Tracking the SDGs at Whole-of-Society Levels: A Systems Thinking Approach

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ABSTRACT

This paper draws from research and development (R&D) work in the use of Systems Thinking in the design, strategic planning, implementation, and monitoring and evaluation (M&E) of development initiatives. A ground-breaking book based on findings from the work was published in April 2015. It was shown that the performance of an individual is to be considered in the context of the entity in which he/she is engaged. The entity can be a project, a programme, a department, an institution, an organization, or even a country. A synthesized African country, Africania, was introduced and its performance profile given by means of a one-page Results Based Management Logical ScoreCard (RBM-LSC) ©. This depicted the intervention logic / theory of change of development on just one page.

In particular, the vision for development in Africania was given as: 'Increasing number of Africanians enjoying dignity, peace and prosperity'. Further, it was shown that for the vision to be achieved, Africanians would have to be responsibly engaged in seven interrelated areas of value-added activities. The seven areas identified were: gainful employment, health, food security, enterprises, utilizing intellect, sustainable use of the natural and built environment, and governance with integrity. These seven areas depicted the mission of development in Africania. It is not surprising that these areas are interconnected / interrelated, since Africania is indeed a system. A subsequent study covering the first of the value-added human endeavors, namely gainful employment, was published in July 2018.

Important knowledge that has emerged from the R&D work includes the fact that the RBM-LSC© is consistently applicable across all walks of life: from the individual project level, through country level, and even up to the continental level and beyond. For instance, it has been used to interrogate findings from the well-publicized recent assessments for reform of the African Union in the context of both Agenda 2030 (The SDGs) and Agenda 2063 (The Africa we want). It has also been used to examine the performance of entities at various societal levels – households, primary schools, secondary schools, universities, informal sector, and formal sector. The paper highlights the use of the RBM-LSC© to track performance in the SDGs. The frameworks and modelling used are presented for cases from various societal levels. The exciting implications of these in reducing the efforts necessary for monitoring and evaluating progress in achieving the SDGs, while enhancing delivery, are highlighted.

INTRODUCTION – SOME BACKGROUND

This paper is based on research and development work which started in the early 1980's with a fascination with Operations Research (OR), modelling, optimization, simulation and systems dynamics. The original work was primarily for the development of improved systems for evaluation, design, planning and production management in the mining industry. A first

exploration at using the various tools and techniques from OR in the 'national development realm' was undertaken by the early 1990's. At that time the R&D work shifted to the design, planning, monitoring and evaluation of development projects and programmes, primarily making use of *Systems Thinking*[1]. The overall goal of the work then was 'poverty alleviation'. Much have changed since then, with the emphasis now being on 'eradication of extreme poverty' as a major indication of progress in development.

SOME EARLY FINDINGS AND SUBSEQUENT DEVELOPMENTS

Major findings from the R&D work by the mid 1990's included the following, among others: (1) Confirmation / validation of the systemic nature of development initiatives and interventions, and hence the increased efforts at using 'systems thinking'; (2) The tendency for 'information overload' with documentation on development, accompanied by vagueness and contradictions which limited the achievements of results; and (3) The ever present requirement for monitoring and evaluation (M&E) in order to establish whether given development initiatives have achieved (or are achieving) positive results. A clear methodology, including several tools, have also been developed from the work, primarily to address challenges inherent in the foregoing findings[2].

The basic thesis behind the methodology is that Engineering and OR considerations can be brought to bear on planning processes. Hence several details can be routinely, even mechanistically, handled with the aid of formulae / models, templates and checklists. The planner and the manager can then be free to devote more time and effort at tackling aspects of their projects and programmes which are not easily standardized or quantified. This would evidently lead to better planning as the basis for improved management.

