

**A Study on
Provincial Educational Conventions
Within the
Overall Educational Policy and Practices in Sri Lanka
in Relation to SDG 4**



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Preface

The research was conducted to achieve the research objectives of identifying the policy and implementation framework/ institutional framework in Sri Lanka in relation to SDG goals and specially the goal no. 4 "Quality Education (Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all)". Special reference of the research was on the suggestions for formulation of provincial education conventions and provincial level institutional framework based on the SDG 4. In the research process existing national policies and provincial level conventions on education with reference to SDG 4 was analysed and factors that should be considered in preparing national policies / provincial conventions for education to achieve SDG 4 by 2030 were explored. Final outcome of the research will be a framework for advocacy based on the practical and sustainable policy level recommendations to address the issues in the education field with reference to SDG 4 in Sri Lanka.

Coalition for Education Development (CED) has conducted the following research during the period of its existence.

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All the researches have contributed policy options on discussed educational issues in Sri Lanka. The tradition of research based decision making process was strengthened due to these researches and the present research is the latest step taken on the process. More and more discussions on the recommendations of this research for practical decision making process at the center and peripheral levels will strengthen the education system in Sri Lanka in accordance with the SDG.

Executive summary

Obtaining a quality education is the foundation in improving people's lives and sustainable development. Major progress has been made towards increasing access to education at all levels and increasing enrolment rates in schools particularly for women and girls in Sri Lanka. Basic literacy skills have improved tremendously, yet bolder efforts are needed to make even greater strides for achieving universal education goals. Achieving inclusive and quality education for all, the 4th goal of SDG, reaffirms the belief that education is one of the most powerful and proven vehicles for sustainable development. This goal ensures that all girls and boys complete free primary and secondary schooling by 2030. It also aims to provide equal access to affordable vocational training, and to eliminate gender and wealth disparities with the aim of achieving universal access to a quality higher education.

In the Sri Lankan context, completing primary and secondary education for both boys and girls has been achieved remarkably. However, the concepts of equal access to quality higher education and vocational training without the influence of wealth and disparities have to be achieved further. With this regard, the role of provincial level political framework and activities can play a key role as disparities are based on the differences between provinces. The present research focused on this aspect of the issue. The objectives of research were to identify the policy and implementation framework/ institutional framework in Sri Lanka in relation to SDG goals and SDG 4, to identify the basis and rationale of the educational policies that already in place in primary, secondary and tertiary levels in Sri Lanka in relation to SDG 4, to measure the importance of formulating provincial education conventions and provincial level institutional framework based on the SDG 4, to analyze the impact or benefit of the existing provincial conventions on education with reference to SDG 4, to identify factors that should be considered in preparing national policies / provincial conventions for education to achieve SDG 4 by 2030 and make practical and sustainable policy level recommendations to address the issues in the education field with reference to SDG 4 in Sri Lanka.

Survey research method mixed with policy oriented research method was used to conduct the research and through a desk research and interviews existing educational policy and practices at national and provincial levels in relation to SDG 4 was identified. Provincial level educational disparities were identified through a field data collection in five provinces (Western, Central, Sabaragamuwa, North Western and Eastern) to represent 9 provinces. Target group members considered for data collection were officers of Ministry of Sustainable Development and wild life, Ministry of Education and Provincial Ministries of Education.

Documents and interview data were analyzed qualitatively to identify patterns of existing policies and implementation.

Recommendations of the research were

- interpretation of national level framework on SDG to suit provinces and developing specific plan of actions to address specific issues in provinces.
- MoE should take the leading role in implementing SDG activities in Sri Lanka.
- Using international level documents/videos to disseminate the concepts to the different social groups in different modes.
- Officers who participates the conferences related to SDG in foreign countries should be responsible to develop a plan of action to be implemented in Sri Lanka.
- The relationship between the general education system and the job market should be studied in deep to suggest measures to improve the school curriculum to suit the job market without hindering the basic expectations of school education: development of a good citizen.
- Generic skills should be highlighted in the school education more.
- Teacher cader should be deployed based on objective criteria to facilitate affected areas.
- The school based exam/assessment systems should be strenghtened and the 50% of marks at school level exams should be calculated to the national level exams. For the purpose teacher capacity should be developed and accountability should be strenghtened.
- Critical thinking should be emphasized at all levels of education system to follow more effective decentralization practices.
- To sustain the capacity of boys, more vocational oriented courses should be started focusing both local and international market.
- Provincial level education commissions should be established to develop provincial level policies and implementations.
- To achieve the policies on equality and equity the nature of distribution of schools and AL classess should be studied and more sections on Science/commerce AL streams should be established at selected places so that equity concept can be achieved. School mapping concept should be used to identify needs of schools / streams of schools continuously at provincial level and national level.
- The continuous discussion between provincial Ministers and authorties is necessary to monitor the needs of each province and developing suitable conventions to fulfill needs of provinces.

- Necessary aspects of the curriculum can be modified with the approval of National Institute of Education, so that the alternative measures that suit the provincial levels can be implemented to achieve the targets of SDG by 2030.
- The curriculum implementation process should be monitored by Zonal directors and In service advisors so that proper implementation of concepts related to SDG at classroom level can be assessed and monitored.
- The concepts related to SDG and related concepts (ex: social cohesion, gender, equity) in school curriculum materials should be clearly disseminated to in service advisors and teachers so that biased ideas based on popular concepts or political agendas can be erased from the mind sets of people. Racial or internationally biased concepts should not be inculcated as a result of less understanding of teachers.
- Wrong interpretations on old stories in text books (Ex: story in the Grade 2 textbook, *Two friends and bear*) and other misinterpretations of subject content, if available, should be revised to convey the old traditional interpretations. During the periodic reviews of the curriculum, this aspect should be given proper attention.
- An in depth research on curriculum content should be conducted to analyse the SDG concepts in curriculum materials and level of understanding of teachers.
- Co-curricular activities at schools should be implemented to inculcate concepts related to SDG 4.
- International documents should be used to modify school curriculum in Sri Lanka suitably.
- Local publications that highlight indigenous knowledge that related to SDG should be popularized among schools.
- The maintenance and implementation of specific policies to achieve the equity is necessary in specific schools/ places in Sri Lanka and for the purpose provincial level modifications and new policies need to be identified.
- A cumulative assessment system should be developed and suggested to the school system so that the responsibility of teacher and principal on the child's learning can be vested, systematically and legally, on their duties.
- Workshops on the theme SDG should be conducted at provincial level to disseminate the knowledge among implementation officers and local level people's representatives.

- Sustainability of the curriculum depends on the sustainability of teacher deployment and based on the premise a 15 year plan of action is needed at provincial wise to evaluate and monitor teacher recruitment and deployment policies and practices.
- Parental awareness projects need to be conducted on the aims and objectives of pre school and school education.
- The definition of good school should be considered as follows to have a sustainable education system. *"Good school is a school which can educate children from problematic families; Good teacher is a teacher who can teach a child from a disadvantage background."*
- Suggest a clear public private partnership policy in each province based on the specific needs of the each province as in state governments in India.
- The needs of Zones, regions and schools too should be specifically identified through the process.
- Initiating a documentation process of best practices and analyzing the processes to identify SDC concepts embedded.
- School should not contribute to poverty by way of promoting and provoking tuition classes indirectly through the unsuccessful management practices at schools.
- The monitoring mechanism needs to be revised to have school friendly monitoring mechanism.
- Private tuition classess should be developed as business enterprises for continuous education and vocational education for adult learners. Their role should be minimized with regard to the school education.

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1.0 Introduction

Coalition for Education Development (CED) is a consortium of organizations involved in the education sector at national, provincial and local levels in Sri Lanka. CED has an island wide membership network encompassing 60 organizations actively engaged in the field. Since the inception in 2004, CED has been involved in promoting civil society participation in formulating and implementing policies related to education in Sri Lanka. CED is committed to steer the Civil Society participation as a vital part in the achievement of goals and targets of EFA, MDG and SDG declarations.

Since CED is promoting data based policy decisions, as its one of the priorities, research is a pioneer endeavour in its activities so that decisions on educational issues can be taken based on an objective manner. On this overall base and according to the CED strategic intervention for the period 2016-2018, it was planned to conduct a research on provincial education policies and practices in relation to SDG 4. In Sri Lanka, almost all the governments who were in power, introduced changes to the education policy for the progress of social and economic sectors. Most of these changes, however, were done in ad-hoc manner, based on the emerging trends, without considering the social, economic and provincial demarcation of the country. In this study it was proposed to identify the provincial level disparities and needs in relation to education context based on the SDG 4. Findings of the study can be used in forming overall education conventions/policies at the provincial level as well as in formulating a National Policy to achieve the expectations of SDG 4. The outcome of the study can be useful as an effective advocacy tool in civil society engagement with the political and education authorities to achieve the expectations of SDG 4.

2.0 Theoretical base for the research

The Sustainable Development Goals (SDGs), otherwise known as the Global Goals, are a universal call to action to end poverty, protect the planet and ensure that all people enjoy peace and prosperity. These 17 Goals build on the successes of the Millennium Development Goals (MDGs), while including new areas such as climate change, economic inequality, innovation, sustainable consumption, peace and justice, among other priorities. The goals are interconnected – often the key to success on one will involve tackling issues

more commonly associated with another.

The SDGs work in the spirit of partnership and pragmatism to make the right choices now to improve life, in a sustainable way, for future generations. They provide clear guidelines and targets for all countries to adopt in accordance with their own priorities and the environmental challenges of the world at large. The SDGs are an inclusive agenda. They tackle the root causes of poverty and unite us together to make a positive change for both people and planet. “Supporting the 2030 Agenda is a top priority for UNDP,” said UNDP Administrator Helen Clark. “The SDGs provide us with a common plan and agenda to tackle some of the pressing challenges facing our world such as poverty, climate change and conflict. UNDP has the experience and expertise to drive progress and help support countries on the path to sustainable development.”

Obtaining a quality education is the foundation to improving people’s lives and sustainable development. Major progress has been made towards increasing access to education at all levels and increasing enrolment rates in schools particularly for women and girls. Basic literacy skills have improved tremendously, yet bolder efforts are needed to make even greater strides for achieving universal education goals. Achieving inclusive and quality education for all, the 4th goal of SDG, reaffirms the belief that education is one of the most powerful and proven vehicles for sustainable development. This goal ensures that all girls and boys complete free primary and secondary schooling by 2030. It also aims to provide equal access to affordable vocational training, and to eliminate gender and wealth disparities with the aim of achieving universal access to a quality higher education. In the Sri Lankan context, completing primary and secondary education for both boys and girls has been achieved remarkably.

"The student net enrolment rate of the age group 5-14 of the country stood at 99.22 per cent in 2014 (Computed 2015) as against 98.39 per cent in 2013. School participation, as measured by the Survival Rate, to Grade 11 stood at 85.09 per cent in 2014, while male and female student survival rates were 82.04 per cent and 88.25 per cent, respectively (Central Bank of Sri Lanka, 2015).

However, the concepts of equal access to quality higher educating and vocational training without the influence of wealth disparities have to be achieved further. With this regard, the role of provincial level political framework and activities can play a key role as disparities are based on the differences between provinces. The present research focused

on this aspect of the issue.

Education is a fundamental human right and is indispensable for the achievement of sustainable development. All stakeholders, including business, can commit themselves to advancing the education goal. While education needs globally are immense, companies and NGOs can leverage their resources and core competencies to support governments in delivering on their promise of education for all. Strong leadership by business can help unlock the necessary investments to ensure quality learning opportunities for all children and adults. As an example "*Action for sustainable development- A global civil society platform* (<https://www.loomio.org/g/uJd5wTXQ/action-for-sustainable-development-a-global-civil-society-platform>, Retrieved 10.04.2017) started the group to be an interactive forum for global civil society coordination on the Sustainable Development Agenda, including the UN Sustainable Development Goals (SDGs) and the Paris Climate Agreement. This group is open to all members of civil society and focuses on the following activities:

- **Innovative Solutions:** Civil society is already convening at the national and regional level- join us to share your story.
- **Monitoring & Accountability:** Civil society has begun to collect social, environmental and economic data to hold governments accountable for their 2015 sustainable development commitments- join us to access tools and knowledge.
- **Policy & Advocacy:** There are hundreds of commitments- join us to ensure they are compatible at all levels of governance.
- **Public Mobilization:** While major agreements have been made, many peoples' needs are not being addressed- join us to ensure all voices are heard.

In Sri Lanka too various business organizations, parents and NGOs are supporting the school education system in various ways. In the present research this aspect too was studied.

Education is often a local issue, which will require businesses to work within local education systems and in communities to determine the best utilization of resources. Business should apply best practices to engage responsibly in education, including promoting sustainable development topics in higher education, and support the public sector's ability to provide inclusive and equitable quality learning opportunities for all. In

this background their role in the Sri Lankan context and provincial level needs to be studied so that the role of SDG in Sri Lanka can better be identified.

2.1 SDG 4 and the present research in the Sri Lankan context

"Sri Lanka's long history of tremendous public investment in health, education has translated into fantastic performance in some of the Millennium Development Goals (MDGs). Sri Lanka has achieved universal primary education target and the target of halving poverty seven years before the deadline. The proportion of pupils starting Grade who reach Grade 5 is nearly 100 percent... the country still faces many challenges when it steps towards SDGs. It encounters persistent income disparities across provinces, districts and sectors more preciously Uva, Central, and Sabaragamuwa provinces, still suffer from high levels of poverty, hunger and malnutrition." (Keembiyahetti, 2016). The statement mentioned shows the necessary of a research to identify specific features of SDG in Sri Lanka and the provinces in the country.

The targets of SDG 4 by 2030 are multifaceted and specifically identified targets can be summarized and the achievement in the Sri Lankan context too can be included in it. Further the provincial wise achievements, existing actions and future needs can be identified through the present research based on the criteria in the table 1.

Table 1. Targets of SDG 4 and Sri Lankan scenario

No.	Target	Sri Lankan context	Provincial level scenario
1	Ensure that all girls and boys complete <ul style="list-style-type: none"> • free, • equitable and • quality • primary and • secondary education leading to • relevant and Goal-4 • effective learning outcomes 	<ul style="list-style-type: none"> • Achieved but issues are there due to private tuition classes • Not achieved • Achieved partially • Achieved • Achieved • Not achieved • Not achieved 	Need to be researched
2	To ensure that all girls and boys have access to quality early childhood development to, care and preprimary education so that they are ready for primary education	Quality is not achieved	Need to be researched
3	Ensure equal access for all	Not achieved fully	

	women and men to affordable and quality technical, vocational and tertiary education, including university		Need to be researched
4	Equal access to all levels of education and vocational training for the vulnerable, including persons with disabilities, indigenous peoples and children in vulnerable situations	Achieved partially with regard to policy on inclusive education but implementation level has weaknesses	Need to be researched
5	Promote, through education sustainable life styles	Although curriculum materials have emphasized some aspects of SDG, life styles have not changed fully to suit SDG.	Need to be researched
6	Promote, through education human rights	Curriculum materials have emphasized some aspects of SDG, life styles have not changed fully to suit SDG.	Need to be researched
7	Promote, through education promotion of a culture of peace and non-violence, global citizenship and appreciation of cultural diversity and of culture's contribution to sustainable development	Not achieved fully	Need to be researched
	Increase the supply of qualified teachers, including through international cooperation for teacher training, especially least developed countries and small island developing states.	<ul style="list-style-type: none"> • Not achieved fully. • Lack of teachers for science, mathematics, English subjects is an issue. • Although teacher deployment policies are there, political-officer influences have affected the proper implementation. 	Need to be researched
	Effective learning environments for all	Not achieved fully	Need to be researched
	Ensuring school children don't go hungry and improving sanitation in schools.	Not achieved fully. Schools without water-toilet facilities are still in Sri Lanka.	Need to be researched
	Number of scholarships available to developing countries, in particular least developed countries, small island developing States and African countries, for enrolment in higher education, including vocational training and information and communications technology, technical, engineering	Lack of knowledge in English has hampered this target	Need to be researched

	and scientific programmes, in developed countries and other developing countries.		
	Foster innovation, and generate stable and more prosperous societies. Take proactive roles in education, using expert skills and interest in innovation to create shared value. In practice this means a productive workforce.	Integration of work force not done fully and effectively	Need to be researched

2.2 SDG and the role of Civil Society Organizations

Many have criticized the Sustainable Development Goals for being overly broad and unrealistic. While a certain degree of ambition is necessary to drive changes, the fourth SDG (SDG4) on education already bears ten targets, touching on issues such as primary and secondary education, vocational and technical training, teacher training and so forth. While the goal attempts to address the important issues, it also faces the risk of lacking focus. The topic of providing ‘free, equitable and quality primary and secondary education’ was highlighted on Sussex Development Lecture delivered by Dr. Jordan Naido, Director of Education 2030 Support and Coordination at UNESCO. A simple question filled the room that evening - is the SDG4 achievable?

While advocating the right to education, the question need to be asked is "what we are actually advocating?" While the global movements and reforms in Sri Lanka education have done their job of getting children into school, it is criticized that children often receive education that falls far short of meeting their right in education. In this context it is striking that current trends are questioned, neither by governments and policymakers, nor by teachers, students or parents. As education systems worldwide increasingly adapt to the needs of the private sector, in Sri Lanka too the school system may be moving further away from social justice and inclusive development and the picture with regard to each and every provinces need to be identified specifically to have scientific data so the advocacy can be made scientifically. .

There is another criticism to say, that "Sustainable Development Goals were approved in September 2015 - and now back to business as usual until the deadline for the implementation of the new development goals approaches?" Based on this idea, civic engagement and building bridges across policy sectors and fields is crucial in order to go from a wish list to a concrete action plan and make the SDGs a reality. "How do we deal

with issues such as shrinking spaces for civil society engagement and de-democratization of society? Can civil society be held accountable when there is a clear lack of political, financial and institutional support for its work? And how can non-formal adult education contribute to active citizenship and social change?" The present research will focus this aspect too trying to have a foundation for civil society engagement in the provincial context.

Relying on simple access indicators or even literacy and numeracy rates as sole indicators of education quality is no longer relevant. More than ever before, country leaders are looking for better and more sustainable ways to capture students' learning outcomes and experiences. Kenya, Zambia, and Palestine are building systems to track previously overlooked learning domains and education levels to prepare students for success in the 21st century. As the indicators for the SDG framework are finalized by March 2016, the indicators for Goal 4 will need to reinforce this demand from countries for a comprehensive framework of indicators and the technical and financial resources to measure progress against them. Achieving the SDGs requires the partnership of governments, private sector, civil society and citizens alike to make sure we leave a better planet for future generations. The findings of present research too strengthen the civil society organizations with this regard.

The SDGs define global sustainable development priorities and aspirations for 2030 and seek to mobilize global efforts around a common set of goals and targets. The SDGs call for worldwide action among governments, business and civil society to end poverty and create a life of dignity and opportunity for all, within the boundaries of the planet. Unlike their predecessor, the Millennium Development Goals, the SDGs explicitly call on all businesses to apply their creativity and innovation to solve sustainable development challenges. The SDGs have been agreed by all governments, yet their success relies heavily on action and collaboration by all actors. The SDGs present an opportunity for business-led solutions and technologies to be developed and implemented to address the world's biggest sustainable development challenges.

Based on these expectations there is a necessity to identify Sri Lankan context on SDG 4 and the provincial contexts related to national framework of governance. The present research will focus on that aspect of SDG 4.

As the SDGs form the global agenda for the development of societies, they will allow leading companies to demonstrate how their business helps to advance sustainable development, both by minimizing negative impacts and maximizing positive impacts on

people and the planet. Covering a wide spectrum of sustainable development topics relevant to companies-such as poverty, health, education, climate change and environmental degradation – the SDGs can help to connect business strategies with global priorities. Companies can use the SDGs as an overarching framework to shape, steer, communicate and report their strategies, goals and activities, allowing them to capitalize on a range of benefits.

In this background the policies, roles and implementation strategies available in nine provincial authorities in Sri Lanka can be studied in relation to the national level SDG policies. Further the engagement of civil societies as companies is vital with this regard. The present research will focus these two aspects too by way of reviewing stakeholder views.

The SDGs aim to redirect global public and private investment flows towards the challenges they represent. In doing so, they define growing markets for companies that can deliver innovative solutions and transformative change. Enhancing the value of corporate sustainability whilst the business case for corporate sustainability is already well established, the SDGs may for example strengthen the economic incentives for companies to use resources more efficiently, or to switch to more sustainable alternatives, as externalities become increasingly internalized.

The SDGs reflect stakeholder expectations as well as future policy direction at the international, national and regional levels. Companies that align their priorities with the SDGs can strengthen engagement of customers, employees and other stakeholders, and those that don't will be exposed to growing legal and reputational risks.

The objective of the SDG Compass is to guide companies on how they can align their strategies as well as measure and manage their contribution to the SDGs. The guide presents five steps that assist companies in maximizing their contribution to the SDGs. Companies can apply the five steps to set or align their course, depending on where they are on the journey of ensuring that sustainability is an outcome of core business strategy. The five steps of the SDG Compass rest on the recognition of the responsibility of all companies to comply with all relevant legislation, respect international minimum standards and address as a priority all negative human rights impacts.

These policies too can be reviewed in the Sri Lankan context. Whether the steps have been followed as expected can be reviewed by way of a research.

2.3 Decentralization of education and SDG

Decentralization of education systems demands harmonization of a complex set of functions, each for primary, secondary, tertiary, and non-formal education. Issues of how far to devolve decision-making, in each of these subsectors, and to whom, continued to be debated. There are a number of on-going experiments worldwide, ranging from devolution of limited functions to intermediate governments and local governments, to community-based management and financing of schools. The current consensus is that tertiary education, and specific functions such as curriculum design and standards setting are best retained by the center; secondary and primary education should be devolved as far as possible; local participation in school management improves accountability and responsiveness, and fosters resource mobilization. Yet, the devil is in the details, and there are many details that need to be sorted out on a country by country basis.

