

Measuring progress towards sustainable development in Africa

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ABSTRACT

The ‘sustainability’ of developmental programmes is one of the most elusive goals of any government services delivery system. ‘Sustainable development’ is an increasingly important umbrella concept to integrate various desired developmental outcomes of governmental interactions with its society. The concept is still a fuzzy one that frequently generates controversy. This article attempts to give an operational meaning to the term ‘sustainability’. It also distinguishes different dimensions of sustainability and suggests a concrete measuring instrument to determine progress towards achieving these different dimensions of sustainable development outcomes in Africa.

According to Bhamra (2015:1), “...social, economic, environmental and governance systems cannot be treated in isolation. For the systems to be concurrently aligned in the development paradigm, the first step is to develop a meta-metric framework that identifies indicators and their respective roles in the development processes. A clear comprehensive metric system that not just focuses on economic indicators but includes social, environmental and governance systems is a pre-requisite”.

This article starts off with a brief conceptualisation of development and of sustainability and then proceeds to summarise the main international approaches to sustainable development, and the way in which it is applied in Africa. The article concludes by identifying the main elements of a systematic generic instrument to measure sustainable development outcomes, focusing on the African context.

INTRODUCTION

This article firstly contextualises the interface between development and sustainability where development is conceived as an outcome of governmental interventions to empower people to consider feasible options in their lives and to make informed choices for a sustainable future.

This paradigm shift conceives sustainable development from an economic transformation in society perspective to a social, later environmental and eventually an integrated

improvement in all societal sectors over a long term period. The article highlights the following sectoral dimensions of sustainability: demographic sustainability, social sustainability, cultural sustainability, technological sustainability, economic sustainability and financial sustainability, environmental sustainability, political sustainability, institutional sustainability and managerial sustainability in order to provide an integrated perspective of effective sustainable development. This is followed by an overview of the application of the main approaches and measures of sustainable development globally, in Africa in general, and in South Africa in particular. The focus on sustainability assessment in this article includes all of these dimensions in order to achieve an accurate perspective on the durability of the envisaged policy interventions. The article also lists core sustainability indicators for South Africa to assess the progress towards achieving sustainable development in South Africa and concludes by identifying the main elements of a systematic generic instrument to measure sustainable development outcomes, focusing on the African context.

CONTEXTUALISING DEVELOPMENT AND SUSTAINABILITY

Although the two concepts of development and sustainability are increasingly linked, they are totally separate concepts that denote totally different phenomena. *“Developmental policies are public policies which succeed in empowering people to exercise choices (Sen 1999), especially regarding the quality of life that they would prefer to maintain. The objective with sustainable development in this sense is to empower citizens to aspire to a self-sustaining improvement in medium to long term life quality. This implies inevitably a coherent systemic integration of development initiatives, resulting in a structural, functional and cultural consolidation of a new way of life. It culminates in the creation of a developmental culture in society, and implies not only short term progress towards empowerment for increasing quality of life, but also longer term durability of those higher standards of life”* (Cloete 2007).

Development is conceived for purposes of this article as an outcome of governmental interventions in society that succeed in empowering people to consider feasible options in their lives and to make informed choices for the future (Cloete & Auriacombe 2013). These choices relate to any action, from satisfying individual basic needs to consolidating collective middle class lifestyles to eventually being able to fulfil higher level personal and collective needs, desires and goals.

Sustainability is based on the original idea of a more appropriate use of environmental socio-economic resources to enable future generations to also enjoy those resources instead of exhausting them in the short term by the current generation (Bell & Morse 2003:2). The concept was immortalised by the Brundtland Commission (1987), and has since been then the generally accepted definition of sustainable development. This conception of sustainable development is perfectly accurate and valid applied to economic conservation and the use of environmental and other resources, and is the logical result of the global approach to development in the middle of the 20th century, especially just before and after the second world war until the end of the 1960s. Development was during this period consistently regarded as sustainable macro-economic growth patterns across society that were supposed to result in a relatively linear fashion in sustainable micro-level socio-economic improvements in quality of life (Thorbecke 2006, Todaro & Smith 2011, UNECA 2012:4).



This conception of development changed dramatically from the 1970s when systematic programme evaluations started to provide evidence that macro-economic growth does not lead automatically to improvements in conditions of life in the absence of explicit supplementary micro-level social and socio-economic development programmes that focus more on people and not on money. Development foci then shifted to first trying to make 'war on poverty' by satisfying the 'basic needs' and later the 'fundamental needs' of individuals (Maslow 1943, Max-Neef 1991 & 2005) and to redistribute resources more equitably to poor communities (Pant 1974, Korten 1984, Thorbecke 2006, UNECA 2012:4).

The fact that balanced growth in multiple sectors is needed for development stability and durability over time began to dawn towards the end of the 1970s when the emerging negative cumulative impacts of the global oil and ozone crises and the effects of global warming on the world's poor became evident (Schoenaker, Hoekstra and Smits 2015). The UN Commission on the Environment and Development was established in 1983 and in 1987 it commissioned a report on the then state of the environment and its implications for development (Brundtland 1987). This report coined the term 'sustainable development': *"Humanity has the ability to make development sustainable to ensure that it meets the needs of the present without compromising the ability of future generations to meet their own needs. The concept of sustainable development does imply limits—not absolute limits but limitations imposed by the present state of technology and social organization on environmental resources and by the ability of the biosphere to absorb the effects of human activities"* (par 27), and *"Meeting essential needs requires not only a new era of economic growth for nations in which the majority are poor, but an assurance that those poor get their fair share of the resources required to sustain that growth. Such equity would be aided by political systems that secure effective citizen participation in decision making and by greater democracy in international decision making"* (par 28).

The above quotes from the Brundtland Commission stated very unequivocally that the only strategy to achieve sustainable development is through a synchronised developmental approach in all societal sectors, including the social, cultural, technological, political, institutional and managerial dimensions of society. However, because the main rationale behind the appointment of the Commission was the worrying emerging impact of the so-called 'greenhouse effect' on future human activities, the Commission's socio-economic resource-focused definition of sustainable development became the dominant conception of it, ignoring in the process the other supplementary dimensions of sustainable development that do not have direct resource use implications.

