

MACRO-LEVEL CONSIDERATIONS FOR EFFECTIVE IMPLEMENTATION OF SUSTAINABLE DEVELOPMENT INTERVENTIONS

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ABSTRACT: *This paper highlights interrelatedness and interdependency of Sustainable Development (SD) Goals and the need to approach SD challenges from multidisciplinary approaches. Priority attention for population and proliferation of weapons of mass destruction are explained as issues that can negatively affect all the achievements made in SD implementation by the United Nations (UN) and its partners. This paper also tries to show the importance of macro and micro-level SD considerations when intervening to address community development challenges and the role of sustainability filters and enhancers towards true sustainability. The drill-down concepts for effective delivery of community development interventions are also explained.*

KEYWORDS: macro-level, micro-level, true-sustainability, sustainability-filters, sustainability-enhancers, drill-down approach

INTRODUCTION

The bedrock on which sustainable development is based is that development will not deteriorate, or quality of life and the natural ecosystems should not degrade. However, it is axiomatic that the systems are all dynamic and continuous scientific improvements are required to reduce or provide better alternatives as sources of inputs to keep the systems going. If there are continuous scientific improvements, the development will not only be sustainable but will result in aggregate sustainable advancement unlike what is currently obtainable, where we carry out human-centred activities that eventually degrade the environment and the supporting ecosystems. The world in actual sense has evolved from the Stone Age era to a Digital Age, where most tasks could be completed remotely from a confined online network, such as the email network, phone network and many more. This evolution has not only positively impacted man but also impacted the eco-system and shifted man's cognitive attention from some basic needs of survival to satisfying financial needs, emotional needs and many more. As we know, it has not been all rosy, our civilization and consequent activities have resulted into human over-population which is causing stress on the supporting systems, over-harvesting of our resources and generating wastes that pollute our ecosystems.

Moldan et al. (2014) stated that the term sustainable development (SD) emerged in context of environmental concerns, witnessed the first appearance of the concept in 1982, in the World Charter for Nature, which was initially addressed at Our Common Future (WCED, 1987) and also, in the 40 Chapters of Agenda 21 of the Earth Summit 1992 (UN, 1992). Sustainable development can be defined as a development that meets the needs of the present without compromising the ability of future generations to meet their own needs. Brundtland (1987)

explained that sustainable development is the unifying principle for meeting human development goals while concurrently sustaining the ability of natural systems to provide the natural resources and ecosystem services upon which the economy and society depend.

The concept of macro-developmental studies looks at how developmental challenges can be addressed from a general perspective and not from an isolated perspective of addressing issues around individual goals. Micro-developmental studies, on the other hand, addresses individual sustainable development challenges, like researching on how to move away from vehicles that use fossil fuel as source of energy to electricity driven vehicle etc.

Sustainable development challenges exist in every developmental situation. They present themselves globally, regionally, nationally and in every community. Macro-Sustainable development, therefore, is looking at issues from the perspective of how the challenge affects a group of people and how the challenge can be addressed holistically. The 17 Sustainable Development Goals (SDGs) by the United Nations set achievable targets for the participating nations. They are improvements that have taken into consideration the outcomes and lessons from the implementation of the Millennium Development Goals (MGDs). According to the United Nations (1992) Agenda 21, indicators for Sustainable Development (SD) need to be developed to provide solid bases for decision-making at all levels and to contribute to self-regulating sustainability of integrated environment and development systems” (Chapter 40.4). Kotoz stated that there was no collective consensus of what sustainability meant and of what constitutes sustainable development. The development solution to global environmental problems while described under one name “sustainable development” is understood and defined in different ways, meaning this concept is first subjective, before objective, when looking at it on a macro scale, comprising of the individual indicators and the composite indicators.