The ways in which public primary and secondary education is financed and delivered varies greatly throughout the world. In France, education is highly centralized at the level of the national government, whereas in Canada the national government does not even have an education ministry, and in the United States education is mainly the responsibility of local school districts. Many developing countries and countries in transition to market economies have highly centralized government administration of education and other public services. During the 1990s and early twenty-first century, many of these countries began to decentralize education. This phenomenon proceeded fastest in Latin America and Eastern Europe, but several countries in Asia and Africa also began initiating decentralization policies.

Decentralization is defined as the transfer of decision-making authority closer to the consumer or beneficiary. This can take the form of transferring powers to lower levels of an organization, which is called deconcentrating or administrative decentralization. A popular form of deconcentrating in education is to give additional responsibilities to schools. This is often called school autonomy or school-based management and may take the form of creating elected or appointed school councils and giving those budgets and the authority to make important educational decisions. DE concentration may also take the form of empowering school directors or directors and teaching faculty to make decisions within the school. In the Sri Lankan context, the School Based Teacher Development (SBTD) project was introduced recently to empower school specific projects to enhance teacher capacity.

Another form of decentralization, called devolution, entails transferring powers to lower levels of government. Most often, education responsibilities are transferred to general-purpose governments at the regional or local levels. Examples are the decentralization of basic education to local (district) level governments in India and Pakistan. In rare cases additional responsibilities are given to single-purpose governments, such as the local school district in the United States. When education responsibilities are transferred to general-purpose governments, the elected governing bodies of those governments must make decisions about how much to spend on education versus other local services.

The measurement of education decentralization is especially difficult. Economists often measure decentralization to lower levels of government by looking at the percent of educational revenues that come from local (or regional) sources, or, alternatively, by looking at the share of educational resources—whatever their origin—that local governments control. Using these measures, education is highly centralized in countries such as Greece, Italy, and Turkey and highly decentralized in countries such as Canada, Norway, the United Kingdom, and the United States. In the Sri Lankan context, from 1987, the governance of some schools was given to Provincial Councils. However national level policies will be decided by the central government.

However, these measures may be misleading when central governments mandate educational policies or programs that require the local government to allocate its revenues in a certain way. Mandating reductions in class size or the creation of special education programs, for example, reduces the degree of power the local government has to allocate its own revenues or resources. In the United States, the federal and state governments influence local education resource allocation both through unfunded policy and program mandates and through the use of conditional grants-in-aid, which require local governments or school districts to match federal or state funding for certain purposes. The combination of these mandates and conditional grants results in local school districts having discretionary expenditure control over only a small portion of their revenues and budgets.

Some educational functions are decentralized even within centralized systems, and others are centralized even within decentralized systems. An OECD survey of its members, for example, shows that, even in centralized systems, schools make most of the decisions about the organization of instruction. On the other hand, in many countries most personnel-management decisions are made at a central level.

Measuring decentralization by answering questions concerning who makes decisions in what areas does not provide an easy answer as to how decentralized one country's education system is relative to another's. Not all decisions are equally important. Indeed, one decision-making area is far more important than the others. Teachers and other school staff represent about 80 percent of total recurrent education spending in developed countries and more than 90 percent of total recurrent education spending in many developing countries. Research on learning also demonstrates that teachers and their ability to teach are the single most important factor in the school that affects learning. Thus, a shortcut for determining whether one country is more decentralized than another is to compare the countries' policies in personnel management. Countries that allow school councils to select school directors and allow schools to recruit, hire, and evaluate teachers have already achieved a significant degree of decentralization even though school finance may still be highly centralized and teachers may be paid according to a national pay scale.

The rationale for education decentralization tends to be associated with four distinct objectives: democratization, regional and/or ethnic pressures, improved efficiency, and enhanced quality of schooling. Several countries with a history of authoritarian government have decentralized government in the name of democratization. More specifically, decentralization in these countries is designed to increase the voice of the local citizen and to empower the citizen to more fully participate in decision-making at the local level. Democratization has been the rationale for transferring education responsibilities to local governments in countries as diverse as Poland and Brazil.

In other countries, there have been pressures from regionally based ethnic and language groups to develop their own curriculum, teach in their own languages, and manage their own schools. A good example of this is Spain, where initially the Basque and Catalan regions gained the right to manage their own educational systems, followed later by other regions. In the Sri Lankan context, regional and/or ethnic pressures were the main reason for the decentralization. However there are avenues for positive decision making processes based on the SDG policies to improve the system of education.

One of the potential benefits of decentralization is increased accountability to the citizen/beneficiary, resulting in improved efficiency in the use of school resources. The improved efficiency results from two effects. One effect is the better match between services provided and the preferences of citizens. The other effect is increased output relative to resources or expenditures. Chile is an example of a country where education was decentralized to local governments primarily in the pursuit of greater efficiency.

When education is decentralized in pursuit of democratization, or in response to regional/ethnic pressures, it is usually just one of several services being transferred to local or regional governments. In addition, educators often resist decentralization for these purposes, fearing greater inequality in spending and educational outcomes. On the other hand, when education is decentralized in pursuit of greater quality, it is usually done as part of a larger reform promoted by educators themselves. An example of this can be found in several large U.S. cities where school councils and school directors have been given greater decision-making autonomy. At the same time, however, the performance of schools is carefully monitored, and schools are held accountable for improved performance to both parents and system administrators.

These four objectives account for most, but not all, of the reasons for education decentralization. Some countries have transferred the finance and delivery of education to lower levels of government to help solve the central government's own fiscal problems. Argentina, for example, transferred education from the national to the regional governments in order to reduce central government fiscal deficits. Since the education sector employs more personnel than other sectors and also requires large recurrent salary expenditures, it is a tempting target to decentralize for fiscal reasons. Other countries have given local governments the authority to run their own schools as a means of circumventing central government bureaucracies in order to rapidly increase enrollments in remote areas. El Salvador provides an example of decentralization to remote rural communities for this purpose.

Like other education reforms, decentralization can result in political winners and losers. The potential winners are those gaining new decision-making powers, while the potential losers are those losing those powers. Two of the potential losers—civil servants and teacher unions—are sufficiently powerful that they can effectively stop decentralization processes. The civil servants working in education ministries have perhaps the most to lose, because some of their jobs become redundant and their power to influence the allocation of resources may be diminished. In countries where corruption in government is a serious problem, reduced power will be also reflected in a reduced ability of civil servants to extract financial or in-kind rents. The leaders of national teacher unions also lose power to the extent that salary negotiations, teacher recruitment, and teacher promotion are moved from national to lower levels of government. Union members may also fear lower salaries if the funding of education is moved to local governments with fewer sources of government revenues. In countries where being elected head of a teacher

union is an important stepping-stone to a political career, decentralization of labor negotiations is likely to reduce the political importance of leading the national union.

The implementation of education decentralization reforms can either be rapid or slow. Legislative or constitutional changes that immediately transfer responsibilities from the national to lower levels of government run the risk that lower levels of government will lack the required administrative capacity required to manage the system well. The result may be disruption in the delivery of schooling to children that adversely affects their learning, at least for a time. A more gradual decentralization can allow powers to be transferred to lower levels of government as those governments gain administrative capacity. The difficulty with gradual decentralization is that it may never occur at all, as the potential losers marshal their forces to fight the policy change.

In some countries with serious problems of internal conflict, weak public bureaucracies, or very weak government finances, one finds de facto decentralization of education. In these cases, the central government abdicates its responsibility for financing and providing public education, especially in remote areas, so local communities organize and finance their own schools and recruit and hire their own teachers. In Africa, the countries of Benin and Togo provide examples of community control and finance of schools resulting from the lack of central government supply. In other cases, the central government finances an inadequate number of teachers and other school resources to ensure schooling of adequate quality. In these cases, parents may form school councils to raise revenues to hire additional teachers, construct and equip school buildings, and provide other school resources. By virtue of their important role in funding education, parents and school councils may exercise significant decision-making power.

The financing of decentralized education can be very complicated in systems where two or three levels of government share financing responsibilities. The choices for financing education in such systems can be framed as follows: (1) central versus local funding, (2) conditional versus unconditional grants, and (3) negotiated versus formula-driven grants. The choices made concerning education finance are extremely important as they determine both the degree of effective control local governments have as well as the implications for efficiency and equity.

The single most important choice is whether the level of government providing education (in most cases, the local government) is expected to generate its own revenues for education from its own tax and other revenues sources or if it will receive the bulk of the required educational revenues from a higher level government. Local government

capacity to generate revenues (i.e., its tax base, or its fiscal capacity) tends to vary widely across local governments within regions or countries. Thus, requiring local governments to raise all their own revenues for education ensures an unacceptably high degree of inequality in spending per child. Countries where local governments finance education from their own source revenues (e.g., Brazil, the United States) have adopted intergovernmental grants to help even out spending inequalities. In the case of Brazil, the central government provides additional financing to ensure each jurisdiction spends a minimum amount per student. In the case of the United States, school finance policies vary by state, but in general they, too, ensure a minimum level of spending and, in some cases, put a cap on the maximum amount a local school district can spend.

Most countries have made the choice to fund a large portion of primary and secondary education spending from either the regional or national government budgets. This funding can be provided in one of two ways. Monies can be transferred from the central government to either the general fund of the local (or regional) government or to a special education fund of the local (or regional) government. In the former case, the local or regional government receives funding sufficient to cover a large portion of expected education expenditures, but the local or regional government makes the decision of how much to spend on education. In the latter case, the local or regional government is required to spend the grant monies on education only. Requiring grant monies to be spent on education ensures adequate education spending but reduces the expenditure autonomy of the local (or regional) government.

Once a decision is made to transfer monies to lower levels of government, a further decision needs to be made as to how to determine what amount of money should be transferred to each receiving government. The basic choice is whether to negotiate that amount between governments or to determine the amount using a capitation formula. Negotiation has political advantages in that it allows central governments to reward their political allies, and thus it is often popular. Capitation formulas, however, are more equitable and may also provide incentives for educational performance. Chile, for example, determines how much it provides to each local government based on a formula that includes indicators of educational cost, educational need, and student average daily attendance. Since local governments receive more revenues if more students are enrolled and attending regularly, the formula has encouraged those governments to undertake campaigns to keep children in schools.

It is extremely difficult to disentangle the effects of education decentralization

policies from other variables simultaneously affecting educational outcomes, and there have been few rigorous attempts to do so. Two studies that did attempt to isolate the effects of devolution in Central America concluded that it increased parental participation, reduced teacher and student absenteeism, and increased student learning by a significant, but small, amount.

The concepts of centralization and decentralization are important ones to consider as they ultimately affect the effectiveness of schools in educating the children of a nation. Centralization refers to the condition whereby the administrative authority for education is vested, not in the local community, but in a central body. This central body has complete power over all resources: money, information, people, and technology. It decides the content of curriculum controls the budget, is responsible for employment, the building of educational facilities, discipline policies, etc.

Decentralization, on the other hand, refers to the extent to which authority has been passed down to the individual school. Site-based management is an example of decentralization in which individual schools can make their own decisions related to finances and curriculum. However, the locus of power remains with the central body. Advocates of decentralization believe it will result in higher student performance; more efficient use of resources; increased skills and satisfaction for school administrators and teachers; and greater community and business involvement in and support for schools. Centralization does not fit the current trends of participatory management, empowerment, and shared decision-making. Decentralization provides local administrators with greater autonomy, thus giving scope for creativity, resourcefulness, and personal enhancement particularly in the area of problem solving.

Decentralization provides for persons at the scene of the action to become involved in the decision-making process. This allows for greater flexibility, and makes it possible for better decisions to be made because persons at the scene of the action are more closely related to the problem.

When individual schools are given the opportunity to make decisions, a higher degree of morale and commitment to the organizational goals and objectives are fostered. If the principal through decentralization is given the authority to generate and disburse funds, great gains could be realized. The staff, then, would exert more effort since it would be a means by which their strategic plans for curricula and program development could be implemented.

Decentralization also promotes the professional development of principals. Everyone

has the innate tendency towards self-actualization. Therefore, being responsible for the development of school goals and objectives and their implementation would encourage principals to seek various means for achieving professional growth while maximizing their potentials.

Decentralization demands the establishment of accountability and evaluation mechanisms. This in itself would ensure that individual schools operate at a high level of efficiency and effectiveness in promoting student achievement.

Decentralization promotes greater parental and community involvement. Community members and parents can provide valuable insight about how schools can be improved to better educate the children in the community. Parents having a greater stake in the educational process, would have a better understanding of the problems facing schools, and would tend to increase their support.

Reform is never initiated by central administration. It usually originates at the bottom and finds its way to the top because of the pressure exerted by those who are affected by unreasonable and ineffective policies. School and district development must be coordinated. Personnel moves, transfers, selection and promotion criteria, policy requirements, budget decisions, including staff development resource all take their toll on schools if the relationship is not coordinated. The center and local units need each other. Schools will get nowhere by swinging from one dominance to another. What is required is a different two-way relationship of pressure, support, and continuous negotiation.

The concept of decentralization was discussed in detail to understand the Sri Lankan context better and to identify avenues for the implementation of the concepts related to SDG policies. Even in Sri Lanka, measures have been taken in line with decentralization but the progress is not achieved as expected. " ...decentralized education systems has not shown expected results for several reasons, including, weak technical, managerial and leadership capacity at the local level, weak ability of local communities to voice preferences, lack of authority give to local level decision-makers, and inadequate attention given to reorienting the functions of the central government..." (The Institute of Policy Studies, 2008). Hence a research base inquiry is needed to understand the SDG policies too in Sri Lanka.

2.4 Rationale for the present research

"Obtaining a quality education is the foundation to improving people's lives and

Sustainable development. Major progress has been made towards increasing access to education at all levels and increasing enrolment rates in schools particularly for women and girls. Basic literacy skills have improved tremendously, yet bolder efforts are needed to make even greater strides for achieving universal education goals. For example, the world has achieved equality in primary education between girls and boys, but few countries have achieved that target at all levels of education

- Enrolment in primary education in developing countries has reached 91 per cent but 57 million children remain out of school
- More than half of the children that have not enrolled in school live in sub-Saharan Africa
- An estimated 50 per cent of out-of-school children of primary school age live in conflict-affected areas
- 103 million youth worldwide lack basic literacy skills, and more than 60 per cent of them are women (<http://www.undp.org/content/undp/en/home/sdgoverview/post-2015-development-agenda/goal-4.html>, Retrieved on 07/09/2016)

Based on these data, it is necessary to identify Sri Lankan scenario with regard to the concepts related to SDG. Further to identify and assess the policy framework and working framework based on the targets of SDG, is necessary to have a foundation for advocacy for the civil society organizations. Hence the targets of SDG need to be specified.

2.4.1 Targets

- By 2030, ensure that all girls and boys complete free, equitable and quality primary and secondary education leading to relevant and Goal-4 effective learning outcomes
- By 2030, ensure that all girls and boys have access to quality early childhood development, care and preprimary education so that they are ready for primary education
- By 2030, ensure equal access for all women and men to affordable and quality technical, vocational and tertiary education, including university
- By 2030, substantially increase the number of youth and adults who have relevant skills, including technical and vocational skills, for employment, decent jobs and entrepreneurship

- By 2030, eliminate gender disparities in education and ensure equal access to all levels of education and vocational training for the vulnerable, including persons with disabilities, indigenous peoples and children in vulnerable situations
- By 2030, ensure that all youth and a substantial proportion of adults, both men and women, achieve literacy and numeracy
- By 2030, ensure that all learners acquire the knowledge and skills needed to promote sustainable development, including, among others, through education for sustainable development and sustainable lifestyles, human rights, gender equality, promotion of a culture of peace and non-violence, global citizenship and appreciation of cultural diversity and of culture's contribution to sustainable development
- Build and upgrade education facilities that are child, disability and gender sensitive and provide safe, nonviolent, inclusive and effective learning environments for all
- By 2020, substantially expand globally the number of scholarships available to developing countries, in particular least developed countries, small island developing States and African countries, for enrolment in higher education, including vocational training and information and communications technology, technical, engineering and scientific programmes, in developed countries and other developing countries
- By 2030, substantially increase the supply of qualified teachers, including through international cooperation for teacher training in developing countries, especially least developed countries and small island developing states.

The research will focus these targets in collecting data so that the advocacy can be based on a framework that need to be addressed on the theme of SDG.

3.0 Objectives of the research

- To identify the policy and implementation framework/ institutional framework in Sri Lanka in relation to SDG goals and SDG 4.
- To identify the basis and rationale of the educational policies that already in place in primary, secondary and tertiary levels in Sri Lanka in relation to SDG 4.
- To measure the importance of formulating provincial education conventions and provincial level institutional framework based on the SDG 4.
- To analyze the impact or benefit of the existing provincial conventions on education with reference to SDG 4.

- To identify factors that should be considered in preparing national policies / provincial conventions for education to achieve SDG 4 by 2030.
- Make practical and sustainable policy level recommendations to address the issues in the education field with reference to SDG 4 in Sri Lanka.

4.0 Methodology

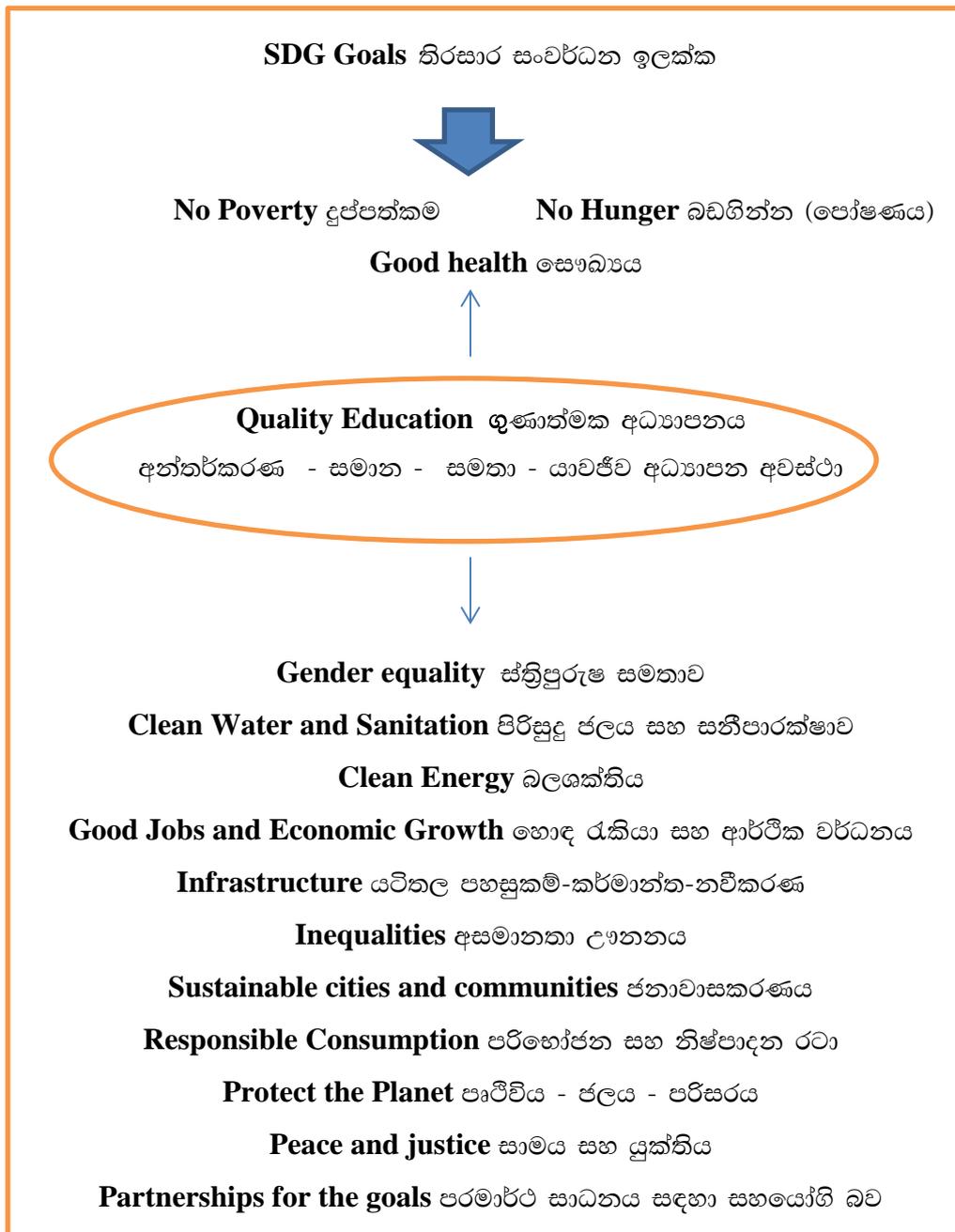
4.1 Research method

Survey research method mixed with policy research method was used as identifying strengths and weaknesses for the purpose of mapping educational policy with practical solutions is the aim. Key steps of the research could be summarized as follows:

- Review the existing educational policy at national and provincial levels in relation to SDG 4 and identify the core factors/ patterns through desk research
- Review the central government and provincial government mechanism and framework on SDG 4 through desk work and interviews.
- Review the existing implementation patterns and core factors of educational policy in relation to SDG 4 at national and provincial levels through interviews
- Identifying provincial level educational disparities, if any in relation to SDG 4 through field data collection and analysis
- Ascertaining the gaps in educational policy at the central and provincial levels in relation to SDG 4

The research framework was developed based on the figure 1 that emphasize the links between different goals of SDG and their relationships with the goal no. 4 on '*Quality Education (Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all)*'. Further document in the Annex 1 was used for the clarification of concepts on SDG.

Figure 1. Research framework



4.2 Sample

Five provinces (Western, Central, Sabaragamuwa, North Central and Eastern) to represent 9 provinces were selected as the purposive sample.

Target group members considered for data collection were as follows:

- Ministry of Sustainable Development and wild life
- Provincial offices of Ministry of Sustainable Development and wild life
- Provincial Ministries of Education

- Chief Minister
- Secretary of Ministry of Education
- Provincial Minister of Education
- Ministers of Provincial Councils
- Members of Observation in provincial Councils
- Committee members of Provincial Education Committees.
- Provincial Director of Education
- Zonal Director of Education
- Members, former members and secretaries of local government organizations
- Director-Planning
- School Principals
- Grama Sewaka

Members of the sample were informed about the data collection through a letter (Annex 2).

