

Science, Technology, and Innovation: Prospects for Being Well in the 21st Century

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Introduction 1

- Our contemporary conjuncture remains marked by significant and persistent global crisis's.
- The sovereignties of country's to determine appropriate and relevant solutions to their domestic challenges are increasingly being constrained by the operations and practices of international and multilateral institutions that continue to reflect the balance of power achieved at the end of World War 2.
- Inter-generational and inter-territorial conflicts are escalating as we look towards future scenarios that include ecological collapse, a separation between work and income, and a diminishing level of confidence of populations in their institutional configurations including their political systems.

Introduction 2

This is the guy who invented GDP

And this is what
he said to
Congress about it,
back in 1934:



Simon Kuznets

“The welfare of a nation can scarcely be inferred from a measure of national income. . . . Distinctions must be kept in mind between quantity and quality of growth, between costs and returns, and between the short and long run. **Goals for more growth should specify more growth of what and for what.**”

- “Perhaps the key theme in the story of the 21st Century will be how humanity addresses multiple threats to the stability of the planetary social-ecological system” (Gerst et al: 2014: 124).
- “What has changed fundamentally after the financial crisis is the fact that capitalism, the system legitimating most aspects of our modern economic science (*and corresponding academic positions*), has decisively lost its comfort zone” (Müller: 2014: 1).
- Need/ Demand for the establishment of an integrated developmental agenda that encompasses both “more **viable and inclusive national development strategies and changes in the global economic system to accommodate and support them**” (UNCTAD: 2013).

GDP best captures the characteristics of economies

- that have efficient recording mechanisms for taxation and other purposes;
- that have centralised (often synonymous with capital and energy intensive) rather than highly dispersed (and manual) forms of (lower environmental impact) economic activity;
- that have a relatively small subsistence or informal sector; and
- that have insignificant levels of FDI.

GDP per capita necessarily does not measure/capture

- unrecorded (untaxed) economic activity (self-employments, scattered and informal work, subsistence and reproductive activity etc.) = most of the economic contribution of women and children
- wealth, capital or physical assets
- raw material or other resources
- technological or human capabilities
- stability of growth or decline outside the time series provided
- sustainability of growth (including but not only environmental/resource sustainability)
- distribution of incomes or wealth, i.e., economic inequality
- living standards or human welfare
- rate of population growth and its impact upon the denominator
- political or social freedom
- portion of outputs provided by foreign investment (profits distributed outside the entity)
- portion of outputs produced by non-native labour (which is outside the GDP per capita denominator)
- time discounting (eg. placing a proper –if any value on things that will need to be paid for in future such as imported rather than depleted domestic fuel supplies or raw materials, nuclear decommissioning, climate change)
- structural change
- technological innovations
- proximate or any other cause of growth
- economic development
- *Does it even measure economic growth?*

Value Addition

- “Innovation is a driver of economic success and growth. Companies and countries that consistently invest in innovation by prioritizing R&D and allocating funds and resources for this activity are proven to be more successful than those that don’t” Thompson-Reuters (2016: 6)
- A means towards increasing the value addition in our industrial activities and thereby our trade, is to ensure that we improve our systems of innovation
- Ensuring a wider participation of enterprises in the prioritisation of science and technology helps, but as does its integration across the various silo’s of public policy
- Focusing on *Local Innovation and Production Arrangements* can help us shift towards such the progressive realisation of increasing our value addition especially with respect to traditional and indigenous products and services.

Manufacturing and Trade

- Manufacturing Industry has been a critical terrain for the previous few centuries.
- Trade has integrated the us all into an interconnected and interdependent world system
- Whilst some of the industries of the BRICS countries have achieved significant global profiles, these have tended to be in already established markets.
- Huge challenges remain in building the capacities, capabilities, and competences of the BRICS in the fields of market creation.
- Herein also lies significant opportunity for industrial renovation along a more sustainable developmental trajectory: *Can we lead the change we want to see in the world?* (apologies - Gandhi).