Lawrence (2017) explains macro-sustainable development from an understanding interplay of priority factors that affect a population (Vol.5, No 5, pp 22-34). Also, Lawrence (2018) describes SD as procedures and techniques used to stabilize the development of an entity or system; he identifies some causal factors that are militating against rapid sustainable development in Nigeria in consideration of the abundance of some utilizable resources (Vol. 6, No 3, pp 27-34). At the macro level, interventions to address a challenge should consider all the priority ramification of that intervention as it affects the particular challenge being addressed and how that intervention also addresses other related goals.

This therefore, will include among others:

1. Always assessing interventions from multidisciplinary perspectives, ascertaining other interrelated SDGs that are affected in the process of implementing interventions and critically reviewing the SDGs from holistic perspectives at the international, national or community levels.
2. Monitoring and evaluation of performances of the individual nations and the UN efforts towards achieving the SDGs, ensuring accurate data collections. Meadows (1998) and Stiglitz et al (2012) hold that the development of good indicators to address clear values and contents in a timely and appropriate manner is equally of great importance.
3. Engaging recalcitrant governments on how they can support the process for better performance.

4. Formulating the processes in enhancing policies, strategies, protocols and many more.

INTERRELATEDNESS OF THE SD GOALS

SD challenges are interrelated and inter-dependent (Lawrence, 2018). Also, United Nations (2014) explained that the inherent complexity of the ecological-socio-economic system, there are no universally accepted representation of it and various representations reflect differing world views. However, for functioning purposes, existing models focus on limited sets of dimensions of interest. Our understanding of the possibilities of joint outcomes in more than one dimension (for example, growth, inequality, and environment) are limited, and to some extent, irreducible (Roehrl 2013). With this, we can gather that many challenges are interrelated, and so are their solutions (Griggs et al. 2014).

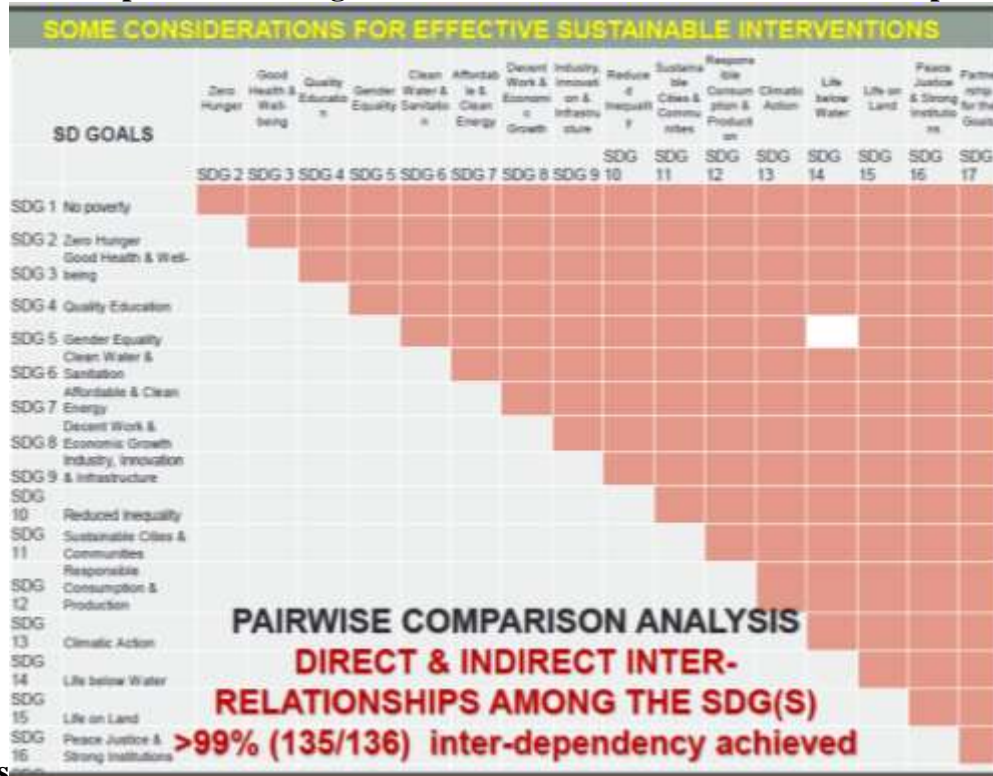
The SDGs are set in a way that each goal through addressing certain groups of challenges are equally interrelated in addressing other challenges.