4.3 Data Collection

Data collection was focused on the following areas related to the general picture of the education system and No. 4 of SDG 'Quality Education'. The data were collected through the analysis of documents/policies and clarifications made by interviews.

- Are there any provincial acts or statues related to SDG?
- Decisions taken by local government bodies
- Decisions taken according to the Town Council act and Local government Act
- Powers of estate authorities before and after 1962 in the plantation areas
- Use of the word "Estate school" Is it suitable?
- Equality and equity concepts - Foreign funds emphasize this policy. SIDA funds for estate schools.
- Data collection from census based on Rural-Urban-Estate areas.
- Data related to Exam dept. and exam)
- Primary data from Census reports to identify existing framework
- Data related to SDG
- Family related data; data related to single parent families
- Data related to service areas of schools

- Working structure of the education system in provinces; Strengths and weaknesses; Cumulative records prepared by Mr. B.J.P. Alles in 1964 and the presently used documents for the school management processes.
- Policies of provinces; Acts or Statute declarations?
- Records of the meetings of provincial councils, Town councils and local government bodies
- Circulars
- Application of international policies and SDG policies

Interviews were conducted to identify expectations and future policies under the following themes

- What are the issues in the education system? Ex: GCE (AL) Examination: Students from other districts sitting the exam in other districts where the Z score mark is lower
- Policy of enroll of students to schools
- Role of Provincial Councils in relation to School Development Societies and its Management Committees.
- Policies on filling the gaps and inequalities between zones, districts
- Measures taken to create educational equity
- Specific features of inclusive education
- Specific features of lifelong education
- Features and weaknesses in school-zone-district-provincial level planning
- Future plans for all these aspects of education
- Policy of teacher/school principal transfers
- Policy of distribution of resources

For the data collection, services of resource persons were employed (Annex 3). Data collectors were monitored centrally three times and they were guided to collect data.

4.4 Data analysis

Two kinds of data (document and interview) were analyzed qualitatively to identify patterns of existing policies and implementation. Based on the analysis suggestions for advocacy were identified.

5.0 Data presentation, analysis and Recommendations

The data presentation, analysis and recommendations are organized under 10 themes identified based on the data.

- 5.1 National level framework on SDG
- 5.2 Educational Policy and SDG
- 5.3 Emphasis of SDG in the school curriculum
- 5.4 Circular foundation for the day to day maintenance of schools
- 5.5 Awareness of peoples' representatives and officials on SDG and focus of mind sets
- 5.6 Teacher cadre and SDG
- 5.7 Pre school education and school education
- 5.8 Support of voluntary organization and NGO's to implement plans
- 5.9 Best practices and the role of SDG
- 5.10 Issue of private tuition

5.1 National level framework on SDG

National level framework on SDG can be discussed based on the two ministries in Sri Lanka. They are 'Ministry of Sustainable Development and Wild Life Conservation (MoSDW) or earlier ministry known as 'Ministry of Mahaweli Development and Environment' (MoMDE) and 'Ministry of Education' (MoE).

5.1.1 Ministry of Sustainable Development and Wildlife Conservation (MoSDW)

Duties and responsibilities of the 'Sustainable Development Division' of the MoMDE are as follows

- Development of strategic plans for protection of the environment and environmental quality improvement and undertaking pilot programmes
- Disseminate knowledge on Sustainable Development among the all sectors of the society.
- Stakeholder coordination for achieving Sustainable Development targets.
- Ensure the promotion of Green Economy in National Development Agendas/ Programmes.

- Develop programmes for environmental valuation and Green Accounting.
- Facilitate promotion of Cleaner production concepts and provide inter and intra agency coordination for incorporation of sub-sectoral Cleaner Production Policies.
- Implementation of Sustainable Water Management Initiatives
- Act as the focal point of implementation of the National Green Reporting System of Sri Lanka.
- Provide a platform to develop policies and strategic plans related sustainable development to integrate environmental concerns into national development processes to ensure long term sustainability (http://www.environmentmin.gov.lk/web/index.php?option=com_content&view=article&id=72&Itemid=38&lang=en: Retrieved on 01.01.2017).

The establishment of a Ministry of Sustainable Development and Wildlife Conservation (MoSDW) provides for an integrated option towards coordinating the sustainable development needs and criteria of the country. The prime objective of ministry is coordinating policies, strategies, programmes, mechanisms and tools to address development challenges towards ensuring environmental, social, and economic sustainability through an integrated approach, inter-ministerial/agency mechanisms, and broad stakeholder engagement. The MoSDW is also the national focal agency coordinating and facilitating the commitments towards implementing the national commitments to the 2030 Agenda for Sustainable Development and the Sustainable Development Goals (SDGs). It has established the Sustainable Development Division (SDD) and has commenced work on a National Sustainable Development Roadmap that will lead towards the formulation of policy and institutional framework, strategy and action plan towards ensuring the sustainable development goals in Sri Lanka.

Goal No. 17 emphasizes the strengthening the means of implementation and revitalizing the 'Global Partnership for Sustainable Development'. With this regard "...These inclusive partnerships built upon principles and values, a shared vision, and shared goals that place people and the planet at the center, are needed at the global, regional, national and local level (P. 19). Hence the MoSDW has responsibility to develop a framework that will facilitate provincial level activities related to SDG goals.

Other than the national level ministry (MoSDW) and its policies, however, only one provincial level convention has been approved related to the environment namely "North Western Province Environmental Statute No. 12 of 1990" (Date of assent: January 10 19

(1). The importance of this convention was the approval of this convention in 1991, during the period, world is focusing on MDG goals. According to the primary source of the document, 'Director of Education of the Provincial Council of the North Western Province or the officer discharging the functions of that office' will be a member of the Provincial Environmental Advisory Council' (herein after referred to as "the Advisory Council). As a result in the education sector, SDG related activities can be implemented but no specific evidence found with this regard.

5.1.2 Ministry of Education (MoE)

The 17 Sustainable Development Goals and 169 targets which are announced demonstrate the scale and ambition of the new universal agenda. Through the agenda *'inclusive and equitable quality education is ensured and lifelong learning opportunities for all was promoted'*. With this regard SDG Goal 4 emphasizes that obtaining a quality education is the foundation to improving people's lives and sustainable development. Major progress has been made towards increasing access to education at all levels and increasing enrolment rates in schools particular for women and girls. Basic literacy skills have improved tremendously, yet bolder efforts are needed to make even greater strides for achieving universal education goals. For an example, the world has achieved equality in primary education between girls and boys, but few countries have achieved that target at all levels of education.

As a result, MoE can implement activities that focus on provincial level SDG 4 related activities. With this regard MoE can document best practices at school levels. Examples are English language teaching projects at schools (Ministry of Education, 2017) and innovations of school principals (Ratnayake, 2008).

Although there are documents/manuals published by MoE that depicted indirectly the concepts related to SDG (Independent Evaluation Office: Global Environment facility (2014); Little et al. 2013; Education first Sri Lanka, 2013; Manuals on Child Friendly Schools, Teacher education curricula, Primary education curricula) no specific document prepared by MoE on SDG. There is a document related to Agriculture Unit of MoE and it has been distributed among schools during the workshops. Further in the Uva province discussions are going on the themes related to SDG and how the concepts can be used to develop school education in the Uva province (Discussion at CED on 15.032017).

The data and documents published by Moe, however, can be used to analyze the situation in education related to SDG 4. As an example the data in table 2 depicts the strength of female population in the Sri Lankan education system. However no planning is in the primary level of education at national and provincial level to have further action based on the SDG.

Table 2. Gender compositions of primary education teachers and support Staff

Senior staff at MOE	M>F
MOE Directors responsible for BESP	F>M
Provincial Directors of Education	M>F
Provincial Deputy Directors (Primary)	F>M
Zonal Directors of Education	M>F
Zonal Assistant Directors (Primary)	F>M
Divisional Directors	M>F
In service advisors (Primary)	F>M
Primary school principals	Data not available
section heads in G1-11 and 1-13 schools	F>M
Primary grade teachers	F>M

Source: Little, Perera, Sivagnanam, & Jennings (2013) P. 30

The question "What is the purpose of devolvement?" can be asked if provinces cannot change the exam time tables to suit their provinces. Further, without a proper coordination, day to day provincial educational activities are flowing without an aim. So Minister of Education should visit provinces monthly to exchange ideas with provincial authorities. Self determination on policies at provincial levels is not sufficient to have a sustainable education system in Sri Lanka. Further grassroots level policy decision making processes should be established and strengthened so that ideas from the grassroots levels will be used to formulate provincial level and national level decision making processes.

Private schools and national schools are not bothering about Zonal Education officers. The quality of the officers is the reason. Hence capacity of Zonal level officers should be strengthened.

5.1.3 Other institutions

President office: Strategic Enterprise Management Authority (SEMA) (2017) has published a document on *Sustain Lanka: handbook for consumers*. Non government Organizations and other organizations too (CED, CEJ and Law and Society Trust (2014)) are involved in the related activities.

Recommendations

- National level framework should be interpreted to suit each and every province in Sri Lanka and a plan of action for 15 years (until 2030) should be prepared by provincial ministries of MoSDW and MoE. Provincial Ministries of Education should be able to interpret the circulars sent by MoE to suit the needs of provinces.
- Specific plan of actions should be prepared to address specific issues in each province (Ex: Non availability of schools for Science stream in Sabaragamuwa; Estate school requirements of Central province) and by way of implementing such plans goals of SDG can be achieved.
- Since the 17 Sustainable Development Goals and 169 targets which are closely related to education (Please see figure 1), MoE can take the leading role in implementing SDG activities in Sri Lanka. As an example SDG goal No. 8 is "*Good Jobs and Economic Growth (Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all*" for which the basis should be laid by the education system of a country. Hence an action plan on 17 SDG targets that focus on all areas of the country and roles of all ministries should be developed and coordinated by the MoE.
- International level Documents published internationally (Ex: UNESCO Asia and Pacific Regional Bureau for Education (2010) *A Teacher's Guide: Incorporating Education for Sustainable Development into World Heritage Education.*); UNESCO (2010a,b) and videos (Ex: Center for Environment Education, India (Year not cited). *Understanding education for sustainable development. A video prepared for UNESCO*) should be studied in depth and similar documents /videos should be prepared to disseminate the concepts to the different social groups.
- Organizations that involve in SDG related activities can be used to popularize and disseminate the findings of SDG among school system. As an example documents

published by Center for Environmental Justice (2016) can be used to popularize the concepts on SDG in the school system and general public.

5.2 Educational Policy and SDG

At the earlier stages of Provincial councils, some provincial council gathers focus groups to prepare specific plans for the provinces. As an example, Central Province develops a plan for the province in 1990's with the participation of people's representatives and intellectuals. The publication on "Development of Kandy District (1992)" can be considered as another example for the purpose (Chief Secretary Office, Kandy, 1992). However, in recent years such practices can't be found.

According to the Blog by GPE Secretariat (July 12, 2015) "*Education equips learners of all ages with the skills and values needed to be responsible global citizens...*" This concept is related to SDG 8 too. One key issue in the Sri Lankan education system is the gap between the school education and global job market due to the failure rates of English language at G.C.E. (O.L.). This has resulted in a gap between the education children gain and job market requirements that need the competencies of English Language. Hence the student friendly language leaning techniques should be emphasized and promoted as in the Katawala school in Kurunagala district (Please see the u tube web sites on KU/ Ketawala Kanishta Vidyalaya; Ada Derana Sri Lankan Of The Year 2016 - Unsung Hero - Wilbert Ranasinghe).

Language related another issue on policy is the division of the thought processes of the country based on the two local languages: Sinhala and Tamil. In Sri Lanka accepted policy is delivering primary and education in Mother tongue to promote innovative thinking processes of citizens and selected subjects in secondary education in English according to the bi-lingual policy. Additionally Sinhala and Tamil are thought as Second National Languages. However lack of teachers has hindered the proper implementation of this policy. Overall division on thought processes has effected the SDG 16 "*Peace and justice (Promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions at all levels)*" too.

Another policy issue identified was the knowledge based curriculum and examination system. Although the curriculum is based on the competencies, key competencies and generic skills needed to be acquired by the curriculum is neglected due

to the examination centered education. This is too a hindrance to enter the job market (National Education Commission, 2014). As Deng Xiaoping in People's Republic of China, has said from the school age children should be taught aiming the job market but the education system should not be overpowered by the job market. Hence a generic skills targeted school education can be implemented in the Sri Lankan context too.

Policies and practices in the examination system too have affected the sustainability of school system. Although there are different term test systems in provinces, the differences within the provinces have not addressed to maintain the province specific educational characteristics and child friendly education systems. In the practice all provinces emphasize Grade 5, G.C.E. (O.L.) and G.C.E. (A.L.) exam results as criteria to measure the effectiveness of teachers and schools and finally the effectiveness of zonal education offices and provincial ministries. As a result the curriculum developed to develop a good citizen is not implemented properly at school level. Hence province/school level exam systems/ assessment system should be strengthened.

Vocational training for failures/dropouts at schools at G.C.E (O.L.) and (A.L.) has been strengthened in Sri Lanka.

Subsequent to the release of the results of the A/L examination, over 200,000 students and over 100,000 O.L. student drop-outs are found to be suffering without a proper channel to acquire a higher level qualification or gain relevant experience enabling them to enter the job market having relevant skills expected by the industry.

Owing to the above state of affairs, most of the students are wasting valuable ages of their lives, as well as their time and money doing A/L two or three times even though they are not much focused on Academic Higher Education. Consequently, students who become exhausted with their repeated A.L. examinations, enter the unskilled job market with comparatively lower salary scales.

With a view to overcome the issues discussed above, the Tertiary and Vocational Education Commission (TVEC) has taken steps to introduce the National Vocational Qualification (NVQ) System with 7 Levels. The NVQ level 7 is equivalent to the bachelor degree qualification. Students can enroll into the M.Sc. or any other postgraduate programme after completion of NVQ level 7 like any other bachelor degree programme. The completers of NVQ level 5, can enter into the 2nd year of most of the foreign universities provided the relevant field of education is available at such universities.

Compared to the academic qualifications, the NVQ is designed for the job seekers soon after the A.L. The specialty of the NVQ system is that, at the completion of each level of the NVQ qualification, candidates become eligible to enter the professional job market with fairly higher salary scales than the academic qualification holders.

The Vocational Training Authority under the Ministry of Youth Affairs and Skills Development, at present, is in the process of implementing the NVQ system very successful (http://www.vtasl.gov.lk/what_is_NVQ.php. Retrieved on 2017.05. 06)

Based on a research at Hardy Technical College Asian Institute of Technology (AIT) began (SAITM is a later byproduct of this institute). Later concepts related to Non formal education came and implemented. The idea at the beginning was, if all children cannot be given vocational education, school leavers should be given that opportunity. Germantec concept came at that time based on the German technology (Germantec- Folk School which means "all children should receive vocational skills.)

In some provinces Commerce and Science sections are not distributed equally hindering the implementing equity concept for girls attending such schools. The quality of 843 estate schools needed to be upgraded to enhance the quality of girl's education.

There is no Tamil medium AL Science stream in the Sabaragamuwa Province. Although there are 28 schools with AL classes in both Ratnapura (14) and Kegalle district (14) and one Tamil school with AL classes in both districts no Science stream is available in the province. Even in the Uva province, facilities are not sufficient and although a decision was taken to attend 56 students to schools situated in Central Province, the future policy is not clear with this issue.

Expression of ideas in Tamil Language will improve the ideas of Tamil community. Hence the ideas of Tamil officers/teachers should be given due recognition.

Recommendations

- Officers who participates the conferences related to SDG in foreign countries should be responsible to develop a plan of action to be implemented in Sri Lanka.
- The relationship between the general education system and the job market should be studied in deep to suggest measures to improve the school curriculum to suit the job market without hindering the basic expectations of school education: development of a good citizen.
- Generic skills should be highlighted so that an aim of SDG "*...such as respect for human rights, gender equality and environmental sustainability*" can be achieved. Without this procedure "*...investment in quality education, progress on all other development indicators will stagnate*" harming the SDG 10 "*Inequalities (Reduce inequality within and among countries)*". As focused by SDG No. 10 provincial

level disparities so far identified should be studied in depth and practical remedial measures should be implemented without influences. The teacher cadre should be deployed based on objective criteria and without political or official influences.

- Both the central MoE and Provincial level nine ministries of education should "*...work to ensure that all children irrespective of where they live get a quality education, prioritizing the most vulnerable*". In the Sri Lankan context vulnerable children can be interpreted as children from broken families, single parent families, war affected families and children from rural areas where basic facilities such as teachers are not available for selected subjects (mathematics, English language, science, music).
- The policy on migrant children of fishermen too needs to be addressed. Before the war schools were operated to cater these children. Specific schools that were abandoned due to war should be started again in Northern and Eastern provinces and the quality of available schools in Kalipinya in the North Western Province should be monitored based on a policy developed to suit the migrant children (Educational Research Unit, Education Department of North Western Province, 2006)
- The school based exam/assessment systems should be strengthened and the 50% of marks at school level exams should be calculated to the national level exams. For the purpose teacher capacity should be developed and accountability should be strengthened.
- Before the establishment of provincial councils in 1989, regional level new /innovative activities were started and implemented. During the period, Independent Regional Directors reports on the planning and administration process of provinces were included in the secretary reports of the MoE. At that time provincial level good practices were encouraged. Similarly teacher research needs to be highlighted and for the purpose teacher strengths should be empowered. For the purpose decentralization should go to the level of teachers.
- After 1989, there seems to be a new hierarchy within provinces and expected devolution of powers towards better education system is not implementing. As the sustainability should be at all levels, critical thinking should be emphasized at all levels of education system. However, in Sri Lanka, people are following the same techniques of centralized government system.

- According to the available data more girls receive secondary education and university education. To sustain the capacity of boys, more vocational oriented courses should be started focusing both local and international market. While working also boys should be provided with continuous learning opportunities and relevant courses to gain university degrees and higher qualifications.
- Provincial level education commissions should be established to develop provincial level policies and implementations. At national level too such a commission, as suggested in 1945, 1961 and 2009, will be beneficial to the national level policy decision process.
- To achieve the policies on equality and equity the nature of distribution of schools and AL classes should be studied and more sections on Science/commerce AL streams should be established at selected places so that equity concept can be achieved. School mapping concept should be used to identify needs of schools / streams of schools continuously at provincial level and national level.
- The purpose of establishment of provincial councils is not the competition among provinces. The continuous discussion between provincial Ministers and authorities is necessary to monitor the needs of each province and developing suitable conventions to fulfill needs of provinces.

5.3 Emphasis of SDG in the school curriculum

National Education Commission (NEC) in Sri Lanka in its report in 2003 has presented national goals and basic competencies developed by the school education. Based on this foundation, the SDG goals and specially SDG 4 related activities can be enacted in the school education context. The school curriculum materials too are developed based on the foundation given by the NEC.

When the content of the school curriculum in Sri Lanka was analyzed based on the criteria "direct or indirect representation of the concept 'sustainable development' in the curriculum materials" two aspects of findings emerged.

A) The First aspect is the direct representation of the concept in the following school textbooks.

1. In the grade 6 Science textbook (Part 1) there is a sub section on 'sustainable use of energy resources in the 4th unit on "Energy of day to day life" (pp. 63-66). (Annex 4).

2. In the grade 7 Science textbook (Part 11) there is a sub section on 'sustainable usage of energy sources' (pp. 125-126) related to the 19th unit on "Sources of energy" (pp. 113-126). (Annex 5).
3. In the Grade 11 Science textbook (Part 11) lesson no. 15 on Biosphere (167-213) has five sub sections and 5th sub section is on Sustainable development and management of environment (201-213). (Annex 6).
4. Out of the five themes in Grade 9 Geography textbook, 4th theme is on 'Environmental ethics and development' (pp. 101-120). The concepts and facts on 'sustainable development' are mentioned in the pages 112-120. (Annex 7).
5. Out of the five themes of Grade 11 textbook of Citizenship Education (2015) 4th theme is on 'Environmental problems and sustainable development' (pp. 82-120). The chapter has the following sub themes.
 - Theories and definitions on environment
 - Components of the system of the environment (artificial, natural)
 - Environment and mankind
 - Services of the environment
 - Changing of the environment by the mankind
 - Problems of the environment
 - Social impact due to the problems of the environment
 - Development

The sub theme of Development has the following sub themes.

- Evolution of the concept of development.
- The measurement of the development
- Classification of the countries according to the development
- **Concept of the sustainable development** (pp 114-120). (Annex 8)

The definition given by "World Commission on Environment and Development (WCED), (Brundtland Commission) *Report*" (1987) "*Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs*" is also quoted under this sub theme.

According to the analysis, concepts and facts related to the sustainable development are included in three subjects (Science, Geography and Citizenship Education) of the grades of 6, 7, 9 and 11.

B) The second aspect is the indirect representation of the concepts on 'sustainable development' in the curriculum materials. For this category, the themes or subject areas that could be related to the "concept of sustainable development" by the teachers at the classroom when they are delivering the content, but not mentioned directly by the curriculum developers, can be included (Table 2). In the table, content of textbooks of purposively selected three grades and 7 subjects have been analyzed to find subject matter that indirectly related to the SDG.

