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POLICY TRIBUNE

*Shaping Change
Where It Counts the Most*



Bandaranaike Academy
for Leadership & Public Policy

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RESEARCH THAT INSPIRES

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Greetings!

It is with immense pleasure that we launch the inaugural issue of the Policy Tribune of the Bandaranaike Academy for Leadership and Public Policy (BALPP).

The Bandaranaike Academy for Leadership and Public Policy (BALPP) is Sri Lanka's first and premier institution for education and training to develop leadership skills, ethical governance and public policy skills. In aligning with the above objectives, the Research Wing (RW) of the BALPP launches the Policy Tribune to inform, educate and enlighten the public about policy related matters. I am pleased to mention that the inaugural issue of the BALPP Policy Tribune comprises of two public policy briefs prepared by two leading experts in the field of policy making. These policy briefs present key findings and recommendations derived from conducting novel academic research. Moving forward we intend publishing more similar work, and hope that such policy briefs will become important sources for governance and policy formulation in Sri Lanka in the future.

In addition to the above, this issue comprises of opinion pieces and articles relating to policy related matters written by two very prominent international policy experts and several members of the staff of BALPP. These articles and opinion pieces explore some of the gaps in policy making and policy implementation and provide recommendations and suggestions on the types of policies and strategies that should be adopted by governments, institutions and advocacy groups to improve the lives of people and create positive transformations in society.

We strongly believe that evidence-based, robust policy making is the backbone of governance of any society and that effective policy-making ensures the equitable allocation of resources, promotes social justice, and addresses societal challenges. Therefore, the BALPP Policy Tribune is a step forward to an academic and intellectual contribution towards effective policy research and active engagement of all stakeholders, in the policy-making process.

Shayani Jayasinghe
Research Associate/BALPP
Editor of the BALPP Policy Tribune



Policy Brief

Access, Opportunity and Social Justice in Secondary Education in Sri Lanka

By Dr. Namala Thilakaratna



1. Introduction

Secondary education remains a challenging sector for the Sri Lankan education system that has often been praised for its achievements particularly when compared other lower- and middle-income countries in South Asia. While literacy levels, gender parity and access are often celebrated successes of the primary sector in Sri Lanka, secondary education functions as a gatekeeper that limits access to quality education and employment, particularly for students of lower socio-economic status. With youth unemployment (15-24 years) at 26.1%^[1] the need to revisit policy in secondary education and improve access and opportunities for all students remains a priority.

This policy brief looks at Sri Lanka's secondary school system and the transition from upper secondary school (e.g. Advanced Levels or A Levels) to tertiary education with the view to making it more accessible by providing more opportunities for students beyond the academic system of entering the state universities. The brief attempts to address the current gaps in the system with reference the Sustainable Development Goals particularly of increasing the number of young people and adults who have access to qualifications after completing the O Levels including the opportunity to acquire technical and vocational skills for employment. It does so by proposing "Multiple and Flexible Pathways" for students in secondary schools to access further education beyond O Levels through a tiered and multidisciplinary Advanced Level system and through access to a more robust TVET system that matches the skills required by labor market.

[1] <https://unevoc.unesco.org/home/Dynamic+TVET+Country+Profiles/country=LKA>

About the Author Dr. Namala Tilakaratna is an award-winning lecturer who draws on extensive expertise in higher education research to positively impact students' learning of academic English, critical thinking, and reflection skills. Engaging in research across education, linguistics, and literacy, she has shared work in diverse international contexts, including Australia, South Africa, and Singapore.

In addition, in alignment with the current Strategic Plan proposed by Tertiary and Vocational Education Commission MOE (2024-2028), this brief advocates for further developing and strengthening and raising the status and quality of the existing TVET sector. This includes fostering private/public partnerships focusing on apprenticeship schemes so that students can learn while working enabling students gaining job security as well as necessary skills needed for the workplace and developing the opportunities for lateral entry via the TVET system to the university system to create more links between universities and technical and vocational education, raising the overall status of TVET and the qualifications it provides.

2. Scope of the problem: Lack of multiple and flexible pathways in secondary education provision

One of the overarching issues facing the current education system is the lack of alignment between the syllabus and the requirements of modern workplaces particularly in the provision of interdisciplinary or multidisciplinary training beyond rigid subject streaming. A number of highly achieving countries, such as Singapore, are in the process of reforming their school curriculum to becoming more oriented to Critical Thinking, problem solving and interdisciplinarity with reforms aimed at allowing students more flexibility in choosing their subjects rather than limiting their options for study in secondary schools [2]. This includes the “Learn for Life” phase by the MOE (2019 to present) that focuses on a shift from national exams and academic achievements as a priority to “connect, collaborate, create and to be resilient to changing circumstances” with a focus on ‘preparing students for life’ rather than preparing them for academic success [3]. However, in Sri Lanka the focus on secondary education is primarily geared towards university entrance exams. Many of the students who qualify for university admission are unable to progress to public higher education because of limited places (approximately 57,000 students entering university or professional study in 2018) [4]. Of the students who are eligible but unable to gain university admission and students with A Levels who haven’t qualified for admission (approximately 245000 students) few opportunities are available in the public sector for training and skills development.

There are several areas that need to be addressed in relation to reforming the A Levels and TVET sectors so that upper secondary provision is more equitable and provides opportunities for students from different income backgrounds to experience higher levels of education with access to better outcomes in the labor market. The A Levels are the only exam in upper secondary schools which means that students who do not successfully complete their A Levels will only have O Level qualifications as their highest level of educational achievement. A further issue is that the current A Levels are primarily focused on academic achievement functioning as a university entrance exam rather than being a terminal qualification. And finally, the rigid streaming of students into five streams needs to be reformed so that the A Levels can be an opportunity to provide students with broader skills that allow them to enter the workplace rather than being only qualifications with the view to entering university.

[2]https://www.moe.gov.sg/-/media/files/about-us/overview_of_singapore_education_system.pdf

[3]https://www.brookings.edu/wp-content/uploads/2023/03/Brief_Singapores-educational-reforms-toward-holistic-outcomes_FINAL.pdf

[4]https://planipolis.iiep.unesco.org/sites/default/files/ressources/sri_lanka_NATIONAL-EDUCATION-POLICY-FRAMEWORK-2020-2030.pdf

1. Tiered A Levels as terminal qualifications

As an alternative to A Levels as a university entrance exam, one possible reform to the existing system can be derived from the existing UK A levels. In the UK, students can choose between taking AS Level which is half the syllabus context of Cambridge International A Level, a 'staged' assessment route which means taking the Cambridge AS Level in one exam series and then sitting for the A Level with the AS level marks being carried forward to a full A Level within a 13 month period. Alternatively, students can take all the A Level subjects in one exam [5]. This provides an opportunity for students succeeding in O Levels to gain valuable feedback and understanding of their potential to succeed in the final A Level exams while providing them with an opt out with at least minimal upper secondary qualifications. In order to alleviate the pressure placed on students by two exams (instead of one), the first stage can be administered as school exams or assessment with the final A Level exams continued as is.

2. Broadening subject streaming with core electives to foster multidisciplinary

Currently the Sri Lankan system consists of rigid subject streaming. The Sri Lankan GCE A Levels consists of 4 streams: Science, Commerce, Technology and Arts.

Streams	Subjects
Science	Biology, Combined Mathematics, Chemistry, Physics, Agriculture
Commerce	Economics, Business Studies, Accounting, Business Statistics;
Technology	Engineering Technology (ET), Bio Systems Technology (BT), Science for Technology (SFT), Information & Communication Technology (ICT)
Arts	Christianity, Geography, Dancing, Drama and Theater, History, Logic, Political Science, Art, Media, Sinhala, Buddhist Civilizations, Music
Common Core: General English, General Information Technology (GIT Exam)	

Table 1: Streaming in GCE A/Levels Adapted from: <https://www.gazette.lk/2024/07/gce-advanced-level-in-sri-lanka.html>

There are a number of institutional constraints resulting in rigid subject streaming including the number of available qualified teachers to teach STEM subjects, currently there are approximately 1845 schools which allow students to access Science and Math streams which lead to careers in medicine and engineering from a total of 10,175 schools[6]. Culturally, these subjects are considered more prestigious leading to better career opportunities than Arts and Social Sciences subjects with corresponding Arts, Management and Commerce Streams experiencing low to medium employability in the labor market. The UK and Singaporean A Levels provide students with greater flexibility regarding subject choice. While this is supported by qualified teachers and appropriate school infrastructure, in Sri Lanka, the system could potentially allow one of three subjects that students take for the A Levels be selected from another stream with Arts and Technology streams.

[5]<https://www.cambridgeinternational.org/programmes-and-qualifications/cambridge-advanced/cambridge-international-as-and-a-levels/qualification/>

[6]<https://nec.gov.lk/wp-content/uploads/2020/10/6.Re-imagining-Education-Sri-Lanka-Summary-Report-by-Presidential-Task-Force.pdf>

Allowing all students to experience Arts and Technology subjects as core electives, for instance, can provide them with an opportunity to develop skills such as technology, ICT and English and 'soft skills' such as "openness" and "emotional stability" which are considered an important factor in earning a high wage [7].

TVET sector development in Sri Lanka

One of the most important areas for development in the transition phase from schools to tertiary education is the TVET sector in Sri Lanka which caters for 105,900[8] who are unable to enter university. As is the case with many of the lower/middle income countries, the TVET sector faces a number of challenges. These include poor infrastructure and outdated equipment, lack of teacher expertise and lack of relevant curriculum that is aligned with industry and private sector. Additionally, there is the prevailing attitude that the TVET sector is a 'second best' education track when compared to university [9].

