.89%
Mauritius	1,300,000	845,000	70%	53%	310,538	23.89%
Jamaica	2,900,000	1,885,000	70%	53%	692,738	23.89%
Costa Rica	5,000,000	3,250,000	70%	53%	1,194,375	23.89%
Slovenia	2,100,000	1,365,000	70%	53%	501,638	23.89%
New Zealand	5,100,000	3,315,000	71%	53%	1,253,319	24.57%
Seychelles	98,000	63,700	72%	54%	24,767	25.27%
Trinidad & Tobago	1,400,000	910,000	72%	54%	353,808	25.27%
Norway	5,400,000	3,510,000	73%	55%	1,402,859	25.98%
Ireland	5,000,000	3,250,000	74%	56%	1,334,775	26.70%
Estonia	1,300,000	845,000	75%	56%	356,484	27.42%
Denmark	5,800,000	3,770,000	75%	56%	1,590,469	27.42%
Iceland	343,000	222,950	79%	59%	104,357	30.42%
Switzerland	8,600,000	5,590,000	79%	59%	2,616,539	30.42%

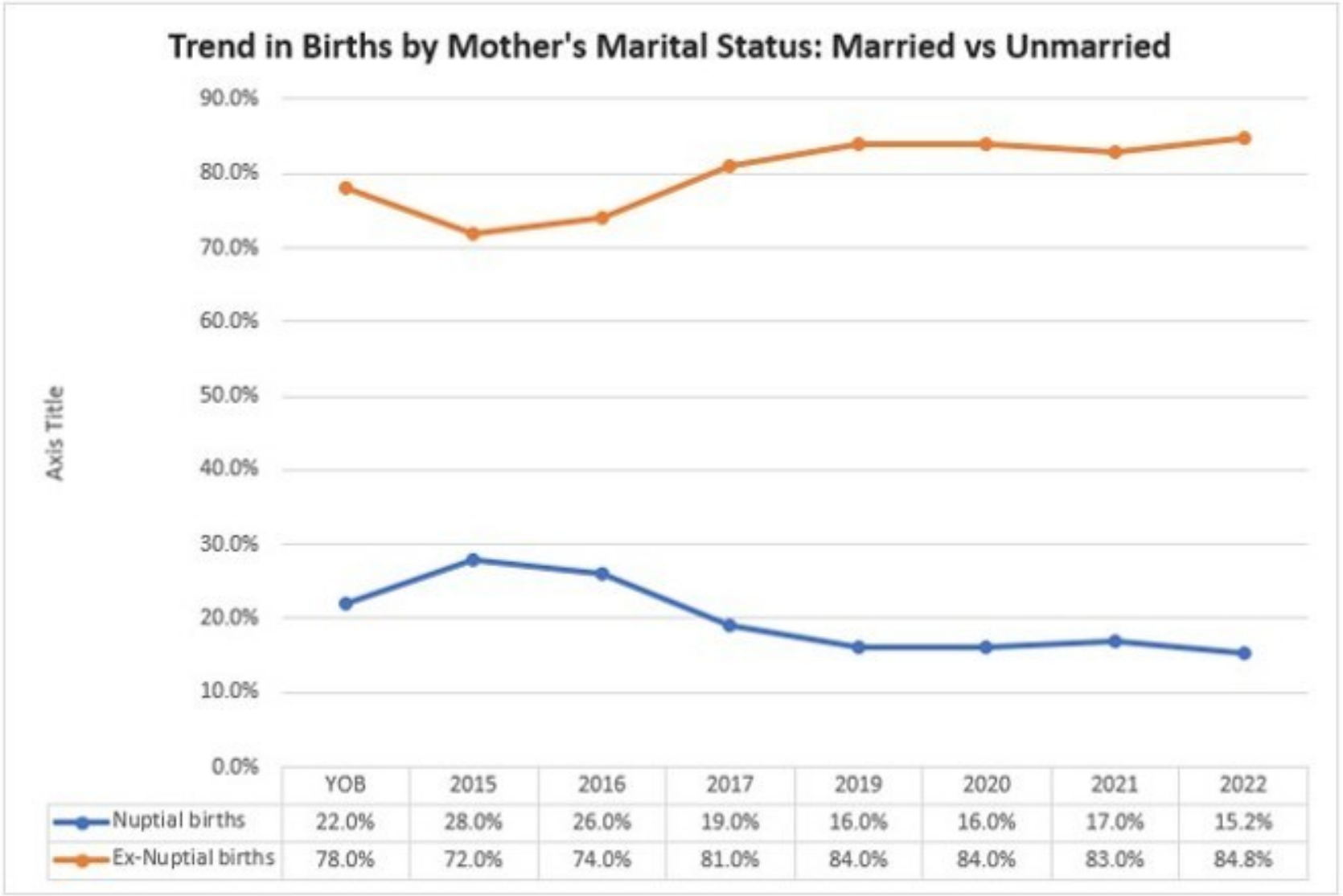
WHY IS THIS HAPPENING?