Table 3. The ideas indirectly related to the 17 themes of SDG in the school curriculum

Grade 11	1. English	2. Buddhism	3. Home Science	4. Science
	Lesson 1: Our responsibilities	Lesson 14: Let us be environment friendly	Lesson 2: Management of the resources at home	Lesson 10.3 Effectiveness of electronic instruments and conservation of energy
	Lesson 2: facing challenges		Lesson 5: Reducing the difficulties when maintaining the quality of food	Lesson 14.3 Polymers
	Lesson 4: For a better tomorrow		Lesson 6: Preparation of meals	
	Lesson 7: Simple living		Lesson 8: Conservation of foods	
Grade 6	1. English	5. Geography	6. Citizenship education	4. Science
	Unit 11: eco friends	Unit 3: Maintaining the environment around the home	Unit 3: Qualities needed to be improved as a good citizen	Unit 3.5: Water is a limited resource
Grade 3	7. Sinhala language	2. Buddhism		
	Lesson 6: Good decision (Annex 9)	Lesson 5: Prince who dislike harming animals		

	Lesson 11: Information on fruits	Lesson 8: Water cup		
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Since the policy framework for the Sri Lankan school curriculum is suggested by the National education Commission and curriculum materials are developed by the National Institute of Education and Department of Educational Publications, the curriculum development process is centralized in Sri Lanka. So, the decision with regard to the inclusion of subject content is centralized. The evaluation process is also centralized with the central body of Department of Examinations.

The Provincial Departments of the Education via Provincial Councils in Sri Lanka, however, can suggest modifications for the curriculum to suit their environment. Further Provincial Councils can seek the approval for such modifications from the National Institute of Education. Although there are such two or three modifications in Central and Uva provinces, no modifications have been suggested on the theme 'SDG'.

The definition given by the Brundtland Commission Report on SDG was "*Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs*". The definition contains two key concepts:

- the concept of "needs", in particular the essential needs of the world's poor, to which overriding priority should be given; and
- the idea of limitations imposed by the state of technology and social organization on the environment's ability to meet present and future needs."

Accordingly it can be concluded that the '*essentials and limitations*' of each and every province in Sri Lanka based on the concept on SD have not been analyzed and '*to meet present and future needs.*'

Recommendations

- Provincial councils should establish a committee at provincial level to study the existing curriculum objectives and materials and propose modifications especially on SDG concepts.
- Any aspect of the curriculum can be modified with the approval of National Institute of Education, so that the alternative measures that suit the provincial levels can be implemented to achieve the targets of SDG by 2030.

- The curriculum implementation process should be monitored by Zonal directors and In service advisors so that proper implementation of concepts related to SDG at classroom level can be assessed and monitored for the necessary remedial measures.
- The concepts related to SDG and related concepts (ex: social cohesion, gender, equity) in school curriculum materials should be clearly disseminated to in service advisors and teachers so that biased ideas based on popular concepts or political agendas can be erased from the mind sets of people. Racial or internationally biased concepts should not be inculcated as a result of less understanding of teachers. Hence the teacher capacity should be developed.
- Wrong interpretations on old stories in text books (Ex: story in the Grade 2 textbook. *Two friends and bear*) and other misinterpretations of subject content, if available, should be revised to convey the old traditional interpretations. During the periodic reviews of the curriculum, this aspect should be given proper attention.
- As has found by a Research sponsored by NEC (2014) "*the subject competencies and competency levels were not clearly stated and tend to confuse teachers.*" Hence an in depth research on curriculum content can be suggested to analyze the SDG concepts in curriculum materials and level of understanding of teachers.
- Co-curricular activities at schools can be implemented to inculcate concepts related to SDG 4.
- International level Documents published internationally (Ex: UNESCO Asia and Pacific Regional Bureau for Education (2010) A Teacher's Guide: Incorporating Education for Sustainable Development into World Heritage Education.) should be used to modify school curriculum in Sri Lanka suitably.
- Local publications (Ex: Gunawardena, 2010) that highlight indigenous knowledge that related to SDG should be popularized among schools.

5.4 Circular foundation for the day to day maintenance of schools

Similar to the curriculum development process, the management process of education too centralized although the provincial council system is implementing from 1987. The overall day to day and yearly management of schools are directed by MoE circulars and guidelines. The recently published such guidelines can be summarized as follows:

- Ministry of Education (2006) Education sector development framework and programme (ESDFP). Planning and Performance Review Division, Ministry of Education, Isurupaya, Battaramulla, Sri Lanka. October 30, 2006.
- Education first: Education sector development framework and programme (ESDFP) (2013-2017). Human capital foundation for a knowledge economy:
- Ministry of Education (2014) Our school: How good is it? Process of evaluation and monitoring for assuring the quality in education.
- Ministry of Education. Restriction of improper collection of funds in schools. : Circular Number 05/2015 of 2015. 01.29
- Ministry of Education. Education sector development framework and programme (ESDFP) (2015-2019): Circular Number 32/2015 of 2015.12.22. (Provision of school based grants for the development of facilities for in schools where the Advanced Level Science Subject stream has been Programme of Developing 1000 Secondary Schools – (2015-2016)

In implementing central government policies and Ministry policies based on these documents, Provincial level modifications too can be made. Specially the needs of specific schools with specific features (ex: smaller number of students, lack of qualified teachers, schools situated in difficult areas and difficult climate areas) needs to be considered in implementation of these circulars. Only the North Western Province, however, has so far approved a convention on environment to suit the province. Further the District of Nuwara Eliya has a policy for a separate school time from 8.00am-2.00pm due to their climate conditions.

For the day to day management of schools, internal supervision plays an important role. The internal supervision was suggested in Ceylon in 1960 by Jinapala Alles. For the purpose cumulative record system was suggested. Accordingly the health conditions of children were observed at first and later the positions of students with regard to the curriculum achievement was assessed. At the end of the school, a cumulative record was given for each and every child. The Guidance Unit of Maharagama Teacher training College was established for the purpose. This process had the features of SDG suggested in 2015. However, the present school system this type of sustainable assessment system is not effective and the results of students are challenged by private tuition owners at the end of Government examinations.

Recommendations

- Based on the guidelines of the existing circulars, each and every school can be monitored equally based on a set of identified criteria. Accordingly, the equality concept will be maintained throughout the country, as on Wednesday each and every school will be observed, evaluated and monitored through the team inspection. Even the principals and teachers have studied the content of the circular and tried to implement the guidelines so the stature of the school can be posed for the observation team.
- The maintenance and implementation of specific policies to achieve the equity, however, is necessary in specific schools/ places in the country and for the purpose provincial level modifications and new policies need to be suggested. For the purpose advocacy of different stakeholders need to be taken.
- A cumulative assessment system should be developed and suggested to the school system so that the responsibility of teacher and principal on the child's learning can be vested systematically and legally on their duties.

5.5 Awareness of peoples' representatives and officials on SDG and Focus of mind sets

According to the informal interviews conducted with people's representatives or higher level administrative officers in the four provinces (Western, Central, North Western, Eastern and Sabaragamuwa) it was found that their awareness was not sufficient to suggest such policy options on SDG. As an example one Provincial Minister of Education said 'special needs children are totally deaf and blind children only'. Showing his limited knowledge on the concept 'special education'

The emphasis on day to day activities rather than conceptual base of day to day activities may be the reason for this less knowledge on education and educational situation. As an example one Provincial Minister of Education said '*We don't have time to do qualitative work. Only child admission and teacher transfers related work needs to be addressed*'. An additional Secretary of Education in MoE has insisted that the role of Members of Parliament and Ministers is not influencing to enter children to schools (ADA, Newspaper, 2017.01.30, p. 12).

After Tsunami, policies on disaster risk management were developed. Further policy documents on 'Child Friendly schools policy', and 'social cohesion policy' were developed

at central government levels and implemented at central level but provincial level knowledge on these themes are not sufficient. The gaps in the flow of knowledge from the center to provincial levels are an issue. Some schools principals are not aware about these policy changes. Reason may be that although some representatives from Sri Lanka participates in foreign conferences /meetings and foreign donors too although develop books based on data gain from highly expensive conferences, no provincial level awareness building projects were implemented.

Rather than focusing on policy formulations based on policy options for provinces, they are focusing on day to day activities of the offices. One Secretary of education said, in an interview, he was concentrating on teacher transfers and admission of children to schools and no time to engage in other activities. Another provincial level people's representative said that he has a connection with the education office only to take funds for the development work of schools situated in his area. He did not have the concepts on SDG and its importance in his activities as a people's representative.

Another common idea expressed by officials is the 'workload' that prevents them on having engaged in innovative activities. The handling of the daily mail and responding to the requests therein also a separate task that needs the official time. The maintaining of the file system using the ICT facilities is not still developed at full strength. This issue is visible at office level and school level too. Hence it is necessary to focus on selected activities (mostly sustaining day to day activities) and as a result innovations will be hindered and concepts related to SDG too will not be adhered in the normal activities. This maintenance culture can be found at different levels of the system from the lower level workers to the higher level officers.

According to the existing phenomena, it can be said that the following idea or expectation is not met in the provincial education context. *"Unlike their predecessor, the Millennium Development Goals, the SDGs explicitly call on all businesses to apply their creativity and innovation to solve sustainable development challenges. The SDGs have been agreed by all governments, yet their success relies heavily on action and collaboration by all actors. The SDGs present an opportunity for business-led solutions and technologies to be developed and implemented to address the world's biggest sustainable development challenges"* (www.sdgcompass.org)

"Businesses must understand that education is not only a key piece of the puzzle for poverty eradication. It also crucial to develop the future workforce, foster innovation, and generate stable and more prosperous societies. They need to take proactive roles in

education, using their expert skills and interest in innovation to create shared value. In practice this means raising educational performance levels, shaping aspirations and creating a productive workforce."

Recommendations

- Workshops on the theme SDG can be conducted at provincial level to disseminate the knowledge among implementation officers and local level people's representatives.
- The management of day to day activities has to be computerized to save time of officers. The census data and office data can be computerized to have an effective day to day management system.

5.6 Teacher cadre and SDG

In the 1970's teachers were assigned to schools based on the students' attendance. The policy is implementing to date with some modifications but an issue on SDG is the non availability of sufficient and quality teachers in difficult areas. According to the national level policy, teachers were appointed based on the University Degree qualifications and Diploma in Teaching (offered by 20 National Colleges of Education established to produce pre service teachers by an Act of Parliament on National Colleges on Education) qualification. However, as a solution to the provincial level teacher shortage, no specific provincial level options have been developed. With this regard two best practices could be identified but these two practices too were implemented by the intervention of Central government.

- Appointment of Samurdi teachers under the Ministry of Samurdi after 1994 and appointing them to the schools where the teacher shortage was prominent (In the Nuwara Eliya District)
- Selection for the Pre Service Teacher Education Course, at the Sripada National College of Education, of students in plantation areas, although they have shown low results at the G.C.E. (A.L.) examination as the representation of Tamil areas are less in the teacher cadre creating teacher shortage in the plantation sector.

The Provinces, however, have not implemented such measures in teacher appointment system to sustain their teacher needs in respective areas. As an example, the Wilgamuwa/ Laggala area in the Central province is suffering from the issue of teacher

shortage and no specific measures have been suggested so far. Even the teachers appointed to the area through the established policies too were transferred to teacher friendly areas based on the political influences. Hence the maintaining the equality in teacher cadre to maintain sustainability is not effective due to provincial level practices.

Teacher capacity to deliver basic concepts of SDG too is questionable. As discussed in section 5.3 on 'Emphasis of SDG in the school curriculum' there are concepts related to SDG. Further there is subject content that can be highlighted to teach SDG related concepts by teachers. But teachers too were restricted to the curriculum materials and exam system and will reluctant to focus on ideas not directly focused by the curriculum materials.

Further teacher role is not changed to suit the subject matter they teach. As an example the book on "Adolescent" (UDA WU YAWWANAYA) was not taught to suit the mind sets of students and later the book was prohibited fro schools.

Recommendations

- Sustainability of the curriculum depends on the sustainability of teacher deployment and based on the premise a 15 year plan of action is needed at provincial wise to evaluate and monitor teacher recruitment and deployment policies and practices.

5.7 Pre school education and school education

There is an officer at the Pradesiya Saba to monitor day to day activities of pre schools. There is a fund at some provinces to educate pre school teachers and teachers are summoned at one place at the end of year and an education program will be implemented. People's representatives attend year end ceremonies of pre schools but no proper provincial level policies for pre school education enacted. Normally parents pay teacher's salaries and Provincial councils pay the salaries of Day Care Center teachers. Special policy in Negombo Town council is the paying of teacher salaries by the town council to pre school teachers in the 13 pre schools. Parents pay only 75/= rupees per month and some parents feel that the amount of fee is reflecting the low level of quality in pre schools and based on this wrong premise send their children to pre schools maintained by international schools. But they charge higher fees.

Popularity of English medium pre schools and schools is also an issue. More fees should be paid for English medium pre schools. Although free pre schools are established with low admission fee in some Pradesiya Saba areas parents prefer to send their children to English medium schools paying higher fees due to the misconception on pre schools conducted in local languages.

Further parents look for 'unnecessary year end events' with a famous person as the chief guest. This feature will decide the number of children due to attend the school in the next year. Hence parental awareness on the nature of pre school education should be strengthened scientifically.

The positive feature of pre schools in Kurunagala district is the caring of children while their parents are working at different occupations. In this way the SDG concept of '*care on the child*' can be maintained.

One issue in the school education sector is the competition for 'so called' 'popular schools' When the teaching learning process is considered there is no specific differences between rural and urban schools. Hence as suggested by the Chief Secretary of Ratnapura, primary classes of popular schools should be removed and the children should be guided to attend the school near their home. This policy was suggested from 1990's but was not implemented due to the influence of 'influential groups' of the society.

Present day school system has directed the child to spend money for education, while in the past education was provided with free of charge. In the North Western province villages affected by casts' system were emerged as developed villages due to the education facilities. The occupations were change and the social status was improved. However, the present school system seems to neglecting the children from affected families (ex: families where mother has gone for a Middle Eastern country; single parent families etc.)

Recommendations

- Parental awareness projects need to be conducted on the aims and objectives of pre school and school education.
- The parental awareness on the nature of pre school education should be strengthened scientifically.

- The stress of attending far away schools should be explained to the parents highlighting long term effect of it. The capacity to sustain the strength of the child will be used effectively if the child can visit a nearby school.
- The definition of good school should be considered as follows to have a sustainable education system. *"Good school is a school which can educate children from problematic families; Good teacher is a teacher who can teach a child from a disadvantage background."*

5.8 Support of voluntary organization and NGO's to implement plans

Around 10 schools in the North Western Province receive the facilities from voluntary organizations such as Rotary. Books, stationaries and toilets for health facilities were provided. A donor from Nederland has built 8 toilets in schools and has provided water constructing wells. Since the said facilities were not provided by the government, voluntary organizations and well wishers have contributed to develop these facilities.

According to the data in Central Province, 5 year plan should be prepared by each and every school and the services rendered by outside organizations based on the policy of government should be mentioned therein. Accordingly NGOs are helping to develop school level activities especially in schools situated in plantation areas. According to the SDG goals this type of public-private partnership in developing the education system is suitable.

However in the role of school principals, the preparation of annual plans are an artificial activity with stress and it was done to fulfil just legal requirement of the official work. Even at the Zonal Education Office level, preparation of plans was not done scientifically based on the plans sent by schools. The practice is reviving the plans of schools to fulfil requirements of requests made by higher authorities. As an example, if the Provincial Director of Education wants to implement 10 water supply projects then the officials will study the plans to identify specific schools that need the water facilities. Since there are 195 schools and 26 Pirivena are within the 5 Regions in the one Zonal Education office area of Ratnapura, officials are not in a position to review all school plans one by one and suggest improvements (Figures for Nuwara Eliya Zonal office area= 156 schools; Hatton= 146). (The original idea was to have 80 schools in one zonal Education Office area which was a manageable figure). Further the diversity of schools with regard to

the number of students, resources, and teacher cadre etc., this synthesis process of planning is a complex task for the officials.

Recommendations

- Suggest a clear public private partnership policy in each province based on the specific needs of the each province as in state governments in India.
- The needs of Zones, regions and schools too should be specifically identified through the process.

5.9 Best practices and the role of SDG

Achievements amidst difficulties can be considered as best practices. *"A best practice is a method or technique that has been generally accepted as superior to any alternatives because it produces results that are superior to those achieved by other means or because it has become a standard way of doing things"* (Wikipedia, Retrieved on 09.01.2017). In the school education sector too, best practices can be found. Improvement of schools due to be closed, by innovative methods, Improvement of achievement levels of students using alternative measures, and managing the school setting, creating new environment that facilitate teaching and learning process, some of the examples. These best practices can be considered as sustainable measures taken by school principals or teachers. Although these types of best practices cannot be generalized to all schools, it is suitable to publish these achievements as research papers or publications as success stories.

Best practices can be used as the success rate of provinces. The convention on environment and educational research culture in the North Western province are examples for best practices. Innovations at provincial level schools and offices (Ex: B/ Walasbadda school, K/ Iriyagama Pushpadana school, Ke/ Athnawala school) should be published within the province and national level, so that the sustainability of such practices can be strengthened. The individual foundations of such innovations should be developed to continue to have a broad base and continuous development process.

So far published documents (National Institute of Education, 2008; Ministry of Education, 2017; Teacher Center: Matale, 2015) with this regard can be popularized within the school system.

Recommendations

- Initiating a documentation process of best practices and analyzing the processes to identify SDG concepts embedded.
- Sending the papers based on best practices to world competitions such as "APCEIU best practice award, Best teacher award etc."

5.10 Issue of private tuition

Private tuition culture have invaded all areas of school education challenging the sustainable policies such as free education, quality teaching at schools, responsibility of schools, etc. Due to the tuition four pillars of SDG are affected. Four pillars are

N= Nature;

E= Economic;

W=Well being; and

S= Social sustainability.

Nature of natural mind set and natural living system of students have been affected due to tuition and over emphasis on exam system. Economically this situation has affected the economy of parents and well being of families. Also the free education policy too affected deteriorating its economic foundations. According to the Blog by GPE Secretariat (July 12, 2015) "*...investing in and strengthening a country's education sector is key to the development of any country and its people*". Since Sri Lanka has invested on free education since 1945, the emerging situation of tuition will affect these SDG expectations drastically. Hence the responsibility of the society with regard to the free and natural education for the child has not been achieved.

Since the students while attending tuition classes, some students Without going to tuition classes go to parks and rooms. Hence while children gaining continuous education they should be guided properly.

Recommendations

- More emphasis should be given to the management styles of schools. Principals should be responsible for the non attendance of children to schools. Relevant regulations should be implemented with this regard. School should not contribute to poverty by way of promoting and provoking tuition classes indirectly through the unsuccessful management practices at schools.

- Teacher responsibility/accountability should be specifically mentioned and measured with regard to the achievement of students.
- The monitoring mechanism needs to be revised to have school friendly monitoring mechanism.
- Private tuition classes should be developed as business enterprises for continuous education and vocational education for adult learners. Their role should be minimized with regard to the school education.

References

- Action for sustainable development- A global civil society platform. <https://www.loomio.org/g/uJd5wTXQ/action-for-sustainable-development-a-global-civil-society-platform>. Retrieved 10.04.2017.
- ADA, Newspaper, 2017.01.30, p. 12 (In Sinhala).
- Ada Derana Sri Lankan Of The Year 2016 - Unsung Hero - Wilbert Ranasinghe
<https://www.youtube.com/watch?v=5PxrehpLWBY>. (Retrieved 10.04.2017).
- CCSSO: Asia Society (April 2010) Provincial education policies and practices in foreign countries. International perspectives on US educational policies and practices (What can we learn from high performing nations). <http://asiasociety.org/files/international-perspectives-on-us-education-policy-and-practice.pdf>. Retrieved 10.04.2017.
- Center for Environment Education, India (Year not cited). Understanding education for sustainable development. A video prepared for UNESCO.
- Center for Environmental Justice (2016) *Sustainable development goals: The Sri Lankan context. / Sustainability school*.
- Central Bank of Sri Lanka (2015) Annual Report, P. 102.
- Chen Lean Heng (2010) Citizenship education for a culture of peace and sustainable future 22-25 November 2010 Penang, Malaysia.
- Chief Secretary Office, Kandy (1992) Development of Kandy District. (1989-1991). Planning and Progress Administration Unit.
- Civil society participation in formulating and implementing policies in Sri Lanka: eGovernment policies and procedures ICTA <https://www.gov.lk/elaws/wordpress/wp-content/uploads/2015/03/eGov-Policy-structured-v4-0.pdf>.
- Climate change Secretariat, Ministry of Mahaweli Development and Environment (2016) *Neela Haritha: The climate change Magazine of Sri Lanka. Inaugural Volume*. www.climatechange.lk (135 pages).
- Court, J., Mendizabal, E., Osborne, D. & Young, J. **Policy Engagement. How Civil Society Can be More Effective**. <https://www.odi.org/sites/odi.org.uk/files/odi-assets/publications-opinion-files/200.pdf> Department of Educational Publications (2013) *Geography (Textbook). Grade 9. 5th print*. Battaramulla.
- Department of Educational Publications (2015) *Life competencies and citizenship education (Textbook). Grade 9, Part 1 (In Sinhala)*. Battaramulla.
- Department of Educational Publications (2015) Science (Textbook). Grade 7, Part 11. Battaramulla.