The TVET system in Sri Lanka has been through a number of reforms including the establishment of the National Vocational Qualifications as a national system for granting of tertiary and vocational education awards within the sector. [10] The sector currently consists of 2946 training centres registered with the TVEC of which 1146 centres had valid registrations. Of these centres there are 1097 public sector institutions National Apprentice and Industrial Training Authority (NAITA), Department of Technical Education and Training (DTET) and the National Youth Council (NYC) [11]. One of the key issues in relation to TVET provision is a lack of transparent and accountable quality assurance despite the establishment of an overall NVO framework to define training standards across occupations [12]. Currently the government is in the process of establishing industrial sector skills councils (ISSCs)[13] which have oversight over the quality of programs and has the capacity to conduct an audit of the existing system in order to understand the capacity of existing TVET organizations and their relevance and quality in the context of TVET provision and labor market needs in Sri Lanka. A first step to reforming the TVET sector is transparency on the students enrolled in the sector, those who have completed TVET education, what kinds of qualifications they attain and whether they are employed and in what capacity (TVEC 2024-2028). In order to address the issue of the TVET sector being viewed as 'second best' to university entrance, the sector has to provide opportunities for Multiple and Flexible Pathways that are made visible and accessible to students who are unable to continue to upper secondary education.

[7] https://unevoc.unesco.org/wtdb/worldtvtdatabase_lka_en.pdf

[8] <https://dtet.gov.lk/en/the-environment-of-sri-lankas-tvet-system/>

[9] <https://documents1.worldbank.org/curated/en/099071123130516870/pdf/P175566037a5e20650a657068b5152205bf.pdf>

[10] [https://www.tvec.gov.lk/page_id=140#:~:text=The%20National%20Vocational%20Qualifications%20\(NVO,are%20based%20on%20three%20parameters.](https://www.tvec.gov.lk/page_id=140#:~:text=The%20National%20Vocational%20Qualifications%20(NVO,are%20based%20on%20three%20parameters.)

[11] www.tvec.gov.lk

[12] <https://openknowledge.worldbank.org/server/api/core/bitstreams/be632f9b-cffa-5d76-a8ae506cb9c2ca3d/content>

[13] [https://nec.gov.lk/wp-content/uploads/2022/10/NATIONAL-EDUCATION-POLICY-FRAMEWORK-2020-2030_Full Text.pdf](https://nec.gov.lk/wp-content/uploads/2022/10/NATIONAL-EDUCATION-POLICY-FRAMEWORK-2020-2030_Full_Text.pdf)

These include partnership and support from the private sector. One of the potential models to implement in Sri Lanka in terms of the TVET sector is that of the German apprenticeship scheme or BiBB (Bundesinstitut für Berufsbildung)[14] where students can enter the labor market through apprenticeship schemes. Secondly, there should be flexible pathways from TVET to the university system for students who show they are capable of earning a university degree via lateral entry. Currently, a university degree in TVET by the University of Vocational Training in Sri Lanka but opportunities could also potentially be made for students to enter the university system later in their training.

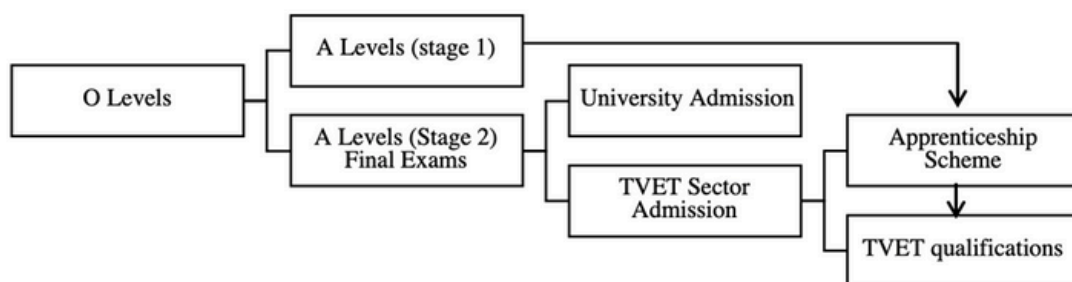


Figure 1: Proposed tiered A Levels and higher education/TVET opportunities

Summary of Policy Proposals

The Sri Lankan secondary system is in need of reform to enable increased access to higher levels of education for students who are not academically include and students who have not gained admission into university. This policy brief has proposed alternatives to existing policy on secondary education provision and transition to higher levels of post-secondary education. In summary they are:

- A Levels to be positioned as a terminal qualification rather than a university entrance exam
- Reform to the current A Levels to provide a tiered system through the introduction of AS Levels so that students can, at school level, have access to upper secondary education but opt out at an earlier stage with an accepted qualification in the form of an AS Level certificate
- Provide students at A and AS Levels the opportunity to take one core elective from another stream with an aim to fostering flexibility and a more multidisciplinary disposition in students at upper secondary level
- An audit of the current TVET system (as proposed by the current TVEC 2024-2028 document) aimed at understanding the types of provision and quality and identifying the gaps in the current TVET system
- Fostering private sector involvement in the TVET sector through sponsored apprenticeship or work/study schemes to a) strengthen the alignment between the TVET sector qualifications and relevance to the current labor market b) enable students from low-socioeconomic backgrounds to enter the workforce while gaining vocational qualifications c) to increase the capacity of the TVET sector through sustained funding from the private sector in order to deal with infrastructure issues such as qualified teachers, equipment, updated curricula.
- To elevate the prestige of the TVET sector through partnerships with public universities by developing a lateral entry system in the 2nd and 3rd year of selected TVET qualifications leading to full degree status for students

[14] <https://www.bibb.de/en/147679.php>

Politics, Policy, Science, Data & Evidence – Reflections on the Pandemic “Five”

By Dr. Irvin Studin



Five major “concepts” or “fields” – words, really – took hold of public and professional discourse around the world during the recent Covid-19 pandemic: politics, public policy, science, data and evidence.

What are we to make of these concepts, post-pandemic – now that things have calmed somewhat, and in order to be more clear-headed the next time round?

As I explain in my new book on the conspicuous catastrophe of the pandemic school closures, the pandemic period saw scientists and science assume the dominant role, to a historically unprecedented degree, in policy decision-making – with such decision-making often relying on – or at least referencing – data. “Follow the science” and “follow the data”, as it were... Political leaders often obliged, instrumentalized or otherwise ceded to this logic.

But this pandemic-period framing was not only simplistic – nay, it failed to appreciate what exactly “policy” and “politics” are, and also what the appropriate roles of “science” and “data” ought to be in respect of public policy.

To be clear, science is not policy. And data is not policy. No! Both science and data are but inputs – among many other necessary inputs – into public policy. And public policy is, on my considered conception, that which legitimate public authorities (typically governments) do, using a variety of inputs and means, to advance a variety of objectives (outputs and ends) and interests for a candidate jurisdiction or society.

About the Author Irvin Studin is President of The Institute for 21st Century Questions (Canada) and Editor-in-Chief & Publisher of Global Brief magazine. He is the Chair of the Worldwide Commission to Educate All Kids (Post-Pandemic). His new book is *Never Close the Schools Again. Ever! How the Pandemic Rise of Third Bucket Kids Changed the Arc of the 21st Century*.

Politics, for its part, is, on my definition, the very contest for that legitimate (constitutional) power – power with which the said public policy can be developed and delivered.

What of science? Science is the study of nature, and the application of the knowledge of such study (as in engineering and medicine) to practical problems. Data in science comes from such study and application, including through mathematical (and computerized) modelling and experiments.

But policy is more complex still – for it must mobilize many other disciplines across many systems of state and society. And so science and data, for all of their apparent authority and contemporary prestige, cannot be dispositive in any policy exercise, as considerations of law, philosophy, sociology, economics and strategy are also and always apposite – again, across multiple systems. I show this in Figure A:

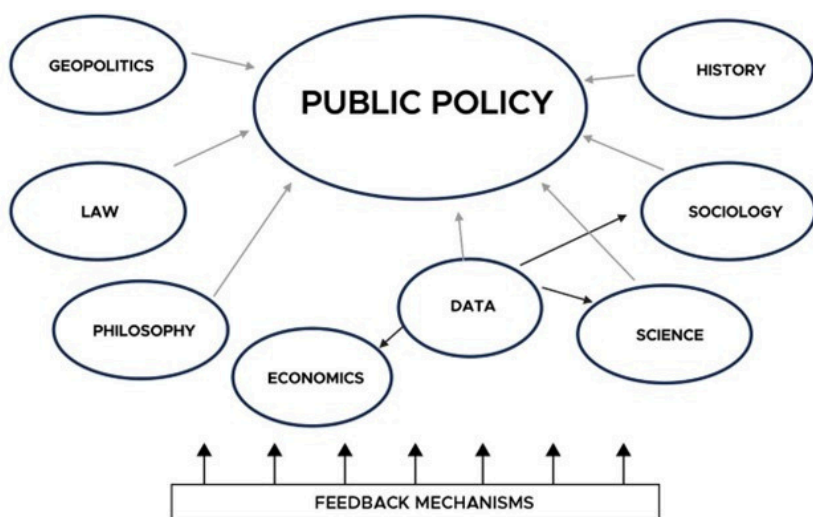


Figure A – Science and Data as Inputs to Policy

But why should policy not just follow the data or be based strictly or even primarily on data – which today is erroneously conflated with “evidence” as such? Answer: Because policy must be based on proper constructions of – and frameworks for – wicked public problems flowing into and over time. What problem(s) are we trying to solve? And what evidence can we adduce for our proposed method of solving the problem(s)?