BIRTHS & FAMILY STRUCTURE [StS & Esc]

- There is an **80% chance** a child is *born to an unmarried parent or to parents who, although married, do not cohabitate in the same household*.

- With the country's marriage rate at only **20%**, it is more likely that unmarried women, sometimes with children from different fathers, will be more successful in having children.

- Further, **six out of ten** times, these women are unemployed and rely on a combination of state support and financial contributions from the fathers of their children to provide for their families. This financial dependency, while helping them fulfil family and community obligations, leads to tensions and conflicts at both familial and community levels.



YOB	2015	2016	2017	2019	2020	2021	2022
Nuptial births	22.0%	28.0%	26.0%	19.0%	16.0%	16.0%	17.0%	15.2%
Ex-Nuptial births	78.0%	72.0%	74.0%	81.0%	84.0%	84.0%	83.0%	84.8%

THE "DOMINO" EFFECT OF NATIONAL UNEMPLOYMENT

Growing Action (Cause) — S — Condition (or Performance / Consequence) — S

[G&U] Size of the manufacturing sector → Level of sales → Level of revenue vs expenses → Level of profitability by corporations consistently → Growth of export sector → Demand for Labour

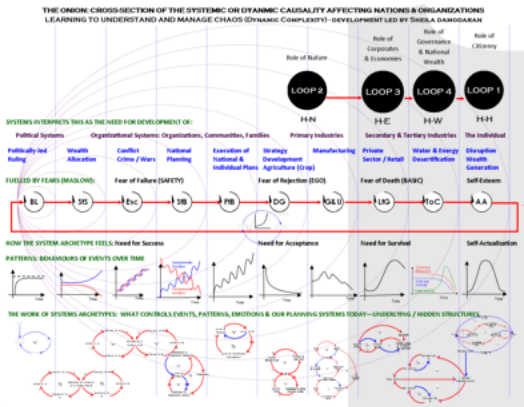
[LtG] Level of Employment → Growth of GDP → Level of per capita income / personal income → Attention on need for corrupt practices / crime → Level of personal sense of self-actualization → Attention on meeting the needs of the self [AA] → Attention on meeting the needs of another → Quality of marital relations [BL] → Level of births → Extent child grows up with both maternal and paternal influences with particulaly strong influence by the father in the field of sciences. → [StS] Capacity to assimilitate mathematics and science subjects → Quality of academic achievements in mathematics and sciences → Attention on personal actions that impact nature → Level of rainfalls → [Esc] Seeing results of personal actions → Level of innovation & creativity → [StB] Level of academic excellence → Quality of Labour → [FtB] Level of skills → Quality of experience → Quality of production → [DG] Size of the agriculture sector that promotes rainfall (e.g. horticulture) → Capacity to grow abundance consistently

Exponential Growth

1 Time ⟶

THE ICEBERG

A Tool for Guiding Systemic Thinking



EVENTS — React
What just happened?
Catching a cold.

PATTERNS/TRENDS — Anticipate
What trends have there been over time?
I've been catching more colds when sleeping less.

UNDERLYING STRUCTURES — Design
What has influenced the patterns?
What are the relationships between the parts?
More stress at work, not eating well, difficulty accessing healthy food near home or work.

MENTAL MODELS — Transform
What assumptions, beliefs and values do people hold about the system? What beliefs keep the system in place?
Career is the most important piece of our identity, healthy food is too expensive, rest is for the unmotivated.

WHAT IS NEXT?

IMPLEMENTATION PATHWAY

STEM AS ECONOMIC INFRASTRUCTURE

- Key shift:
  - STEM is no longer primarily an education agenda.
- It becomes:
  - productive infrastructure,
  - industrial capability,
  - corridor intelligence,
  - manufacturing discipline,
  - and throughput coordination capacity.