This paradigm shift in the conception of sustainable development from an economic transformation in society to a social, later environmental and eventually an integrated improvement in all societal sectors over a long term period, also had a crucial parallel impact on the conception of development itself. The primary goal of development as an improvement in objective quality of life was in the 1990s fundamentally changed when Amartya Sen (1985, 1999) pointed out that development can be either an objective improved outcome or a subjective change in attitude or both. He reconceptualised development as 'choice', or a fundamental individual empowerment to be able to choose what one wants to do. This approach resonates with the 'public choice' approach to economics and governance, but must be contextualised within Sen's emphasis on the intervening role of the state to protect vulnerable segments of society from exploitation by the affluent (Thorbecke

2006:21). From this perspective, poverty is the individual and structural absence of freedom of choice, while development implies the availability of choices to exercise how one wants to spend one's future. These potential choices need not necessarily materialise in the form of improved quality of life, but need only be the availability of opportunities in an enabling environment that allows for the individual freedom to exercise feasible choices and to decide what you want to do.

Sen's new conception of development confirmed the crucial catalytic intervening role of the state in sustainable development, as the Brundtland Report has mentioned in the quote above, and has been taken further in the form of a 'new institutionalism' approach (Thorbecke 2006:21). Sustainable development does not occur spontaneously by itself. It needs a combination of conducive factors, participation of various stakeholders and beneficiaries and monitoring and steering by public sector governance agencies in order to materialise and consolidate. It is therefore important to also emphasise the supportive governance dimensions of sustainable development that include political, institutional/organisational and managerial perspectives on sustainability (UNECA 2012:4). Christopoulos, Horvath & Kull (2012) formulate the argument for improved international governance of sustainable development as follows: "*Sustainable Development...and its pillars are well known, and the need for integrating the social, economic and environmental aspects in development is widely accepted. A topic currently gaining momentum is the improvement of the institutional framework, as called for through the ongoing global processes*".

The main sectoral dimensions of sustainability that can be identified, include **demographic sustainability**, which consists of the achievement and maintenance of desired trends in human, fauna and flora populations that are stable and durable within a specified long-term time frame (Cloete 2007). **Social sustainability** can be conceptualised as the achievement and maintenance of an empowered citizenry that constitutes stable and cohesive communities striving towards a continuous improvement in achieving individual preferences and collective interests within a specified long-term time frame (Cloete 2007). UNECA (2011:23) summarises it still in pre-Sen terminology as "*.. continuous improvement in the social well-being and quality of life*". It is typically measured by human and social development indicators.

Cultural sustainability comprises the achievement and maintenance of stable and durable systems of values, customs and practices expressing, promoting and developing the cultural identity of individuals and groups in a community or society (Cloete 2007), while **technological sustainability** is the achievement and maintenance of effective and appropriate stable technological systems enabling, supporting, facilitating and promoting societal activities in different sectors durably within a specified long term time frame. Sagar and Majumdar (2014) have put forward a very compelling argument for the optimal use of technology and innovation as a strategic strategy to achieve sustainability, especially in developing nations: "*While there is no simple way to address these major sustainability challenges, given their scale and the interweaving of the drivers with the very fabric of our economic, social, and human existence, technology has the potential to play a major role in this process (see for example UNMP 2005). This is particularly important for developing countries, given that these challenges are pressing and urgent there. Yet leveraging the potential of technology for addressing sustainability challenges in developing countries is not a trivial exercise, given the uncertainties and the complexities of the technology innovation*



process in general and in relation to the sustainability transition, especially in the developing-country context”.

Economic sustainability can be seen as the achievement and maintenance of a sound, stable and growing/expanding economic system that meets the needs of its society or has the potential to develop towards higher levels in an efficient and durable way within a specified long-term time frame (Cloete 2007). UNECA (2011:35) also summarises it as “...*maintaining and sustaining a high real growth rate of the economy to achieve the Millennium Development Goals (MDGs)*”. The main requirements for sustainable businesses are well-summarised in UNEP (2007). Typically, indicators include growth rates of GDP, balance of payments, exports and imports; savings and investments; agriculture, manufacturing, debt and the structure of the economy (UNECA 2011:36).

Financial sustainability would then imply not spending more than you earn over time, and preferably not reducing assets or capacity, but rather building them up in a durable way within a specified long-term time frame (Cloete 2007).

In the light of the above arguments, **environmental sustainability** can now be redefined as the achievement and maintenance of stable ecological and bio-diversity systems durably within a specified long-term time frame (Cloete 2007), although UNECA (2011:44) still summarises it in the Brundtland Commission’s original terminology as the “...*maintenance of the integrity of different environmental media and systems to ensure that their functions and beneficial uses are upheld for present and future generations*”. Environmental sustainability indicators typically measure continuous improvements in the state of the atmosphere, soil and water (UNECA 2011:44).

As an important enabling dimension, **political sustainability** refers to dedicated democratic political commitment: continuous democratic support by political decision-makers for the programmes concerned, not only through consistent rhetoric, but also backing their words up by consistent democratic governance actions. Political sustainability is therefore the achievement and maintenance of a stable, effective political vision, commitment and support based on legitimate, transparent, democratic processes operating in a durable way within a specified long-term time frame (Cloete 2007). Closely linked to this is **institutional sustainability**, which can be conceived as the achievement and maintenance of stable, effective and efficient institutions that have a good record of achieving strategic policy objectives durably within a specified long-term time frame and of learning from past failures and successes (Cloete 2007). UNECA (2011:60) summarises this dimension as the creation and maintenance of an enabling “...*environment of well-defined and responsive institutional and strategic frameworks*”.