The following shows how the targets of SDG 1 (End poverty in all its forms everywhere) are set in ways that they become interrelated and interdependent with other SDGs:

- 1.1 By 2030, eradicate extreme poverty for all people everywhere, currently measured as people living on less than \$1.25 a day. The concept of eradicating extreme poverty is also addressed in SDG 8: Decent work and economic growth.
- 1.2 By 2030, reduce at least by half the proportion of men, women, and children of all ages living in poverty in all its dimensions according to national definitions. This SDG 1.2 is also addressed in SDG 5: Gender equality and SDG 10: Reduce Inequalities.
- 1.3 Implement nationally appropriate social protection systems and measures for all, and by 2030 achieve substantial coverage of the poor and the vulnerable. This is also addressed by SDG 10: Reduce inequalities.
- 1.4 By 2030, ensure that all men and women, in particular, the poor and the vulnerable, have equal rights to economic resources, as well as access to basic services, ownership, and control over land and other forms of property, inheritance, natural resources, appropriate new technology, and financial services, including microfinance. These issues are equally handled by SDG 8: Decent work and Economic growth, SDG 9: Industry, Innovation and infrastructure, SDG 10: Reduce inequalities, SDG 11: Sustainable cities and communities, SDG 16: Life on Land and SDG16: Peace, Justice and Strong Institutions.
- 1.5 By 2030, build the resilience of the poor and those in vulnerable situations and reduce their exposure and vulnerability to climate-related extreme events and other economic, social and environmental shocks and disasters. These issues are addressed by SDG11: Sustainable cities and communities and SDG 13: Climate actions.
- 1.6 Ensure significant mobilization of resources from a variety of sources, including through enhanced development cooperation, to provide adequate and predictable means for developing countries least developed countries, to implement programs and policies to end poverty in all its dimensions. These are also handled by SDG 17: Partnership for the goals.
- 1.7 Create sound policy frameworks at the national, regional and international levels, based on pro-poor and gender-sensitive development strategies, to support accelerated investment in poverty eradication actions. SDG 5: Gender equality, SDG 9: Industry, Innovation and Infrastructure, SDG10: Reduce inequalities & SDG16: Peace, Justice and Strong institutions are equally addressing these targets that are contained in SDG 1.7.

From the examples given using SDG 1, it can be demonstrated clearly that the SDGs are interrelated and inter-dependent.

Pairwise Comparison showing some direct and indirect Inter-Relationships amongst the



SDGs

From the above, we can see that 99% inter-dependency between goals was achieved. Worldwide approved goals and targets have both instrumental value and political value. For development institutions that structure their work around internationally agreed goals, in particular, the new goals are expected to offer a framework around which policy and action aiming to improve human well-being will be justified and organized; this was what happened in international development institutions around the MDGs too. Several experts have shown intricately and graphically the interrelatedness of the SDGs. This includes GSDR – ICSU report (2015) <https://sustainabledevelopment.un.org/post2015/transformingourworld>, and David Le Blanc, “Towards integration at last? The SDGs as a Network of Targets”, Rio+20 Working Paper 4.