Core insight:

- Industrial systems move at the speed of human coordination.
- Target: 60% of population STEM adept

PRODUCTIVE ECONOMIES REQUIRE STEM CONFIDENCE

- **Productive sectors operate through technical reasoning.**
- Agriculture, manufacturing, mining, logistics, engineering, construction, and technology all depend upon people who are comfortable working with measurement, quantities, forecasting, causality, and uncertainty.
- The issue extends beyond technical specialists. Productive economies become possible when large numbers of citizens possess sufficient confidence to engage with mathematics, science, systems, and practical problem-solving.
- **Productive capability grows when technical confidence becomes widespread.**
- A nation becomes capable of sustaining complex productive systems when STEM adeptness is distributed throughout society rather than concentrated within small technical communities.

THE SAME CHALLENGE MAY APPEAR IN THE PUBLIC SECTOR

- **Public-sector implementation also depends upon technical confidence.**
- Investment assessment, project evaluation, infrastructure planning, economic modelling, budgeting, industrial coordination, procurement, and programme review all require confidence in working with quantitative information and dynamic complexity.
- When technical confidence is limited, uncertainty often produces caution. Decisions take longer, approvals slow down, implementation becomes fragmented, and coordination becomes increasingly difficult.
- **Public-sector performance and productive-sector performance may therefore share common capability foundations.**
- The same capability constraints influencing productive sectors may also influence the institutions responsible for enabling them.

FROM PRIVATE-SECTOR PERFORMANCE TO PUBLIC-SECTOR PERFORMANCE

The same pattern may be expressing itself through different parts of the system.

PRODUCTIVE SECTOR

- Lower technical confidence
- Lower investment confidence
- Reduced productive expansion
- Reduced labour absorption
- Persistent unemployment

PUBLIC SECTOR

- Lower technical confidence
- Lower implementation confidence
- Slower approvals
- Slower coordination
- Persistent implementation pressures

Persistent issues often emerge across multiple parts of the same system.

What appears as separate challenges may ultimately reflect a common structural condition expressing itself through different institutions and sectors.

Two Sides. One Capability. One Nation.

PRODUCTIVE ECONOMY


AGRICULTURE


MANUFACTURING


MINING


LOGISTICS & TRADE


ENGINEERING & CONSTRUCTION


TECHNOLOGY & INNOVATION

THINK

ANALYSE

SOLVE

STEM CONFIDENCE

Mathematics
Science
Technology
Engineering
Problem Solving
Systems Thinking

PUBLIC SECTOR CAPABILITY


PLANNING & STRATEGY


INVESTMENT ASSESSMENT


BUDGETING & RESOURCE ALLOCATION


INFRASTRUCTURE PLANNING


PROCUREMENT & COORDINATION


PROGRAMME EVALUATION

Investment Confidence

Productive Growth

Jobs & Labour Absorption

**When STEM Confidence is widespread,
Productive Economies expand and Public Institutions perform.**

Faster Decisions

Better Coordination

Effective Implementation

A NATIONAL CAPABILITY PROPOSITION

- **Botswana may wish to pursue a long-horizon objective of developing STEM adeptness across approximately 60% of the working-age population.**
- The objective is not to produce scientists and engineers exclusively.
- The objective is to develop a population increasingly comfortable with numbers, measurement, technical reasoning, systems thinking, forecasting, experimentation, and practical problem-solving.
- **The emergence of AI creates an opportunity previous generations did not possess.**
- AI-assisted but monitored learning can accelerate access to technical knowledge, reduce barriers to learning, and increase confidence in engaging with mathematics, science, and productive disciplines.
- **Early effects can emerge rapidly.**
- Within months, confidence levels begin changing.
- Within approximately three years, shifts begin appearing in productivity, implementation capability, entrepreneurship, innovation, and productive-sector participation.
- **Capability compounds over time.**
- Once technical confidence begins spreading through a population, the effects reinforce one another through households, schools, workplaces, institutions, and productive sectors.

CAPABILITY COMPOUNDS. NATIONS TRANSFORM.