- Do Phu Hai, Prof.Dr. () Process of public policy formulation in developing countries. Faculty of Public Policy, Graduate Academy of Social Science (GASS), Vietnam
http://www.icpublicpolicy.org/IMG/pdf/panel_11_sl_hai_phu_do.pdf
<http://www.ids.ac.uk/opinion/sdg-4-education-necessary-ambition-or-misplaced- folly> (Retrieved on 07/09/2016)
- Education System Overviews (Australia, Finland, Ontario, Finland, US): Building Blocks for Education. http://www.edu.gov.on.ca/bb4e/Executive_Summaries_EN.pdf.
- Educational Research Unit, Education Department of North Western Province (2006). Research approach for the North Western Province education (In Sinhala).
- European Commission, Brussels (25 September 2015) Sustainable Development Goals and the Agenda 2030. http://europa.eu/rapid/press-release_MEMO-15-5709_en.htm
www.sdgcompass.org what are the SDGs?
- GPE Secretariat (July 12, 2015) <http://www.globalpartnership.org/users/gpesecretariat>.
 Retrived on 12.10.2016.
- Gunawardena, M.R.B. (2010) *A handbook for envirnmental paddy growing/ Natural foods in Sri Lanka*. Weligepola: Women's Society on Coordinated people Development (In Sinhala).
- Hend, C.L. (2010) Gender sensitizing: reorienting teacher education to address sustainable development: Guidelines and tools. UNESCO: Japan Funds-in-Trust.
- ICTA (2015) Government policies and procedures <https://www.gov.lk/elaws/wordpress/wp-content/uploads/2015/03/eGov-Policy-structured-v4-0.pdf>.
- Independent Evaluation Office: Global Environment Facility (2014) Sri Lanka (1991-2012). Sri Lanka (1991–2012) Volume 1: Evaluation Report and Volume 2: Technical documents. Joint country portfolio evaluation.
- Julius Court, Enrique Mendizabal, David Osborne and John Young **Policy Engagement: How Civil Society Can be More Effective** <https://www.odi.org/sites/odi.org.uk/files/odi-assets/publications-opinion-files/200.pdf><http://www.undp.org/content/undp/en/home/sdgoverview/post-2015-development-agenda/goal-4.html> (Retrieved on 07/09/2016).
- Keembiyahetti, N. (2016). Sustainable Development Goals: A new entry for Sri Lanka. *Economic Review*, April-June, 2016.
- Law and Society Trust (2014) Forum on Sri Lanka's road to sustainable development. Colombo 8.
- Little, A.W. () Education for all: Policy and Planning. Lessons from Sri Lanka <https://assets.publishing.service.gov.uk/media/57a08cf1ed915d622c00169b/paper46.pdf> (Retrieved on 07/09/2016).
- Little, A.W., Perera, W., Sivagnanam, M., & Jennings, J. (2013) Independent completion report of the Basic Education Sector Program in Sri Lanka. FINAL REPORT.

Manuals on Child Friendly Schools), Teacher education curricula, Primary education curricula.

Ministry of Education, *Sustain Lanka. English and Foreign Languages Branch*. <https://www.youtube.com/watch?v=WATfGmB-4bY> (Retrieved on 06/05/2017).

Ministry of Education (2017) An approach to best practices of schools No. 2. (2015-2016). Battaramulla: Management and Quality Assurance Branch (In Sinhala).

Ministry of Education (2013) Education first Sri Lanka. Battaramulla: Policy and Planning Branch.

Ministry of Education (2008) National policy and a comprehensive framework of actions on education for social cohesion and peace (ESCP). Battaramulla: Social Cohesion and Peace Education Unit.

Ministry of Education (2008) Education for all: Mid decade assessment report in Sri Lanka. Education for all, by 2015 truly.

Ministry of Education (2010) Quality development of the process of school system of education iii. Guidelines on national educational standards and ISA competencies. Battaramulla: Management and quality Assurance Unit.

Ministry of Environment and Natural Resources (2008) *Guidance manual for safe and effective detection and investigation of illegal traffic and transboundary movements of hazardous wastes and other wastes in Sri Lanka*.

Ministry of Sustainable Development and Wildlife (Year not cited) *A sustainable nation- An inclusive transformation*. තිරසර රටක්-සංයුක්ත පරිණාමනයක් (19 pages).

National Education Commission (2003) Envisioning education for human development: Proposals for a national policy framework on general education in Sri Lanka.

National Education Commission (2014) Study on curriculum development in general education in Sri Lanka. Research Series 92014) – No. 1.

National Institute of Education (2008) *Research and reflections of school principals (No 1-7)*. Maharagama: Dept. of Research and Development (In Sinhala).

National Institute of Education (2013) Education of the poor and powerless in disadvantaged areas: A model resource book for small schools in Sri Lanka. Maharagama: Department of Research and development.

National Institute of Education (2013) List of post graduate theses on education (1956-2013). Maharagama: Dept. of Research and Development.

North Western Province of the Democratic Socialist Republic of Sri Lanka: North Western Province Environmental Statute No. 12 of 1990 (Date of assent: January 10 19(1). *Printed on the orders a/the North Western Province Provincial Council*. Published

in Part IVA of the Gazette of the Democratic Socialist Republic of Sri Lanka of June 26, 1992.

Ratnayake, R.M.D. (2008). Steps of development: B/Walabadda Vidyalaya, Demodara). Series of principal's research and reflection. Maharagama: Dept. of Research and Development, National Institute of Education. රත්නායක, ආර්. එම්. ඩී. (2008) සංවර්ධනයේ පියසටහන් (බ/ වලස්බද්ද විද්‍යාලය දෙමෝදර). විදුහල්පති පර්යේෂණ සහ ප්‍රකාශන මාලාව, 2008

President office: Strategic Enterprise Management Authority (SEMA) (2017) *Sustain Lanka: handbook for consumers* (In Sinhala)

Teacher Center: Matale (2016) Let us help children with learning disabilities (In Sinhala).

The Institute of Policy Studies, The National Institute of Education and Poverty and Economic research Network (2008). National conference on improving school performance through educational decentralization. Maharagama: 14 NOVEMBER, 2008.

UNESCO (2011) Education for sustainable development: An expert review of process and learning

UNESCO Asia and Pacific Regional Bureau for Education (2010) *A teacher's guide: Incorporating education for sustainable development into world heritage education.*

UNESCO (2010a) Reorienting teacher education to address sustainable development: Guidelines and tools: Gender sensitizing.

UNESCO (2010b) Reorienting teacher education to address sustainable development: Guidelines and tools: HIV/AIDS.

UNICEF Sri Lanka (February 2013) Out-of- School Children in Sri Lanka (Summary Report) Colombo: Sri Lanka. http://www.unicef.org/education/files/Sri_Lanka_OSS_Summary.pdf.

United Nations () 17 goals to transform our world. <http://www.un.org/sustainabledevelopment/education/>.

United Nations (2015) Sustainable Development Goals for 2030: Transforming our world: the 2030 agenda for sustainable development <https://sustainabledevelopment.un.org/post2015/transformingourworld>.

United Nations (2015) Transforming our world: the 2030 agenda for sustainable development. <https://sustainabledevelopment.un.org/post2015/transformingourworld> (Retrieved on 2017.05.04).

United Nations. SDG Goal 4: Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all: 17 goals to transform our world. <http://www.un.org/sustainabledevelopment/education/>.

Wikipedia: Best practice. https://en.wikipedia.org/wiki/Best_practice. Retrieved on 09.01.2016.

World Commission on Environment and Development (WCED), (Brundtland Commission) (1987) *Our Common Future*.

www.sdgcompass.org. What are the SDGs?

Annex 1

17 ways education influences the new 17 global goals

Blog - July 12, 2015 by [GPE Secretariat](#)

Education is essential to the success of every one of the 17 new sustainable development goals

This September, the United Nations will commit to the new Sustainable Development Goals, which will succeed the Millennium Development Goals. The SDGs outline a new and ambitious worldwide effort to reduce poverty and hunger, improve health, enable equality, protect the planet and much more. Real progress will be elusive unless all children receive a quality education.

#1 No Poverty (End poverty in all its forms everywhere) .



Education is the one of the most effective ways to reduce poverty.

According to [UNESCO](#), 171 million people could be lifted out of poverty - a 12% drop in global poverty - if all students in low-income countries left school with basic reading skills.

UNESCO also [found](#) that one extra year of schooling increases an individual's earnings by up to 10%, and each additional year of schooling raises average annual gross domestic product by 0.37%.

#2 No Hunger (End hunger, achieve food security and improved nutrition and promote sustainable agriculture).



There's strong evidence that a mother's education improves her children's nutrition, especially as she seeks higher levels of schooling.

The most recent [UNESCO research](#) in 2013 shows that there are approximately 47 million children in low-income countries who are stunted as a result of malnutrition in early childhood. If all mothers in those countries had a primary education, 1.7 million children

would be saved from stunting. If those mothers had a secondary education, 12.2 million children would be saved from stunting.

#3 Good Health (Ensure healthy lives and promote well-being for all at all ages.)



Better educated people are much less vulnerable to health risks.

When mothers in particular are educated, even at the most primary level, they are more likely to be well informed about various diseases and take steps to prevent them. UNESCO reports that each extra year of a mother's schooling reduces the probability of infant mortality by as much as 10% and that a child whose mother can read is 50% more likely to live past age five. A study in the journal *Lancet* also showed that four million child deaths have been prevented over the past four decades thanks to the global increase in women's education.

#4. Quality Education (Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all).



Education builds on itself, creating greater capacity to educate others and nurture a culture that values learning.

Education equips learners of all ages with the skills and values needed to be responsible global citizens, such as respect for human rights, gender equality and environmental sustainability. Investing in and strengthening a country's education sector is key to the development of any country and its people. Without investment in quality education, progress on all other development indicators will stagnate. The Global Partnership for Education works to ensure that all children irrespective of where they live get a quality education, prioritizing the most vulnerable.

#5. Gender Equality (Achieve gender equality and empower all women and girls).



Education enables girls and women to reach their full potential - in parity with men and boys - in their homes, communities, workplaces and institutions of influence.

One additional school year can increase a woman's earnings by up to 20%, according to World Bank studies, and Plan International has shown that some countries lose more than \$1 billion a year by failing to educate girls at the same level as boys. We also know that as the gap between the number of girls and boys narrows, so, too, do gender disparities in wages and employment.

#6 Clean Water and Sanitation (Ensure availability and sustainable management of water and sanitation for all).



As communities become better educated about the links between their sanitation and health they see substantial improvements in sanitation. And, as societies become more economically prosperous, it stands to reason that they will be better able to create modern water and sanitation facilities and systems.

In many societies, girls can spend as many as 15 hours per week fetching water for their families, leave no time for school, UNESCO reports. Similarly, without access to safe sanitation, there are many more sick children who will miss school. In Ethiopia, 6.8 million people gained access to improved sanitation from 1990 to 2006. This was partly the result of having educated communities about the links between sanitation and health, and of implementing new, affordable technologies.

#7 Clean Energy

Ensure access to affordable, reliable, sustainable and modern energy for all.



Like education, clean and accessible energy is an essential building block of a country's social, economic and environmental development.

Experience suggests that educated citizens will likely be more inclined to recognize and adopt new practices and technologies that will help them and their communities prosper.

And, with education, those citizens will be positioned to build and maintain energy infrastructures that will sustain their countries for a long time to come.

#8 Good Jobs and Economic Growth (Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all).



Education is one of the strongest drivers of economic progress and prosperity. Studies have shown that each additional year of schooling raises average annual gross domestic product (GDP) growth by 0.37%.

The Education for All Global Monitoring Report showed that, in 1965, adults in East Asia and the Pacific had, on average, spent 2.7 more years in school than those in sub-Saharan Africa. Over a 45-year period, average annual growth in income per capita was 3.4% in East Asia and the Pacific, but 0.8% in sub-Saharan Africa. The difference in education levels explains about half of the difference in growth.

#9 Infrastructure (Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation).



With education, countries have greater capacity to assemble and maintain the physical building blocks of progress, health and security.

As a country's inhabitants become better educated, they will be more likely to acquire their own critical technical skills and creative problem solving necessary to build and sustain roads and bridges, ICT systems, ports and airports, health and financial systems, governance practices and the many other structures that enable life in a country to improve and flourish. Well-planned and operating infrastructure itself enables more children to get the educational opportunities they need. Better infrastructure makes it possible for children - particularly in remote areas that have few developed roads or other reliable means of transportation - to get to school conveniently and quickly.

#10 Inequalities (Reduce inequality within and among countries).



As more children, from across the demographic, geographic and cultural spectrum become educated, we are likely to see an improvement in a country's income inequality.

One study showed that a 0.1% improvement in a country's education equality can, over forty years, raise its per capita income by 23% higher.

Research demonstrates that with more education equality, Vietnam's economic performance improved and, in 2005, its GDP surpassed Pakistan's, where education equality levels are half those of Vietnam's.

And, with better education, people from traditionally disadvantaged communities are better positioned to advocate for their own rights and needs, gain entry into higher echelons of economic, social and civic life and help narrow gaps of inequality across their societies.

#11 Sustainable cities and communities (Make cities and human settlements inclusive, safe, resilient and sustainable).



With education, people are more likely than not to understand, support and craft creative solutions that ensure the basic ingredients of sustainable cities and communities are in place.

Good urban planning, efficient energy use, good water and sanitation management, social inclusion and other elements of well-working communities require people with knowledge and skills that are only available through quality education. At the heart of a World Bank Sustainable Cities Initiative, for example, are awareness-building programs, development and implementation of local diagnostic tools, the creation of policy reforms and other tasks that require not just primary but advanced education.

#12 Responsible Consumption (Ensure sustainable consumption and production patterns).



Education raises the odds that people will use energy and water more efficiently and recycle household waste, according to UNESCO

A study of Ethiopia showed that, six years of education improve by 20% the chance that a farmer will address climate change by adopting techniques such as soil conservation, variation in planting dates and changes in crop varieties.

Another study showed that for each additional year of education that a head of household received, a society is between 4% and 21.5% less likely on an annual basis to cut old-growth forest per household. Also, in developing countries, research points out that there is an improvement in awareness of energy-efficient technologies with increasing education.

#13, 14 and 15

Protect the Planet - Take urgent action to combat climate change and its impacts.

Life below water - Conserve and sustainably use the oceans, seas and marine resources for sustainable development.

Life on land - Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss.



With higher levels of education, people across many different societies show greater concern about the well-being of the environment.

In 29 countries, 25% of people with less than a secondary education expressed concern for the environment compared to 37% of people with secondary education and 46% of people with tertiary education, research shows.

Also, environmental education programs have been responsible for important advances in many national and regional efforts to fight climate change and protect aquatic life and terrestrial ecosystems. But that kind of education can only reach its full potential where a critical mass of a country's or region's inhabitants have foundational learning skills that come with primary and secondary education.

#16 Peace and justice (Promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions at all levels).



Education is an essential precursor to peace, tolerance and a healthy civil society.

Studies have shown that people with secondary educations are more likely than those with only primary education to show tolerance for people who speak another language (a 21% difference in Latin America and 34% among Arab States), immigrants (26% and 16%, respectively), homosexuals (32 and 1%), people of a different religion (39% and 14%), people with HIV (45% and 12%) and people of a different race (47% and 28%).

We also know that literate people are more likely to participate in the democratic process and exercise their civil rights, and that, if the enrollment rate for secondary schooling is 10 percentage points higher than the average, the risk of war is reduced by about three percentage points.

#17 Partnerships for the goals (Strengthen the means of implementation and revitalize the global partnership for sustainable development).

Partnerships are proven to be a most effective way to achieve strong development outcomes.



The Global Partnership for Education is a prominent example of how working in a collaborative partnership can enhance progress in education and in the other development sectors. The partnership model of the Global Partnership for Education mobilizes and aligns donor financing behind national education plans that are based on needs assessments and evidence- based policy making.

It coordinates the work of all internal and external actors that play a role in that process. When the most important players work together, we see greater efficiencies and impacts with the available resources. And we see real progress in countries that are hungry to bring quality education to their children and move ever closer to the global goal of education for all.

As the U.N. High-Level Panel of Eminent Persons on the post-2015 Development Agenda declared in 2013, "The Global Partnership for Education is getting quality education to marginalized children, coordinating education's many players, offering aid without wasteful replication and following local leadership. GPE is single-sector [education] but shows how collaboration can bring better results. Similar models might prove useful in other areas."

Annex 2

Letter sent for seeking the consent for data collection

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Annex 3
Team of data collectors

Name	Province	Mobile	Email
Gamani Amarasinha	Western	0778480925	
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Annex 4

SDG concepts in Grade 6: Science - textbook

►► Sustainable Use of Energy Sources

Now you are aware that energy is needed to do work. Energy helps us in many ways. It helps us to maintain our body temperature, provides light, and helps to cook your meals. It is also used to operate television and radio. Not only that, energy supplies power to move vehicles and for body functions and movements.

In ancient times (200 year ago), the major energy sources were the sun, fire-wood and wind. People used solar energy to dry things, and fire wood to cook meals. Wind energy was utilized for sailing boats.

With the increasing complexity in lifestyle, new energy sources were discovered. Many of them are now used to generate electricity.



Assignment 4.8

Make a small booklet containing images and information on different energy sources and their uses.

The world population rises day by day. Energy requirements also, increase accordingly. The use of some energy sources are increasing at a high rate. For example, fossil fuel is a non renewable energy source. What will happen when all sources of coal, petroleum gases and petroleum oil are over? It will take millions of years for them to regenerate. Therefore, it is our responsibility to use these energy sources mindfully.

We have to protect them for our future generations.



Assignment 4.9

Assume that you are born in an area, where no more fossil fuels are available. List the problems that you will encounter and suggest remedies.

We can conserve energy sources by using them carefully. Our ancestors used them carefully and protected them for us. Therefore, it is our responsibility to protect these sources for future generations, too.



For your Extra knowledge

Bio gas can be produced by using biomass. All types of waste matter gathered in urban areas and agricultural waste can be used to make biomass.

Ethanol is a kind of alcohol which is produced as a bio-product in sugar cane industry. It can be used as a fuel to run vehicles.

Some countries in the world use maize plants to produce fuel.



Fig. 4.23 - An areoplane which Uses alcohol as a fuel



Summary

- Energy is needed to do work.
- The ability to do work is referred to as energy.
- Energy is produced by energy sources.
- The sun is the primary source of energy.
- Wind, biomass, fossil fuel, water, tidal waves, geothermal energy and nuclear energy are some of the examples of energy sources.
- Some of them are non - renewable.
- Energy sources should be conserved for future generations.

Exercise

01.
 - i. What is biomass?
 - ii. What is the similarity between bio mass and fossil fuel?
02.
 - i. What are the energy sources suitable to generate electricity in Sri Lanka?
 - ii. What are the fossil fuels that are used in power stations in Sri Lanka?
03.
 - i. Suggest some measures to minimize the energy consumption in your home?
 - ii. What are the energy sources that will be used to a large extent in the future?

Project

Mention occasions of energy waste in your home and make a report of your suggestions to minimize the wastage.

Technical Terms

Energy	- ஊக்கிய	- சக்தி
Work	- காரிய	- வேலை
Bio mass	- சேவ சீகனீட	- உயிர்த்திணிவு
Sea waves	- மூதுடி ரல	- கடல் அலைகள்
Tidal waves	- டீடீ ரல	- வற்றுப்பெருக்கு அலைகள்
Geothermal	- ஜு நாய	- புவிவெப்பம்
Nuclear	- நயசீக	- கருச்சக்தி
Fossil fuels	- ஸூகீல ஓன்டன	- சுவட்டு ளரிபொருள்
Wind mill	- ஐலம் மூர்ல	- காற்றாலை
Sources of energy	- ஊக்கி பூல	- சக்தி முதல்

Annex 5

SDG concepts in Grade 7: Science – textbook

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Assignment 19.2

- Prepare a table that shows the advantages and disadvantages of non-renewable energy sources.

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For extra knowledge

The time period of existence of some non-renewable energy sources are given below.

Mineral oil	- about 50 years
Natural gases	- about 70 years
Coal	- about 250 years

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19.3 Sustainable usage of energy sources

It is our responsibility to use the non-renewable energy sources in a thrifty manner, as they will disappear one day. So, the future generation will not be able to use these energy sources.

Some strategies are given below for sustainable usage of these energy sources.

- Minimize using domestic electricity
- Walk or use a bicycle for travelling short distances (This will be good for your health too.)
- Use common transportation methods instead of using personal vehicles
- Tune the engine of vehicles to maximize the efficient of fuel
- Use hybrid or electrical vehicles
- Use optional energy sources whenever possible
e.g. :- Solar water heaters can be used to boil water for bathing
- Use fuel that can be found from the nearby environment
e.g. :- Using firewood, coconut shells for purposes such as cooking
- Avoid busy hours for travelling
- Minimize using plastic (a lot of fuel is needed to produce plastic)

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- Make aware the public the necessity of minimizing the use of fossil fuels
- Fix catalytic converters to vehicles



Activity 19.7

Conduct a debate in the class room on the topic “using renewable energy sources/non-renewable energy sources help for the country to get long term advantages.”



Assignment 19.3

Make a booklet containing measures that can be taken to reduce the electricity cost at home.



Summary

- Energy sources can be divided into two groups as renewable energy sources and non-renewable energy sources.
- Renewable energy sources must be used as much as possible. Then non-renewable energy sources can be protected.
- There are advantages as well as disadvantages of both renewable and non-renewable energy sources.
- Sustainable usage of energy sources will help for the future generation to use them.

Annex 6

SDG concepts in Grade 11: Science – textbook

Biosphere

ozone layer becomes depleted. Thus, ultraviolet rays fall on earth. The exposure to these rays is a cause for this disease.

15.5 Sustainable development and environmental management

Sustainable development is the smart use of the natural resources by safeguarding the balance of the environment in such a manner that the future generations can use them in the future.

Environmental management is the maintenance of natural resources by using them in an environmental friendly manner to fulfill the needs of man.

15.5.1 Sustainable agricultural uses

A sustainable development could be expected by reforestation, use of traditional knowledge and technology, carbon foot print, minimizing food miles, waste management and energy management.

- **Multiple cropping**



Figure 15.34 - Mono cropping



Figure 15.35 - Multiple cropping

- **Biological pest control**

The biological pest control is the use of another plant, animal or a microorganism which do not harm the cultivation in order to destroy pests. The *Promichotheca cumingii* beetle lays eggs on the larvae of the *Rhynchophorus ferrugineus* beetle. The larvae that come out from their eggs eat the larvae of the *Rhynchophorus ferrugineus* beetle. It will control the population of the *Rhynchophorus ferrugineus* beetle.

- **Use of organic fertilizer**

It is environmental friendly to use substances made by transforming complex organic compounds found in animals and plant parts to simple compounds as fertilizers. Organic fertilizers are the decomposed plant and animal matter which help to improve, soil structure and porosity to enhance the activity of soil organisms.

Assignment 15.9

Engage in a discussion about the advantages caused to the environment by using the above mentioned agricultural uses.

- **Reforestation for environmental balance**

Environmental management is the maintenance of natural resources by using them in an environmental friendly manner to fulfill the needs of man.

As a result of changing the environment by man according to his necessity, the forest cover gradually decreased. Specially, paddy cultivation, vegetable cultivation, tea cultivation, rubber cultivation and large scale development projects were the reasons for this situation.