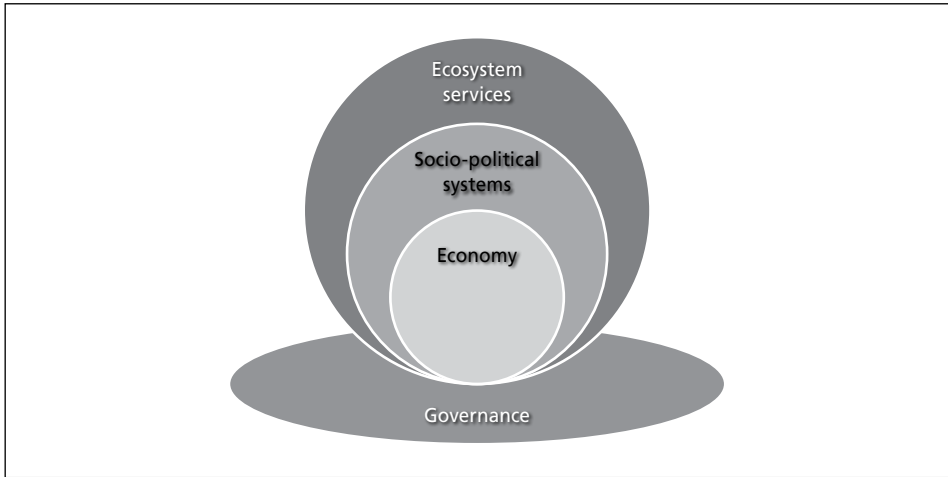
From an organisational and managerial perspective, sustainability can be seen as the institutional and functional durability of public policy programmes. Sustainability in this sense refers to the durability of services of a required quantity and at a required level of quality over an extended period (Cloete 2007. See also Gallopin 2003:35). It therefore implies a thorough assessment of all resource implications of service delivery, the incorporation of the results of such assessments into the design of service delivery strategies, and continuous access to the resources needed for sustainable services delivery (Cloete 2007). Following on this, **managerial sustainability** then logically comprises the achievement and maintenance of a combination of strong and committed leadership, clear and unambiguous strategic policy objectives, a broad-based consensus about these objectives, effective operational

policy implementation, coordination, monitoring, assessment and redesign, all durably within a specified long-term time frame (Cloete 2007). Sustainability in this sense also refers to the overall capacity of the organisation to deliver such services and adapt to changing circumstances over an extended period of time, maintaining and improving the services concerned. The World Bank (1992) regards sustainable development as “*development that lasts*”. Sustainability also includes the notions of flexibility and resilience in the face of setbacks (Snowden 2012, Bhamra 2015, Glemarec & De Oliveira 2012). Sustainability is therefore a manifestation of complexity and can only be assessed coherently from a trans-disciplinary perspective (Masis 2009, Du Plessis 2012, Du Plessis, Sehume & Martin 2014, Florin & Dedeurwaerdere 2014).

In 2012, the ‘Hakone Vision on Governance for Sustainability in the 21st Century’ was drafted. It “...calls for a fundamental restructuring of the IFSD that (i) clearly articulates the ‘aspirations’ of governance for sustainability including objectives and underlying values and norms, (ii) allows for meaningful and accountable participation by a wide range of ‘actors’ to develop solutions ‘from’ people ‘for’ people and (iii) creates an ‘architecture’ to include better configuration of actors, actor groups and their networks, as well as improved institutions and decision-making mechanisms” (Kanie, Betsill, Zondervan, Biermann & Young 2012. See also Swilling & Annecke 2012 and World Bank 1994).

This integrated perspective on effective sustainable development can be illustrated as follows:

Figure 1: Integrated systems approach to sustainability



Source: NFSD 2008:15

THE GLOBAL MEASUREMENT OF SUSTAINABLE DEVELOPMENT

The first explicit international initiative to emphasise the importance of governments not only achieving developmental outcomes but to consistently maintain these outcomes and even improve them over a longer term time frame in order to maintain a stable improvement trend, was the so-called Rio Conference of the UN in 1992 (UNECA 2011:15). The Rio Conference adopted the 1987 Brundtland Commission’s conception of ‘sustainability’ as

summarised above. One of the most original contributions of the Rio Cterm development improvements imply integrated, synchronised and balanced developmental outcomes in different sectors, and not only isolated economic, social, environmental and democratic developmental progress in a country, and the initiation of global implementation plans to achieve these outcomes.

The Rio Conference was also the culmination of a number of other related initiatives that already started in the 1970s, eg the Social Indicators Programme of the Organization of Economic Cooperation and Development (OECD), which integrated the environment in urban development systems (OECD 2000, 2001, Strange & Bayley 2008), and the creation of the Human Development Index by the UNDP to measure different facets of human and social development. The Rio Conference, however, concluded in 1992 that *"...(m)ethods for assessing interactions between different sectoral environmental, demographic, social and developmental parameters are not sufficiently developed or applied. Indicators of sustainable development need to be developed to provide solid basis for decision-making at all levels and to contribute to a self-regulating sustainability of integrated environment and development systems"* (UN 1992: Agenda 21 – Chapter 40).

After the 1992 Rio Conference, the UN Commission on Sustainable Development (UNCSD) approved in 1995 a project to develop a generic set of indicators for Sustainable Development (UNECA 2011:15). The most authoritative ongoing international experiments in measuring sustainability still occur in the UNCSD. The UNCSD was created in December 1992 to ensure effective follow-up of the UN Rio Conference on the Environment and Development, and to monitor and report on the implementation of those agreements at the local, national, regional and international levels. Its main objective is to make indicators of sustainable development accessible to decision-makers at the national level (UNECA 2011:15).

In 1996 the UNCSD started to promote the linear Pressure-State-Impact-Response (PSIR) model of the OECD, and developed a working list of 134 indicators that was distributed to selected countries worldwide for voluntary testing to measure global and national progress towards sustainable development (UNCSD 1996, 2001:312–313). The model's logic is that social and economic driving forces underlying human actions put pressure on the ecological system, bringing about changes both in the natural human environments (Cloete 2007). These changes have longer term impacts again both in the natural and human environments that necessitate more human intervention in response to these impacts to redress these negative consequences for sustainable development. The UNCSD, however, relinquished it five years later in favour of another approach, not because the model was flawed, but because it was in fact too rigid and sophisticated and needed data that just was not available, especially in developing countries (see also Bell & Morse 2001 for an analysis of some of the complexities involved in this approach, and Rotmans & De Vries 1997 for an interesting application of the PSIR model in a context of global change) (Cloete 2007).