A 3-YEAR STEM ADEPTNESS ACCELERATION PATHWAY FOR BOTSWANA

OUR NATIONAL TARGET

60%

STEM ADEPTNESS

of working-age population within 3 years

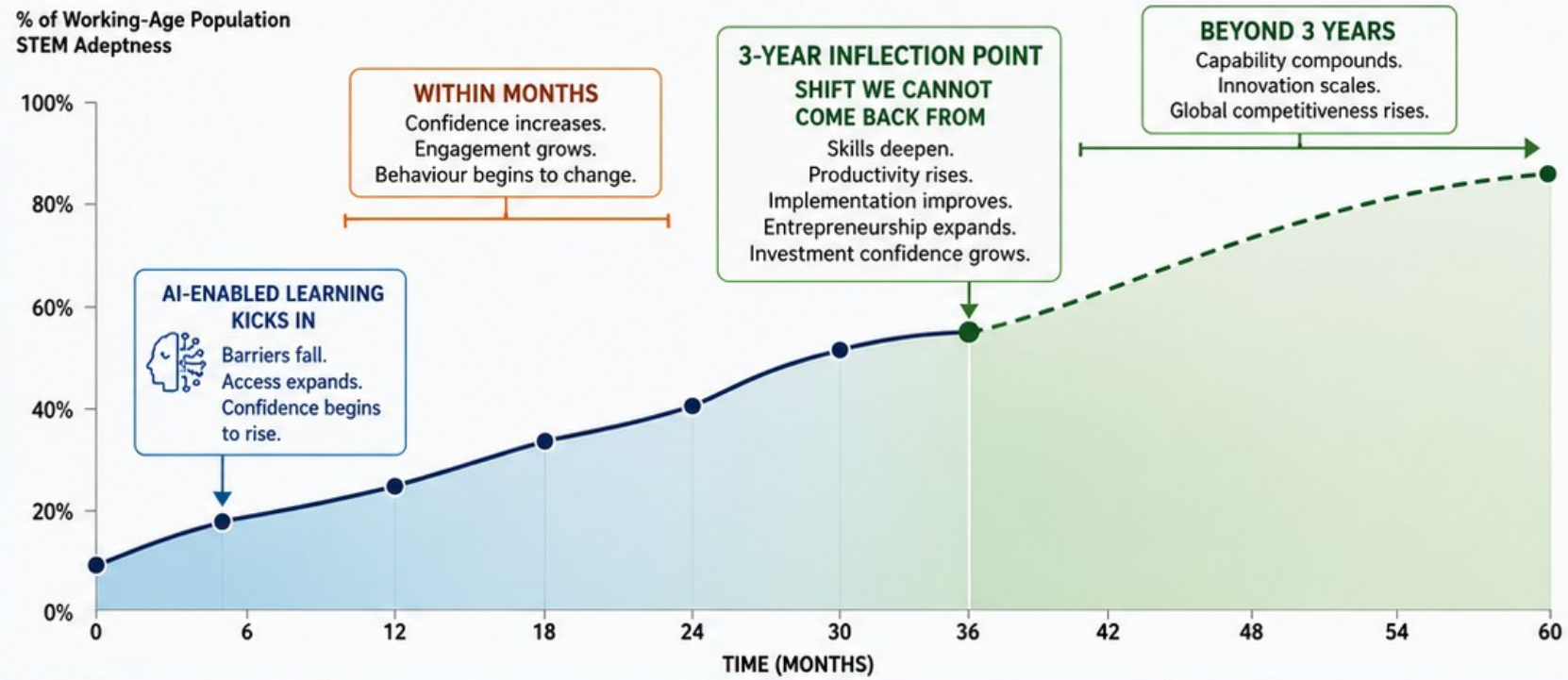
Comfort with
- Numbers
- Measurement
- Causality

Technical Reasoning
- Systems Thinking
- Problem Solving
- Experimentation

Applied Skills
- Technology Use
- Data Literacy
- Innovation Mindset

NOT TO CREATE SCIENTISTS ALONE, BUT TO BUILD A NATION COMFORTABLE WITH COMPLEXITY AND CAPABLE OF SUSTAINING PRODUCTIVE SYSTEMS.

BEHAVIOUR OVER TIME: STEM ADEPTNESS & NATIONAL IMPACT



FOUNDATION (0–6 MONTHS)
AI onboarding, content access, foundational numeracy & science literacy

ACCELERATION (6–24 MONTHS)
Widespread learning, applied practice, confidence building, early results

TRANSFORMATION (24–36 MONTHS)
Measurable shift in productivity, implementation capacity and outcomes

COMPOUNDING IMPACT (36+ MONTHS)
Sustained productivity growth, innovation, competitiveness, prosperity

WHAT BEGINS TO CHANGE

LABOUR PRODUCTIVITY
More output.
Higher value.
Better quality.

IMPLEMENTATION CONFIDENCE
Faster decisions.
Better planning.
Stronger execution.

ENTREPRENEURSHIP & INNOVATION
More start-ups.
More solutions.
More jobs.

PRODUCTIVE SECTOR PARTICIPATION
More firms.
More production.
More exports.

LABOUR ABSORPTION
More people in meaningful, productive work.