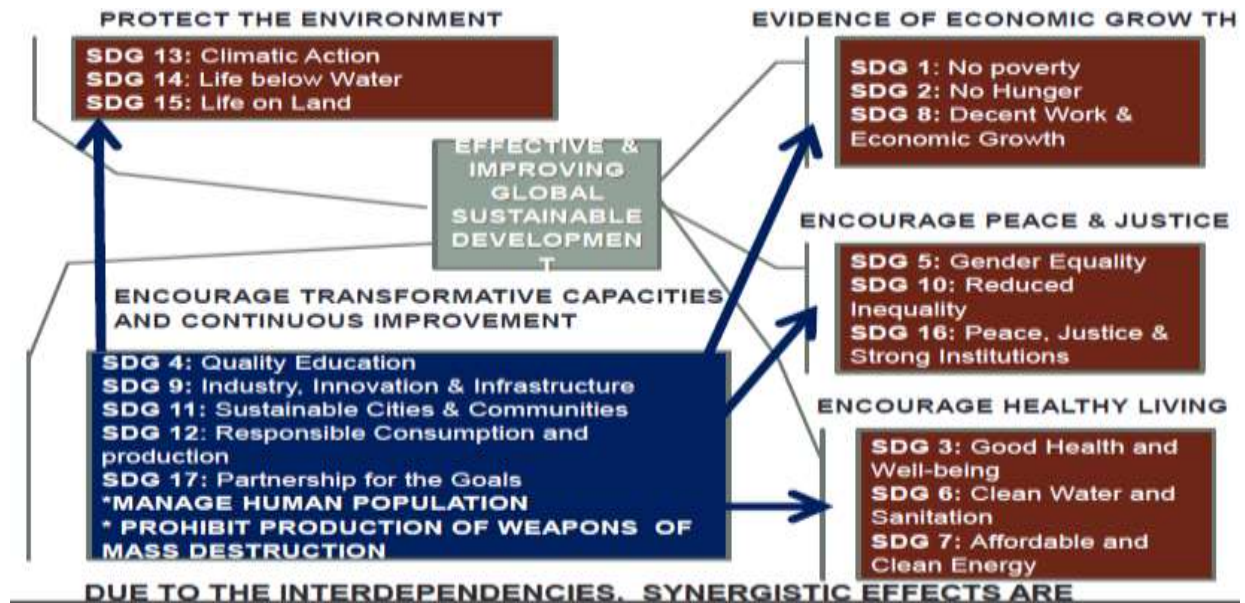
GROUPING SD GOALS

The SDGs and their inter-relatedness can further be assessed from the following groupings. Here the 17 SDGs have been grouped into 5 units, namely: protect the environment (SDGs 13, 14 and 15), encourage transformative capacities and continuous improvement (SDGs 4, 9, 11, 12 and 17), evidence of economic growth (SDGs 1, 2 and 8), encourage peace and justice (SDGs 5, 10 and 16) and encourage healthy living (SDGs 3, 6 and 7).

Placing of SD goals into 5 Groups (Concept 1)

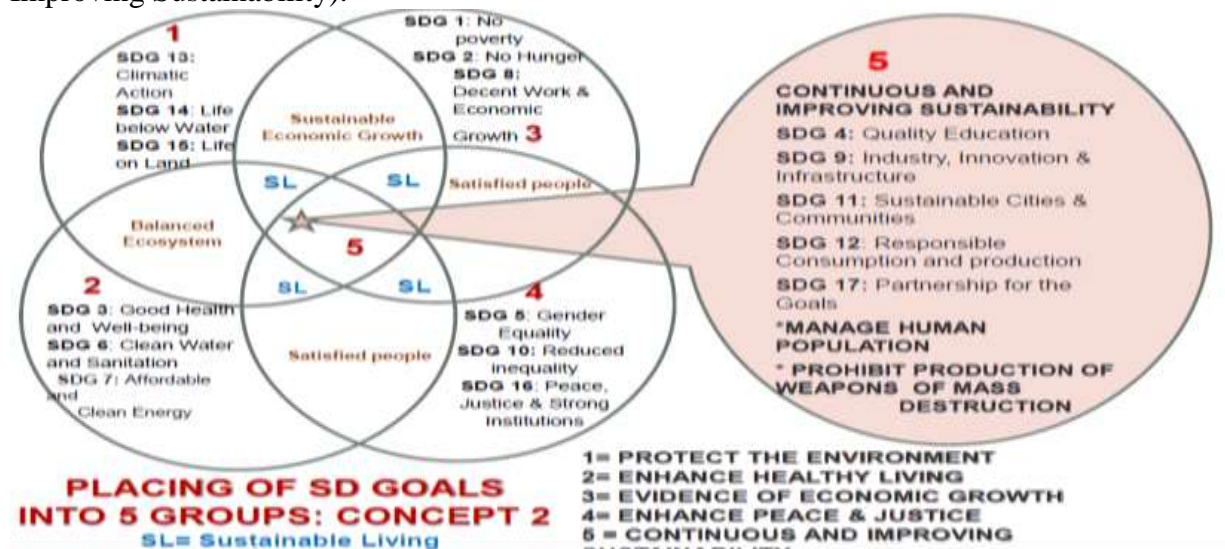
The concept 1 below shows the importance of the transformation group which had included sub-goals that needed to be highlighted (manage population effectively to avoid under or