To be sure, data may figure in the evidence. Yet that, it itself, is not enough – far from it. For there must be reasons – and reasons, based on any of the disciplines described above, are the core of evidence.

Bref, good policy is driven by good reasons – and data and science may or may not be such a reason (or provide the basis for a reason), depending on the policy problem in question, and the quality and relevance of the data and science at play.

In the case of the pandemic school closures, I began to publicly decry and sound the alarm on the ouster of hundreds of millions of (“third bucket”) children from school from the northern fall of 2020. When I did this online, a number of skeptics asked for the “data” to prove my assertion.

I replied that the “data” was not yet available, as this was all happening, as is the case with many emergencies, in real-time – but with massive future consequences. Relevant data on year-over-year school enrollment for that particular school year would, in many countries, not be available to the public for almost another year still; in some cases, even longer.

How, then, to proceed in policy decision-making? Should one have waited for two years for “data” to prove what had happened two years prior in order to respond, two years later, to the mass ouster of students into the third bucket (no school at all)? Nonsense! But that was the logic of “following the data”... Conversely, should one operate on a hunch, at time zero, without any “data” or even other reasons in support of a possible policy move?

Answer: One must, in real-time, adduce all ken and instruments in support of proper decision-making: experience, wisdom, formal academic and professional knowledge, the advice of good advisers, the lessons of the past and other jurisdictions, imagination (yes, imagination!) and, yes, science and data in order to solve difficult public problems. And then one has a chance at some success.

Einstein himself argued for imagination, intuition and “bold speculation” in science as the sine qua non in jumping from the empirically (data-driven) path-dependent to new levels of understanding. [1] Indeed, Einstein argued that “[t]he intuitive and constructive spiritual faculties must come into play wherever a body of scientific truth is concerned [...]. Our moral leanings and tastes, our sense of beauty and religious instincts, are all tributary forces in helping the reasoning faculty towards its highest achievements.”[2]

Figure B reproduces Einstein’s diagram on imagination and intuition in science from his 1952 letter to his friend, the Romanian philosopher-cum-mathematician Maurice Solovine. The physicist Gennady Gorelik describes Einstein’s logic as follows: “Axioms A, including the concepts for their formulation, are free inventions of the human spirit (not logically derivable from what is empirically given). Extralogical inventive intuition takes off from the ground, or, rather, the launch paid, of empirical data E. At the second step, some statements S_n are derived from A to be checked by landing in the E at the third step. If the landing is successful, the whole theory, including its axiomatic fundamentals, is justified.”[3]

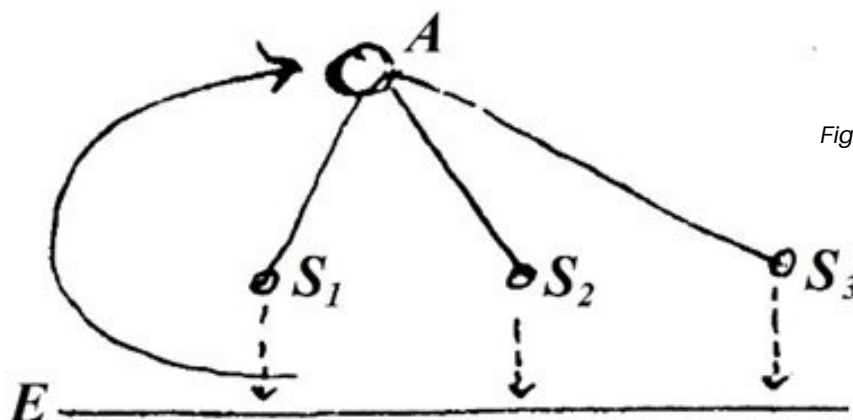


Figure B- Einstein on Intuition and Imagination

[1] <https://arxiv.org/pdf/1106.6345>

[2] Ibid.

[3] Ibid.

Of course, all of this applies in spades in public policy as well – new, imaginative frameworks for analyzing problems often enhance the understanding and improve outcomes in practice.

From a public policy perspective – including in emergencies and disasters – what’s still missing? Answer: corrective feedback from the population and other “estates” of society, as I show in Figure A. And politics – and the political contest – plays a key role in this feedback dynamic from population to power. For while public policy is not solely the province of democracies (indeed, non-democracies often did better than democracies in preventing the third bucket catastrophe of the pandemic!), the chief functional advantage of the democratic system is the very existence of feedback mechanisms to public power in order to correct mistakes. (What if, for instance, a mathematical model on which scientific advice is based is, on inspection, rubbish? Or what if the data feeding that model is poor? Or what if that numerical predictions of that model are improperly interpreted for or by decision-makers? How to correct? Answer: Feedback mechanisms, only.)

Assuming the public (political) power in question, under the pressure of emergency, is disposed to correction...

Policy Brief

Harnessing Emerging Sciences and Technologies for Sri Lanka's National Development

By Professor Janendra De Costa



Preamble

It is important that Sri Lanka's national development is viewed in a wholistic framework which includes economic development, with a reasonably equitable distribution of its benefits, improved quality of life, especially for the currently lower income groups, and environmental security to ensure that the benefits of economic growth and social wellbeing are sustained to future generations. Sri Lanka has just completed an IMF-aided economic reset and is at the early stages of a process of recovery from a significant economic downturn and reduced quality of life, especially for its low- and middle-income groups and for much of its aging population. Therefore, it is imperative that Sri Lanka utilizes the opportunities afforded by the emerging sciences and technologies to enhance its drive towards national development.

Ground realities to be considered when adopting emerging technologies

Sri Lanka's economy is still dependent on agricultural exports of relatively lower value addition, tourism, apparel exports and remittances from workers based overseas for revenue generation. High energy costs, and high wages for a workforce of lower productivity are major challenges faced by all revenue-generating industries. Emigration of trained personnel, especially in the health and science and technology sectors, and lack of substantial state or foreign-direct investment are key constraints that hamper efforts to accelerate economic growth. Increasing frequency of extreme weather events induced by climate change exert wide-ranging adverse impacts on the infrastructure, economy, quality of life and the environment.

About the Author Janendra De Costa is the Senior Professor and Chair of Crop Science in the Faculty of Agriculture at the University of Peradeniya. His research interests span across agriculture and forestry with specific emphasis on environmental stresses, climate change and their impacts.

This is further exacerbated by environmental degradation caused by human activities which continue unhindered due to weak and poorly enforced regulatory mechanisms. Despite these weaknesses and constraints, there are strengths in Sri Lanka that can be harnessed to resuscitate its national development via emerging sciences and technologies. Despite being sub-optimally resourced, the state-funded education system, supplemented by non-state educational institutions produces a workforce of high basic literacy who are receptive to infusion, adoption and generation of new technologies. A combination of state and private network of health care institutions has maintained Sri Lanka's key health indicators at relatively higher levels by global and regional standards.

Pathways for emerging sciences and technologies to contribute to Sri Lanka's national development

Two principal pathways are identified for emerging sciences and technologies to contribute to national development: (a) Increasing efficiency; and (b) Innovation to generate new products and services. These are outlined below:

1. Increasing efficiency is a key pathway by which emerging sciences and technologies can contribute to Sri Lanka's national development. Agriculture, food processing and value addition, power generation, distribution and clean energy, and a wide range of manufacturing industries, along with health care and education systems can harness the potential offered by emerging technologies such as artificial intelligence, green hydrogen and their associated tools and technologies to enhance their efficiency of production and quality assurance procedures.

Automation and robotics powered by artificial intelligence has the potential to enhance efficiency of production and manufacturing processes.

2. Innovation to produce globally competitive products and services, their incubation and mass production is the other key pathway which can benefit from emerging sciences and technologies. A wide range of emerging technologies and application of emerging technologies to existing technologies such as nanotechnology, biotechnology, mechatronics and materials science and in key sectors such as manufacturing, health care and education can lead to products and services which can be competitive against existing products and services by virtue of their superior performance and increased efficiency via reduced cost and environmental footprint.

Both increased efficiency and innovation have the potential to improve quality of life and environmental cost.

Key policy and operational interventions proposed

Policy- and operational interventions are proposed with different time horizons, viz. short- to medium-term and medium- to long-term.

Short- to medium-term interventions

Short- to medium-term interventions are aimed at infusion of specific emerging technologies² into sectors which afford a greater feasibility of doing so in the near future. These are outlined below :

Feasibility analysis and identification of entry points

Most emerging technologies are high-end technologies which require a substantial investment in terms of infrastructure and trained manpower to introduce and to develop, over a period of time, to a sufficient level to contribute to national development. At the present juncture, Sri Lanka should first look inwards to assess its current capability to:

- (a) identify key and strategic sectors/areas which are likely to provide the greatest benefit by an infusion of an emerging technology
- (b) assess the current capacity, in terms of existing infrastructure and available trained personnel, for successful infusion of the required emerging technology

Infusion of overseas expertise

Following initial identification of entry points and assessment of feasibility, the potential for effective infusion of expertise from abroad should be explored. Overseas expertise could be in the form of services of foreign nationals or expatriate Sri Lankans. Appropriate mechanisms with clear guidelines for engagement need to be formulated when obtaining the services of either of the above categories of experts. An essential component of such service agreements should include training of Sri Lankan scientists and technologists so that Sri Lanka becomes self-reliant in applying and further developing the specific emerging technologies within a reasonable period of time.

Establishment of high-performance expert groups

In the sectors/areas identified for infusion of specific emerging technologies, teams of experts should be assembled with clear, time-bound terms of reference to lead the adoption of the identified emerging technologies. These teams may include professionals from state institutions including universities and those from the private sector and overseas. It is preferable that these experts work full-time from one physical location so that they are fully focused on this task.