The tools, techniques and frameworks were developed, tested and used on/for scores of development projects and programmes across more than twenty African countries. The sectors covered included: agriculture (crops, livestock), social forestry, renewable energy, water and sanitation, education and training, mining, and organizational development. Elements of Systems Thinking employed in, and developed from the work, included the *Principles of Systems Performance*, and basic systems models, such as the *Input-Output* model and the '*Systems-Ware*' model. In addition, derived systems models such as: the *Systems-ware model of the Logical Framework Matrix* (= *Systems-ware LogFrame*), t*he Results Based Management Logical ScoreCard (= RBM-LSC)*©, and *the 3-Rights Scheme for RBM Performance Enhancement (= 3-Rights M&E)* were also developed, tested and implemented[3],[4],[5]. An ever-present question then was: 'how does all these fit in with development of an African country?' With usually two or three projects over the years in given African countries, the country specific data was inadequate to correctly model development of any country. The decision was then taken to use ALL the data to model a 'Synthesized African Country – Africania', using the Results Based Management Logical ScoreCard (RBM-LSC) ©, (**Figure 1**).

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[1] Senge, P. M., *The Fifth Discipline: The Art and Practice of the Learning Organization*, London: Random House Business Books, 1990.

[2] Wright, E. A, *Practical project planning*, Harare: UZ Publications, 1998.

[3] Wright, E. A., and B.S. Wright, *Results Based Management – A Systems Framework*, in Hussein, J. (Ed), Proceedings 14th Southern Africa Regional Review and Planning Workshop, Harare: SADC/ICRAF, 2001.

[4] Wright, E.A., *Geoinformation for Poverty Alleviation*, in: Zeil, P, and Kienberger, S. (Eds) Geoinformation for Development, Heidelberg: Wichmann, 2007.

[5] Wright, E.A., *The Rule-of-3 in Results-Based Performance Management – A Systems Thinking Approach*, Wandsbeck: Reach Publishers, 2015.

The RBM Logical ScoreCard©: Development in Africania		
#	**Results-Chains**	**Performance Indicators / Sources of Verification**
	Impacts (=Vision)	**From Year…..**
5	Africanians are enjoying **dignity**, **peace** and **prosperity**.	Africanians enjoying **dignity**, **peace** and **prosperity** increased by at least 10% p.a.
	Outcomes (= Mission)	**From Year…**
4	Africanians are responsibly engaged (acting with integrity) economically, socially (politically) and environmentally at personal / household; regional (village, town, province); national and international levels.	Africanians benefiting increased by 10% p.a. **M1:** Gainful employment; **M2:** Health services; **M3:** Food security; **M4:** Utilising intellect; **M5:** Viable enterprises; **M6:** Use of natural/built environment; & **M7: Governance with integrity**.
	Outputs (= Deliverables)	**From Year…**
3	**Out-1**: ***[Hardware]***: Infrastructure for the **Ms**[6] in place and their correct use actively promoted.	**OD1:** Hardware in place increased by at least 10% p.a., say.
	Out-2: ***[Software]***: Enabling laws, regulation, policies, etc. for the **Ms** in place and their correct use actively promoted.	**OD2:** Software in place and considered equitable.
	Out-3: ***[Human-ware]***: Africanians have gained increased awareness, knowledge and skills in the **Ms**.	**OD3:** Africanians with increased awareness knowledge and skills in the **Ms** increased by at least 10% p.a.
	Out-4: ***[Management]***: Africania is efficiently and effectively managed.	**OD4:** Africania managed within budgets and plans.
	Activities (Processes)	
2	**Act-1**: ***[Hardware]***: Design, plan and build (or facilitate acquisition) of infrastructures / facilities for the **Ms** and operate and maintain these as necessary. **Act-2**: ***[Software]***: Review, develop, adopt and operate appropriate policies, rules, and regulations for the **Ms.** **Act-3**: ***[Human-ware]***: Review, design, plan, adopt and operate awareness raising, education and training programmes for the **Ms.** **Act-4**: ***[Management]***: Undertake planning, HRM, PR, mobilisation of funding, implementation and Monitoring and Evaluation (M&E).	
	Inputs / Resources	
1	• Facilities and materials; • Funding from national and international sources; procedures and methods; Laws, policies, etc. • Appropriate knowledge and skills.	