overpopulation and prohibit the production of weapons of mass destruction). Also noteworthy is the fact that this group 5 interacts synergistically with the other groups for better outcomes.



Placing of SD goals Into 5 Groups (Concept 2)

In the second concept having all the 4 groups work with the 5th group (Continuous and Improving Sustainability).



This second concept also shows the key roles the 5th group plays in ensuring overall continuous and improving sustainability of SDG outcomes.

As stated earlier, the compartmentalization of the SDGs into these groups has made it easier to focus on issues that address the theme and it has brought to prominence the challenges of managing sub-national, national and regional populations and prohibiting the production of weapons of mass destruction which are critical factors to achieve effective sustainable development. The UN giving adequate focus on these issues is vital.

Both under-population and over-population have their negative impacts on sustainable development. Under-population means that the fewer labour active part of the population will be working to provide for the elderly group whose population over time is increasing. Under-population can be addressed through encouraging increases in birth rate, liberalizing immigration policy to favour certain qualities among immigrants and mechanization/robotic automation of industrial and other activities to reduce labour requirements. Over-population, on the other hand, introduces excessive pressure on resources/amenities, unemployment and related social vices. Nigeria is currently one of the nations with the highest population growth rate in the world and the pressure is evident in every aspect of its economy. Over-population can be addressed by encouraging the reduction of birth rates through family planning, boosting economic growth and encouraging labour-intensive activities. More issues on over-population are discussed in Lawrence (2018).

With regards to weapons of mass destruction, though they can be nuclear, chemical, biological, cyber, etc. currently the major threat to the continued existence of humanity is coming from the stockpiling of nuclear bombs by some superpowers. In a world riddled with so many conflicts and complicated with human sentimentalities, the use of nuclear bomb to attack another nation and possible retaliation by that nation or its friends is always possible and escalation of such conflicts can precipitate a nuclear war. Nations, instead of using scarce resources to support productive SD interventions, are prioritizing the development and stockpiling of nuclear bombs.

The United Nations (UN) can take a stand that it will excommunicate any nation that uses a nuclear bomb on another. Such sanction should include that no UN Member State should trade, visit or collaborate with such defaulting nation. It might imply some inconvenience but this is necessary to protect humanity.

THE TRUE SUSTAINABILITY CONCEPT

This concept addresses the resolution of developmental challenges holistically and considering priority factors before decisions on interventions are taken that will enhance project functionality and reduce white-elephant syndrome on completion. Since in the end, the intervention is likely to address more than one SDG, it is more of the Macro-Level approach than any other.

It is important to subject every new community development intervention to this two-staged macro-level selection process; which are sustainability filters and sustainability enhancers (Lawrence 2017 Vol. 5 No 5). Sustainability criterion can be used to test the suitability of new technology and it examines issues that would enhance project or intervention success after implementation.

SUSTAINABILITY FILTERS

According to Lawrence (2017) Sustainability Filters assess if the proposed implementation process for the intervention will take care of the following:

- Ensure the **participation and involvement** of target beneficiaries in the planning, implementation, and management of the project.

