“Abductive Innovation Strategy: Shortcut to the Top?”

Challenges for Developing Countries towards global Knowledge Society
National Innovation Systems for Development
Case study of Botswana

Dr. Dreves, Reinhart J., @ T.E.C.
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Towards a Knowledge driven Society (KNS):  
- Understanding the chance of change -

The Concept of KNS: Knowledge as Production Factor, Economic growth and development based on capital and labor (Marx), productivity and technology – heterogeneities;

Innovation-Concept development: Smith, List, Schumpeter, etc.


Development as multi-dimensional transformation process: MDGs, Indicators, strategic development; Development curves and rankings;

Development Indices and components as expression / recognition of relevant contribution

NLC: National Learning Capabilities and Knowledge creation - Human and Social Capital

KN Facilities: Infrastructure

NPC: National Productive Capabilities: Entrepreneurship - Competitiveness

Social Facilities: culture, intellectual capital, net-works

NIS: linkages with innovative results

Innovation Strategies: how to be more …..; the need for a strategic approach
Innovation Strategies for Development:
adaption of relevant measures for desired change

Actual Innovation Strategies: EU-USA-China-LA-SADC-WB-BW:
EU: Innovation is overarching policy objective, steered at highest level with massive investments in Knowledge creation and conducive environment → link: EU-Strategy (2011)
USA: Catalyze breakthroughs for National Priorities, Promote Competitive Markets that Spur Productive Entrepreneurship, Invest in the Building Blocks of American Innovations → link: USA-Strategy
LA - Colombia/Brazil: Demand-driven vs. Strategy-driven Approach, → link: Inter-American-Development-Bank,(2006) strategy conditions
SADC: absence of a clear strategic vision recognized → SARUA, (2012)
Botswana: combined RSTI Policy → MIST, 2011
The NEED for a STRATEGIC APPROACH in EUROPE

Our key partners and emerging economies follow a strategic approach to innovation and implement it.

A strategic approach to innovation =

- Innovation is the overarching policy objective driving all other policies (education, labor markets, skills, ICT/infrastructure, tax policy, etc.)

- Innovation policy is steered and monitored at the highest level

- Massive investments in skills, research and innovation
The example of the US President Obama’s Strategy for American Innovation:

- increasing significantly the budget for three key basic-research agencies from $12.6 billion in 2010 to $19.5 Billion in 2016 (increase by 54%)
- reaching 3% target for R&D intensity
- focusing on key priorities and “grand challenges”
The example of China

China « Indigenous Innovation Strategy »

- Promote the development of technological innovation in domestic firms, leading to ownership of own core IP rights
- Explore potential markets through in-house R&D activities and external knowledge acquisition
- Be among the top-5 worldwide by 2020 for patents granted for domestic inventions and citations of international scientific papers
- Implement the “Medium- to Long-Term Plan for the Development of Science and Technology until 2020”
  - min. 60% of GDP growth
  - max. 30% foreign technologies, IPR, standards
- 1000 Talent program – to get the 1000 best Chinese researchers back from the US
IDB: Strategic Approach still in the “back seat”

A: Demand driven / Colombia (prevailing) - sectors
B: Strategy driven / Brazil (progressive) - sectors

IDB hypothesis combining political economy determinants and institutional factors:

“For a strategy-driven approach to become dominant in a country, the confluence of at least TWO of the following THREE factors is required:

1. A sufficiently strong technical and social-scientific intelligentsia
2. Government institutions where this technical intelligentsia can exercise its intellectual influence
3. A nucleus of private entrepreneurs capable of going beyond a short-term corporatist stance and of interacting with the technical intelligentsia to generate a long-run strategic perspective for productive development policies.

In the LA experience the technical and social-scientific intelligentsia sees itself as representing both the standpoint of the country’s future and the interests of technical rationality. But (i) if this social segment is weak; (ii) if it is not sufficiently represented in the state bureaucracy; (iii) if the specialized agencies through which its views and technical interests are weak or non-existent; and (iv) if it does not have an ally in (at least a segment of) the entrepreneurial class, it cannot become a dominant factor influencing public policy, and there is thus NO possibility of developing a strategy-driven approach in a particular country.