At present, we experience the harmful effects of the decrease of the natural forest cover. Therefore, in order to reestablish the environmental balance, it is necessary to do reforestation in suitable areas.



Figure 15.35 - Reforestation

15.5.2 Traditional knowledge and use of technology

- **Agriculture**

It is mentioned that during the rule of King Parakramabahu the Great, our country was self sufficient with rice and rice had even been exported. But, at present, we are unable to achieve such heights although machines and agricultural chemicals are excessively used. Therefore, instead of seeds and agricultural chemicals purchased from multinational companies, it is the high time to use traditional agricultural methods such as local seeds and cultivation methods.

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Rathhal

Madathawal

Suwadal

Mavee

Kaluheenati

Extra knowledge
Some important information of traditional varieties of paddy

Type of paddy	Function
Kuruluthuda	<ul style="list-style-type: none"> • Induce spermatogenesis • Make body strength • Reduce joint pain • Increase immunity • Act on excretory system readily
Kahawanu	<ul style="list-style-type: none"> • Facilitate digestion of food • Facilitate absorption of sugar • Avoid carcinogenic properties
Rathhal	<ul style="list-style-type: none"> • Activate excretory system • Make the body comfortable • Cure lung diseases and fever • Head abdominal ailments • Clean urine and bile
Madathawalu	<ul style="list-style-type: none"> • Detoxification • Prevent diabetes • Avoid gene mutations • Enhance immunity • Growth and repair of tissues • Cooling of body
Suwadal	<ul style="list-style-type: none"> • Prevent eye diseases • Induce nerve activities and avoid diseases • Stimulate sperm production • Reduce oedema • Anti-diabetic properties
Mavee	<ul style="list-style-type: none"> • Anti-diabetic properties • Reduce burning sensation, Thridosha and cure constipation • Improve skin condition
Kaluheenati	<ul style="list-style-type: none"> • Prevent constipation • Anti cancerous properties or carcinogenic properties • Body warming • Induce spermatogenesis

• **The technology of irrigation**

Sri Lankan irrigation system is one of the unique water management systems in the world. Historical large tank can be identified as a great technical attempt with a very complex scientific knowledge.



Figure 15.36 - An ancient tank bund

The reservoir constructed across a river, canal or a branch of it with the aim of collecting sufficient water for agricultural activities is known as a tank.

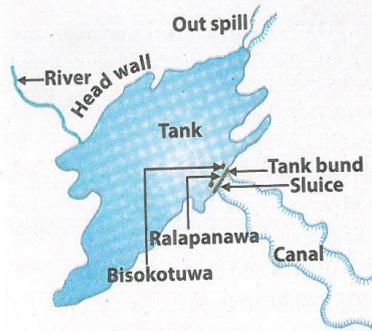


Figure 15.37 - Major parts of a tank

The large tanks distributed in the dry zone of Sri Lanka hold a huge water capacity. Major factor that should be paid attention to constructing such large scale tanks is, keeping the gathered water for a long time. Also by controlling the pressure caused by its colossal capacity of gathered water and controlling the power caused by its extremely destructive pressure when the water is taken out for use.

There are several functions done by tank bund, sluice, Bisokotuwa (Sluice gate), Ralapanawa and canal, which are considered as the major parts of a tank. The tank bund was built with soil connecting the hills from either side.

The robustness is essential if the stability of the tank bund and needs to be protected. To maintain this situation a systematic methodology has been applied. Tank bund had been constructed of several soil layers. It had been made of several thoroughly beaten layers such as, a layer of clay, soil, gravel and clay (Kirimeti) layer, kept one on one.



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Figure 15.27 - A sluice gate

When water in large tanks is taken out a huge pressure is exerted and the magnitude of pressure increases with the height of water column. The sluice was built at a specific level on the tank bund using huge pieces of stones in a way that it began from the area where water is filled in the tank bund and going under the tank bund or piercing it. A slab of stone, connected to the sluice vertically was used to release water. There are more than one sluice made in tanks with a high bund.

Bisokotuwa is also a part of the sluice. It means the rectangular space made of stones, from which water flows out from the tank. Its purpose is to take water out with less pressure level after releasing water at different pressure levels. The mud sluice is at the bottom level of a tank bund. This mud sluice was used to remove alluvial collected after a rainy season.

When a tank is filled with water, waves occur on its surface, and the waves can erode the bund. The **Ralapanawa** is made by keeping stones on the interior slope of the tank bund. A **brink (Isweti)** is built to avoid collecting water with eroded mud, sand and gravel, to the tank water.

The small sized water tanks built in the upper part of tank collect water first and next the large tank.

The upper part of tank that is **Head wall (Wew Ismaththa)** is the water catchment area. Clearing forest, cultivation and building of houses is strictly prohibited in this area.

The surrounding area parallel to the water level is known as **wew thawulla** and this is rich with natural habitats of flora and fauna.

Accordingly, tank is a marvellous human creation that is compatible with nature.

Assignment 15.10

Make a scientific investigation about the technology of irrigation system of Sri Lanka, and prepare a report.

• Conventional food patterns

Food comprises of a collection of nutrition, healthiness, culture, tradition, environment, creation, folk tales, literature, technology, etc. The traditional food patterns improved the quality of life of our people. But consumption of oily, starchy

Biosphere

food, flavourings and bad food habits cause number of issues in public health. This condition has influenced the tendency of non-contagious diseases like high blood pressure and diabetes.

Important facts about natural flavourings

- The most reactive parts of a food
 - Improve the colour, taste, odour and appetite of food.
 - Contain bactericidal properties
 - Minimize, harmful effects caused by food
 - Has unique taste and quality, which cannot be obtained by artificial flavourings.
- E.g. :- Cinnamon - Control the blood glucose level.
Reduce diseases caused by phlegm
Has anticancer properties
- Clove - Give pleasant odour to mouth
Relieve pain
Destroy microorganism (Detergent property)
- Pepper - Stimulate digestion of food
Relieve abdominal disorders

• Local medical science

This field consists of Aurveda, **Siddha**, **Unani** and native medicinal fields, which has history of thousands of years. Ayurveda is one of the important medical fields, descended from India. It is a perfect science with two traditions.

1. Kayachikithsa (Clinical medicine)
2. Surgical science

According to Ayurveda there are three types of reaction that take place in human body. Those three factors are known as **Va, Pith and Kapha**.

- Va - Air
- Pith - Bile
- Kapha - Phlegm

Imbalance of these three factors cause diseases according to Ayurveda. Ayurveda field of medicine, use plants, or parts of plants to treat patients.

Treatments are given in three ways

1. Medicine
2. Food
3. Exercises

In Ayurvedic medicine, treatments are done to the cause or root to the disease. Body activity is not controlled artificially by giving medicine (drugs) externally. Therefore side effects are not resulted.

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Eggs
Summation

Food is also a significant factor to cure diseases. It should be consumed to balance Va, Pith and kapha the three factors.

Its main target is not only curing diseases, but also maintaining physically and mentally fit healthy life.

15.5.3 Carbon footprint and minimization of food mile

• Carbon footprint

The amount of carbondioxide released into the atmosphere as a result of the activities of a particular individual, organization or community is a carbon footprint. Total carbonfoot print cannot be calculated as CO₂ is naturally produced whereas it needs more data.

• Water footprint

The amount of fresh water utilized in the production or supply of the goods and services used by a particular person or group.

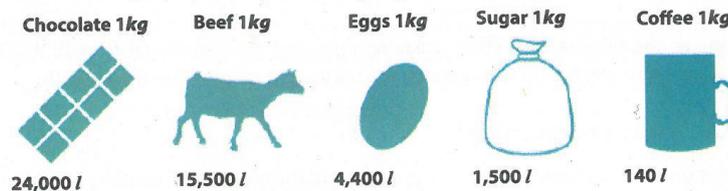


Figure 15.28 - Water footprints of several foods

• Food mile

The distance over which a food item is transported during the journey from producer to consumer, is known as food mile.

The food mile changes according to the quantity of food and the place it is produced.

E.g. - Food mile of some of the foods that you take for your breakfast can be calculated as follows. Suppose you are in kurunegala.

(1)

Rice	1 mile	(Taken from your paddy)
Potato curry	100 miles	(Taken from Welimada area)
Coconut	0 mile	(Taken from your coconut trees)
Eggs	10 miles	(Taken from a poultry farm of your area)
Summation	<u>111 miles</u>	

Biosphere

(2)

String hoppers made up of rice floor	85 miles	(Rice taken from Polonnaruwa)
Dhal curry	925 miles	(Taken from Misur area of India)
Coconuts	0 mile	(Taken from your home garden)
Coconut sambol	185 miles	(Taken from Jaffna)
Coconuts	0 mile	(Taken from your home garden)
Summation	<u>1195 miles</u>	

(3)

Bread	9340 miles	(Wheat flour taken from America)
Fish curry	44 miles	(Taken from Negombo)
Coconuts	0 mile	(Taken from your home garden)
Coconut sambol	800 miles	(Taken from Chennai, India)
Summation	<u>10184 miles</u>	

As long as the food mile is short, sustainability and environmental friendliness is high. Therefore we should take actions to shorten the magnitude of food mile.

15.5.4 Waste management

Consumption of substances becomes greater with the increase of human population. Eventhough natural waste materials deteriorate gradually, they get collected to the environment rapidly. Odour of such waste spreads in urban areas, rather than in villages. Non deteriorative materials such as polythene, plastic, electrical cells, electronic waste, electric bulbs and, printed coloured newspapers get collected in the environment continuously. When burning these waste materials gases such as dioxine emits. When these waste materials are burried, soil gets polluted and heavy metals get collected into soil. Public is unaware of the danger of them. It is very important to be knowledgeable that gradual disposal of the tiny piece of plastic, battery of a mobile phone CFL bulb be catostrophic. It is our responsibility to collect waste matter separately and forward it to the process of recycling.

The waste handling technique named 4R is practised in waste management

Reuse - Use as many items as possible again and again.

E.g. Polythene

Reduce - Unnecessary items should be avoided or minimized.

E.g. - Avoid taking antibiotics and vitamins unnecessarily

Replace

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Replace - Use of eco friendly substances instead of incompatible materials with nature.

E.g. - Use of organic fertilizer instead of chemical fertilizer.

Recycle - Process to convert different raw materials, animal dung and dead bodies into new products to prevent waste of potentially useful materials.

E.g. - Production of bio gas using animal excretory matter, dung and dead matter.

Recycling polythene and plastic in order to produce fuel.

15.5.5 Energy management

Consumer is provided with an opportunity to utilize energy with the aim of conservation of energy and minimization of cost. Planning and monitoring of energy production and consumption is required for sustainable utilization and then fulfil the needs of the consumer. This process is referred to as energy management.

• Energy crisis and technological issues

Drastic increase of price of economically important energy resources due to their constricted supply is referred to as energy crisis. Fuel oil crisis, electricity crisis and dearth of energy resources also indicate this problem. Energy crisis occurs as a result of the great demand for the supply of limited natural energy resources.

Reasons for energy crisis

- Drastic growth of human population
- Increase of the number of industries
- Over consumption of energy
- Wasting energy
- Non investigation of renewable energy resources
- War activities
- Political problems

Technical problems arise during the management of available energy. Technology for extraction of energy resources, methodology of purifying energy resources are some of them.

Assignment 15.11

List out the steps you follow to utilize energy with minimum wastage.

• Monitoring daily energy consumption

It is necessary to be aware and compare the energy consumption by measuring it daily. Then wastage can be minimized.

- **Energy auditing**

The purpose of monitoring is to visit different institutions, and make recommendations and advise based on the results of the respective energy audits and make the authorities aware related to energy consumption.

In this context making the public enthusiastic on reduction of energy consumption and improving energy efficiency are ensured.

- **Energy efficiency**

Energy efficiency is defined as utilization of minimum quantity of energy for a particular service through effective management of energy consumption.

It is possible to improve energy management and control through energy efficiency. It also enables to provide an enhanced service by utilizing minimum energy. However this does not mean that the service is withheld or controlled.

Assignment 15.12

Investigate the electrical appliances at your home and record their wattage (power). Hence compare their level of energy consumption.

- **Sustainable energy use**

In sustainable use maintenance of a certain aspect at a desired status/level is expected. Due to technical reasons, utilization of most renewable energy resources still remains at a lower level.

E.g. Solor energy, Wind energy, Biomass

Importance of utilizing natural energy in architecture

In constructing a house some steps need to be taken in order to maintain good indoor air circulation. When natural sunlight incidents upon the surfaces the temperature of indoor environment increases. Hence it is not desirable to place fenestrations(windows) on East and West walls of the house. Especially since heat transfer from the western side is high, it is not done. By placing windows on North and South directions good air circulation and natural cooling can be maintained within the house. Electrical energy consumption for air conditioning can be minimized to a great extent by means of natural ventilation. Day light harvesting can be utilized for reducing electrical energy consumption due to artificial lighting. This enables a substantial reduction of operational cost of a building. Using thick curtains can also lead to reduction of heat transfer in air conditioned spaces. This considerably reduces energy consumption for air conditioning. Rain water harvesting can be applied as an energy conservation measure. In boiler systems exhaust gases discharged through the chimney stack contain high temperature waste heat which can be extracted to heat boiler feed water and as an air pre-heater.

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With the utilization of eco-friendly natural energy sources it is possible to minimize the adverse effects on the environment.

Different Conventions, Legislations and Acts are in function at international and national level for the management and sustainable use of the environment.

Several examples for international conventions are given below.

- Montreal protocol to control the gases which harm the ozone layer
- Kyoto protocol to minimize the emission of green house gases

State institutions under the Ministry of Environment, Central Environment Authority, Marine Environment Protection Authority, Geological Survey and Mines Bureau, State Timber Corporation, National Gem and Jewellery Authority implement law, rules and regulations related to environmental management.

Assignment 15.13

Prepare a booklet on renewable energy sources.

Summary

- There is a natural balance among living organisms, physical component and the environmental conditions in the biosphere. This balanced relationship is known as the environmental equilibrium.
- The increasing human population and their activities cause the breakdown of the ecological balance.
- The simple organizational level that is individual, organize to form population, community, ecosystem and finally forms the biosphere.
- The flow of energy and natural minerals among organisms is essential to maintain the ecological balance.
- The flow of energy and nutrient among organisms occur through food chains, food webs and bio geo-chemical cycles.
- Environmental pollution is the breakdown of ecological balance due to the waste materials released to the environment by man.
- Agro chemicals, industrialized waste, green house gases, heavy metals, particulate matter, food additives, cleaning agents medicine, detergents and perfumes are the main causative agents of environmental pollution.
- Man is experiencing direct and indirect effects of environmental pollution at present.
- Usage of inigenous knowledge and technology, inigenous medicines waste management and energy management are some of the effective ways for sustainable development.

Exercise

(01)

- (i) What is the organizational level which includes abiotic component in the biosphere
 - i. Individual ii. Population iii. Community iv. Ecosystem
- (ii) Select the answer with all the descriptions about the population
 - i. Species name, living period
 - ii. Species name, location
 - iii. Living period, locaton
 - iv. Species name, living period, location
- (iii) Which of the following is not a causative gas for acid rain
 - i. Nitrogendioxide ii. Carbondioxide
 - iii. Sulphurdioxide iv. Sulphurtrioxide
- (iv) The main gas which cause green house effect is,
 - i. Carbondioxide ii. Methane
 - iii. Chloro Fluoro Carbon iv. Oxides of nitrogen
- (v) The bacteria which involves in fixation of atmospheric nitrogen as ammonium is,
 - i. *Rhizobium* ii. *Nitrosomonas*
 - iii. *Nitrobacter* iv. *Pseudomonas*

(02)

- (1) There are many ecosystems found in the biosphere.
 1. Name two relationships present in an ecosystem.

 2. Name two biological communities identified in a pond ecosystem.

 3. Name two causes for the breakdown of ecological balance.

 4. What is the main method of fixation of carbon in an ecosystem.

 5. The flora in Singharaja forest are naturally well-grown than the crops in an agricultural land. Justify this statement.

(3)
2
3
4
Biosphere
Bio geo - c
Industrializ
Urbanizatio
Non - conta
Food chain
Food web
Energy pyra
Number pyra
Biomass
Sustainable c
Environment
Energy mana
Waste manag
Carbon food p
Food mile

(3)

1. Name two applications in sustainable agriculture.

2. Mention two fields where indigenous knowledge and technology can be applied.

3. What is known as **food mile**.

4. Name two ways to shorten the food mile.

Technical terms

Biosphere	- சேவலுள்ளி	- உயிர்க்கோளம்
Bio geo - chemical cycles	- சேவலு டிசைமினல் சைக்கிள்	- உயிர்ப்புவி இரசாயனச் சக்கரம்
Industrialization	- கார்ப்பிசைமினல்	- கைத்தொழில் மயமாக்கம்
Urbanization	- நகரீகரிசைமினல்	- நகரமயமாக்கம்
Non - contagious diseases	- நெல் தோலிசைமினல்	- தொற்றாத நோய்கள்
Food chain	- உணவு சங்கிலி	- உணவுச் சங்கிலி
Food web	- உணவு வலை	- உணவு வலை
Energy pyramid	- சக்தி பீரமிட்	- சக்திச் சூம்பகம்
Number pyramid	- எண்ணிக்கை பீரமிட்	- எண்ணிக்கைச் சூம்பகம்
Biomass	- சேவலு சக்தி	- உயிர்த்திணிவு
Sustainable development	- நிலைம சக்தி	- தொடர்ச்சியான அபிவிருத்தி
Environmental management	- சூழலிசைமினல்	- சூழலில் முகாமைத்துவம்
Energy management	- சக்தி கலாசைமினல்	- சக்தி முகாமைத்துவம்
Waste management	- கழிவு கலாசைமினல்	- கழிவு முகாமைத்துவம்
Carbon food print	- கார்ப்பிசைமினல்	- கார்ப்பிசைமினல்
Food mile	- உணவு மைல்	- உணவின் மைல் பெறுமானம்

Annex 7

SDG concepts in Grade 9: Geography - textbook

It is clear that the above activities undertaken in the name development often disturbs environmental stability. Although development is a necessity, for it to be successful, it has to be undertaken with due care for the environment.

Development strategies will not cause problems if they are designed to provide beneficial long-term results without causing environmental damage. If the development process leads to undesirable effects then development cannot be termed successful, because of the environmental problems that it entailed.

Direct or indirect problems caused by human activities are given below :

- Increase of global temperature
- Rise of the sea level
- Drought
- Strong winds
- Soil erosion
- Floods
- Landslides
- Water pollution and
- Air pollution figure predominantly among them.
- Acid rain

Man is not the owner of the environment, but only one of its partners. Hence, it is important that steps be taken by man to make the development process a sustainable one.

Activities

1. Create a presentation of your choice to show how human activities have contributed to a breakdown in the environmental balance.
2. Prepare slogans pertaining to the protection of environmental balance and display them in the school premises.

Sustainable development is,
development leading to the satisfaction of present needs while simultaneously creating an environment ensuring the right of future generations to satisfy their needs.

In other words it is a development which could be sustained. This means initiation of development processes which can be economically, socially and environmentally sustained.

In the past, Sri Lankans performed their agricultural activities in accordance with the environment. They built tanks and irrigation networks suited to particular areas. Therefore, there had been no great damage to the environment. Steps such as selection of suitable lands for *chena* cultivation, clearance of a new plot only after letting the former plot to fallow and allowing for the natural regeneration of the soil before cropping again, helped not to disturb the environmental balance. Preparation of *chena* lands after felling and burning of forest chased away wild animals. The fact that no damage was caused to such animals is shown by this statement.

“No-legged and two-legged animals, birds, reptiles, go away from this forest. We are not committing a sin. Before the god of fire invades you better leave”

Similarly, a part of the cropland was left open to birds. That was termed *kurulu paluwa* (portion left to be damaged by birds). The idea was to attract birds to the field as they behave as predators and prey on insects harmful to the crop while at the same time restricting the damage done by the birds to a minimum. As this is a natural process there was no damage to the environment. Another salutary gesture was leaving the catchment immediately above the water level of the tanks/reservoirs free of cropping to allow space for work animals to browse.

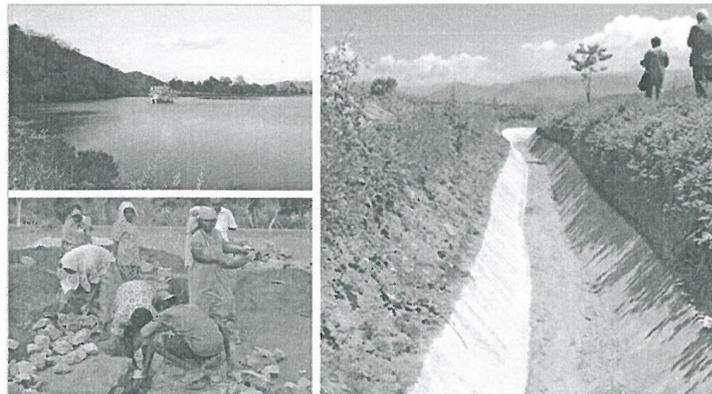


Fig. 4.9 : A tank, an irrigation canal and a group of workers building an irrigation canal

Building of canals and irrigation networks to convey water from the source to the farmlands and planting of *kumbuk* trees along canals were done. This allowed the absorption of salt by the root system of trees thus causing purification of water by natural means. Multiple cropping was conducted in order to reduce the insect damage

to a minimum. Adopting crop rotations to retain fertility of soils, use of margosa oil, citronella oil, resin etc. to control insects, use of organic fertilizer including hay to add fertility to the soil and secret methods (*Kem*) were among the other traditional methods used. These methods did not cause any environmental damage. This type of information clearly indicates the environment friendly ways with which our ancestors ensured the sustainability of the environment.

Activities

1. Name few actions that can be taken to protect the environmental balance.
2. Write some secret methods (*Kem*) followed by the farmers in your area.

As large scale development projects of the present day do not give adequate attention to the environment, there exists a threat to the environment balance. Hence, numerous steps have been taken both at national and international levels to maintain the environmental balance.