THE SYSTEM CONNECTION: FROM STEM ADEPTNESS TO NATIONAL OUTCOMES

STEM ADEPTNESS
Population comfortable with numbers, science, technology & systems

→

NATIONAL CAPABILITY
Stronger skills base, better problem solving, greater technical depth

→

HIGHER PRODUCTIVITY & INVESTMENT CONFIDENCE
Firms expand. Institutions perform better. Economy becomes dynamic.

→

LABOUR ABSORPTION
More opportunities. More jobs. Higher incomes. Inclusive participation.

→

REDUCED UNEMPLOYMENT
FULL PRODUCTIVE PARTICIPATION
P10,344
Potential Per-Capita Monthly Income
Working-age population fully productively engaged

OUR ASPIRATION: A NATION OF CONFIDENT, CAPABLE PEOPLE BUILDING A DIVERSE, PRODUCTIVE, PROSPEROUS BOTSWANA.

"Once capability begins to grow across a population, the trajectory becomes difficult to reverse — because capability compounds."

THE HUMAN OPERATING SYSTEM

- Different labour layers required:
- **Production Layer**
  - growers,
  - irrigation operators,
  - livestock technicians.
- **Industrial Layer**
  - machinists,
  - packhouse operators,
  - maintenance teams,
  - cold-chain technicians.

THE HUMAN OPERATING SYSTEM

- Different labour layers required:
- **Coordination Layer**
  - throughput planners,
  - logistics coordinators,
  - standards managers,
  - export schedulers.
- **Intelligence Layer**
  - data systems,
  - forecasting,
  - demand analytics,
  - systems modelling.

Bottom reflection:

- The future shortage may not be jobs.
- It may be coordinated capability.

FROM UNEMPLOYMENT TO PRODUCTIVE ABSORPTION

- This is directly your unemployment work.
- Botswana's issue increasingly becomes:
  - not simply:
  - unemployment,
- but:
  - insufficient productive absorption systems.

Key insight:

- Economies absorb labour through coordinated productive structures — not through intention alone.
- Then show:
  Demand → Production → Manufacturing → Logistics → Exports → Labour Absorption

WHAT SETS THIS IMPLEMENTATION PATHWAY APART?

TRADITIONAL APPROACH
Policies → Programmes → Budgets → Projects → Jobs

STRLDI IMPLEMENTATION PATHWAY
Understanding → Alignment → Behaviour Change → Structural Change → Labour Absorption

FROM SYMPTOM MANAGEMENT

- Unemployment Programmes
- Grants & Subsidies
- Incentives
- Public Sector Expansion
- Project-Based Interventions

TO STRUCTURAL TRANSFORMATION

- Productive-Sector Deepening
- Labour Absorption Design
- Diversification Capability
- STEM Capability Formation
- Long-Term Economic Coordination

PHASE 1: STRUCTURAL RECOGNITION

Objective

- Build a shared understanding that persistent unemployment is not behaving as a labour-market issue alone, but as a structural national issue.
- **Focus Areas**
  - Behaviour Over Time (BOT) patterns
  - Labour absorption dynamics
  - Productive-sector performance
  - Diversification behaviour
  - Household and STEM linkages
  - Systems archetypes and structural causes
- **Key Outcome**
  - The national conversation shifts from:
  - **“What programme should we fund next?”**
  - to
  - **“What structures are reproducing unemployment?”**

PHASE 1: STRUCTURAL RECOGNITION

PURPOSE

- Build a shared understanding of the structural drivers underlying persistent unemployment and diversification challenges.

- **INITIAL REACH-OUTS**
  - **Presidencies**
  - **National Planning Commission (NPC)**
  - **Botswana Economic Transformation Programme (BETP)**
  - **Ministry of Finance**
  - **Productive Sector Leadership**
  - **Agriculture**
  - **Manufacturing**
  - **Trade**
  - **Education & Skills Development**

- **EVENUAL REACH-OUTS**
  - Southern Africa
  - Eastern Africa
  - Western Africa

OUTPUT

- **Shared National Understanding**
- **Leadership Alignment**
- **Recognition of Structural Drivers**
- **Readiness for Coordinated Action**

PHASE 2: POLITICS SPEAKS BACK TO ITS PEOPLE

- **Objective**
  - Create a new national dialogue around productive development and shared responsibility.
- **Focus Areas**
  - Productive economies
  - Labour absorption
  - Agriculture and manufacturing
  - STEM readiness
  - Long-term national competitiveness
- **Key Message**
  - **Government cannot solve unemployment alone.**
  - **Government and citizens must solve unemployment together.**
- **Key Outcome**
  - Citizens begin seeing themselves as participants in the solution rather than recipients of programmes.