- Ensure that possible health, safety, social and other environmental **impacts of implementing** the intervention have been evaluated and mitigation measures put in place towards addressing implied negative impacts.
- Ensure that the intervention has considered **all the critical success factors in a holistic manner and is using an integrated and coordinated** approach both at the supra-system (system and its external environment).

SUSTAINABILITY ENHANCERS

Lawrence (2017) also described Sustainability Enhancers as those factors when present makes interventions more sustainable using the 5 A's which are: Adaptable, Affordable, Available, Applicable and Appropriate.

Adaptable: Intervention should be easily modifiable and usable in other circumstances that beneficiaries may be exposed to, interventions that can be easily replicated, will be more easily mass-adopted, for instance, processing machines that use only electricity as an energy source may not be too suitable in the rural Africa where constant electricity supply may not be obtainable.

Available: Interventions should be available if others want to replicate it and spare parts also available. You need to assess if the people will be able to secure spare parts and maintain the project on completion. For instance, imported processing machines that cannot be fabricated in the nation and spare parts must be imported may inadvertently introduce challenges if mass adopted.

Affordable: Intervention should be cheap enough to attract more investors and ensure mass production, replication and adoption. For example, consider cost-benefits and appropriate substitutes before investing in or adopting technologies.

Applicable: Interventions should be able to effectively resolve and address the developmental and other related problems that it intends to address. It should be relevant to the needs of the people. For instance, super cassava hybrid is high yielding but requires very fertile soil and if the rural people cannot afford fertilizers then introducing super cassava to them may not be a wise choice since their local varieties produce more than the hybrid variety on an infertile soil environment.

Appropriate: is the technology relevant to the level of development of the beneficiaries? It will not be useful providing a public water scheme, whose source of power will be from the national electricity grid and if there is no constant electricity supply in that location to provide water for the public toilet. Introduction of such intervention must go along with the provision of an appropriate source of water that the beneficiaries can maintain and sustain. Provision of computers to a rural school where there is no constant source of power or competent operators is equally inappropriate as beneficiaries should be trained on how to operate the equipment.

Based on the above, true sustainability is achieved where sustainability filters overlap with the sustainability enhancers as shown in the figure below:

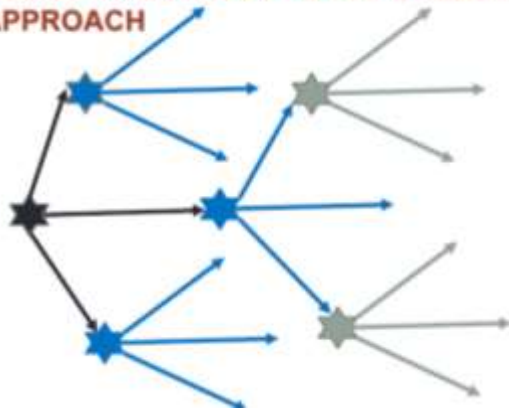


THE THREE FACTOR DRILL-DOWN ANALYSIS

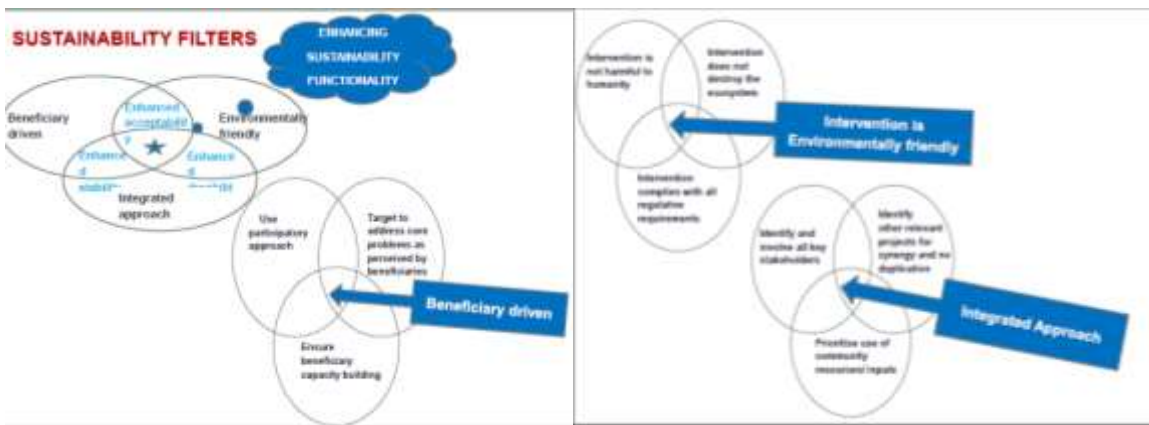
The 3-factor drill-down analysis approach allows us to look at complex issues to effect maximum impact only using a few manageable factors in this regard, we tried to identify three priority factors in each situation for the analysis. The approach is in line with Pareto Principle of 80/20 rule, which shows that a vital few among many factors account for the majority of impact in most situations. <https://www.projectsart.co.uk/pareto-analysis-step-by-step.php> Some examples one can apply this principle to include fundraising, intervening to address an SD challenge, prioritizing areas that can give the greatest impact, providing scholarship awards to needy people, etc. In all naturally occurring situations with populations that follow normal distribution curves but available resources cannot cater for all, the use of this principle objectively (not with political considerations) will give optimum result or impact. With the example of fundraising, if the resources are too thin to cater for all the people, then identifying those few with potentials to give more, will provide better result than spending all the time approaching everyone.

It is even also very effective in analysing situations to identify the most appropriate SD intervention, starting with the priority factors and then drilling down by further identifying the key factors determining the preceding factors and so forth.

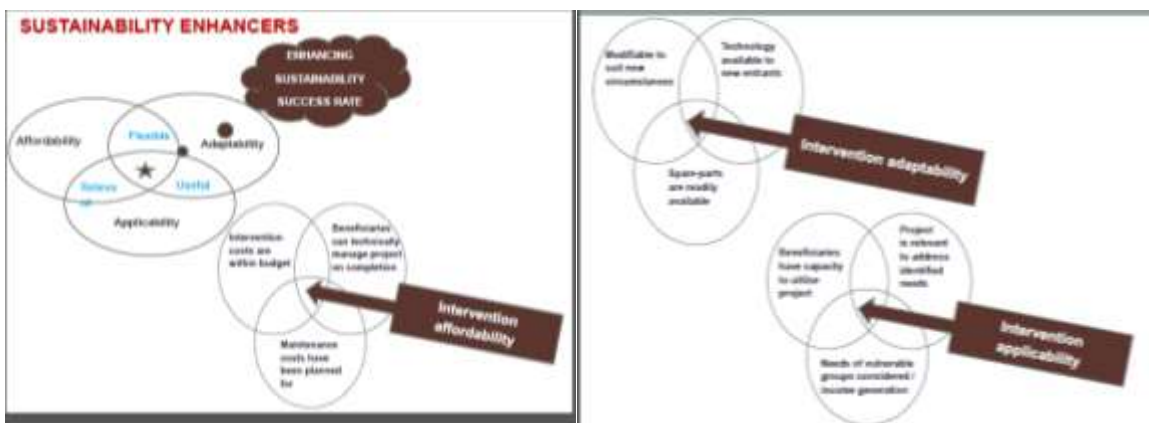
USE OF THE THREE FACTOR DRILL DOWN APPROACH