In 2001 the UNCSD changed its approach to a non-linear, open ended 'shopping list' of product output and outcome indicators in the form of a systematic framework of four dimensions of accumulated capital (social, environmental, economic and institutional – see also Serageldin 1996 for a slightly different set of accumulated capital: natural, human, social and economic). The UNCSD indicator framework uses an integrated approach to sustainable governance and deals with both selected resource inputs and product outputs

and outcomes. It also contains indicators based on both normative and utilitarian issues relevant for an exercise of this nature. The most glaring weakness in the framework, however, is its superficial treatment of process-related indicators of efficiency and productivity. This is a serious flaw that needs to be remedied in future (Cloete 2007).

Another strategic development at the turn of the century that influenced the work of the UNCSD was the adoption by the UN of the Millennium Development Goals (MDG) Programme in 2000. It was an attempt to halve poverty in member countries by 2015 (UN Millennium Declaration 2000). *“The UN Millennium Plan is basically a pro-active political strategy document, in contrast to the CSD framework that comprises a reactive, expert-driven, technocratic programme to measure sustainable development. The Millennium Plan incorporates most elements of the CSD framework, but comprises rather an abbreviated selection of certain elements from it”* (Cloete 2006). The MDGs focus primarily on social and environmental issues and international partnerships to promote development in general. The eight main strategic MDGs aimed to eradicate extreme hunger and poverty, achieve universal primary education, promote gender equality and empower women, reduce child mortality, improve maternal health, combat HIV/AIDS, malaria and other diseases, ensure environmental sustainability and develop a global partnership for development. Ironically the MDGs ignore the integrated sustainability focus that had developed over a long time within the UN framework, as summarised above.

In 2014 progress towards achieving these main goals was mixed (UN 2013, UN MDG Report 2014:5–6). The number of extremely poor people and people without access to clean water were more than halved, but undernourishment and access to sanitation were only significantly improved. Gender parity in education was largely achieved but dropout rates remain high. Women in public positions improved. Child mortality was reduced by half and maternal mortality nearly by half. Malaria and TB deaths were halved and access to antiretroviral therapy (ART) for HIV-infected people increased dramatically. Ozone depleting substances have been nearly eliminated and terrestrial and coastal marine areas under protection have been increasing, but carbon dioxide emissions increased dramatically while more forests were lost, species endangered and fresh water became scarcer. International development cooperation, however, seemed to have improved (UN MDG Report 2014:5–6. See also WHO 2010 and UNIDO 2011).

In 2012 the UN Rio+20 meeting resolved to expand the relatively successful MDG programme into a fully-fledged Sustainable Development Goals (SDGs) Programme for the period 2015–2030 (UN 2012, UNDP 2012, Vandeweerd 2013, UN WG on SDGs 2014, UNEP 2015). The new programme contains a detailed series of indicators to measure progress towards achieving the 17 relatively ambitious stated SDGs below and an accompanying 169 targets by 2030 (UN WG on SDGs 2014:6, Le Blanc 2014:4):

- “GOAL 1 End poverty in all its forms everywhere*
- GOAL 2 End hunger, achieve food security and improved nutrition and promote sustainable agriculture*
- GOAL 3 Ensure healthy lives and promote well-being for all at all ages*
- GOAL 4 Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all*
- GOAL 5 Achieve gender equality and empower all women and girls*



- GOAL 6 *Ensure availability and sustainable management of water and sanitation for all*
- GOAL 7 *Ensure access to affordable, reliable, sustainable and modern energy for all*
- GOAL 8 *Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all*
- GOAL 9 *Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation*
- GOAL 10 *Reduce inequality within and among countries*
- GOAL 11 *Make cities and human settlements inclusive, safe, resilient and sustainable*
- GOAL 12 *Ensure sustainable consumption and production patterns*
- GOAL 13 *Take urgent action to combat climate change and its impacts*
- GOAL 14 *Conserve and sustainably use the oceans, seas and marine resources for sustainable development*
- GOAL 15 *Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss*
- GOAL 16 *Promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions at all levels*
- GOAL 17 *Strengthen the means of implementation and revitalize the global partnership for sustainable development”.*

The sustainable development indicators that have been used in the MDGs project and that are suggested for the SDGs one, are based on the UNCSD indicator framework. This is the most authoritative indicator framework for this purpose and should produce good results. However, Le Blanc (2014) assessed the envisaged SDG programme and states that “ *the proposed goals and targets can be seen as a network, in which links among goals exist through targets that refer to multiple goals... Our mapping also reveals some missing links among goals, compared to what our knowledge of the biophysical, social and economic systems would suggest*”. Langford (2012) concluded that “(t)he Rio Declaration 2012 establishes a number of criteria for this purpose but they remain at a general level and gloss over some hard trade-offs”. He developed a series of additional criteria to test the suitability of indicators that are used to measure progress towards achieving the SDGs (2012:19). The latest version of the SDG indicator set that the UN is considering is available in its recent report on the topic (UNSDSN 2015).

ECOSOC will assess the transition of the MDGs to the SDGs at a High-level Summit (HLS) during 6–10 July 2015. The HLS will provide global, regional and national policy guidance and recommendations on the steps needed for this transition from the MDGs to the SDGs (<https://sustainabledevelopment.un.org/intergovernmental/ecosoc>). The United Nations Summit to adopt the post-2015 development agenda will take place during 25–27 September 2015 in New York (<https://sustainabledevelopment.un.org/post2015/summit>).

An interesting application of the CSD indicator framework is in Brazil, where the most comprehensive National Sustainable Development Programme developed so far, can be found (Brazil 2004). In contrast to Argentina, the Brazilian government has developed and started to implement its programme in a pragmatic, bottom-up experimental approach over a number of years (Brazil 2002), and has only now realised the need for a systematic integrated measuring instrument. The strength of the Brazilian approach is that it is driven and coordinated by the Ministry of Planning, Budget and Management, and resulted in a very effective linkage of strategic sustainable development goals with governmental action plans and budgetary allocations for those action plans (Brazil 2002:46). A strong policy research and assessment culture in that Ministry (with the assistance of 400 full-time researchers), also provides systematic data compilation and evaluation capacity for the government, that can be used for strategic and integrated policy review and redesign experiments (Cloete 2007).