Some common actions that could be followed to maintain the environmental balance are given below :

- Use of strategies to prevent environmental pollution caused by industrial development
- Disposal of waste generated from industries in a regular manner
- Adopting a proper plan in town and village development in order to avoid disasters
- Use of conservation methods specially in the cultivation of slopes
- Flood control, conservation of river banks and conservation of coasts
- Avoiding filling and clearing of wetlands
- Preparing suitable development plans with due consideration to climate, land and soils of the respective regions
- Introduction of irrigation, cropping methods and crops suitable to the environment
- Securing the cooperation of all relevant institutions in planning regional and town development activities
- Contributing to conserve the environmental balance through the use of appropriate technology in development pursuits
- In the management of development activities creating community awareness on disaster management and planning for disaster management.
- Taking care to carry out all development pursuits on a sustainable basis.
- Minimizing the use of chemical fertilizer and other agro- chemicals.
- Encouraging the production and use of compost.

Environmental Conservation Policies at International Level

International Agreements, Decrees, Acts and Conventions have been adopted for the purpose of global environmental conservation to achieve sustainable development in order to ensure the survival of humanity. Factors relating to some of them are given below:

Convention/Organization	- Ramsar Convention
Commencement	- In 1971 in Ramsar city in Iran
Member countries	- 158 (by 2008)
Objectives	- <ul style="list-style-type: none"> • Wetland conservation • Wetland management • Inclusion of at least one internationally significant wetland

A wetland is a natural or artificial, permanent or temporary, stable or draining, fresh water, salt water or mixed water marshes, completely inundated areas or lands going under water up to 6 m. during tides. Muthurajawela, Bundala and Kalametiya in Sri Lanka are examples of wetlands.

International Wetland Day commemoration is annually conducted under a special theme.

It is our duty to preserve these wetlands which help to protect biodiversity

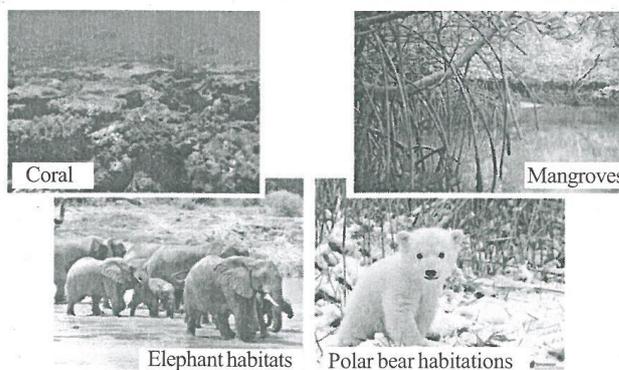


Fig. 4.10 : Ecosystems Facing Destruction

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Montreal Convention	
Convention/Organization	- Montreal Convention
Commencement	- In 1987 in Montreal, Canada
Member countries	- 194 (by 2008)
Objectives	- <ul style="list-style-type: none"> • Limiting the production of Chlorofluorocarbon and Helon which destroy the ozone layer. • Complete cessation of the use and production of these gases by year 2000.

Scientists believe that because of action based on these international agreements the ozone layer is being replenished

In order to protect the ozone layer we must be responsible not to burn or release harmful materials even at domestic level

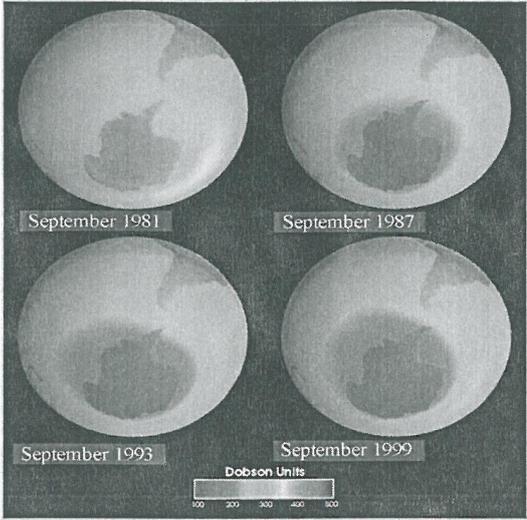


Fig. 4.11 : Depletion of the Ozone Layer

Rio Convention

Convention/Organization	- Rio Convention
Commencement	- On 03.07.1992 in Rio de Janeiro, Brazil
Member countries	- 172 (by 1992)
Objectives	- <ul style="list-style-type: none">• Prevention of addition of Chlorofluorocarbon and Helon to the atmosphere• Protection of biodiversity• Abstaining from biodiversity destroying acts.

It is our duty to organize our activities according to the Rio Convention

Sri Lanka is also a member of these conventions which were convened at international level to protect the environment. In Sri Lanka even lands with natural features of universal value are threatened by human activities causing numerous environmental problems. Therefore, specific environmental regulations and acts have been passed in Sri Lanka paying attention to these problems. Some of them are,

- Coast Conservation Act
- National Heritage Forestland Act
- Marine Pollution Prevention Act
- Forest Conservation Act

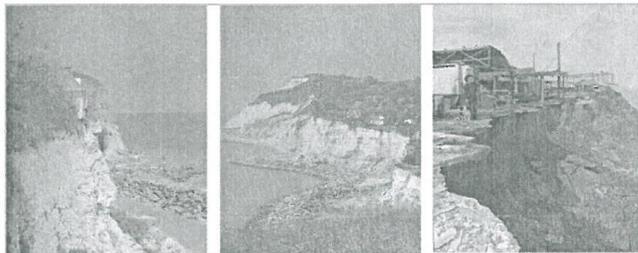


Fig. 4.12 : Eroded Coastal Areas

Coast Convention Act

Regulation/Act	- Coast Convention Act
Commencement	- 1981
Objectives	- <ul style="list-style-type: none">• Surveying the coastal zone• Exploring the resources of the coastal zone• Management of the coastal zone.• Regularization and control of development activities within the coastal zone• Conservation of the coastal zone

Observance of the regulations of the Coast Convention Act allows to minimize the damage to the coastal zone and to conserve it.



Fig. 4.13 : A Coastal Area

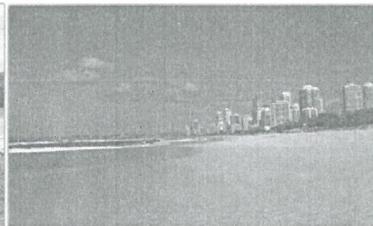


Fig. 4.14 : An Urban Settlement Near the Coast

National Heritage Forestland Act

Regulation/Act	- National Heritage Forestland Act
Commencement	- 1988
Objectives	- <ul style="list-style-type: none">• Declaration of National Heritage Forestlands• Protection and development of National Heritage Forestlands.

National Heritage Forestlands

Ecosystems with exceptional natural characteristics

Locations with gene resources or biological values

Plant and animal habitats facing threats of extinction

This Act has prohibited many activities such as cutting of plants and trees, sawing, removal, collection and sale of forest matter and shooting an animal or a bird within the prescribed area in order to protect National Heritage Forestlands.

It is our duty to protect National Heritage Forestlands by respecting these laws and regulations.



Fig. 4.15 : A girl appreciating the beauty of nature

Activities

An Area Degraded by Mining



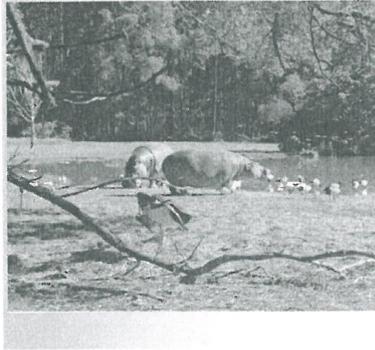
Rehabilitation of land



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Conversion of land to near original status after Rehabilitation



1. Name five international conventions relating to environmental protection.
2. Suggest three measures that could be adopted for wetland conservation in Sri Lanka.
3.
 - i. Study the photographs well.
 - ii. Write down the facts about the lands in Sri Lanka that have faced such situations.
 - iii. Discuss with your teacher and find reasons for degradation of land. Present your suggestions on how one such land can be rehabilitated.

Sources

- Educational Publications Department, 1998, Human Geography Part I. (Sinhala)
- Fazlum Khalid with Joanne O' Brien, (ed.), 1992, Islam and Ecology, Worldwide Fund for Nature.
- Ministry of Forest Resources and Environment, 1999, An Action Plan for Implementation for Biodiversity Conservation in Sri Lanka.
- Ministry of Environment, 2006, Wetlands, Central Environmental Authority, 2nd Edition.
- Ministry of Environment and Natural Resources, (n.d.), Global Warming: A Warning to All.
- National Institute of Education, 1993, Conservation of Coastal Resources, Teachers' Guide. (Sinhala).
- Sri Lanka Environment Journalists' Association, 2008, Environment and Media, Vol. 1, July 2008.
- Sri Lanka Forest Conservation Department, 2008, Notes Used as Lecture Aids for Forest Projects.
- Sri Lanka Democratic Socialist Republic, 1988, National Heritage Wilderness Areas Act No. 3 of 1988.

Annex 8

SDG concepts in Grade 11 Citizenship Education - textbook

සංවර්ධන රටවලට නිදසුන්

- නෝර්වේ
- ස්වීඩන්
- ජපානය
- ඇමෙරිකා එක්සත් ජනපදය
- ඕස්ට්‍රේලියාව
- කැනඩාව
- ජර්මනිය
- ප්‍රංශය
- බෙල්ජියම

නිරසාර සංවර්ධන සංකල්පය

සංවර්ධන සංකල්පය තුළ දී වැඩි වන ජනගහනයක් සමග පුළුල් වන මානව අවශ්‍යතා සපුරාලීම එහි ඇති ප්‍රබල ම අභියෝගයකි. වැඩිවන ජනගහනයේ අවශ්‍යතා සපුරාලීමට සම්පත් වැඩි වැඩියෙන් යොදා ගැනීමට සිදු වී ඇත. නිෂ්පාදනය හා යෙදවුම් ඉහළ යාම නිසා පරිසරයට විශාල පිරිවැයක් දැරීමට සිදු වී ඇත. මිනිසා සංවර්ධන ක්‍රියාදාමයේ දී පරිසරය අමතක කර සිය අවශ්‍යතා කෙරෙහි වැඩි අවධානයක් යොමු කිරීම නිසා ස්වාභාවික පරිසරය දැඩි අවධානමකට ලක් වී ඇත.

අසීමිත ලෙස සම්පත් කැනීම, සම්පත් හිඟය නිසා විකල්ප සම්පත් කෙරෙහි යොමුවීම, පරිසරයට, මුදා හැරෙන අපද්‍රව්‍ය ප්‍රමාණය වැඩිවීම, පරිසර දූෂණය තීව්‍රවීම ආදී හේතූන් නිසා ජෛව විවිධත්වයට හානි සිදුවීම, ස්වාභාවික ක්‍රියාවලියට බාධා සිදුවීම, ස්වාභාවික විපත් තීව්‍රවීම, ගෝලීය උණුසුම වැඩිවීම වැනි ආන්තික තත්ත්වයන්ට මුහුණදීමට සිදු වී ඇත.

සංවර්ධන සංකල්පය මගින් මිනිස් ජීවිතවල ගුණාත්මක බව ඉහළ නැංවීමට ආර්ථික සංවර්ධනය හේතු වුව ද සමස්තයක් ලෙස එමගින් ලෝක ප්‍රජාවට සාධාරණත්වය ඉටු වී නොමැති බව අනාවරණය වේ. ලෝකයේ වැඩි ජන කොටසක් දුගී දුප්පත්කමින් පීඩාවට පත් වී ඇති අතර භූමිය, වාතය, වනාන්තර, ඛනිජ සම්පත් ආදී ස්වාභාවික සම්පත් විනාශවීම හා ගුණාත්මක බවින් පිරිහීයාමට ලක් වී ඇත. මෙහි ප්‍රතිඵල ලෙස විශාල ජන සංඛ්‍යාවකගේ ශාරීරික සෞඛ්‍යය හා සුව සෙත කෙරෙහි හානි දායක බලපෑම් එල්ල වී ඇත.

මේ අයුරින් වර්තමාන මිනිසාගේ සංවර්ධනයේ ගුණාත්මකභාවය වෙනුවෙන් භෞතික පරිසර පද්ධතිවලට දරා ගත නොහැකි වෙනස්කම් සිදු නොකළ යුතු ය. මිනිසා හා පරිසරය අතර අන්තර් ක්‍රියාව අමතක නොකළ යුතු මෙන් ම පරිසර සම්පත් විනාශ වී යාමට ද ඉඩ නොතැබිය යුතු ය. දුර්ලභ හා ක්‍ෂයවන සම්පත් ක්‍ෂයවී යාම වළක්වා ගැනීම

හා මනා කළමනාකරණයකින් පරිහරණය කිරීමට අවධානය යොමු කිරීම වැදගත් වේ. ඒ අනුව නූතන මිනිසාගේ සංවර්ධන ප්‍රයත්න මගින් අනාගත මිනිසාට අසාධාරණත්වයෙන් තොර ව සාධාරණ ව පෘථිවි ගෝලය තුළ අනාගත පැවැත්ම සුරක්ෂිත කිරීම සඳහා සංවර්ධන සංකල්පයට අවකීර්ණ විය යුතු ය. එය තිරසාර සංවර්ධනය ලෙස අර්ථ දැක්විය හැකි ය.

තිරසාර සංවර්ධනය යනු අනාගත පරපුරේ අවශ්‍යතා ඉටු කර ගැනීමට ඇති ඉඩ ප්‍රස්ථා අහිමි නොකර වර්තමාන සංවර්ධන ක්‍රියාවලිය ප්‍රශස්ත අයුරින් පවත්වා ගෙන යාමයි.

තිරසාර සංවර්ධන සංකල්පයේ විකාශනය

තිරසාර සංවර්ධන සංකල්පය සඳහා මූලිකත්වය දරා ඇත්තේ නොර්වේ හිටපු අගමැතිවරයෙකු වූ ග්‍රොහාර්ලම් බෲන්ඩ්ලන්ඩ් ගේ සභාපතිත්වයෙන් 1983 ලෝක පරිසර කොමිෂන් සභාව පිහිටුවීමත් සමගය. එමගින් පලකළ වාර්තාව වූ " අපේ පොදු අනාගතය " මගින් තර්ක කර ඇත්තේ "පරිසරය හා සංවර්ධනය සමෝධානය " කළ යුතු බවයි. ඒ අනුව විරස්ථායි සංවර්ධනය නිර්වචනය කර ඇත්තේ "අනාගත පරම්පරාවලට ඒවායේ අවශ්‍යතා සපුරා ගැනීමේ හැකියාව නැති නොකරමින් වත්මන් අවශ්‍යතා සපුරාලන සංවර්ධනයක් වශයෙනි. ඒ සඳහා උපාය මාර්ග ගෝලීය හා ජාතික මට්ටමින් අත්පත් කර ගැනීම සඳහා යෝජනා කර ඇත. මෙම සංකල්පය විධිමත් අයුරින් ලොව පුරා පිළිගෙන ඇති අතර 1992 ජුනි මස රියෝද ජනෙයිරෝවල පැවැත් වූ පරිසරය හා සංවර්ධනය පිළිබඳ ජාත්‍යන්තර සමුළුවේ දී පරිසර ගැටලු පිළිබඳ දැඩි අවධානයට ලක්විය. එහි දී 21 වන සියවස සඳහා වූ න්‍යාය පත්‍රය ගෝලීය වශයෙන් පිළිගනු ලැබී ය. තිරසාර සංවර්ධනය සඳහා අනුමත උපාය මාර්ග ක්‍රියාත්මක කිරීමට සියලු ජාතීන් ඔවුන්ට අයිති වැඩ කොටස ඉටු කරනු ඇතැයි එමගින් අපේක්ෂා කරන ලදී.

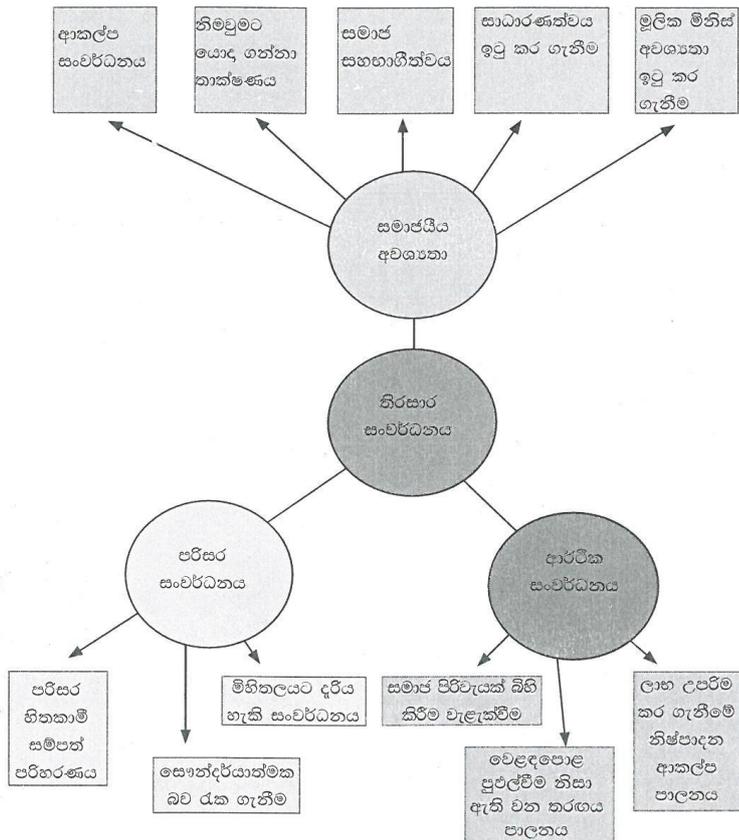
වසර 2000 දී එක්සත් ජාතීන් විසින් සහසු සම්මන්ත්‍රණය පවත්වන ලද අතර එහි දී සහසු අරමුණු ගොඩනගා ගැනීමේ දී තිරසාර සංවර්ධන ඉලක්ක ප්‍රමුඛ විය. 2005 වසරේ දී ලොව සහසු අරමුණු හා ඒ අනුව විරස්ථායි සංවර්ධනය සාක්ෂාත් කර ගෙන ඇති ප්‍රගතිය සමාලෝචනය කරන ලදී. පළමු සම්මන්ත්‍රණයෙන් පසුව වසර 20 කට පසුව එනම් 2012 දී රියෝද ජනෙයිරෝවල නැවත ජගත් සමුළුවක් පවත්වන ලදී. එහි දී " විරස්ථායි සංවර්ධනය සඳහා වන අපේ කැපවීම අලුත් කිරීම සඳහා අපේ ග්‍රහයා සඳහා සහ වත්මන් හා අනාගත පරම්පරා සඳහා ආර්ථික, සමාජයීය හා පාරිසරික වශයෙන් විරස්ථායි අනාගතයක් ඇතිවීමට සැලැස්වෙන බව සහතික වීම" සඳහා ය. මේ අනුව පරිසරය හා සංවර්ධනය පිළිබඳ එක්සත් ජාතීන්ගේ සම්මන්ත්‍රණයේ නිගමන සඳහා ඇති අපගේ බැඳීමවලින් බැහැර නොවී සිටීම ඉතා වැදගත් වේ.

මෙ පරිද්දෙන් විරස්ථායි සංවර්ධනය එහි සියලු මාන‍්‍යන්ගෙන් අත් කර ගත හැකි ආකාරයට ආර්ථික, සමාජයීය හා පාරිසරික අංශ ඒකාබද්ධ කරමින් ඒවායේ අන්තර් සම්බන්ධතාව පිළිගනිමින් විරස්ථායි සංවර්ධනය සියලු මට්ටම්වලින් තව දුරටත් දියුණු

නොමිලේ බෙදාහැරීම සඳහා ය.

කිරීම අවශ්‍ය බව (රියෝ + 20) එක්සත් ජාතීන්ගේ සම්මන්ත්‍රණයේ නිගමනය විය. ඒ අනුව මෙම සංකල්පය කෙරෙහි ලෝක වාසී ජනතාව ප්‍රතිපත්තිමය හා නෛතික පදනමින් යොමු වී තිබීම අගය කළ යුතු ය.

කිරසාර සංවර්ධනය ළඟා කර ගැනීමේ දී ජය ගත යුතු අභියෝග



4.7 රූපසටහන

කිරසාර සංවර්ධනයේ අවශ්‍යතාව

කිරසාර සංවර්ධනයේ දී මිනිස් අවශ්‍යතා හා ඉඩමනාවන් ඉටු කර ගැනීමේ දී ආර්ථික අවශ්‍යතා පමණක් සලකා බලන දෘෂ්ටියෙන් මිදී ඒ හා සමග සමාජීය සංවර්ධනය හා පරිසර සංවර්ධනය කෙරෙහි අන්‍යෝන්‍ය වශයෙන් යොමුවීම සඳහා අවධානය යොමු කළ යුතු වේ.

සංවර්ධන ක්‍රියාදාමය තුළ දී පාරිසරික අවශ්‍යතා කෙරෙහි වඩාත් සංවේදීවීමේ අවශ්‍යතාව අවධාරණය කිරීම වැදගත් වේ. මිනිසාගේ සංවර්ධන ක්‍රියාදාමයේ දී ස්වාභාවික සම්පත් අහිමිවීමත්, පරිසරයට සිදුවන හානිය ගණනය කිරීමෙන් සිදුවන පාරිසරික පිරිවැය තක්සේරු කිරීම කළ යුතුය. මිනිසාගේ පෞද්ගලික ලාභ අපේක්‍ෂාවෙන් කරනු ලබන ආර්ථික කටයුතුවල දී එමගින් සිදුවන හානිය සමස්ත ලෝක වාසී ප්‍රජාවට බලපාන බැවින් ඒවා සීමා කිරීම කළ යුතු ය. ලාභ අපේක්‍ෂාවෙන් කරනු ලබන අහිතකර නිෂ්පාදන සඳහා සීමාවන් පැනවීම ද වැදගත් වේ. මහා පරිමාණ වශයෙන් පරිසරයට හානි ගෙන දෙන කැනීම හා ඉදි කිරීම් කටයුතු, කර්මාන්ත, කෘෂි කාර්මික කටයුතු, පිළිබඳව පාරිසරික ඇගයීම් මගින් ආර්ථික, සමාජ හා පාරිසරික සංවර්ධනය තුළනය කිරීම කළ යුතු ය. එබැවින් අනාගත පරපුර වෙනුවෙන් පිවිතුරු ලෝකයක් පැවතීමට නම් වර්තමානයේ පරිසර සම්පත් සුරා කැමෙන් තොර ව පරිහරණය කළ යුතු වේ. ශ්‍රේෂ්ඨ ඉන්දියානු කවියකු වූ කාලිදාසයන්ගේ කුමාර සම්භව කෘතියෙන් පවසා ඇත්තේ පෘථිවිය ප්‍රයෝජනයට ගත යුත්තේ කිරි දොවන ආකාරයෙන් මිස සුරා කැමෙන් නොවන බවයි. එබැවින් තිරසර සංවර්ධනයෙන් අපේක්‍ෂා කරන්නේ එවැනි ම අර්ථයකි.