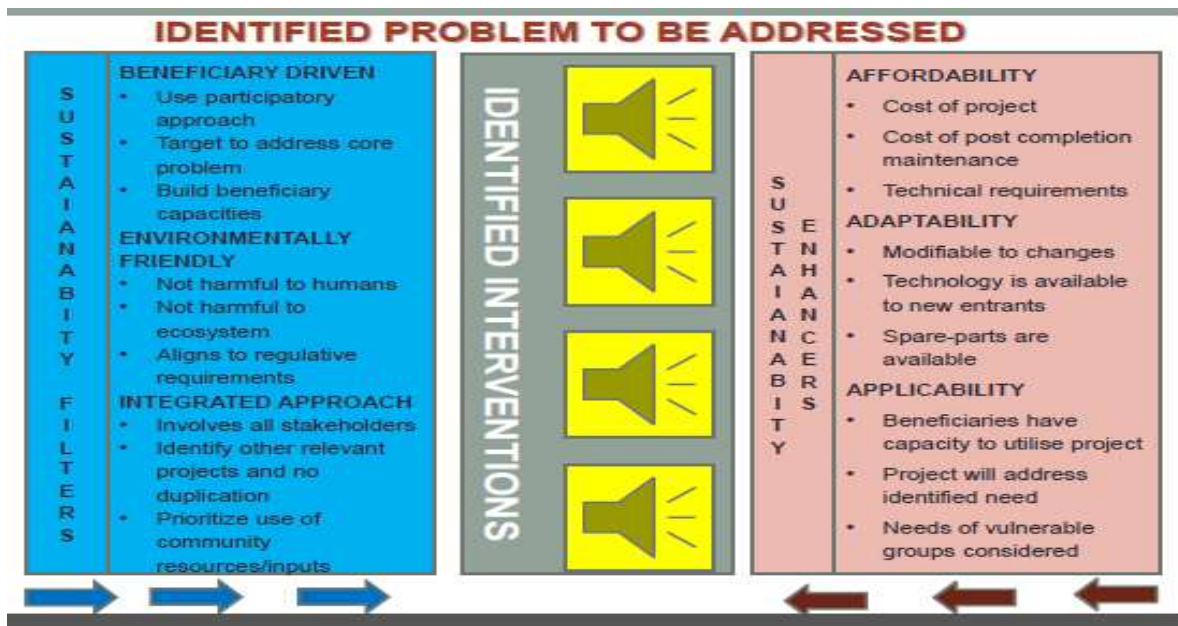
Application of the drill-down analysis to identify sustainable filters for an intervention:



Application of the drill-down analysis to identify sustainable enhancers for an intervention:



Application of true Sustainability concept to identify the appropriate project for intervention or key problem requiring intervention, using the concept where sustainability filters overlap with the sustainability enhancers



Rationale for the adopted process, it:

- enhances community participation in projects planning, implementation, takeover and ownership
- ensures sustainable development education and capacity building are incorporated into community engagement and facilitating their participation
- reduces white elephant, non-functional projects in the communities
- ensures scarce resources are better utilized for the beneficiaries

MICRO-LEVEL CONSIDERATIONS

Despite the Macro-level efforts, most scientific advancements have used the micro-level approaches. They have played great roles and will continue to do so. All stand-alone research efforts are in this category.

Some Micro-level SD studies include the following:

1. Developing greener machines utilizing non-fossil fuels.
2. Developing energy-efficient machines
3. Better ways to manage the environment and the ecosystem and reducing population pressure on natural resources
4. Prohibition of weapons of mass destruction etc.
5. Studies on Small and Medium Scale enterprise management

CONCLUSION

This paper has highlighted the interrelatedness and interdependency of the SD Goals and the need to approach sustainable development challenges from multidisciplinary approaches for better outcomes. The paper also highlighted the need to give priority attention to population and proliferation of weapons of mass destruction as they have the potential to nullify and send back all the developmental progress so far achieved by the United Nations and all other developmental players in the world, towards sustainable development.

The paper also tried to show the importance of macro-sustainable development considerations, using several tools like regrouping the SD goals 17 to 5 functional units and highlighting the 5th group that includes SDGs 4, 9, 11, 12, 17 and two critical sub-groups of managing human populations and prohibiting the proliferation of weapons of mass destruction as the most transformative and also synergistic in enhancing the impacts of the other SDGs. The paper also demonstrated how the true sustainability concept and the drill-down approaches can help enhance project effective delivery for better functionality and success rate. Authors identify this effort as introductory and agree that more work needs to be done to grow these concepts.

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