This organisational culture has resulted in the incremental emergence of a comprehensive integrated national sustainable development policy and programme monitoring and evaluation system that is very advanced even compared to those of highly developed nations in the first world. The social and economic dimensions are, however, dealt with in much more detail than the environmental and institutional dimensions of Brazilian society. The expansion of the Brazilian indicator framework in these sectors and the more effective integration of these sectors with the social and economic ones are at the moment the focus of attention (Brazil 2002:64, Cloete 2007).

The most recent progress in the conceptual development of systematic sustainable development frameworks can be found in Latin America. The Economic Commission for Latin America and the Caribbean (ECLAC) in Santiago, Chile has pioneered a programme on sustainability assessment that resulted in a conceptual systems model for sustainable development that is also applicable in other developing contexts (Gallopín 2003, Cloete 2007, Martínez 2007). Gallopín's model conceptualises sustainability as the durability of what he calls the essential identity of a whole socio-ecological system over time (Gallopín 2003:15, 19, 35). This implies the interaction between all sectors of human society and the natural environment within which humans live. Gallopín contrasts strong sustainability (where minimum critical values or capital must exist in each separate sector of society and the natural environment), with weak sustainability (where manufactured capital may in some cases be substituted for natural capital (Gallopín 2003:16). Sustainable development is conceptualised as systematic improvements in a desired direction over time (Gallopín, 2003:35; Cloete 2007).

ECLAC also assisted the government of Argentina to develop the most comprehensive systematic national Framework of Indicators for Sustainable Development yet devised for a single country, based on the UNCSO indicator framework (Argentina 2005). This report takes the systematic assessment of sustainability one step further by not only identifying concrete policy indicators for social, economic, environmental and institutional development, but also explicit indicators to measure the inter-relationships among these sectors (Argentina 2005:103, 2009). In contrast to other attempts that developed recommended integrated frameworks of indicators (eg OECD 2000 & 2001, EC 2001), this exercise has resulted in an authoritative measuring instrument that was designed on the request of the government of Argentina (and published under the name of the President of the Nation), for application throughout the Argentinian public sector (Cloete 2007). This instrument has provided the



Argentinian government with a potential regulatory framework blueprint with the authority and the legitimacy to drive national sustainability strategies in that country in a coherent and effective way if it is applied appropriately (Cloete 2007).

The ECLAC approach to measuring sustainable development is the most sophisticated framework that has been developed yet. However, it is a complicated measurement tool that requires highly sophisticated datasets of UNCSO-type indicators. Its main advantage is the Analytic Hierarchy Process (AHP) approach that measures only two variables systematically at a time, and that can therefore theoretically produce much more accurate results regarding the impact of one variable on another. It is a measurement approach that is probably only feasible in highly developed contexts that already have accurate, reliable, tested specialised datasets on the respective issues that are to be measured, available.

Other interesting international attempts to develop systematic indicators for measuring sustainability include those of Hart (1999), Hezri (2004), Hueting & Reijnders (2004), Prescott-Allen (2001), the OECD (2000 & 2001), the European Commission (European Commission 2001), Agenda 21 (UN-Agenda21 1992), Kirkpatrick, George & Curran (2001), the Network of Regional Governments for Sustainable Development (nrg4SD 2004a&b), the Community Indicators Project, Redefining Progress (RP 2002), SDI (2002), the International Institute of Sustainable Development's Dashboard of Sustainability (IISD 2000, 2002), the International Conservation Union's Barometer of Sustainability (IUCN 1997), and the World Bank's Performance Monitoring Indicators (World Bank 1996) (Cloete 2007). The United Kingdom's indicators are relatively comprehensive (UK DEFRA 2014), as is the UN's sustainable development measurement approach in Europe (UNECE 2009), while a recent innovative addition to this literature is Bhamra (2015) on the development of a general resilience framework to measure sustainable development.

Schoemaker, Hoekstra and Smits (2015) summarised, compared and assessed 55 sustainable development measurement systems that have developed over the last four decades internationally. It is the first and most comprehensive assessment of such measurement frameworks. Their summary provides the details of the initial economic measurement frameworks that dominated this scene until the early nineties, and were then replaced by more refined, integrated sustainability measurement frameworks especially since about 1995, based on the important work done by the UNCSO.

One of the most crucial new conceptual models towards a more integrated system of measurement manifested in the Stiglitz–Sen–Fitoussi Report published in 2009 (Stiglitz *et al.* 2009). It comprises “...the report of the Commission on the Measurement of Economic Performance and Social Progress which was led by Nobel prize winners Joseph Stiglitz and Amartya Sen, as well as the prominent French economist Jean-Paul Fitoussi. The main aim of the commission was to identify the limits of GDP as an indicator of economic performance and social progress, and to assess the feasibility of alternative measurement tools”. This report led to a report by the OECD and EU Conference of European Statisticians (EUCES) on how to refine the measurement of sustainable development, which is the most recent and authoritative model for this purpose, competing with the UNCSO approach. It identifies 20 cross-sectoral themes based on the three pillars that constitute the foundations of the Brundtland report's narrow conception of sustainable development that excludes the institutional and governance cluster (EU 2013, UN 2014). There is clearly a need for further harmonisation of these competing approaches to the measurement of sustainable

development. This process is in progress through high-level discussions at international level among the different stakeholders on this issue. The UNCSD approach still seems to be more relevant, given its wider focus that incorporates the crucial institutional governance cluster of indicators in a much more balanced way.

MEASURING SUSTAINABLE DEVELOPMENT IN AFRICA

This section will assess very briefly the progress with and measurement of sustainable development in general on the African continent and then in South Africa in particular.