PHASE 3: HOUSEHOLD ONBOARDING

Objective

- Strengthen the household's role in capability formation and long-term economic development.
- **Focus Areas**
  - Educational continuity
  - STEM readiness
  - Family stability
  - Learning environments
  - Intergenerational capability development
- **Key Insight**
  - **The household is not only a social institution.**
  - **The household is also an economic institution.**
- **Key Outcome**
  - Greater national alignment between family life, education, and productive-sector needs.

PHASE 4: PRODUCTIVE-SECTOR REORIENTATION

Objective

- Refocus national growth toward sectors capable of absorbing labour at scale.
- **Priority Sectors**
  - Agriculture
  - Manufacturing
  - Agro-processing
  - Logistics
  - Technical services
- **Key Questions**
  - Which sectors absorb labour?
  - Which sectors reproduce capability?
  - Which sectors create multiplier effects?
- **Key Outcome**
  - Labour absorption becomes a deliberate design objective.

PHASE 5: DEMAND-SPINE & SUPPLY-SPINE COORDINATION

- **Objective**
  - Align production systems with regional and global demand opportunities.
- **Focus Areas**
  - Trade
  - Agriculture
  - Manufacturing
  - Education
  - Finance
  - Investment
- **Key Questions**
  - What does the market require?
  - What can Botswana competitively produce?
  - How should production systems be organised?
- **Key Outcome**
  - National coordination around productive growth and export competitiveness.

PHASE 6: STEM DEEPENING

Objective

- Build world-class technical and productive capability.
- **Focus Areas**
  - Science
  - Technology
  - Engineering
  - Mathematics
  - Agricultural sciences
  - Industrial skills
- **Key Insight**
  - Long-term diversification depends on sustained technical capability.
- **Key Outcome**
  - A growing pipeline of globally competitive STEM talent.

PHASE 7: LABOUR ABSORPTION ACCELERATION

Objective

- Enable employment growth through productive-sector expansion.
- **What Happens**
  - Firms expand
  - Suppliers emerge
  - Value chains deepen
  - Technical services grow
  - Export activity increases
- **Key Insight**
  - Employment becomes an outcome of productive growth rather than a target pursued independently.
- **Key Outcome**
  - Sustained increases in labour absorption across the economy.

PHASE 8 (PARALLEL): NATIONAL LEARNING SYSTEM

Objective

- Build the capability to identify and address future systemic challenges before they become crises.
- **Foundation**
  - The Five Disciplines
  - Systems Thinking
  - Personal Mastery
  - Mental Models
  - Shared Vision
  - Team Learning
- **Key Insight**
  - Nations that learn continuously adapt more effectively to change.
- **Key Outcome**
  - A learning society capable of sustaining productive development across generations.

PHASE 9: NATIONAL SYSTEMIC INTEGRATION

- **Objective**
- Integrate insights from multiple persistent national issues into a coherent national development architecture.

- **INPUT STUDIES**
  - Persistent Unemployment
  - Economic Diversification
  - STEM Capability Development
  - Gendered Violence
  - Household Stability
  - Educational Outcomes
  - Agricultural Productivity
  - Public Sector Performance
  - Health Outcomes
  - Other Persistent National Challenges

https://sheilasingapore.blog/2026/05/16/a-showcase-of-viewing-persistent-issues-through/

- **PROCESS**
  - Cross-study analysis
  - Shared systemic structures
  - Common causal patterns
  - Interacting system archetypes
  - National priority alignment
  - Strategic integration

- **KEY QUESTION**
  - **What structures are simultaneously influencing multiple national outcomes?**

- **OUTPUT**
  - Integrated National Systems Strategy
  - Cross-Ministry Coordination Framework
  - National Learning Priorities
  - Long-Term Structural Interventions
  - Evidence-Based National Development Planning

The Persistent Structural Issues Atlas:

Mapping the Global Loop

Societal problems like unemployment and health crises are not isolated failures but "persistent structural pressures" generated by underlying systems. By mapping these into four interacting layers (KSLs), we can move from managing downstream symptoms to reshaping the structural generatore that produce them.