Figure 1: RBM Logical ScoreCard© Development in Africania

[6] **M's**: The **seven** sets of Measures for the Mission / Outcomes of development.

THE RESULTS BASED MANAGEMENT LOGICAL SCORECARD (RBM-LSC) ©

The Systems-Ware LogFrame[7] is the predecessor of the (RBM-LSC) ©. The (RBM-LSC) © has also been used as a tool for ex-ante evaluations[8]. Important details about the (RBM-LSC)© shown in Figure 1 include: (1) It is on just one-page, reducing information overload, and allowing 'everyone to read from the same page'; (2) It shows the intervention logic of development in Africania by a series of interlocking results-chains; namely: inputs to activities to outputs to outcomes (mission) to impacts (vision); and (3) The seven M's captured for the outcomes (mission) are a compact presentation of what Africanians mean when they consider (sustainable) development. The mission of development is that Africanians are responsibly engaged with: Gainful employment; good health care services; food security; effective use of intellect; viable enterprises; sustainable use of the natural and built environment; and governance with integrity. The 'Africania we want' is one in which equitable progress is made in ALL the seven Ms. Failures to progress in some of the Ms will tend to negate gains made in the others (principles of systems performance). The 7Ms are interconnected / interrelated, as Africania is a system.

Overall, what benefits do Africanians get to enjoy if they are responsibly engaged and making equitable progress with the seven Ms? Answer: Africanians get to enjoy dignity, peace and prosperity – the vision of development (see **Figure 1**). These three go together (systems!). Dignity is personal wellbeing (= human-ware). Peace is interpersonal wellbeing (= software). Prosperity is material wellbeing (= hardware). The vision is, of course, the highest attainable results in the results-chains of development.

THE 3-RHIGHTS SCHEME FOR RBM PERFORMANCE ENHANCEMENT

Evaluators are generally familiar with the traditional Project Cycle Management scheme (**Figure 2**), or one of its variations. The evaluator understands that monitoring occurs during implementation, and that evaluation does NOT come ONLY after implementation.