Concluding, “that in the absence of a strong technical intelligentsia expressing itself through strong, capable institutions (and allied with at least a part of the business class with long-term view) strategic considerations take “a back-seat”. (IDB 2006)
WB: Integration of Innovation into long-term Strategy is Key also for developing countries

1. Innovation in the developing world means “something new” at that location and for that society: methods new applied or a new sector established (textile, cars, flowers, computer, tourism);
2. Entrepreneur as key actor interacts with Universities, public laboratories, banks, customer Asoc. forming an Innovation System
3. Conducive environment: macroeconomic stability, infrastructure development, quality of governance
4. Important details: Support Agency, solid network / technical infrastructure (Metrology, Standards, QA-Control), pro-poor technology programs / public procurement, special economic zones, innovation friendly techno cities = being pragmatic!
5. Upgrading local knowledge base and adapting adequate new knowledge is critical; change happens only gradually from limited local success of specific industries or areas and with much needed institutional creativity from policy makers to build critical mass for broader reforms and a general climate of trust
6. Innovation policy not a linear & mechanistic process of promoting ideas and projects from research to market, a holistic (systemic) and “biological “ approach is more appropriate; Gov. responsible for positive climate through (a) incentives + facilities, (b) removing bureaucratic obstacles, (c) improve tech. education + R&D structures; Regional and spontaneous initiatives can play critical role; creation of innovation climate (not a full culture) takes at least 10 years!
7. But most important key success factor is “to integrate a vision for innovation in long-term development strategy”, which “requires an explicit government-wide approach”; failure is mostly due to “not sufficient authority”, the lack of “strong political leadership, collective will, and clear commitments”; therefore:
8. “innovation policy can be a key component of 21st century development strategies, even in poor countries with constraining economic environments. But to succeed innovators must be supported by high-level central and local government policy makers who have the vision, pragmatism, and the ability to work creatively in institutional contexts. → CHINA: = world factory; MALAYSIA:= IS world leader; TUNISIA; FINNLAND

1. KNS Pillars = Education + ICT + Innovation + Science & Technology
2. Focus on (a). ICT = enabler of Education, Innovation and Development
3. And (b.) Leadership, AICIT: African Leadership Capacity Building Program
4. Recommendations from an Assessment of Environmental, Institutional and Individual Leadership Capacity Needs for developing KNSs in Africa 2011:
   (a) Education and Innovation to be viewed as interrelated drivers for socio-economic development
   (b) A comprehensive (strategic) approach to Science, Technology and Innovation should be developed
   (c) Leadership Capacity should be developed to address “system wide” and “system deep” change for coordination and extension of policies into sustainable implementation and development across all system levels.
5. Country (Mauritius, South Africa, Tanzania, Zambia) Assessment conclusions: “There is a need for implementing and coordinating the four pillar initiatives towards KNS development; there is a clear gap in systems / mechanisms / structures for overseeing, coordinating, monitoring and evaluating initiatives.” = lack of Strategic Approach!
6. “A knowledge Society is a society that creates, shares and uses knowledge for socio-economic development. ICT and education are critical for development and for securing employment in a KNS. However, the potential of ICT in education can only be realized when it is embedded in a social context that is open to innovation and supported by a favorable policy environment. Government policy has a real impact on strategic initiatives, and often determinates the parameters of such initiatives through laws, regulations, and the allocation of funds.” Dec. 2011.
SSA / SADC: not yet ready, testing for future regional strategic intent in 4 pilot countries: BWA – MOZ – NAM - ZAM

2006: SADC countries identified in their Regional Indicative Strategic Development Plan (RISDP) the need to enhance their systems of innovation, and to create mutual benefits by extending this to regional –co-operation and regional innovation systems. Systemic strategic and operational innovation support is recognized as an integral ingredient in economic growth and poverty alleviation aspirations.

2008: UNESCO-SADC Conference on S,T & Innovation Policy
2010: Draft SADC Strategic Plan on STI with 7 objectives, SARUA based
2011: SAIS-Southern Africa Innovation Support Program launched to pilot regional strategic intent based on (1) human and (2) institutional capacity, (3) regional networking and (4) co-operation from April 2011 – March 2015 in 4 countries: BWA, MOZ, NAM, ZAM.

2012: SARUA: Strategic Agenda for Development in SADC 2025: “the absence of a clear strategic vision has been recognized by SADC ministers as a key limitation. ... It is clear that HE leaders require a strategic approach...”
BWA: Revised National Policy on Research, Science, Technology and Innovation approved & Implementation Plan: Ready to do it right?