KSL 1: Human Formation

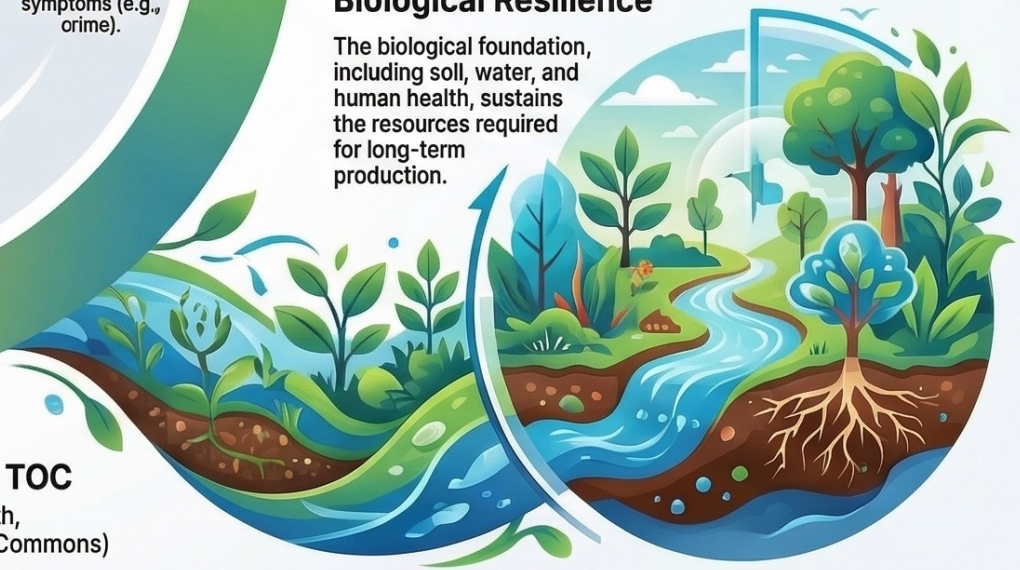
Societies must form disciplined, capable individuals whose technical competency—not just years of schooling—drives economic participation.

KSL 1: DG, FtB

(Drifting Goais, Fixes that Backfire)

KSL 2: Ecological & Biological Resilience

The biological foundation, including soll, water, and human health, sustains the resources required for long-term production.



KSL 2: LtG, TOC

(Limits to Growth, Tragedy of the Commons)

KSL 3: G&U, Esc, AA

(Growth & Underinvestment, Escalation, Accidental Adversaries)

KSL 3: Productive Economic Capacity

The "real" economy transforms resources and labor into goods through manufacturing depth rather than just consumption.

KSL 4: Stb, StS

(Shifting the Burden, Success to the Successful)

KSL 4: Institutional Allocation & Execution

Governance systems must prioritize long-term productive investment over short-term political distribution or "treating" symptoms.

The Central Reioforcing Loop: The four layers are connected by a central reinforcing cycle that elther drives national growth or deepens systemic failure.

The Propagation of Pressure: Weakness in one layer creates stress in ofhers; e.g., shallow production (KSL5) strains fixeal allocation (KSL4).

Primary vs. Secondary Issues: "Primary" issues are the structural generators (e.g., family breakdown), while "Secondary" issues are the visible symptoms (e.g., orime).

The Propagation of Pressure: Weakness in one layer creates stress in others, e.g., shallow production (KSL3) strains fixval allocation (KSL4).

ROLE OF NATIONAL DEVELOPMENT PLANS (NDPs)

- National Development Plans become:
  - **Less focused on isolated sector strategies**
  - and
  - **More focused on addressing the structural conditions influencing multiple national outcomes simultaneously.**

- **END STATE**
  - **A National Learning System capable of continuously studying, integrating, and responding to persistent issues through coherent long-term development strategies.**

CLOSING SLIDE : THE STRLDI TRANSITION PATHWAY

- **Phase 1** – Structural Recognition
- **Phase 2** – Politics Speaks Back to Its People
- **Phase 3** – Household Onboarding
- **Phase 4** – Productive-Sector Reorientation
- **Phase 5** – Demand-Spine & Supply-Spine Coordination
- **Phase 6** – STEM Deepening
- **Phase 7** – Labour Absorption Acceleration
- **Phase 8** – National Learning System
- **Phase 9** – National Systemic Integration & NDP Alignment

End Goal

A productive, labour-absorbing economy supported by capable households, strong institutions, and a continuously learning society.

WHAT IS DIFFERENT?