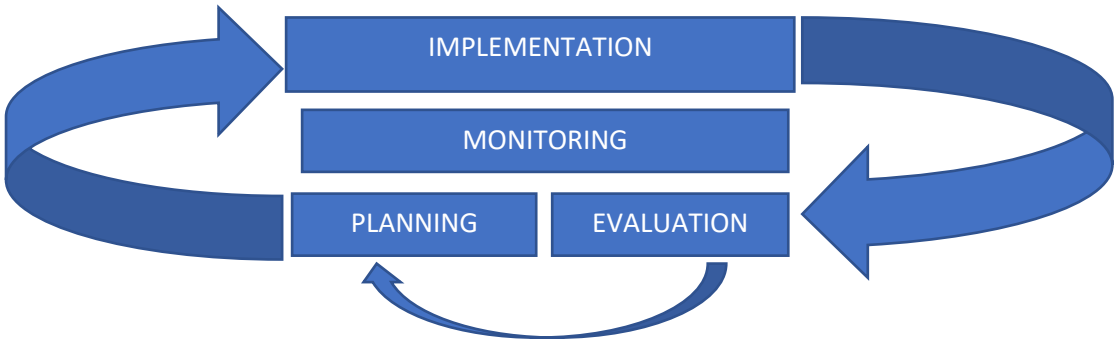


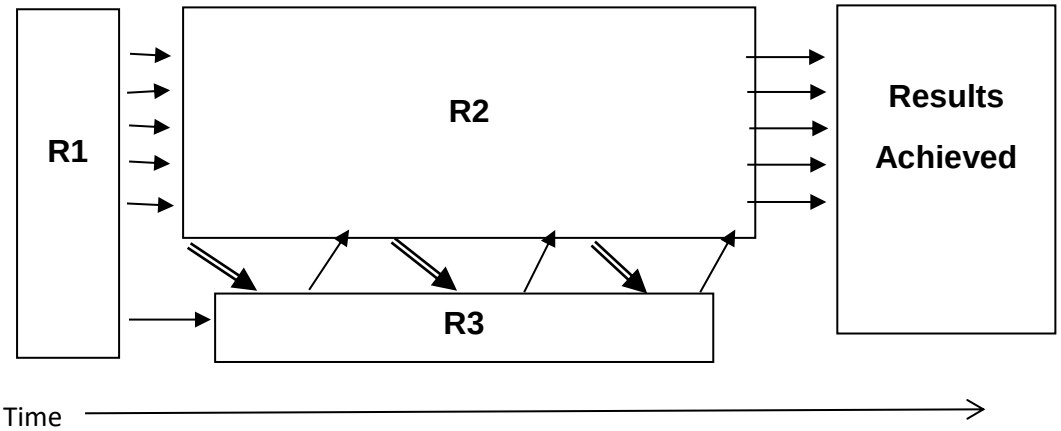
Figure 2: The Traditional Project Cycle Management Scheme

[7] Wright, E.A., *The Re-design of an integrated water and pollution management programme using the systems-ware model of the log frame*, Physics and Chemistry of the Earth, Amsterdam: Elsevier, 2003.

[8] Wright, E.A., and G. Geurts, *The RBM Logical ScoreCard: A Tool for evaluating programme logic*, Joint Conference European Evaluation Society and the United Kingdom Evaluation Society, London: 2006.

However, non-evaluators almost naturally take the above sketch to mean that evaluation comes ONLY after implementation. This point was brought home to this author some two decades ago by a senior manager in an organization, who said: "*For us, evaluation COMES AFTER implementation! What is all this talk about evaluation before the completion of a project?*" And, he then emphatically referred the author to the page containing the above sketch in the organization's official programme management manual. The senior manager had, of course, not understood the sketch the same way an evaluator would. And, by waiting for the 'end of implementation' before evaluating project/ programme performance, opportunities for right implementation (achieving results) are squandered.

After the said encounter, the author invested some efforts in making project cycle management schemes understandable to both evaluators and non-evaluators. The essence is to place the elements of the project cycle along a timeline showing clearly what the reality is, namely: Planning (R1) precedes implementation; Implementation (R2) is accompanied by different evaluations (e.g.: mid-term evaluation and the end-of-project / programme evaluation); There may also be ex-ante evaluation, completed just before, or at the start of implementation of the project / programme; Implementation is normally accompanied by monitoring (R3); and, a pre-requisite for effective monitoring and evaluation (M&E) is the M&E plan or framework (R1). Arranging the above along a timeline gives the 3-Right Scheme for performance management as shown in the sketch below (**Figure 3**)[9].



1st Right: **R1**: Design / Planning of Activities for both Programmes / Projects and M&E;
(Do we know the **Right** things and have planned to implement them?)

2nd Right: **R2**: Implement Programme / Project Activities;
(Are we doing (the right) things **Right**?)

3rd Right: **R3**: Implement M&E Activities, Discuss Findings and agree on Steering;
(Are we learning the **Right** lessons?)

Figure 3: The3-Rights Scheme for Performance Management (3-Rights M&E)

The scheme makes it possible to better visualize how each part interacts with the others. Interestingly, the RBM cycle shown in **Figure 3** is nothing but an 'implementation system' or framework – a derived systems model. The various parts / components must be present and functioning satisfactorily for the system to deliver results.

[9] Wright, E.A., *The Rule-of-3 in Results-Based Performance Management – A Systems Thinking Approach*, Wandsbeck: Reach Publishers, 2015.