1. Revised National Policy on RSTI, 09.2011/08.2012: Revision intended to broadly align with MDGs Botswana Vision; strategic priorities intended to be related to the goals set in NDP 10 and Vision 2016; Gov. expressed intention to address issue through NIS approach; but "currently between the stages of formulation and implementation", "while the commitment and direction exists, the development of specific programs and organizational structure still needs to be agreed".

2. Revised National Policy on RSTI, "draft Implementation Plan" 11.2011; "agree on the need to prioritize collaboration and coordination amongst all stakeholders involved and effected by research, science, technology and innovation, in order to attain broad national development goals; ... focus on a set of strategic priorities: 1. research capacity, 2. HR capacity, 3. Institutional capacity, 4. expanding KN base, 5. promote networking / collaboration, 6. promote innov. activities, 7. create conducive environment. → from THICK – THINK (WB); 12 key areas with specific programs identified - still in planning phase. BNRDICC: the "New Vision" Council?

3. "The effective implementation of the draft RSTI policy requires strong political commitment and leadership" (p 42); "current ad hoc, uncoordinated approach ... has proved to have slow and limited impact..."; funding to rise from 2011: 0.5% to 2% of GDP in 2016; (GDP to be 156,418 Mio Cur. BWP);

4. S&T HRD strategy: development of local S&T skills and capacity → NHRDS?


6. Conclusion: understanding of innovation → political importance → institutional creativity → organizational learning→ availability of funding → implementation activities → Change.
Innovation Strategies for Development: adaption of relevant measures for desired change based on gaps / needs analysis – rankings by “relevant” indicators

Starting point: where are we now? Measures, Indicators, Analysis: HDI, KNEI, GCI, GEDI, ICI, NIS - Readiness:

**UNDP-HDI /187- 18, 0.63:** Life Expectancy / Health; Knowledge & Education; Income per capita at PPP (2011 new)

**WB-KNEI /146 -85, 0.58:** 1. Economic and Institutional Regimes, 2. Education & Learning, 3. Innovation System, 4. Information Infrastructure (ICT)


**GEDI:** Global Entrepreneurship and Development Index, estimations for Botswana

**EFD-ICI / 131-69, 0.53 :** HC, training & social inclusion; Institutional environment, Regulatory & legal framework; Research & Development; Adaption & Usage of ICT, clusters by income levels and weighted by political regime.

**NIS-CANA:** International Comparison of National Innovation Systems;
Abductive Innovation Strategy

Actual Situation in BWA: Vision statement and Pillars, NDP 10 and respective programs, HRD Strategy, R&I / S&T Strategy,

What do the “individual” Indicators say on weakness for BWA:

HDI: 118/187: Tertiary Education / Health

KEI: 85/146: Tertiary Education & ICT

GCI: 79/144: TE+ R&D, Business, ICT Readiness, Infrastructure, Health, Innovation

GEDI: 0.26 optimistic estimation; TE, Internet, Market, Business strategy, Technology Absorption

ICI: 69/131: R&D, Education - ICT/Quality of Infrastructure, Equity

NIS: international comparisons

→ Human Capabilities, Learning Facilities, Productive Capabilities, Social Facilities and ..... Vision/Strategy
Abductive Innovation Strategy

Deduction from existing available Knowledge (data & information): further development requires strategic knowledge management, creative policies, innovative entrepreneurs, an open conducive environment and sustainable funding.

Abduction / Guess:
Development Goal: Transformation of People into Diamonds;
Strategy: Create Innovation Culture and Innovation Capabilities
Projects:
1. Local Private sector development / Employment creation
2. TE improvement: access, relevance/quality, public costs
3. Investment in ICT / Research / Networking / Collaboration
Abductive Innovation Strategy

Deduction from “scientific” facts: don’t follow the S-curve only to catch-up for ever, take your chances strategically and pragmatically on both sides of the inflection point by taking a short-cut through innovation.

A Pragmatic double-faced development strategy based on local conditions and global opportunities.

Identify relevant local potentials and prioritize for pragmatic innovative local development strategies (local needs) and regional cooperation and networking on innovation strategies (global system requirements)
Discussion

Q & A