However, if this proves practically difficult, 'semi-virtual' expert groups, where some experts function within their own institutions on a part-time basis may be considered. Even in this operational set-up, it is essential that a core group of scientists and technologists function full-time as a team at one physical location.

Provision of resources

All resources, which include physical resources and remuneration packages for the personnel, should be provided through a transparent mechanism with adequate checks and balances for ensuring accountability. State-, private sector- and international donor funding may be sourced for providing the required resources.

Operational mechanism

The teams of experts should provide time-bound plans for infusion of specific emerging technologies in their respective sectors/areas. Mechanisms should be put in place to monitor progress and initiate required course corrections.

An appropriate body, consisting of representatives from relevant state institutions (e.g. line ministries, treasury etc.), industry representatives and independent experts (e.g. academia), should be established for progress monitoring and evaluation.

Research

Research may be required to solve issues that could arise when adopting emerging sciences and technologies developed in a well-resourced and technology-savvy setting to the resource-limited and less technology-savvy environment that prevails in Sri Lanka. This research would predominantly be of an applied and/or developmental nature, but a limited amount of fundamental research may also be necessary.

As such, a mechanism should be established to provide essential research funding, preferably on an open and competitive basis, to local scientists in universities and research and development (R & D) institutions. The funding mechanism may be operated via the current research funding institutions such as the National Research Council, the National Science Foundation and the Council for Agricultural Research Policy, but with adequate provisions for timely disbursement of funds and their efficient processing.

Fiscal Policy interventions

Fiscal policy measures may be put in place to incentivize private sector organizations and entrepreneurs to adopt emerging technologies in their manufacturing processes and services. Possible fiscal policy measures include tax reliefs to organizations adopting emerging technologies, and tariff reductions on imported items required in emerging technologies and on exported goods manufactured using emerging technologies.

Medium- to long-term interventions

These medium- to long-term interventions are aimed at developing a broad base for:

(a) dissemination of knowledge and expertise via tertiary and secondary education institutions

and

(b) generation of new knowledge, products and services based on emerging sciences and technologies via R & D,

so that a continuing process of innovation through emerging sciences and technologies is initiated.

Interventions at the Tertiary Education Level

Tertiary education level in the universities and technical colleges offer the greatest potential to build a broad base of personnel with knowledge and training in emerging sciences and technologies identified as having the potential to contribute to Sri Lanka's national development.

Two interventions are proposed in this regard:

(1) Inclusion of emerging sciences and technologies in the curricula of relevant university faculties

This is a lengthy procedure given the time required for in-house deliberations within university departments and faculties and a string of approvals from university committees, the Senate and finally from the UGC.

However, this option should be pursued as it provides the opportunity to disseminate knowledge on emerging technologies to a wider section of the undergraduate population in Sri Lankan universities, which in turn, increases the probability of generating innovations through emerging sciences and technologies in the future.

(1) Establishment of Centres for R & D and dissemination of knowledge on emerging sciences and technologies in a few selected universities

These centres should ideally transcend the traditional faculty and departmental compartmentation within Sri Lankan universities and thereby provide a platform for academics from a diverse range of relevant disciplines to work together.

Furthermore, these centres should be closely networked with the relevant local, and if possible, international R & D institutes with provision for the exchange of knowledge and personnel. Similarly, they should be closely linked with the industries, private sector organizations and entrepreneurs to facilitate uptake and commercialization of any new products and services that may be generated via R & D. Initial funding and resources to establish such centres should be provided by the state with supplementary funding from the private sector and international donors.

The networks of advanced R & D centres in countries such as India (the network of Indian Institutes of Technology, IITs) and Germany (the Max Planck Institutes) can be considered as models for a similar network of centres in Sri Lanka.

Interventions at the secondary education level

Secondary education level offers to the possibility of creating awareness and infusion of the fundamentals of emerging sciences and technologies to a wider section of the student population in comparison to the tertiary education level which is accessed by less than 5% of the student population of any given age cohort.

Furthermore, the secondary education level, arguably, constitutes a stage of learning where the students are more receptive to absorb and process new knowledge in a way that would increase the probability of them generating new applications and innovations.

Four interventions are proposed to achieve this objective :

(1) Introduction of new optional subjects on emerging sciences and technologies into the secondary school curriculum

Inclusion of emerging sciences and technologies into the content of compulsory subjects that are already being taught would further inflate the existing content-heavy subjects (e.g. Science at the GCE Ordinary Level and all science-based subjects at the GCE Advanced Level), thus increasing the pressure on a student population in a learning environment which is heavily reliant on examination performance as a measure of their learning. Introduction of emerging sciences and technologies as separate optional subjects would allow students to gain knowledge in a learning environment which has a greater probability of the subject content being internalized and thereby being applied in generating innovations.

(2) Establishment of laboratories with basic learning resources in schools which opt to offer the new subjects on emerging technologies

Given the cost of establishing and maintaining such laboratories, schools which opt to offer these new subjects should be supported with state- and international donor funding (e.g. UNESCO, UNICEF), possibly supplemented with private sector funding. To ensure that students across all regions of the country gain exposure to emerging technologies, a minimum number of such laboratories should be established in each educational district.

(3) Linking of schools which opt to offer new subjects on emerging technologies with centres established in the universities

While school-based laboratories can function as the initial breeding ground for secondary school students to dabble with emerging technologies, the university-based centres can provide them a glimpse into the process of generating real-world applications of emerging sciences and technologies. To facilitate this learning pathway, establishing linkages with relevant schools and conducting short-term exposure programs should be included in the mandate of the university-based centres.

(4) Introduction of teacher training programs

Availability of an adequate number of teachers with knowledge on the fundamentals of emerging sciences and technologies is crucial to their effective introduction at the secondary education level. Therefore, short- to medium-term teacher training programs should be developed in collaboration with the relevant universities, R & D institutions and unaffiliated freelance experts. Such programs should be incorporated into continuing professional development (CPD) programs for teachers as emerging technologies are highly likely to change over time.

Strengthening of intellectual property rights (IPR) mechanisms

New products and services generated via innovations based on emerging technologies have to be protected via IPR for Sri Lanka and its scientists and technologists to receive the full benefits of their innovations.

Science Journalism

Science journalism offers a powerful tool to create awareness and disseminate knowledge about emerging technologies to a wide cross-section of the general public and civil society.

Increasing societal awareness on emerging technologies would change perceptions and increase the civil society's receptivity to bear the cost of introducing emerging technologies during the initial phase. As such, policy interventions should be initiated to harness the potential of science journalism, both in print and electronic form, to promote emerging sciences and technologies in Sri Lanka.

Institutional mechanism for implementation of policy initiatives and interventions

As emerging sciences and technologies span across a wide range of scientific disciplines, applications and sectors, an institutional mechanism which operates within the ministerial boundaries would not be effective in providing leadership and direction to a program to introduce and sustain the application of emerging sciences and technologies towards national development of Sri Lanka. Therefore, a trans-ministerial taskforce under the leadership of the Executive President or a nominee of the Executive President, is proposed to steer and oversee the implementation of this national drive.

In order to be effective and efficient in its functioning, it is preferable that the taskforce consist of a limited number of experts representative of different sectors and scientific disciplines plus a selected number of government officials representing key institutions such as the Treasury, key line ministries and the Auditor General's Department. The taskforce should be entrusted with the authority to implement measures across different ministries and state institutions along with financial authority while functioning under the purview of the Auditor General.

EXPLANATORY NOTES

[1] Science and technology are closely related but serve different purposes:

Science is the systematic study of the natural world through observation and experimentation. Its primary goal is to understand natural phenomena and uncover the underlying principles and laws that govern them. Science is driven by curiosity and the pursuit of knowledge for its own sake. For example, studying the behavior of electrons in different materials to understand their properties is a scientific endeavor.

Technology, on the other hand, is the practical application of scientific knowledge to create tools, products, and processes that solve problems and improve human life. Technology focuses on design, invention, and production. For instance, using the knowledge of electron behavior to develop semiconductors and create electronic devices like smartphones is a technological application.

An emerging technology refers to a new or developing technology that is currently in the early stages of its lifecycle but has the potential to significantly impact society, industries, or the economy in the future. These technologies are often characterized by rapid innovation and growth, and they can lead to transformative changes in how we live and work.

Some key aspects of emerging technologies include:

- **Novelty:** They are relatively new and not yet widely adopted.
- **Potential Impact:** They have the potential to disrupt existing systems and create new opportunities.
- **Uncertainty:** Their future development and applications are often uncertain and can evolve in unpredictable ways.
- **Interdisciplinary Nature:** They often combine advances from multiple fields of science and technology.

Examples of emerging technologies include artificial intelligence, quantum computing, and gene editing. These technologies are still being researched and developed, but they hold promise for significant advancements in various domains.