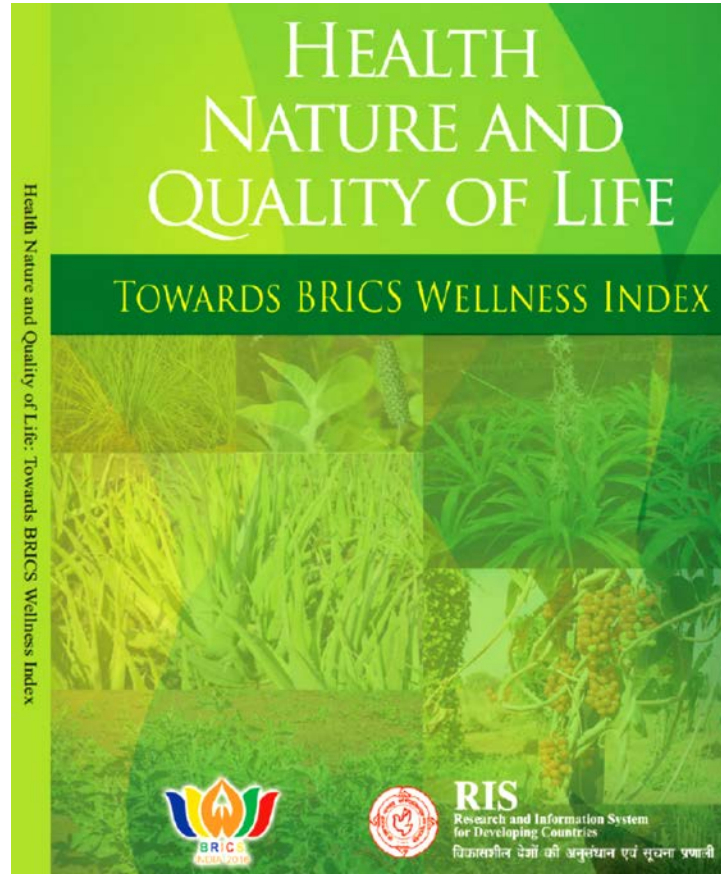
Trade Classification

- The current version of the Standard International Trade Classification does require reconsideration under our contemporary conjuncture.
- Is the harmonisation process reflective of the changing balance of forces or is it intended to reproduce the inherent combined and uneven development status of an unequal world order?
- Can the BRICS work together, notwithstanding their own combined but uneven nature, to advance a just and fair system that privileges the emergence of alternative metrics building on the vast and complex heritages of our respective societies?
- Or will we merely seek to replace the exiting power blocs with ourselves as a new regime of unequal and imbalanced trade?

Standardisation

- The arena of Trade and Industrial Standardisation offers huge opportunities
- We must consider how we build the necessary scientific and technological capacities and capabilities inside our respective countries so that we simultaneously ensure that our neighbouring countries also benefit from our interventions
- Specifically, we must include our own populations in improving our science of measurements through our metrology functions
- South Africa is working extensively in its regional economic community to share its technical capabilities and institutional competences
- BRICS would benefit from aligning with such processes and providing further resources to those countries with weaker systems.

First Publication (2016)



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Conclusions

- *“Redesign the metrics with which to measure wealth production. As numerous studies have shown in recent years, GDP has very limited meaning and is even distorting in the knowledge economy. New metrics need to be designed to account for the use of energy and materials and to measure the various ways in which value is now created and well-being enhanced”* (Perez: 2016: 212).
- *“although [the] mainstream orientation to social class and health inequalities may appear innocuous or politically neutral, it in fact functions in the service of incremental, apolitical, technical changes that are ultimately system-justifying and status-quo-reproducing”* (Muntanera et al: 2015: 279).
- Heeding this warning should alert the research scholars and public intellectuals of the BRICS to be more forthright in advocating a more radical and robust rupture with the neoliberal framings of wellness and well-being.
- The BRICS, as the political apparatus of 42% of the world’s population, must ultimately lead in the reconstruction and development of an alternative world order that advances beyond the fatalistic compulsions of capitalism and opens pathways to reconstructing and developing a better life for all.

Key Research Questions

- 1) What is the current state of the art (and science) of measuring wellness and well-being in South Africa?
- 2) Is the contribution of STI included in SA's measurements of Wellness and Well-being? How does this correlate with the international literature?
- 3) Defining case-studies for further explorations of the relationships between R&D, STI, and Well-being?
- 4) Defining Subjective and Objective Biases in measuring R&D, STI, and Well-being?
- 5) Can a Wellness Index for SA proxy for GERD as a more relevant and appropriate indicator of Socio-Economic and Political Progress?
- 6) Can SA's performance be robustly compared with the rest of the BRICS?

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