USING THE METHODOLOGY TO KEEP TRACK OF PROGRESS WITH THE SDGs

The methodology has also been used for two major works involving the SDGs. The first was researching into the positioning of evaluation for both the African Union's Agenda 2063 and the UN's (World's) Agenda 2030. The second was examining the SDGs 'on the ground'.

Positioning Evaluation for Assessing Agenda 2063 – The Africa We Want

A meta-evaluation within the R&D work found a consistent pattern in evaluation findings for all walks of life: from the individual project level, right through the national arena, and even up to the continental level. For instance, findings from the well-publicized recent assessments for reform of the African Union[10] include, among others: (1) The chronic failure to see through African Union decisions has resulted in a ***crisis of implementation***; and (2) A perception of ***limited relevance [of the AU] to African citizens***. These challenges are traced to 'missing components' in the 'system' designed to constitute Agenda 2063. The 'responsibilities' of the African citizen had not been explicitly articulated, and hence could not be mobilized. The use of (RBM-LSC) © for the 1st Right of the 3-Rights M&E scheme helped to identify such missing components. Mention is made of this here because the same missing component of 'responsibility' (of the person on the ground) is found in the 'system' design of the SDGs.

Interrogating these findings in the context of both Agenda 2030 (the SDGs) and Agenda 2063 (The Africa we want) highlighted several implications for evaluation. These included: (1) The need for unified country evaluation systems to address both Agendas simultaneously, as the two are closely aligned; (2) The need for robust ex-ante evaluations to facilitate improved design and planning, or to avoid embarking on initiatives that would not effectively contribute to positive results; and (3) The use of on-going monitoring and evaluation (M&E) as integral parts of relevant action-oriented implementation systems. This last requires the M&E function to keep track of implementation on an on-going basis as indicated by the 3-Right M&E scheme.

Tracking the SDGs 'on the Ground'.

In researching the achievements of development results 'on the ground' we have been encouraged by a United Nations report[11]. Dignity, peace and prosperity rang a bell. We have seen these in the course of the R&D work. More specifically, dignity (human-ware), peace (software) and prosperity (hardware) have been tagged as the vision of development[12],[13] of Africania. The vision is increasingly reached when the peoples of Africania are achieving results with / on the 7Ms. A mapping was undertaken to retrofit the 17 SDGs to the 7Ms (**Figure 4**). The alignment shown is spectacular and the implications exciting. This is not surprising as the aspirations of the peoples of Africania are clearly identical to the aspirations of the peoples of the world. The 'fit' between the 17 SDGs and the 7Ms provided a compact framework as a basis for in-depth assessment of performance in various development endeavors, the first of which was assessing employment (M1)[14] in Africania.

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[10] Kagame, P., *Final African Union Combined Report_2801207*, Addis Ababa: African Union, 2017.

[11] United Nations, *Repositioning the United Nations development system to deliver on the 2030 Agenda: our promise for dignity, prosperity and peace on a healthy planet A/72/684-E/2018/7*, New York: UN, 2017.

[12] Wright, E.A., *Geoinformation for Poverty Alleviation*, in: Zeil, P, and Kienberger, S. (Eds) Geoinformation for Development, Heidelberg: Wichmann, 2007.

[13] Wright, E.A., *The Rule-of-3 in Results-Based Performance Management – A Systems Thinking Approach*, Wandsbeck: Reach Publishers, 2015.

[14] Wright, E. A., *Job Creation for Self (and Others) – A Systems Thinking Approach*, Wandsbeck: Reach Publishers, 2018.