Measuring sustainable development in Africa in general

Development in Africa has always been very problematic, given the colonial legacy of most nations on that continent which resulted in disfunctional international boundaries across the continent and large degrees of skewed and underdevelopment and even exploitation in many countries. This situation was aggravated by successive authoritarian regimes after decolonisation in most African countries which mismanaged resources and development programmes for the benefit of a small group of ruling elites only. Although this situation has improved since the 2000s, bad governance still plague many African countries (*Financial Times* 2013, Okolo 2014, Africa Progress Panel 2015).

The 2012 UNECA Report on progress with sustainable development in Africa (2012:6–7) summarised the main problems that the 2002 WSSD identified, as:

1. *“A fragmented approach towards sustainable development that de-coupled environment and development.*
2. *Lack of integrated national policies and approaches in the areas of finance, trade, investment, technology, and sustainable development.*
3. *Continuing unsustainable patterns of consumption and production.*
4. *Inadequate financial resources and technology transfer from developed countries”.*

The report concluded that *“(f)irst, there was an urgent need for more countries to convert international obligations into national policy on sustainable development. Second, the transition from normative standards to operational programmes needed to be associated with the creation of new knowledge (through scientific and technological research and the integration of indigenous knowledge) as part of a larger societal problem-solving process. Thus, there was a much greater need for the application of new knowledge and innovative means, and for the reorientation of technology to respond to sustainability challenges”* (UNECA 2012:7).

At the time of the Johannesburg Summit (2002), 95% of African countries had already ratified the Rio Conventions on Biodiversity, Climate Change and Combatting Desertification while a whole range of African countries were actively pursuing different sustainable development activities. The transformation of the OAU into the AU in 2001, and the establishment of NEPAD created stronger implementation capacity: *“...the New Partnership for Africa’s Development (NEPAD),...an AU programme that came into being in 2001, is a*



pledge by African leaders to address the continent's multi-faceted development challenges for the achievement of the MDGs and sustainable development. It recognizes that poverty eradication and improved living conditions for the majority of the population are essential for sustainable development. NEPAD outlines the responsibility of African leaders to articulate national and regional priorities and to manage development by engaging Africans in leading and owning their development" (UNECA 2012:7).

However, the 2012 UNECA report found that a series of obstacles still prevents African countries ten years later to make significant progress with sustainable development (see also UNDESA 2008). The report's main findings on each of the four sustainable development pillars are the following:

- **Sustainable Institutions and Good Governance:** *"The dark years of personalized power, prevalence of unaccountable and authoritarian governments, violation of human rights, rampant corruption, absence of the rule of law, massive state intervention in the economy and lack of decentralization of responsibilities and resources are receding in Africa. The region is today making strides in the building of democratic institutions and will continue to pursue efforts aimed at good governance within the context of the activities of AU (and) the African Peer Review Mechanism (APRM)..."* (UNECA 2012:10. See also *Financial Times* 2013a).
- **Sustainable Economic Development:** *"...(O)ver the past decade, the unweighted average growth rate was about the same for Africa and Asia. Given current prospects, there is a strong likelihood that Africa will surpass Asia in growth in the next decade... In 2010, Africa's average growth rate rose to 4.9 per cent, from 3.1 per cent in 2009. ... The political developments in North Africa were projected to have a depressing effect on the continent's growth, leading to a fall to 3.7 per cent in 2011, with the possibility of accelerating to 5.8 per cent in 2012. Despite the return to growth, generally the region still faces enormous development challenges...this will require significant policy shifts, as well as financial and technical resources, to ... avoid a rise in poverty levels"*(UNECA 2012:12). De Loitte (2012) confirmed this assessment: *"Africa's middle class has tripled over the last 30 years, with one in three people now considered to be living above the poverty line—but not among the wealthy. The current trajectory suggests that the African middle class will grow to 1.1 billion (42%) in 2060. As African economies are growing (7 of the 10 fastest growing in the world are African), the wealth is trickling down and Africa now has the fastest growing middle class in the world"*. The Africa Competitiveness Report (2013) contains useful data on progress with African development.
- **Sustainable Social Development:** *"The key elements in the analysis of sustainable social development include the extent of social sector development, poverty eradication, and the level of inequality. The region recorded a number of success stories in the achievement of the MDGs and is on track. A number of countries made good progress, but overall progress is somewhat slow. Nonetheless, the evidence is strong and encouraging that, with the right policy mix, efficient use of resources, improved governance and enhanced and sustained international support, the region will achieve many of the MDGs"* (UNECA 2012:14).
- **Sustainable Environmental Development:** *"More than 30 per cent of global dry lands are located in susceptible dry land regions in North Africa, the Sahel and the southern*

part of Africa. They cover almost two billion hectares in 25 countries, representing 65 per cent of the continent's land mass. Over 400 million people live in the dry lands, the majority of them the rural poor with an annual population growth rate of three per cent. The dry land is under threat from deforestation, soil erosion, nutrient mining, recurrent drought and climate change, potentially resulting in land degradation and desertification, and aggravated poverty.. In spite of the progress in the implementation of commitments around the environmental pillar, there are monumental challenges requiring urgent attention. Among the most visible is the challenge of achieving balanced integration of the three pillars of sustainable development in planning, budgeting and implementation of plans and programmes. There is a pressing need for national and sub-regional economic policies adequately to address environmental consequences. Mechanisms and administrative systems dealing with environmental issues are still weak. There is still insufficient public awareness about the real causes and magnitude of environmental problems and the consequences of not dealing with them. Also worthy of mention is inadequate forecasting of emerging environmental problems” (UNECA 2012:22).

The authoritative UNECA report on sustainability in Africa concludes that “...little progress has been made to foster a balanced integration of the pillars in national and subregional integration strategies, however. In order to exploit fully the benefits of interlinkages, the region needs appropriate institutional and strategic frameworks and supporting systems that promote a holistic and integrated approach to development challenges. Global, regional and national level strategic responses to the MDGs provide invaluable opportunities to harness the synergies of the pillars of development. This report calls for strengthened interlinkages among the pillars in order to achieve the goals of sustainable development” (2012:26) . This conclusion emphasises in no uncertain terms the need for more effective good governance and management in African countries in order to ensure that sustainable development on the continent is fast-tracked. The report suggested detailed recommendations for improving measurable, integrated, sustainable development in Africa, all built around better leadership, management and governance in African countries (UNECA 2012:30. See also Ahmed & Hanson 2011 a&b, Swilling 2011 & 2013, Master of Finance 2014, Mutunga, Zulu & De Souza 2012, Borchert 2015, Africa Progress Panel 2015, ISS 2014).