[2] There are several exciting emerging technologies making waves today. Some of the most notable ones are:

1. **Artificial Intelligence (AI):** AI continues to advance, with applications in various fields such as healthcare, agriculture, finance, and transportation. AI-powered scientific discovery is particularly noteworthy [3]
2. **Augmented Reality (AR) and Virtual Reality (VR):** These technologies are transforming industries like gaming, education, and real estate by providing immersive experiences [4]
3. **Big Data and Advanced Analytics:** These tools are crucial for making sense of the vast amounts of data generated daily, helping businesses make informed decisions [4]
4. **Blockchain:** Beyond cryptocurrencies, blockchain technology is being used for secure transactions, supply chain management, and even voting systems [4]

- 5.Clean Technology (Cleantech): Innovations in renewable energy, such as solar, wind and geothermal power and green hydrogen are essential for addressing climate change [5]
- 6.Internet of Things (IoT): IoT connects everyday devices to the internet, enabling smarter homes, cities, and industries [4]
- 7.Robotics: Advances in robotics are enhancing manufacturing, healthcare, agriculture and even household chores [6]
- 8.Quantum Computing: This technology promises to revolutionize computing by solving complex problems much faster than traditional computers [7]
- 9.CRISPR and Gene Editing: These technologies are making significant strides in treating genetic disorders and advancing personalized medicine [5] and in developing new crop varieties with a range of favourable characters such as stress resistance, climate resilience and greater nutritive value.
- 10.High Altitude Platform Stations (HAPS): These systems offer new levels of communication and observation capabilities, especially in remote areas [3]

[3]<https://www.weforum.org/agenda/2024/06/top-10-emerging-technologies-of-2024-impact-world/>

[4] <https://www.startus-insights.com/innovators-guide/emerging-technologies-full-guide/>

[5] <https://www.technologyreview.com/2024/01/08/1085094/10-breakthrough-technologies-2024/>

[6] https://en.wikipedia.org/wiki/Emerging_technologies

[7] <https://www.mckinsey.com/featured-insights/themes/top-15-technology-trends-unfolding-today>

The Leadership Challenge in South Asia : A Perspective from Pakistan

By Senator Javed Jabbar



The concept and word of *Leadership* have come to be seen synonymously and mainly, with political leadership. Which is certainly the most important tier because politics has an over-arching, pervasive impact on virtually all segments of a society and nation . Yet leadership in other spheres also plays a critical role , regardless of the quality and impact of political leadership .

In this reflection in the context of South Asia, let us begin at the top rung. Though the region is a distinct geographical entity and, despite vast divergences, has an indigenous historical symmetry, in 2024 all nation-states are still recovering and emerging from the long-term effects of European colonization. Be they the absurdities of the first-past-the-post electoral system inherited from Westminster --- in which parties and candidates that receive only a small percentage of the total registered voters become successful representatives of the total electorate till the next polls --- or the anomalies of the bloated bureaucratic systems that distort governance , almost every South Asian state continues to search for alternatives which could more fairly mirror the realities and needs particular to itself.

Fortunately , in recent years, and in 2024 in particular , both political leadership and the people in different countries of the area have shown the will to shape new pathways in political change. With the people taking the lead , and leading the leaders!

On 8th February this year, the voters of Pakistan created an unprecedented milestone in global electoral history. The conventional general election anywhere, parties and candidates search for voters and encourage them to turn-out and cast ballots in their favor.

About the Author Javed Jabbar is an award-winning writer and filmmaker, policy analyst, former senator and federal minister of Pakistan. He can be contacted at javedjabbar.2@gmail.com.

But in Pakistan, after the Supreme Court shockingly upheld the biased verdict of the Election Commission depriving the imprisoned Imran Khan-led *Pakistan Tehreek-i-Insaaf* (PTI) from using its famous electoral symbol of the cricket bat due to alleged or real failures to hold timely internal party polls (while condoning major similar failures by other parties which were allowed to use their respective well-known symbols), and depriving PTI the right to contest as a party, it was the voter who not only turned up, but also went searching for the independent candidate in her/his constituency who was a known member of PTI but who had been allotted a different election symbol : e.g. in one constituency , a table, in the constituency next door, a tractor, and so on. Thus, hundreds of candidates who were actually PTI candidates had dozens of different symbols --- whereas all the other parties had the unfair advantage of their single well-known symbols , e.g., an arrow, a tiger , etc.

Yet, so determined, so mature was the average Pakistani voter-supporter of PTI --- each voter a political leader in her/his own right ! And women-voters for PTI were specially active --- that independent candidates with entirely different election symbols secured more votes --- 17 million plus --- than the other two leading parties using their historic symbols, eg. 13 million plus (*PML-N*, of Nawaz Sharif and 8 million plus of the Bhutto-Zardari-led *PPP*). So shocked by the outcome were the forces pitted against PTI --- the Election Commission , *PML-N* , *PPP* , the military , sections of the Judiciary --that , despite rigging the final vote-counting tallies , the more fair-minded majority of the Supreme Court insists that PTI be allotted its share of reserved seats as per its voted-for right --- while all other elements, as of the date of writing on 30th September 2024 , are inventing all kinds of devious tactics to avoid implementing the verdict in favor of the PTI rendered by both the electorate and the majority of the Supreme Court.

Here then is authentic political leadership in South Asia : transcending painful deprivations and in justices --- citizens rally to support true democracy of the people , by the people , for the people --- yet they are still thwarted by those forces that actually see do not respect the people. In India , in the April-June polls, voters also demonstrated refreshing maturity in punishing the extremism of the Hindutva-driven BJP by substantively reducing its seats in the Lok Sabha . Earlier, and once more in 2024, the Indian voter has proven that s/he has the will to strengthen non-dynastic as well as non-extremist -prone parties by voting into office in New Delhi and in east Punjab the Kejriwal-led Aam Aadmi party in place of the Congress and BJP. In West Bengal, Mamata Bannerjee has shown the ability to overcome long-entrenched domination by the Communists and by the main Congress, as also curb the more recent intrusions of BJP.

In Sri Lanka in September, voters catapulted into the top office a President from a party which secured only about 4 per cent of the vote in the previous polls, and now has left long-established names far behind. Other contributors to this collection of essays are better placed to analyze this remarkable change. In the Maldives, voters backed the assertiveness of national sovereignty in the face of hegemonic domination.

Perhaps the most powerful manifestation of popular will for radical political change occurred with the youth-led Monsoon Revolution in Bangladesh in August. Though the change came through sheer, sustained street power instead of by ballot -- which , in any case, for the previous polls had become highly partisan and non-inclusive --- the phenomenon also signified how tumultuous internal change can have substantive geo-political dimensions as in BD's relations with India , and with Pakistan, China , USA and other countries .

Thus, notwithstanding the danger of *"the more things change, the more they stay the same"* always lurking in the shadows of promise to injure and disarm positive change, the realm of political leadership in South Asia in 2024 has become more people-centric, and more people-led than in recent times . Even harking back decades to the emergence as independent nation-states free of European , mainly British colonial control , the different countries of the region produced political leadership of extraordinary character who were role-models for the whole world . Indeed, they inspired other countries still under colonial occupation , specially in Africa , to confront and overcome foreign suzerainty.

While the leaders of the Great Rebellion in Sri Lanka in the early 19th century and the doyens of the Independence movement in the first half of the 20th century are numerous and well-known, as a Pakistani writing in the context of the essay's title , one is particularly proud of the quite unique character and political impact of Mohammad Ali Jinnah, the founder of the country. He did not speak fluently in Urdu , or Bengali , the popular spoken languages in the areas that became parts of West and East Pakistan in 1947. His English was chaste, as was his attire in stylish Saville Row suits, until 1937 when he switched to traditional locally worn clothes. He overcame formidable resistance to the creation of Pakistan from 3 principal adversaries : the colonial British , the Hindu-dominated Congress Party, and , like bitter icing on the cake, several fellow Muslim forces, mostly religious parties which fervently opposed the formation of a new homeland for the Muslims (but which, after Independence, have become the ideological custodians of the State!).

The eminent American historian Stanley Wolpert commences his biography of Jinnah with the following words , which say it all : *"Few individuals significantly alter the course of history . Fewer still modify the map of the world. Hardly anyone can be credited with creating a nation-state. Mohammad Ali Jinnah did all three."*

For the past 77 years , the people of Pakistan have struggled to produce leadership with the qualities exemplified by Mr.Jinnah. He lived only for 13 months after the birth of the new nation-state and was thus unable to shape conditions and institutions that would foster new leadership in the political sphere, and in other sectors, with the attributes he possessed. That challenge was, and is connected with the structural dimensions of the political economy, the control of resources, the civil-military balance, or imbalance, the scope available for leadership to peacefully express views and visions without persecution and suppression by elements that wield force and might. At certain points, qualitative leadership has emerged but has not been enduring because of a mix of factors : comprising both failures by civil elements, and by military intrusions into the political and other spheres of national life, as also covert interventions by mainly Western states with geo-political interests in the region.

But, as in other countries of South Asia where, in the non-political sphere, leadership of vision, grit and endurance has emerged to shape bold new initiatives in the social, commercial, technical fields, so too in Pakistan in the past seven and a half decades such progress is visible . Note : it is ironic that , because such non-partisan leadership is often in the category known by the label of "NGOs" and "civil society" that is largely dependent on overseas funding support, such leadership has faced persecution on mostly false charges of promoting "foreign agendas" .

Sometimes, such beneficial change-making leadership has been state-linked, and yet non-partisan. In the 1950s and 1960s, as Pakistan strove to survive as the most uniquely-constructed nation-state in world history, e.g. with 2 wings separated by about 1000 miles of hostile territory, and commencing with little or no industrial, banking, logistics infrastructure, visionary technocrats and bureaucrats led efforts and helped establish state-sponsored factories for cement, fertilizer, paper, chemicals, jute, etc. which were soon handed over to the private sector, initiated speedy construction of physical networks in road, rail, air, maritime transportation, helped boost agricultural production to avail of demand created by the Korean War, etc.

For the peaceful, manifold uses of nuclear power, such techno-bureaucrat leaders pioneered the Pakistan Atomic Energy Commission (PAEC) which recruited and trained thousands of technicians, engineers, scientists whose pioneering work made possible today in 2024 benefits for millions in the fields of medicine, agriculture, higher education, research : quite apart from proficiency in the production of nuclear weapons developed only after India invaded East Pakistan on 21st November 1971 to break-up the original Pakistan and then regrettably introduced into South Asia the menace of atomic weapons in 1974.