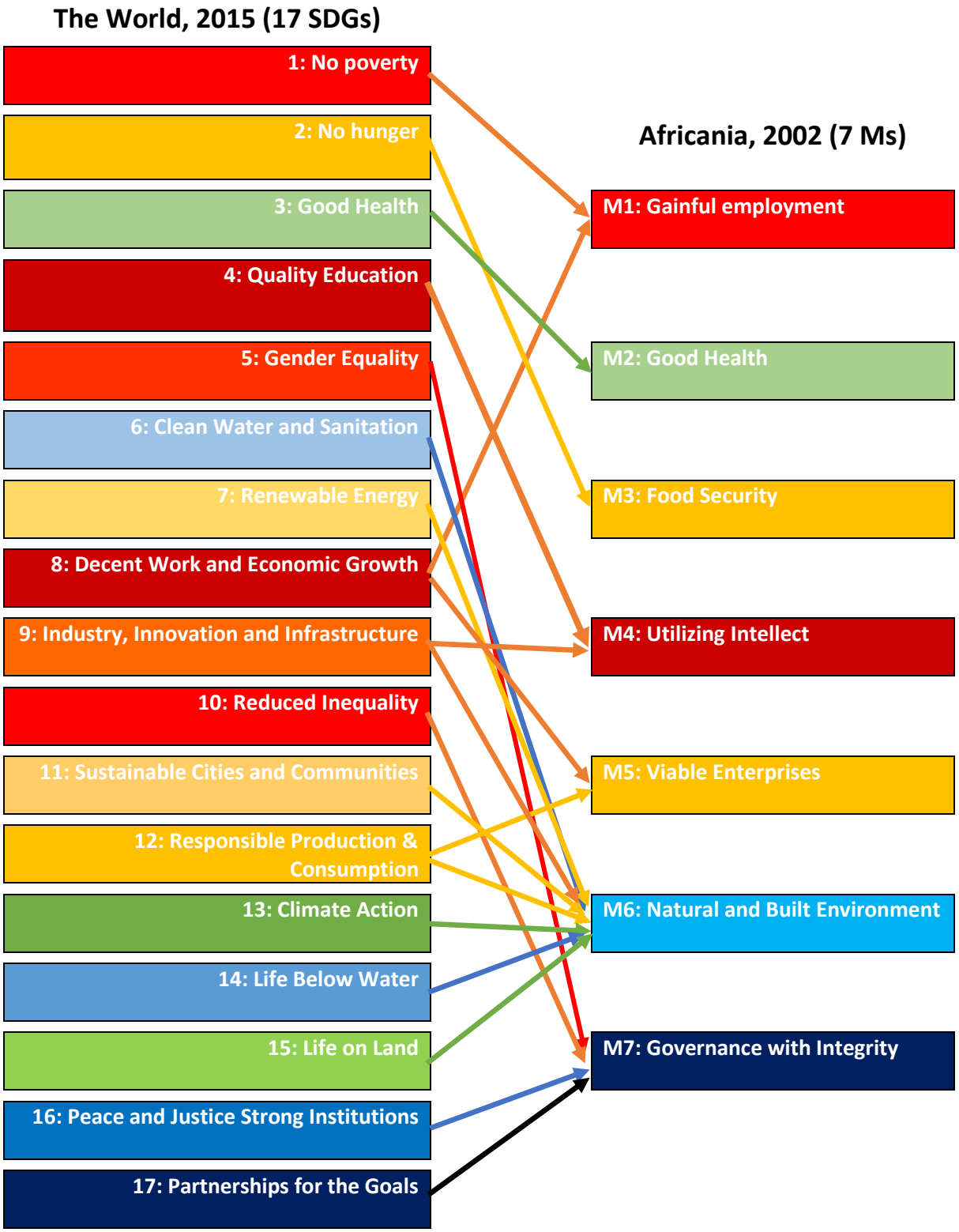

Figure 4: Retrofitting 17 SDGs (World, 2015) to 7Ms (Africania, 2002).

Major efforts are invested worldwide in getting managers to better manage or lead others with the aim of achieving positive results. An evident gap in this practice is that of the neglect of self-management. Self-management is a cornerstone of integrity. This realization prompted the second in-depth study. Centrally, the parts played by integrity (M7) in the performance at various societal levels were critically examined. The levels considered included: households; primary schools, secondary schools, universities, city and town councils, the informal sector, the formal sector, and Africania as a whole. Tracking employed both the (RBM-LSC) © and the 3-Rights M&E. **Table 1** summarizes the findings for two households.