In addition to the UNCSD Sustainability Framework which is the most authoritative measuring index for this purpose in Africa and which is used by UNECA, additional useful sustainability indices include the general Afrobarometer, the Mo Ibrahim African Governance Index and Alison (2014) questioning good governance progress in Africa, the African Sustainability Barometer (*Financial Times* 2013b) for gauging the sustainability of business operations in Africa, and the general Democracy Index of the *Economist* (2014).

Measuring sustainable development in South Africa

The draft South African National Framework for Sustainable Development (NFSD) was published in 2007 (NFSD 2007). This was the first attempt to develop such a holistic policy framework for this country. It was necessitated by the resolutions taken during the so-called Johannesburg Summit on Sustainable Development during 2001. Annex 2 of that framework



contains a series of indicators to measure progress towards sustainable development goals in different sectors in South Africa.

The approach that was followed in the report was based on the CSD model, identifying the four main sectors within which sustainability would be pursued. These are the social, economic, environmental and institutional sectors. Dynamic indicators were conceived, indicating either positive or negative changes in policy outputs and outcomes over a specified period. The use of a combination of dynamic indicator ratios based on both stand-alone indicators and composite indices that reflect change over time is an important strategic departure from the traditional use of stand-alone, static, snapshot indicators that provide a picture of a given moment in time and which is outdated immediately after the measurement is taken (Rabie 2014). The different types of indicators used, accommodate and reflect the complexity of the phenomena under investigation.

At the time, these indicators, however, still had to be synchronised with the general National Indicator Initiative (NII) which formed part of the Government Wide Monitoring and Evaluation System (GWM&ES) coordinated by the Presidency (SA-GWM&ES 2005). Unfortunately this never happened because of bureaucratic competition between the Presidency and the Department of Environmental Affairs (DEA) (the lead department of the NFSD). In the end, the final approved NFSD did not contain any additional sustainability indicators (NFSD 2007. See also Cloete 2007, Cloete, Møller, Dzengwa & Davids 2003).

Core Sustainability indicators for South Africa

The following list of potential indicators to assess progress towards achieving sustainable development in South Africa is contained in Annex 2 of the 2007 draft of the NFSD (see also Cloete 2005 & 2006 for background working papers that lead to the development of this list of potential indicators):

Potential social sustainability indicators	Potential economic sustainability indicators
<ul style="list-style-type: none"> • Change in % of population living below poverty line • Change in gender adult literacy ratio • Change in Gini-index of income inequality • Change in % of total income & expenditure of 5th quintile • Change in ratio of average female wage to male wage • Change in % of black senior & middle managers/ professionals or ownership of public organisations & businesses • Change in % of poor households (< R1 100 pm) access to free basic services: water, sanitation– including solid waste removal, health & electricity) • Change in nutritional status of children • Change in mortality rate under 5 years old • Change in life expectancy at birth • Change in contraceptive prevalence rate 	<ul style="list-style-type: none"> • Change in real per capita growth • Change in municipal financial viability ratio • Change in capital formation/GDP • Change in debt to GNP ratio • Change in balance of trade in goods and services • Change in role of investments in GDP • Change in tax collected as a percentage of GDP • Change in consumer price index • Change in changes in land tenure and land utilization patterns • Change in annual energy consumption per capita/ GDP • Change in proportion of renewable energy sources of total supply of primary energy • Change in general waste produced per income group per year

<ul style="list-style-type: none"> • Change in TB cases & medication use • Change in adult literacy rate • Change in HIV and AIDS prevalence rate • Change in children reaching grade 5 of primary education • Change in adult secondary education achievement level • Change in cholera, diarrhoea & typhoid & malaria prevalence rates • Changes in formal-informal housing ratios • Change in % of household access to secure tenure • Change in % of population with access to basic health services • Change in % of households satisfied with their quality of life • Change in population of urban formal and informal settlements • Change in population growth rate • Change in dependent population growth rate • Change in youth between 18 and 24 years who do not study nor work • Change in delinquency per 10 000 of the population. • Change in number of recorded crimes per 100 000 population • Change in number of active community organisations per size of community • Change in social welfare spending as % of total budget 	<ul style="list-style-type: none"> • Change in unemployment rate: narrowly or widely conceived • Change in waste recycling and re-use • Change in access to public transport • Change in internet connections per 1 000 of the population • Change in electricity network coverage • Change in water supply ratios: private homes, businesses, agriculture and industry • Change in main telephone lines per 1000 inhabitants • Change in pc's per 1000 of population • Change in road & rail infrastructure per capita • Change in expenditure on research and development as a percent of GDP
Potential environmental sustainability indicators	Potential institutional sustainability indicators
<ul style="list-style-type: none"> • Change in emissions of greenhouse gases as ratio of GDP/per capita • Change in consumption of ozone depleting substances • Change in concentration of criteria air pollutants in urban areas • Change in ratio of fertilizer and pesticide consumption to agricultural produce • Change in land affected land degradation and desertification • Change in land productivity versus potential • Change in arable and permanent crop land area • Change in wood harvesting intensity • Change in exploitation of fossil fuels for the generation of energy • Change in algae concentration in coastal waters 	<ul style="list-style-type: none"> • Existence of a National Sustainable Development Strategy • Change in democratic participation and accountability: degree of free and fair elections (including voting %) and public acceptance of results, political competition, composition (GWM&ES, WB-KKZ, Mil 12-gender, IPU) & accountability of Parliament • Change in instability (legitimacy of government): democratic nature of transitions of power, levels & nature of political protest, political & ethnic violence • Change in ethics: Codes of conduct, existence and effectiveness of institutional arrangements to deal with corruption, number of corruption cases, sources of exposure of corruption, protection of whistleblowers • Change in regulatory quality: ease of access to services and opportunities, individual and company tax policy and patent rights protection