In the social development sector, Pakistan benefits enormously from the huge contributions of social philanthropy led by individuals but also collectively enabled by the incredible generosity of the people who are rated by independent surveys to be among the most "caring and giving" in the world.

Another facet of non-partisan leadership emanating from Pakistan to benefit the world at large, is the visionary, insightful formulation of the Human Development Index by the eminent Pakistani economist Dr. Mahbub ul Haq working as Adviser to UNDP in New York in 1991. This writer was privileged to know Dr. Haq as an esteemed senior family friend and also as a fellow Senator . But even allowing for a personal bias, on purely objective grounds, the visionary concept of scientifically measuring the development of peoples by levels of literacy, education, health, access to basic services, et al rather than "Gross National Product" was a revolutionary intellectual leadership contribution which has become a credible worldwide standard to assess the genuine progress of nations.

To conclude: whether in politics , or in the social, economic, development sectors , whether they converge as in the instance of Nobel Prize winner Dr Mohammad Yunus in Bangladesh becoming Chief Adviser of the interim Government , or whether as in the case of Imran Khan whose popularity endures even from inside prison , the challenge in South Asia for the decades ahead remains how to produce and sustain leadership that transforms poverty into just and abiding empowerment.

Managing the Waste Crisis of Sri Lanka: Policy Recommendations and Effective Strategies

By Shayani Jayasinghe



Waste: People and the Planet

During recent times, solid waste management has become a huge challenge faced by authorities and citizens across the globe. According to the Global Waste Management Outlook Report 2024, issued by the United Nations Environment Programme(UNEP), more than two billion tonnes of municipal solid waste is generated each year around the world. Municipal Solid Waste (MSW) is a type of waste consisting of everyday items that are discarded by the public. It is generated wherever there are human settlements.

Human led rapid urbanization coupled with industrialization has contributed largely to the generation of solid waste in municipal areas around the globe. The increasing population and waste generation without the proper measures of waste mitigation has caused many environmental challenges and raised many health-related concerns. Irregular waste dumping and lack of proper waste disposal mechanisms not only leads to a destructive environment but also serves as a breeding ground for many diseases and is also a major contributing factor for climate change and loss of biodiversity. Therefore, Municipal Solid Waste (MSW) is thus intrinsically linked to the triple planetary disaster of climate change, environmental pollution and biodiversity loss.

These disasters have adverse effects on mother nature and have caused disruptions in the lifestyles and livelihoods of people and communities across the globe. Therefore, the issue of waste management and its environmental impact has become a main issue of concern around the world, prompting many governments and organizations to take stringent measures and formulate robust policies to tackle the crisis.

About the Author Shayani Jayasinghe is the Research Associate of the Bandaranaike Academy for Leadership and Public Policy (BALPP). She is passionate about environment and climate related issues and is working on policy formulation related to these fields. Shayani is also a visiting lecturer of the International Relations Division of the Bandaranaike Centre for International Studies(BCIS).

Management and handling of solid waste is a concern in both developed and developing countries worldwide. Although research shows that the quantity and quality of waste generated by urban areas of developing countries is much lower than the waste generated by urban areas in developed and industrialized countries, the measures used for the management of MSW in developing countries remain inadequate. Developed countries have managed to handle waste disposal issues to a certain degree by applying modern technology to carry out advanced waste recycling methods, maintain proper sanitary land filling techniques and adopt ecofriendly methods to generate energy from waste. These countries have been successful in using recycled waste to generate many economic benefits and mitigate environmental catastrophes.

Solid Waste Management (SWM) has become a major issue in many developing countries across the globe due to several factors. Rapid population growth as well as the lack of proper funding and technology to cope with the increasing amount of waste generated by rapidly growing cities have contributed largely to the poor waste management in developing countries. This issue is exacerbated by the shortage of reliable and efficient waste collection services, limited source separation of waste types, lack of proper waste recycling technologies and reliance on unmanaged landfills and open dumps for disposal – creating large scale toxic mountains that pollute the air, water and soil, threaten public health and hasten climate change and other environmental catastrophes. This form of poor waste management, which is a common issue in developing countries, often tends to undermine economic development and social progress in these countries, resulting in discomfort and disruption of livelihoods of people.

Despite some concerted efforts taken by governments, organizations and environmental activists worldwide to address this issue of waste management, many challenges remain due to gaps in technology, lack of proper leadership and defects in policy making.

Sri Lanka, which is a developing country situated in South Asia has been facing major challenges regarding solid waste disposal and solid waste management. The absence of waste segregation, poor waste collection and disposal mechanisms, and lack of public commitment to waste management are some of the underlying causes for these prevailing conditions (Dharmasiri, 2019). Sri Lanka experienced a tragic situation on April 14, 2017, when a large section of the Meethotamulla garbage dump collapsed burying buildings and houses nearby and killing 32 persons. This disaster highlighted some of the gaps in policy making and lack of proper disaster mitigation and management techniques within the country.

In the light of the above, this article discusses the challenges that Sri Lanka has confronted in managing Municipal Solid Waste and provides policy recommendations and strategic guidelines which Sri Lanka can adopt to overcome these challenges.

Waste Issue in Sri Lanka

As per the reports issued by Centre for Environmental Justice (CEJ), Sri Lanka generates around 7000 MT of solid waste per day with the Western Province accounting for nearly 60% of waste generation (CEJ: 2021). The Western province is the most populated province in Sri Lanka where the commercial capital Colombo city and the administrative capital Sri Jayawardenepura Kotte are located. The Western province is the largest generator of solid waste because of rapid urbanization, large scale population growth and industrialization.

In Sri Lanka, the solid waste disposal and management issue has become a very challenging task in urban areas, especially in the Western province where congestion caused by high population concentration has resulted in limiting space available for proper waste disposal. The rising population in the Western province over the decades has produced more and more waste, raising many socio-economic and health related concerns.

The most common types of solid waste that are generated in urban areas of Sri Lanka comprise of plastic and polythene waste such as shopping bags, straws, lunch sheets, straws, storage containers and boxes, wrappers and milk packets. In 2017, Sri Lanka was ranked fifth in the world among the countries that contribute largely to plastic and polythene pollution in oceans. Research shows that this type of waste is highly detrimental to the environment and marine life because they can remain on the planet for several years causing large scale pollution and raising many health-related concerns as well (CEJ:2021). This type of waste destroys marine life, damages marine eco systems and pollutes sea water causing major threats to natural habitats. Furthermore, it results in reducing the ability of a marine ecosystem to adapt to climate change, directly affecting the livelihoods of millions of people, their food production capabilities and socio-economic well-being. The problem of irregular solid waste dumping in Sri Lanka demonstrates many gaps and shortcomings in waste collection, recycling, transporting and disposing processes. Many cities in Sri Lanka lack proper waste collection, transportation, composting and recycling facilities as well as proper waste dumping sites.

Open dumping is the most common method of waste disposal in Sri Lanka. Waste generated from households, factories, hospitals and all other entities is dumped in environmentally very sensitive areas such as marshy lands, beaches, lowlands, roads, highways, forests etc. causing air, water and soil pollution. Also, these open dumping sites have become breeding grounds for disease vectors such as mosquitoes and other harmful pathogens. Unregulated waste dumping has also contributed to reducing the aesthetic value and natural beauty of the environment. This has created a challenging environment in promoting tourism in the country as the scenic beauty of many tourist destinations has been destroyed by irregular waste dumping and the lack of proper waste management methods.

Burning solid waste is also another issue that raises many environmental and health concerns within the country. The open burning of solid waste causes environmental pollution due to toxic gases and smoke released into the air. People with existing health conditions, the elderly, pregnant mothers and young children are especially vulnerable to the ill health effects of smoke. These issues demonstrate the public's poor knowledge on waste management and their lack of commitment to maintaining environmentally friendly waste management practices.

Hence, the issue of waste management has become a huge challenge for both citizens and authorities in Sri Lanka. During the past few years, the issue of waste management became an important topic of discussion within the country. The government of Sri Lanka has taken many initiatives to improve waste management systems in the country including developing of policies, strategies, guidelines, legislation and provision of infrastructure facilities for waste management.

Initiatives to Address the Waste Issue in Sri Lanka

Sri Lanka ratified the **Basel Convention on the Control of Transboundary Movements of Hazardous Waste and their Disposal** in 1992 and had taken many steps to ensure implementation of its provisions. This step highlights Sri Lanka's interest in contributing to waste management issues on local and international platforms. To improve the waste management systems within the country, Sri Lankan government issued guidelines for the management of solid waste in Sri Lanka in accordance with the National Environmental (Protection and Quality) Regulation No. 01 of 2008. However, as Sri Lankan society and economic system underwent many transformations, new challenges began to emerge calling for more policy reforms and strategies to address the issue in a more organized and efficient manner.

The Ministry of Environment developed the National Strategy for Solid Waste Management (2000) and the National Policy for Solid Waste Management (2007) to address the waste issue in Sri Lanka by improving waste management systems within the country and by building community resilience. These strategies have been instrumental in providing guidelines on the importance of waste avoidance, reduction, reuse and recycling of waste, waste segregation and final disposal of waste in an eco-friendly manner while still giving priority to waste recycling over waste disposal.

These technical guidelines have also emphasized the importance of separating waste into different components at the source of generation to facilitate efficient and effective waste management practices. Such practices have been instrumental in educating the public about the importance of maintaining proper waste management mechanisms. Some of the major benefits of waste reuse and recycling are income generation, employment opportunities and preserving the environment whilst safeguarding human health, improving livelihoods and reducing expenses for waste disposal.