7Ms (Goals) and Vision (Impact)	Tracking / Assessments	
	Household-1 (HH-1)	**Household-2 (HH-2)**
M1: Gainful Employment	Have decent disposable income, as both parents are gainfully employed.	Both husband and wife are gainfully employed. The family is not money poor.
M2: Food security	HH-1 is food secured, as they can afford to buy enough nutritious food on a sustainable basis.	HH-2 have enough to eat as the father regularly provide for the family, including for his unemployed grown-up children.
M3: Health	HH-1 makes use of appropriate health care services as they can afford to do so when they need care.	The family makes use of appropriate health care services whenever the need arises.
M4: Use of intellect	The children are doing well at school. The father exercises just the minimum effort required in his profession. He could do more in improving his knowledge and skills;	Moonlighting practices of father raises question on the proper use of his intellect. The grown-up children lack some essential life skills, and the parents do not seem to be attending to this issue.
M5: Enterprise	Strictly speaking, HH-1 is not in business. However, family has a reasonable level of savings, and have plans to acquire land and build houses for renting;	The wife was doing quite well with her hairdressing business. Father uses the business for his moonlighting activities (in addition to his regular job).
M6: Natural and built environment	The family practices of good environmental management and are not contributing to the deteriorating environmental conditions of their neighbourhood.	HH-2 practices 'poor environmental management'. They regularly burn garbage in their back yard. They are generally very noisy, disturbing the peace of the neighbours.
M7: Governance with integrity	HH-1 is clearly being 'governed' with integrity. The parents are honest, and they impress upon their children that 'honesty is the best principle'.	HH-2 not being 'governed' with integrity. Father is weak on **honesty**. The children lacked **discipline**.
Vision (Impact): Dignity, peace and prosperity	HH-1 is enjoying **dignity** and **prosperity**. Family members enjoy **peace** at home. They have concern dealing with dishonest people and being exposed to air pollution. These are '**disturbing their peace**'.	HH-2 is enjoying **prosperity** (material). **Peace**, both within and outside the household, is questionable, and so too is **dignity**. They contribute to 'disturbing the peace of others' with their noise and the burning of rubbish.

Table 1: Findings from tracking performance of households in achieving the 7Ms (the SDGs?)

Findings from the Tracking

The complete set of findings for the households and those for the other levels are in the full report[15]. The sketches of the two households used in the study are not exhaustive. The two households are each headed by educated professionals. There are several other types of households in Africania – poor households, households headed by uneducated fathers, entrepreneurial households running successful family businesses and, of course, households headed by single mothers. The two households used however clearly demonstrate several salient aspects of management with integrity at the household level, and these include: honesty, knowledge, discipline, collaboration, and cleanliness.

The chances of the households enjoying dignity, peace and prosperity are clearly enhanced when the parents are aware of, and practice honesty in their dealings with others. The parents of HH-1 are honest, and they impress upon their children that 'honesty is the best principle'. On the other hand, the father in HH-2 is clearly weak on honesty. Parents need to be knowledgeable in matters of integrity and life skills, and willing to teach and mentor their children in the same - leading by example. Every member of a given household is a self-manager, and discipline is cardinal for successful self-management, which then contributes to the attainment of positive results (impact). Collaboration (the members or parts working together), as opposed to competition and quarrelling, visibly supports the wellbeing of a household. Cleanliness is next to godliness, the saying goes. An immediate repercussion of uncleanliness is that of the accompanying health hazard.