- **Addresses the structures producing unemployment, not only the symptoms.**
- **Recognises households as part of the economic system.**
- **Positions citizens alongside government as co-creators of solutions.**
- **Places labour absorption at the centre of economic design.**
- **Builds productive sectors before chasing employment numbers.**
- **Develops national learning capacity to prevent future crises.**

END GOAL
A PRODUCTIVE, LABOUR-ABSORBING ECONOMY

- Supported by:
  - **Capable Households**
  - **Strong Productive Sectors**
  - **Coordinated Institutions**
  - **STEM Capability**
  - **Continuous National Learning**

HOW WORK WITH STRLDI UNFOLDS

Stage 1:

LEADERSHIP DEVELOPMENT

Learning to Work with Structure

- Systems Thinking Capability Building
- Five Disciplines Practice
- Assumption Testing
- Feedback Loop Analysis
- Leverage Point Discovery

Output: Leaders capable of seeing and working with systemic causes rather than symptom

Stage 2:

SYSTEMIC RESEARCH

Seeing the System Whole

- Behaviour Over Time Analysis
- Persistent Issue Mapping
- System Archetype Identification
- Structural Diagnosis
- Shared Understanding of the Issue

Output: A visible picture of the structures generating the persistent outcome.

Stage 3:

SYSTEMS STEWARDSHIP & STRATEGY RENEWAL LABS

Translating Insight into Action

- Cross-Sector Learning
- Strategy Testing
- Intervention Sequencing
- Implementation Alignment
- Continuous Learning

Output: Coordinated action capable of shifting Behaviour Over Time patterns.

RESULT

Persistent Issue → Structural Understanding → Leadership Capability → Coordinated Action → Behaviour Change Over Time

HOW THE WORK UNFOLDS

Three interconnected modes of practice.
All three are engaged, depending on the system and the stage of readiness.

1 LEADERSHIP DEVELOPMENT

Practising the Disciplines

- The Five Disciplines
- Systems Thinking
- Team Learning
- Mental Models
- Shared Vision
- Personal Mastery

OUTPUT
Shared capability to think and act systemically.

2 SYSTEMIC RESEARCH

Seeing the System Whole

- Behaviour Over Time
- Structural Drivers
- Feedback Processes
- System Archetypes
- Mental Models

OUTPUT
Shared understanding of the structures behind persistent outcomes.

3 SYSTEMS STEWARDSHIP STRATEGY RENEWAL LABS

Turning Insight into Coordinated Action

- Leverage Points
- Strategy Development
- Cross-Actor Alignment
- Implementation Sequencing
- Learning Loops & Adaptation

OUTPUT
Shared stewardship of persistent issues through coordinated action.

THE OUTCOME

Persistent issues become visible → Structures become understandable → Leadership capability is strengthened → Coordinated action is aligned → Behaviour changes over time

> “We do not just provide answers. We build the capability to *ask better questions, see deeper, learn together,* and *steward what matters.*”

DISTINCTIONS TO "SYSTEMS"

SYSTEM MANAGEMENT / ANALYSIS

DETAILED COMPLEXITY

- Exists because of a defined purpose, mandate, target, or objective.
- Boundaries are known, visible, and often formally defined.
- The parts are generally visible and can be mapped directly.
- Management focuses on improving performance within the system.
- Most organisational "systems" discussions fall into this category.
- Problems are often solved through process improvements, resource allocation, compliance, and management intervention.

SYSTEMIC STRUCTURES

DYNAMIC COMPLEXITY

- Exists whether or not anyone recognises it.
- Boundaries are not predefined and must be discovered.
- The causal relationships are often hidden and revealed through inquiry.
- Learning focuses on revealing and changing the structure producing behaviour.
- Most persistent national and societal issues fall into this category.
- Problems require understanding feedback loops, delays, system archetypes, and underlying structures.

DISTINCTIONS TO “SYSTEMS”

EXAMPLES OF SYSTEM MANAGEMENT / ANALYSIS

- Organisation and its divisions
- Industry and its organisations
- A vehicle and its components
- The human body and its organs
- Supervisor–supervisee relationships
- Employer–employee relationships
- Government ministries and departments
- Corporate operating systems

KEY DISTINCTION
SYSTEM MANAGEMENT ASKS:
"**How do we improve the performance** of the system we can already see?“
SYSTEMIC STRUCTURE INQUIRY ASKS:
"**What hidden structure** is producing the behaviour we keep observing over time?"

EXAMPLES OF SYSTEMIC STRUCTURES

- Persistent unemployment
- Economic diversification challenges
- Low labour absorption
- Weak manufacturing growth
- Declining STEM capability
- Educational performance patterns
- Poverty traps
- Wildlife–human conflict
- Gendered violence
- Organisational decline and attrition
- Public sector performance patterns
- Climate change

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