These guidelines and policies play a pivotal role in strengthening the relationship between people and the environment and empowering people to work together to address common challenges imposed by improper waste management mechanisms. However, when paying attention to the recent tragedy in Meethotamulla and many other environmental and health related hazards caused by irregular waste dumping, it is evident that these policies and strategies have failed to achieve the intended objectives as well as to address the challenges imposed by poor waste management mechanisms.

The committee that was appointed to probe into the matter clearly highlighted that this disaster was the result of a policy failure caused by the negligence of relevant authorities and institutions. The shortage of facilities in Sri Lanka for waste recycling highlights the gaps in technology and infrastructure as well as the lack of public awareness and education on the advantages of recycling. As a result, waste tends to end up in large garbage dumps such as Meethotamulla or remain lying on the streets by putting nearby residents' health at risk and contributing to environmental pollution. The delays in evacuating the residents around the Meethotamulla garbage dump on time highlights the gaps in disaster preparedness and disaster mitigation in Sri Lanka. The failure of authorities to implement strategies to expedite the clearing operations and help victims on time, also highlights some of the gaps in policy formulation and implementation regarding sustainable waste management and disaster mitigation.

In the aftermath of the Meethotamulla tragedy, the Ministry of Mahaweli Development and Environment formulated the National Waste Management Policy (NWMP) in 2018. The loopholes and shortcomings of the previous policy have been identified and addressed in this policy document with the prime objective of preventing similar catastrophes in future through capacity building, knowledge management, institutional and legal reforms. One positive feature of this policy document is that it holds the government and relevant authorities accountable with clear responsibilities laid out to relevant institutions to manage efficient waste management systems. Another positive feature of this policy document is that it views waste not merely as something that should be discarded but something that can be reused in a productive manner due to its utility value. It encourages recycling and composting waste on a local and national level to reduce pollution and increase employment opportunities (Rajapaksha and Karunarathna: 2022).

However, even amidst policy interventions and institutional reforms, the waste management issue in Sri Lanka continues to remain a challenging issue due to the absence of adequate infrastructure, lack of public awareness regarding waste reduction and efficient waste management mechanisms as well as the lack of coordination among institutions, lack of institutional capacity to conduct research, raise funds, utilize modern technology and raise awareness among the public (Dharmasiri:2019).

Effective Strategies and Policy Recommendations

The waste management system of Sri Lanka is in need of legal, institutional and policy reforms to enable access to funding, adequate infrastructure, modern technology and proper education to raise public awareness and build community resilience. It is necessary to formulate comprehensive waste management policies and efforts that place a priority on sustainable waste reduction, waste reuse, segregation, recycling and composting techniques that are required to address this issue. This article suggests that Sri Lanka can adopt the following policy recommendations and strategies to address this issue in a more efficient and responsible manner.

- **Implementing a Disaster Mitigation Policy aimed at Preventing Disasters Caused by Slope Failures of Landfills or Open Dumps.** The current disaster management policies in Sri Lanka are solely aimed at mitigating damages caused by natural disasters such as tsunamis, floods, landslides etc. The Meethotamulla disaster is an eye-opener on the necessity to include waste disposal related disasters into the National Disaster Management Policy to educate and raise awareness among both authorities and the public about the adverse effects of such issues on social and economic systems of the country. Steps should be taken to establish a well-organized early warning system to avoid damage to people and the environment caused by slope failures of landfills or open dumps.
- **Introducing Policies to Promote Sanitary Landfilling.** In Sri Lanka, Open dumping of waste in landfills have caused massive damage to the environment and raised many health concerns of citizens. However, countries such as Japan has managed to overcome this issue by introducing sanitary landfills. Joint research conducted by University of Fukuoka and the City of Fukuoka in 1970s produced and applied semi-aerobic landfill technology to create sanitary landfills which are eco-friendlier and more sustainable. As a result of this, Japan today is lauded as one of the countries with the best waste management systems that have contributed to creating a healthier environment for its citizens.

A sanitary landfill is a method of disposing waste on land without disturbing the environment and public health by efficiently utilizing engineering skills to confine them in the smallest practical area possible, before reducing the volume by covering with a layer of earth to ensure the least exposure to the air (Ikeguchi: 1994). Research conducted in Mozambique emphasizes that upgrading from an open dumpsite to a semi-aerobic landfill can reduce harmful greenhouse gas emissions by 40% (Muchangos and Tokai :2020). Sri Lanka should adopt similar practices and conduct more studies on utilizing this technology to manage solid waste efficiently and safeguard the environment from the negative effects of irregular waste dumping.

- **Designing a School Curriculum Where Children are Taught about the Techniques of Managing Efficient Waste Management Systems.** Countries such as Japan, Germany and Belgium have excelled in this regard where school curriculums set guidelines to students to reduce waste, recycle waste and maintain proper waste management systems. Proper waste management education has significantly influenced the behavior of students in these countries by enhancing their knowledge, attitudes, and skills in waste handling and contributed to the creation of a more environmentally sustainable generation.
- **Implementing Strong Government Policies to Promote Recycling.** Germany is a leader in recycling and waste management due the adoption of a series of policies and strategies that such as mandatory waste sorting policies and an extremely efficient **Deposit Refund Scheme (DRS)** – that have significantly improved its waste management and increased its recycling rates. Under the DRS, consumers pay a deposit when they purchase plastic bottles that can be recycled. This amount is reimbursed once the empty bottle is returned to a retail store for recycling. It is a strategic way of reducing the use of environmentally damaging plastics and encouraging consumers to adapt to a more sustainable lifestyle.
- **Designing Strategies to Encourage Composting Organic Waste.** A more efficient way of handling organic waste is by composting it. Composting is a process by which organic waste is broken down by microorganisms, generally bacteria and fungi into simpler forms. Thereafter, the microorganisms use the carbon in the waste as an energy source. This process has two main advantages. One advantage is that it reduces waste sent to landfills and helps to reduce damage to the environment. Another advantage is that it helps to produce fertilizer rich in nutrients which can be used for gardening and landscaping.
- **Strengthening Institutional Capacity.** Institutions play a pivotal role in handling waste management, enforcing regulations and raising awareness among the public. Therefore, it is important to strengthen the structural organization of institutions in charge of waste management by providing them with adequate funds, resources, technological assistance and continuously training the staff attached to these institutions to be more efficient and responsible in handling waste and educating the public.
- **Providing More Funds for Research and Innovation.** Scientific research and technology play a pivotal role in finding solutions to waste management challenges that many societies are facing. Throughout the years, scientific research has been instrumental in introducing innovative strategies to make waste management a more efficient and convenient task.

Waste management technology has experienced significant advancements, notably with the introduction of mobile applications that have been instrumental in educating the public and motivating communities to work together to actively participate in waste management related activities. The introduction of smart bins equipped with sensors can detect waste levels and, upon reaching a predefined capacity, signal waste management authorities for timely collection. Therefore, it is necessary to provide more funds for scientific research and train personnel to contribute to a cleaner and healthier society.

- **Exploring Waste-to-Energy Options.** It is a process that converts waste into a useful source of energy including heat, electricity and fuel. This is a very attractive option for environmental sustainability and energy security. It helps to reduce the amount of waste that ends up in landfills, mitigating the environmental impact of waste disposal.
- **Establishing Partnerships with Waste Management Companies.** Since the issue of waste management can't be handled only by the state sector alone, the government should take steps to collaborate with the private sector to expedite this process and achieve the intended targets. These private waste management companies can assist the government to facilitate the smooth functioning of waste collection, transportation, recycling and the implementation of sustainable practices.
- **Implementing Strategies to Build Community Resilience through Education and Awareness Raising.** The issue of waste management can't be handled without the active participation of the public. Therefore, it is necessary to raise awareness and educate the public about the importance of maintaining proper waste management practices and get them actively involved in the process. Proper laws should be implemented to take action against those who do not adhere to these guidelines.
- **Continuous Waste Management Monitoring and Progress Reviewing.** The government should implement strategies to continuously monitor waste management and track progress to identify areas that have improved over the years as well as areas that need to be improved and further developed.

In conclusion, by paying attention to the above strategies and policy recommendations, we can make a significant impact on reducing waste, conserving resources, protecting ecosystems and creating a sustainable Sri Lankan society.

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Winds of Change in Mannar - Environmental Policy Gone Awry

By Leya Gyi



Sri Lanka has long been recognized as a hotspot of biodiversity, among thirty-six other locations found worldwide, as is accepted by several international agencies. In fact, according to the National Red List, Sri Lanka is found to be home to 253 land snail species, 245 species of butterflies, 240 birds, 211 reptiles, 748 evaluated vertebrates, 1,492 invertebrates, 336 Pteridophytes and 3,154 flowering plants (Diversity, n.d.) but that is excluding new species that continue to be found even today.

However, despite Sri Lanka's rich natural resources and abundance of species located both in and around the island nation, it is in no recent news that policies related to the protection of the environment are seldom effective.

There are already policies and legal frameworks in place to protect the various ecosystems the island is home to, as well as to safeguard endangered species and those to oversee the restoration of degraded habitats. But despite their feasibility, these policies only seem to work on paper as opposed to putting them into practice. This is mainly due to the facts that they are rarely enforced in the way they are meant to – government-run protection agencies often find themselves lacking in personnel and resources; at other times, they are hamstrung by the inadequacy of the very same laws they are meant to be enforcing. In addition, several laws governing the protection of the environment that are in effect today were passed close to, or sometimes even more, than a century ago – when the country was still under the rule of the British Empire. Since gaining Independence, though, certain laws have been updated to keep pace with the changing times while entirely new ones have been passed as well. In spite of this, though, Sri Lankan policies still leave much to be desired when it comes to the protection of the environment.