<ul style="list-style-type: none"> • Change in annual withdrawal of ground and surface water as a percent of total available water • Change in availability of surface water (dams etc.) per person <p>Change in BOD and COD in water bodies</p> <p>Change in salinity levels</p> <p>Change in concentration of faecal elements in freshwater</p> <ul style="list-style-type: none"> • Change in abundance of selected key species • Change in relationship between commercial fishing and the maximum permitted • Change in protected area as a % of total country surface area • Change in % of businesses that implement measures for clean production • Change in number of ISO 14 001 certificates issued • Change in public spending on the environment as % of total budget 	<ul style="list-style-type: none"> • Change in rule of law: Protection and exercise of basic rights, cases referred to higher court, predictability of the judiciary, legitimacy of judgements in popular perceptions, enforceability of private contracts, justice for the poor, human rights enforcement, Number of proceedings brought before the Public Protector • Change in judicial management index: Violent crimes, conviction rates, prisoner population, % awaiting trial prisoners, complaints about police brutality, crime victims satisfaction, community police relations, case time logs, state territorial integrity • Change in govt effectiveness and efficiency: transaction costs, service quality, bureaucratic delays, public satisfaction with services • Change in participation in and implementation of global agreements • Change in good governance goals: Efficiency, effectiveness, productivity, responsiveness and participation, equity, transparency, accountability, flexibility, integration, innovation. • Change in good governance outcomes: Degree of vision and goal achievement, affordability, fairness, developmental, stability, democracy, empowerment, citizen satisfaction, adequacy and future availability of remaining resources to meet desired outcome levels within specified time frames, review of lessons learnt.
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As a result of the lack of interest of the South African Presidency in 2007 to include explicit sustainability indicators into its final National Development Indicator set, the above draft indicators were never fully developed in terms of the conceptual dimensions of sustainability summarised above. The institutional indicators suffered the most as a result, because they only included a rough adaptation of the World Bank's governance indicator indices (Cloete 2006). A more comprehensive set of indicators to measure the different dimensions of sustainability has since been developed by the author (Cloete 2007). These indicators are generic and applicable with slight refinements in different national contexts.

In 2011, however, the South African Cabinet approved a three year *National Strategy for Sustainable Development and Action Plan:2011–2014* that provided a programme of action to promote 5 strategic priority areas of the NFSD during this period (NSSD1 2011). This strategy includes a restructuring of the South African governance system and building capacity to clarify roles in attempting to achieve the NSSD1 goals. The document also contains a range of indicators for the 5 identified strategic priorities which are integrated planning and implementation systems, sustaining ecosystems and natural resource utilisation, a green economy, sustainable communities and responding to climate change. These indicators are still very unsystematic and incomplete. They need to be significantly revised and integrated into the existing development Indicators of the Presidency as well as the environmental indicators of the DEA, which still exist separately and parallel to the NSSD1 indicators. The governance of sustainability in South Africa is therefore still largely inadequate.

The South African government has also recently initiated another attempt to develop explicit sustainability indicators (NPC 2011). This exercise is currently in progress and constitutes an important project within the UN's new SDG programme. Its outcomes are regarded with high anticipation by specialists in this field.

CONCLUSIONS

The need for balanced and integrated development outcomes across the globe is generally accepted as a prerequisite for sustainable human progress. The 1987 Brundtland Report kick-started a major initiative championed by the UN to achieve this strategic global goal. This initiative is gaining strength, as the positive and negative global impacts of human activities across the world in social, economic, environmental and institutional sectors of society become clearer. Under the auspices of the UN, there is a clear international trend developing towards the measurement of progress towards achieving sustainable development in different sectoral dimensions. Sustainability assessment has to focus on all of these dimensions in order to achieve an accurate perspective on the durability of these envisaged policy interventions. An emerging good practice is further to assess sustainable development more accurately within a complexity and resilience paradigm.

Sustainable development in Africa is a much more elusive target than in many other regions of the world, because of the developmental backlogs and unfavourable conditions that still exist in most African countries as a result of colonial exploitation and post-colonial bad governance and management in many countries on the continent. This situation, has, however started to change for the better over the last decade, and indications of slow but steady improvements in developmental levels in many African countries are beginning to emerge. This is, however, unfortunately still not the general norm, and some African countries are still in very weak positions as a result of intractable internal and external conflicts, and bad governance and management that still result in continuous socio-economic exploitation of the masses and environmental exploitation of the natural environment by governing elites, causing extreme poverty.

Sustainability assessment is a fast developing, emergent sub-field of higher order evaluation management. The measurement of sustainable development across the globe has established a strong foundation with the work of the UNCSO, ECLAC and, more recently also with the work of the CES in the EU. However, current sustainability indices still differ much in terms of focus and approach, and in most cases tend to focus primarily on socio-economic and environmental sectors and neglect the different institutional dimensions of good governance and management that are needed to stimulate and manage balanced, integrated development in the main societal sectors.

The systematic monitoring, measurement and evaluation of any programme performance further require a number of enabling conditions, among which the existence of reliable, regularly updated, quality data on the issues concerned is an important prerequisite. This requirement is infrequently met in developing nations, especially in Africa. The result is that effective sustainability measurement in Africa in general is still largely at the rhetorical level, with the important exception of South Africa, where a comprehensive system of monitoring and evaluation of governmental programmes has been institutionalised since 2005 and has



slowly started to take root in a top-down way, driven and coordinated by the Presidency. This top-down model has also now been emulated in a number of other African countries and seems to be the most effective strategy to fast-track the implementation of a more rigorous evaluation of the results of public sector interventions in those societies.

A comprehensive draft set of sustainability indicators has further been developed in South Africa to measure the South African National Framework for Sustainable Development, but has so far not yet been implemented. A new initiative to do that, is currently under way. This exercise has the potential to establish a generic framework of sustainability indicators that would also be applicable with some customisation in other national contexts.

The dedicated implementation by the UN of its new SDG programme also has the potential to fast-track progress towards the achievement of these goals by 2030, although a range of enabling conditions will have to be met before full goal achievement will be possible.

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