Retrofitting the 17SDGs to the 7Ms produced a spectacular fit (**Figure 4**). Hence performance at various societal levels in Aficania were assessed with respect to the 7Ms. This part of the work showed that 'integrity' played a pivotal role in the achievements of results at the various levels. Examining the SDGs reveals that the component 'integrity' is missing in the design of the 'system' of the SDGs. Further, examining the 1st Right for the SDGs indicated that several necessary subject matter components are missing. Noticeable among the missing subject matter components is that of 'culture'. Culture is an enabler of development. At the same time culture is an obstacle to progress in many walks of life. For instance, the cultural traditions in some communities may not be supportive of the education of the girl child. In such cases, the achievement of the education targets is jeopardized if the relevant issues with the culture are not properly addressed. Similar issues put the achievement of some of the health targets in jeopardy. In the course of the work a word search in the 2019 SDG report turned up zero occurrences for 'responsibility', 'integrity', and 'corruption (an opposite of integrity)'.

Possibly the most vivid finding of the research examining the SDGs is the concrete recognition of the equal importance of the components / parts and the complex interaction / interconnectedness between them (Systems Thinking). The components /parts, of course, include the subject matter of the goals at the global level, in addition to the responsibilities (of the peoples of the world) on the ground to successfully implement. This last is, of course, necessary to generate the data and information which is then aggregated for assessing progress at the national level and reporting to the global level.

[15] Wright, E.A., *Management with Integrity – A systems Thinking Approach*, Wandsbeck: Reach Publishers, (in press).

DISCUSSIONS – IMPLICATIONS, CONCLUSIONS (AND RECOMMENDATIONS?)

The various studies undertaken in the context of the on-going R&D work have findings with several implications with regards to the SDGs. By retrofitting the SDGs (of the world) to the 7Ms (of Africania) and recognizing that both understandably lead to the common vision of dignity (personal wellbeing, a human-ware), peace (interpersonal wellbeing, software) and, prosperity (material wellbeing, hardware), the global SDGs are effectively translated down to the 'ground level' where the citizen lives his/her day to day life. Further, by tracking / assessing performance on the ground against the 7Ms we get a clearer picture that is not masked out by the national aggregations that feed into the global report. This fully reflects the paradigm of 'thinking globally and acting locally' – a necessary ingredient for achieving the SDGs.

Considering the findings from the various studies several proposals can be envisaged. Weak components or parts in the system of the agendas, if left unattended to, would limit the achievements of positive results (achievement of the goals). A possible first step in addressing the missing component of 'responsibility' should be that of promoting 'responsibility at all levels. The global level could start by revisiting the Universal Declaration of Human Rights (**UDHR**) and updating / revising this to become the Universal Declaration of Human Rights and Responsibilities (**UDHRR**). Relevant considerations could also be given to 'integrity' in that identifying responsibility, and even making a declaration on responsibility would still require the peoples of Africania (and the world) to mobilize integrity in order to act responsibly.

Improved methodologies (including tools) are available to simplify the design, planning, and M&E for the SDGs, thus enhancing the chances for achieving positive results (on the ground). The common vision of development being dignity, peace and prosperity could easily serve as 'filters' in the selection of development initiatives / interventions. Namely, if a given initiative / intervention does not (or, is not likely to) contribute to dignity and/or peace and/or prosperity, then it should be re-examined, or re-designed, or not adopted.

The research and development work will continue to capitalize on the findings and using relevant improved tools. The improvements, of course, include substantial reduction in the efforts required for effective planning, monitoring and evaluation. For instance, a strategic planning workshop that would normally have required three working days can now be completed in just one day, producing more easily actionable plans. The same goes for effective M&E, in that the development and use of robust M&E systems, built on much reduced numbers of indicators substantially facilitate faster assessment of progress. Resources (funds) released with the use of improved systems should, understandably, be invested to accelerate the achievement of the goals. Finally, on-going work covers the inevitable use of e-technology using simulation and Artificial Intelligence (AI) to help with the design, planning, implementation, and monitoring and evaluation of development initiatives / interventions. These, it is hopped, would make increased contributions to the achievements of the SDGs.

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