About the Author Leya Gyi is the Office Administrator at the Bandaranaike Academy for Leadership and Public Policy. Passionate about the environment and conservation, she has followed several courses related to the topics before deciding to expand her field.

Policies that do eventually make the cut are often poorly enforced, leading to delays, high costs and a myriad of other issues that overshadow any of the positive benefits of it. This can in part be explained due to the fact that the present and former Governments have many times been more focused on the projects pertaining to the development of infrastructure within the country. Oftentimes, the focus on biodiversity and its protection has been a secondary issue outside mainstream decision-making for both the government and the private sector (Abeyratne, 2023).

Additionally, both the public and private sectors have, in the past, acknowledged the difficulty of including the consideration of the environment in any project planning, and present and former Governments have many times been more focused on the projects pertaining to the development of infrastructure within the country. In many cases, it is short-term gains that have been sought from such projects, with officials paying little to no regard to the possible consequences they may have on the environment. This is in turn aided by corruption in certain circles, where officials will turn a blind eye to actions that are often detrimental or illegal – a good example being the issue of sand mining in and along rivers that have destroyed [river] ecosystem[s], deepened the river bed, caused river bank erosion, wrecked livelihoods and threatened water security (Jayasinghe, 2021). Also, a prime example of the shortcomings of existing environmental policies in Sri Lanka would be the recent issue of the Adani-backed Mannar Wind Power Project.

A project that is being spearheaded by Adani Green Energy Sri Lanka, the proposed wind turbine farm – of which Phase 1 has already been completed – would provide 250 MW of clean, emission-free energy to the local grid, but at the cost of impeding the Central Asian Flyway, one of eight pathways for millions of migratory birds from across the globe. Despite the seemingly altruistic motives behind the expansion of the Mannar Wind Power Project, several wildlife protection organizations and notable environmentalists, both local and international, have pointed out the extensive ecological damage such a project would lead to. As well as this, the proposed bird corridor that would exist after the completion of both phases is not considered to be viable by several experts, and would ultimately lead to mass scale harm and damage to biodiversity and ecosystem services, which will be irreparable and irreversible (Society, 2024). In addition, the extension of the first phase and implementation of the second phase of the project would see the proposed turbines encroaching on the buffer zone of the Viduthalaithivu National Park as well as being in close proximity to the Adam's Bridge National Park – both of which were recently declared to be RAMSAR wetlands earlier this year. Mannar itself is an island home to three national parks, including the aforementioned two, and the Gulf of Mannar itself is one of the most biologically diverse coastal regions on the planet earth, home to several indigenous and endangered species. Mannar is well-known for being host to migratory birds from around the world, often being suitably described as a “birding paradise”.

Most concerning, perhaps, is the fact that the Environmental Impact Assessment (EIA) was not carried out in a proper manner; to elaborate - an EIA is usually carried out while following the guidance of the National Environment Act (NEA), Coast Conservation and Coastal Resource Management Act and the Flora and Fauna Protection Ordinance (FFPO) – as is documented by the Central Environment Authority. This particular EIA, however, was only done under the National Environment Act came under fire from experts and organizations alike as they were quick to point out discrepancies within it, with questions being raised as to why Mannar was being pushed for as the final location for the project, with experts stating that there were other, more viable locations nearby that were not nearly as ecologically sensitive as this. In addition to this, it was pointed out that Mannar was not even the best location for the installation of the wind farm as far as wind currents are concerned.

It is then perhaps clear, that there is some ulterior motive behind Mannar being chosen by those responsible for the setting up of this wind power project. This then, makes it clear that Sri Lankan environmental policy is in desperate need of being updated and revised for the present day and require a method to ensure transparency when such assessments such as this are being carried out. Since the EIA was released for public viewing, several groups have since raised their concerns about this, with the Wildlife and Nature Protection Society going so far as to take the matter to the Supreme Court, seeking an intervention in the project, pointing out that the proposed project site lies in the center, encircled by three protected areas and aiming to declare decisions taken by Cabinet of Ministers and relevant Ministers who issued statements to go ahead with the project as illegal (Society, 2024).

The very fact that it is NGOs and individuals who seem to actively get involved in addressing these issues and not state organizations, speaks volumes for itself.

Despite all the promises made and policies enacted, it is often rare that they work the way they are meant to, which ultimately means fewer victories for nature. In the end, it is up to the government to take responsibility for all the happenings, and to take a firmer approach when it comes to dealing with similar matters. For example, Sri Lanka could take steps to ensure that policies related to the conservation of our diverse ecosystems are properly enforced by the relevant authorities, as well as giving the very same authorities more power and jurisdiction to get their job done and introduce methods to ensure that all the correct procedures are followed before projects similar to the Mannar Wind Power Project are implemented.

Finally, the government ought to address the issue of corruption both within and outside the system, as this is what often tends to lead to such situations. As it is said, there can be no smoke without fire, and it is time the government stopped ignoring the issue of preserving Sri Lanka's biodiversity before it invariably comes back to haunt us in the future.

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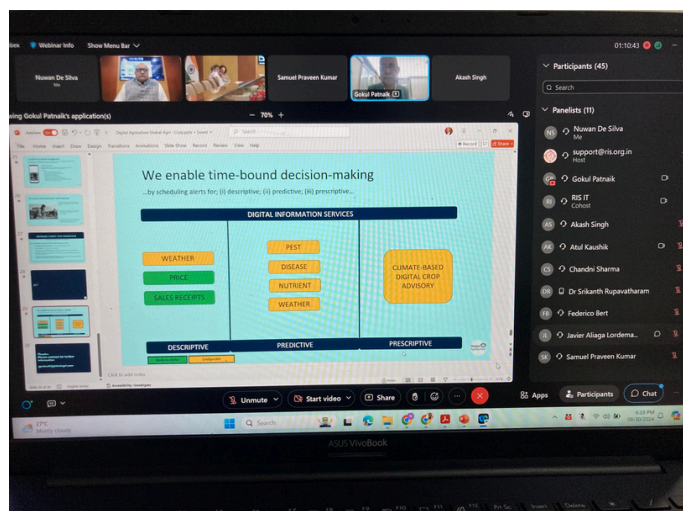
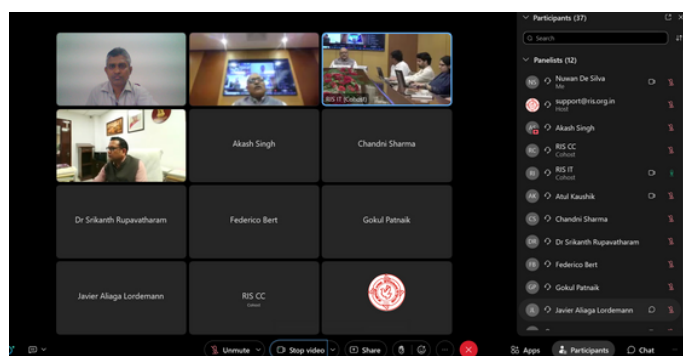
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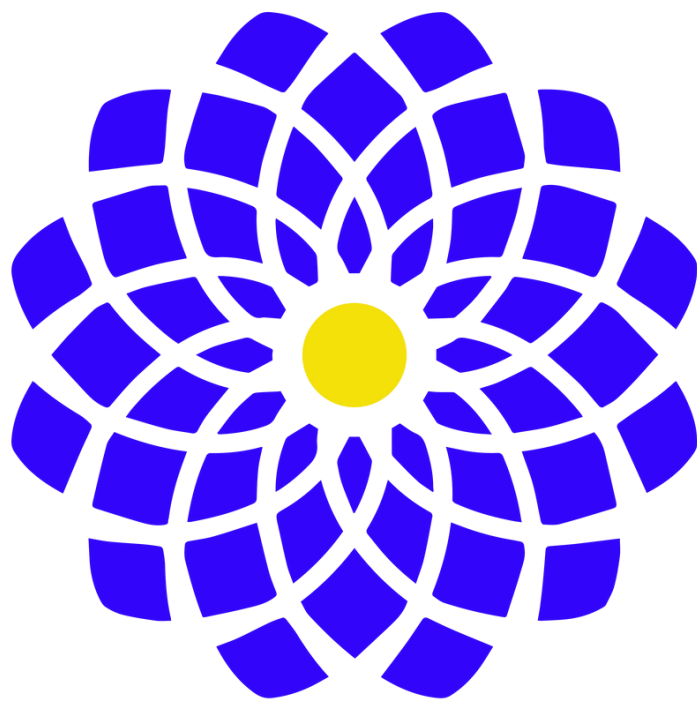
BALPP In Focus

Dr. Nuwan de Silva represents BALPP at the DAKSHIN Workshop on “Digital Technologies in Agriculture for the Global South”

The RIS (Research and Information System for Developing Countries) /DAKSHIN India organized an online panel discussion: " Digital Technologies in Agriculture for the Global South" on August 30, 2024. At the above panel discussion, Dr. Nuwan De Silva who is a Senior Lecturer in Crop Science, Faculty of Agriculture, University of Peradeniya and a member of the BALPP Research Collective on Digital Agriculture delivered an insightful presentation on key challenges and opportunities for Sri Lanka in the Digital Agricultural sector.

In his presentation, he also proposed some of the strategies and policy recommendations which Sri Lanka can adopt to boost production in the agricultural sector with the effective application of digital technologies.





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