තිරසර සංවර්ධනය සඳහා ගත යුතු ක්‍රියා මාර්ග

වර්තමානය වන විට ලෝකයේ බොහෝ රටවල් තිරසර සංවර්ධන සංකල්පයෙහි වැදගත්කම අවබෝධ කර ගෙන ඇත. ඒ අනුව අපේ ග්‍රහලෝකය සඳහා මෙන් ම අනාගත පරම්පරාව සඳහා ආර්ථික සමාජීය හා පාරිසරික වශයෙන් තිරසර අනාගතයක් පවත්වා ගෙන යාමට සහතික වීමට එකඟතා ඇති වී ඇත. ඒ අනුව පරිසරය හා සංවර්ධනය පිළිබඳ සහසුක නිගමන කෙරෙහි අවධානය යොමු කිරීම වැදගත් වේ.

සංවර්ධනය සඳහා බලපාන ප්‍රධානතම සාධකය සම්පත් වේ. සම්පත්වල ඵලදායීතාව හා කාර්යක්ෂමතාව වැඩි කිරීම මගින් තිරසර සංවර්ධනය ළඟා කර ගැනීම පහසු වේ. මේ සඳහා යොදා ගත හැකි ප්‍රධාන ක්‍රමවේදයක් ලෙස 3R සංකල්පය වැදගත් වේ.

- Reduce - අවම කිරීම
- Reuse - නැවත භාවිතය
- Recycle - ප්‍රතිචක්‍රීකරණය

සම්පත්වල ඵලදායීතාව දියුණු කිරීමට යොදා ගන්නා ලෝකයේ භාවිත වන උපාය මාර්ග

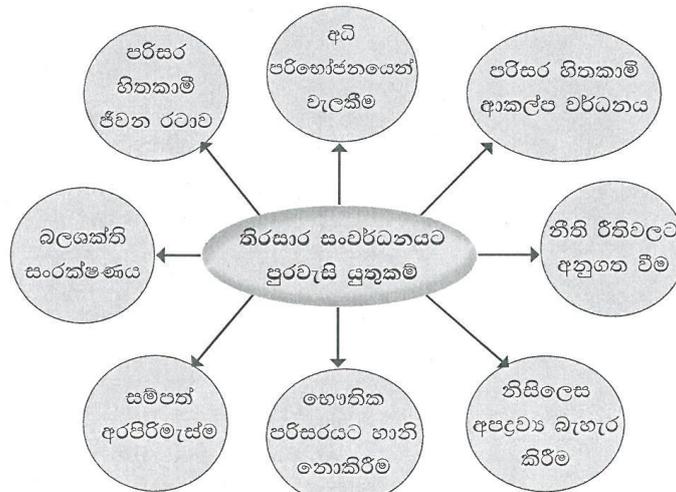
- 5 S - ඵලදායීතා සංකල්පය භාවිතය
- CP - සුපිරිසිදු නිෂ්පාදනය (Cleaner Production)
- GP - හරිත ඵලදායීතාව (Green Productivity)
- TQM - පූර්ණ ගුණාත්මක කළමනාකරණය (Total Quality Management)

Poka Yoke - වැරදි ශුන්‍ය කිරීම (Mistaken Proofing)

PPP - බැහැර කිරීමේ වගකීම නිෂ්පාදකයාට පැවරීම (Producer Paid Principle)

ක්‍රියාකාරකම

- පරිසර හිතකාමී ව කටයුතු කිරීමට ඔබ නිවස තුළ දී ගත හැකි ක්‍රියා මාර්ග යෝජනා කරන්න
- ඔබ පාසල තුළ ක්‍රියාත්මක කළ හැකි පාරිසරික වැඩ සටහනක් ඔබේ පන්තිය මුල් වී ක්‍රියාවට නංවන්න. එම ක්‍රියාකාරකම සඳහා පසු විපරම් වැඩ සටහනක් අනුගමනය කරන්න
- ශ්‍රී ලංකාවේ ක්‍රියාත්මක වූ හා ක්‍රියාත්මකවන තිරසාර සංවර්ධන ව්‍යාපෘති පිළිබඳ ව පරිසර ඇගයීම් වාර්තා හා සම්බන්ධ පුවත්පත් වාර්තා, අධීකරණ ක්‍රියා මාර්ග අධ්‍යයනය කර එහි ඇති බලපෑම් සාකච්ඡා කරන්න
- ශ්‍රී ලංකාවේ ජලාශ්‍රිත ශිෂ්ටාචාරය තුළ දක්නට ලැබුණු තිරසාර සංවර්ධන ක්‍රියා මාර්ග නිදසුන් ඇසුරින් සාකච්ඡා කරන්න



4.8 රූපසටහන

නිරසර සංවර්ධනය සම්බන්ධයෙන් විවිධ ආයතනවල හා සංවිධානවල වගකීම් හා යුතුකම්

රටක සමස්ත ආර්ථික ක්‍රියාවලිය රාජ්‍ය හා පෞද්ගලික අංශ මගින් මෙහෙයවීම කරනු ලබයි. මෙම සියලු කාර්යයන්හි දී පරිසරයේ ඇති වැදගත්කම දැඩි ලෙස අවධානයට ලක් කර තම කාර්යයන් සංවිධානය කිරීම වැදගත් වේ. විශේෂයෙන් පරිසර හානි පිළිබඳ සංවේදීවීම, ඒ පිළිබඳ විපරම් කිරීම හා සොයා බැලීම, නිවැරදි තොරතුරු රැස් කිරීම, ප්‍රකාශ කිරීම, ඒ හා සම්බන්ධ අදාළ ආයතන හා අංශ දැනුවත් කිරීම සඳහා මෙම සංවිධාන බැඳී සිටිය යුතු ය. සියලු කටයුතුවල දී නිරසර සංවර්ධනයේ වැදගත්කම පිළිබඳ ව විවිධ මාධ්‍ය ඔස්සේ දැනුවත් කිරීම කළ යුතු ය. විශේෂයෙන් අධ්‍යාපන ක්‍රියාවලිය තුළ දී පරිසර හිතකාමී ආකල්ප වර්ධනය, සරල දිවි පැවැත්ම පිළිබඳ සිතූම් පැතුම් හා වර්ධනයන් සමාජ ගත කිරීමට යොමුවිය යුතු ය.

නිරසර සංවර්ධනය පිළිබඳ රජයේ වගකීම් හා යුතුකම්

රාජ්‍ය ප්‍රතිපත්ති තුළ හා ඉදිරි දැක්ම තුළ නිරසර සංවර්ධන සංකල්පය සාක්ෂාත් කර ගැනීමට අවශ්‍ය මග පෙන්වීම් හා කැපවීම් පාලකයින් සතු විය යුතු ය. මෙහි දී ජාතික පාරිසරික ප්‍රතිපත්තියක් අනුගමනය කිරීම වැදගත් වේ. මෙමගින් රාජ්‍ය ආයතන ශක්තිමත් කිරීම, දැනුවත් කිරීම, මෙහෙයවීම, සඳහා වගකීමෙන් බැඳී සිටිය යුතු ය. රාජ්‍ය නිලධාරීන් මගින් හා ආයතන මගින් මේ සියලු දැනුවත් කිරීම කළ යුතු ය. ජාතික පාරිසරික පනත් අදාළ ආයතන මගින් බල ගැන්වීම, නීතිය නිසියාකාර ව ක්‍රියාත්මක කිරීම සඳහා මැදිහත් විය යුතු ය. කලින් කලට පරිසරයේ අවශ්‍යතා සලකා බලමින් ජාතික හා ප්‍රාදේශීය වශයෙන් වැදගත් තීන්දු තීරණ ගත යුතු ය.

පරිසර විනාශයට ප්‍රධාන හේතුවක් ලෙස ජනතාවගේ දිළිඳුකම පෙන්වා දිය හැකි ය. එමගින් පරිසර සම්පත් අනවසර හා අවහානිතයන් මගින් සුරා කෑමට ලක් කරයි. එය වැළැක්වීම සඳහා දිළිඳුකම පිටු දැකීමේ ක්‍රියා මාර්ග අනුගමනය කළ යුතු ය. රටක පවතින නිෂ්පාදනය, බෙදා හැරීම, පරිභෝජනය සම්බන්ධව පවතින අසමතුලිතතා අවම කිරීමට ක්‍රියා මාර්ග ගත යුතු ය. පරිසර හිතකාමී නිෂ්පාදන හා සේවා කෙරෙහි, ආයෝජකයින් දිරිමත් කිරීම ද කළ යුතු ය.

මේ අනුව නිරසර සංවර්ධනය පවත්වා ගෙන යාම සඳහා රජය මගින් ඉටු කළ යුතුකම් හා රජයේ වගකීම් කිහිපයක් පහත දක්වා ඇත.

- පරිසර සංරක්ෂණ වැඩසටහන් සැලසුම් කිරීම සහ ක්‍රියාත්මක කිරීම
- පරිසර හිතකාමී භාණ්ඩ හා සේවා නිෂ්පාදකයින් දිරි ගැන්වීම

- පරිසර හිතකාමී භාණ්ඩ හා සේවාවන් පරිභෝජනයේ වැදගත්කම පිළිබඳ ව ජනතාව දැනුවත් කිරීම
- පරිසරයට අදාළ නීති රීති සම්පාදනය හා බල ගැන්වීම.
උදාහරණ - 1980 ජාතික පරිසර පනත
- පාරිසරික බලපෑම් තක්සේරු කිරීම (EIA)
- පරිසර ආරක්ෂණ බලපත්‍ර (EPA) ක්‍රියාත්මක කිරීම
- පරිසර ප්‍රමිතීන් හඳුන්වා දීම
- පරිසර ආරක්ෂණ ප්‍රදේශ ප්‍රකාශයට පත් කිරීම
- හරිතාගාර වායු විමෝචනය පාලනය
- අධිපරිභෝජනය සීමා කරවන පරිසර හිතකාමී ජීවන ක්‍රමයකට ජනතාව යොමු කිරීම

Annex 9

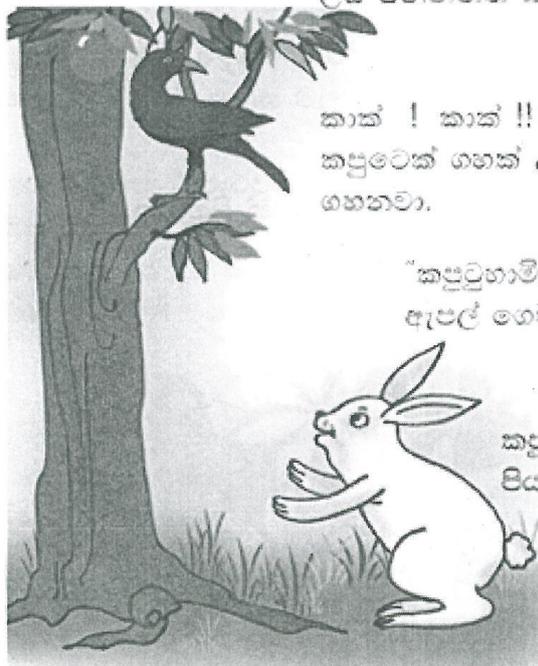
Indirect presentation of SDG concepts in Grade 3 Sinhala Language textbook

6 කදිම තීන්දුව

නියං කාලය අවසන් වී ගෙන ආවා.
කැලේ ගස්වල කොළ හැලිලා.
පලතුරු කිසිවක් නැහැ. ඒ වුණත්,
ඇපල් ගහක එක ම එක ගෙඩියක්
ඉතුරු වෙලා තිබුණා.

හාවෙක් වතුර සොයමින් කැලේ මැදින් දිවුවා.
වටපිට බැලුවා. මේ ඇපල් ගෙඩිය දැක්කා.

කොහොම ද මේක කඩා ගන්නේ ?
ඇපල් ගෙඩිය තියෙන්නේ හුහාක් උඩ.
උඩ පනින්නත් බෑ. හාවා සිතුවා.



කාක් ! කාක් !! කාක් !!!
කපුටෙක් ගහක් උඩ ඉඳ ගෙන කැ
ගහනවා.

“කපුටුහැමි, කපුටුහැමි, මට අර
ඇපල් ගෙඩිය කඩලා දෙන්න”
හාවා කිවුවා.

කපුටා ඇපල් ගහට
පියාහිලා ගියා.

ඇපල් ගෙඩිය කැඩුවා. ඇපල් ගෙඩිය හොටෙන්
ගිලිහුණා. ඒක බිමට වැටුණා.

"කපුටුහාමි ඔයාට බොහෝ ම ස්තූතියි," භාවා කිවුවා.
ඇපල් ගෙඩිය ගන්න භාවා ගහ මුලට ගියා.
දෙනන් පුදුමයක් ! ඇපල් ගෙඩිය දුවන්න පටන් ගත්තා.
මේ මොකද? මේ මොකද? භාවා බිය වුණා.

ඇපල් ගහ මුල නිදා ගෙන සිටිය ඉත්තූවකුගේ
පිට උඩටයි ඇපල් ගෙඩිය වැටුණේ. ඉත්තූවා බිය වුණා.
උෟ උඩ පැනලා දුවන්න පටන් ගත්තා.
ඇපල් ගෙඩිය ඉත්තූ කුරුවල ඇමිණිලා.

"ඉත්තූවො, ඉත්තූවො, කොහෙද
මගේ ඇපල් ගෙඩිය ගෙන යන්නේ?"
භාවා කැමැසුවා.

"මේක මගේ ඇපල් ගෙඩිය. ඒක මායි අල්ල ගන්නේ,"
ඉත්තූවා කිවුවා.



මගේ ඇපල් ගෙඩිය දෙන්න.
ඒක මායි හොයා ගන්නේ" භාවා කිවුවා.
එතකොට ම
කපුටුහාමින් ඉගිල්ලිලා ආවා.
"ඔයාගේ නොවේ. ඒක මගේ ඇපල් ගෙඩිය.
ඒක මායි කඩා ගන්නේ."

"මේක මගේ ඇපල් ගෙඩිය."
ඉත්තූවා ආයෙත් කිවුවා.
තුන් දෙනා ම ඇපල් ගෙඩියට
කෑ ගහනවා.
එකගතාවකට එන්න
කාටවත් ම බැහැ.

තුන් දෙනා ම ඇපල් ගෙඩියට රණ්ඩු කර ගන්නා.

එතකොට ම එතැනට ලොකු චලහෙක් ආවා.
චලහා ගෙරෙවුවා.

"මොකද මේ.....? මොකක් ද මේ සඳ්දේ ?
ඇයි රණ්ඩු කර ගන්නෙ.....?"

"අහෝ චලස්නාමී මේ කැලේ ඉන්න ලොකු ම නුවණක්කාරයා යියා.
මේ ඇපල් ගෙඩිය අයිති කාට ද කියලා කියන්න."

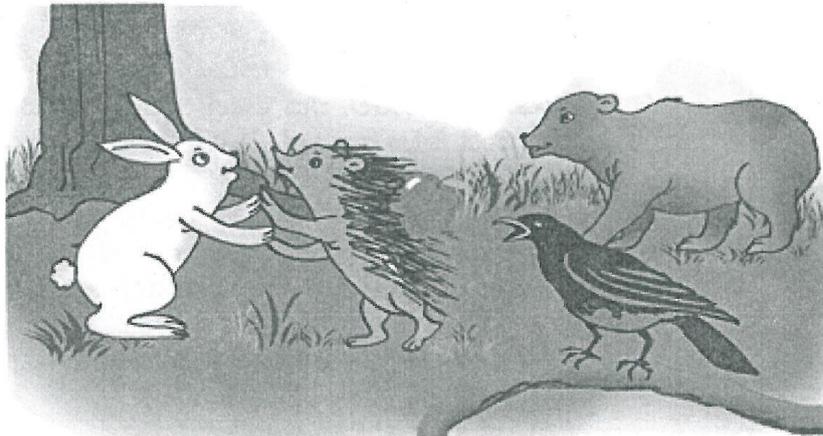
තුන් දෙනා ම සිදු වුණු දේ චලහාට කිවුවා.
චලහා මේ ප්‍රශ්නය විසඳන්න ඉදිරිපත් වුණා.

"කවුද ඇපල් ගෙඩිය හොයා ගත්තේ?"

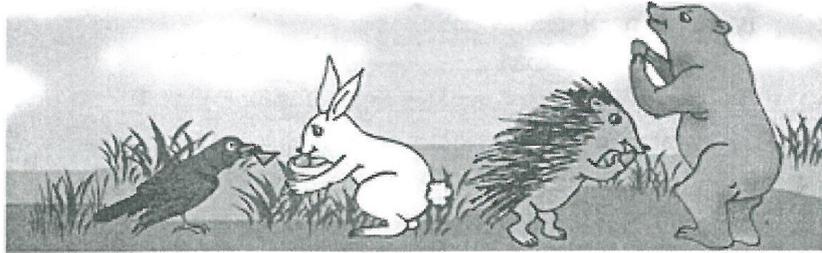
"මම....." හාවා කිවුවා.

"කවුද ඇපල් ගෙඩිය කඩා ගත්තෙ.....?"

"මම....." කපුවා කෑ ගැසුවා.



"හොඳයි ඉතින් කවුද ඒක අල්ලා ගත්තෙ.....?"
 "මම....." ඉත්තෑවා උඩ පැන්නා.
 "මිය තුන් දෙනා ම හරි. ඒ හින්දා තුන් දෙනාට ම
 ඇපල් ගෙඩිය අයිති වෙන්න ඕන."
 "ඒ වුණට මෙතැන එක ඇපල් ගෙඩිය හො තියෙන්නෙ."
 කපුටා කීවුවා.
 "මේ ඇපල් ගෙඩිය සමාන කොටස්වලට බෙදන්න.
 හැම කෙනෙකට ම කැල්ලක් ගන්න පුළුවන්" වලහා කීවුවා.
 එතකොට ම හාවයි. කපුටයි. ඉත්තෑවයි සතුටින් කෑ ගැසුවා.
 "අපට මෙක කලින් හිතූණෙ නැති හැටි....."
 ඉත්තෑවා ඇපල් ගෙඩිය හතරට බෙදුවා.
 "මෙන්න හාවාට පළමු වෙති කැල්ල..... ඔයා තමයි ඉස්සෙල්ලා ම
 ඇපල් ගෙඩිය දුක්කෙ....."
 "කපුටුහාමි මෙන්න ඔයාගෙ පංගුව. ඔයා තමයි ඇපල් ගෙඩිය
 කැටුවෙ."
 දෙවෙනි කැල්ල කපුටාට දුන්නා.
 "මේ මගේ පංගුව. එමයි ඇපල් ගෙඩිය අල්ලා ගත්තෙ." ඉත්තෑවා
 තෙවන කැල්ල ගන්නා.
 ඉතුරු කැල්ල ඉත්තෑවා වලහාට පිළිගැන්නුවා.
 "මේ වලස්හාමිට."
 "මට.....?" "ඒයි මට මොකට ද?" වලස්හාමි පුදුමයෙන් ඇසුවා.
 "මට අපට තුටුණ කියලා දීපු නිසා. අප සමගි කළ නිසා....."
 හැම කෙනෙක් ම තමාගේ ඇපල් පංගුව සතුටින් කෑවා.



පැවරුම්

1. පාඩම කියවා ගැලපෙන වචනය තෝරා හිස්තැන සම්පූර්ණ කර ලියන්න.
 - i. ඇපල් ගහක ගෙඩි ඉතිරි වී තිබුණා. (එකක්, දෙකක් තුනක්)
 - ii. භාවේක් චතුර සොයමින් මැදින් දිවුවා. (වන්න, කැලේ, ගම)
 - iii. කපුටෙක් උඩ ඉඳ ගෙන කෑ ගැසුවා. (පුටුවක්, වහලයක්, ගහක)
 - iv. ඉන්නැවා ඇපල් ගෙඩිය බෙදුවා (තුනට, හතරට, පහට)
 - v. ඇපල් ගෙඩිය පළමුවෙන් ම දුටුවේ ය. (භාවා, ඉන්නැවා, කපුටා)
2. මේ කියමන් කිවුවේ කවරෙක් ද යි පාඩමෙන් සොයා ලියන්න.
 - i. "ටෙ ආර ඇපල් ගෙඩිය කඩලා දෙන්න." ()
 - ii "මේක මගේ ඇපල් ගෙඩිය. එක මායි අල්ලා ගන්න." ()
 - iii. "කපුටුභාමි මයාට බොහෝ ම ස්තුතියි." ()
 - iv. "ඇයි රණ්ඩු කර ගන්නේ?" ()
 - v. "මෙතැන එක ඇපල් ගෙඩිය හේ තියෙන්නේ. " ()
3. ඉරි ඇඳි පඳු ලියන බසට හරවා ලියන්න.
 - i. භාවේක් චතුර සොයමින් දිවුවා.
භාවේක් චතුර සොයමින් දිවුවේය.
 - ii. කපුටා ඇපල් ගහට පියාඹලා ගියා.
කපුටා ඇපල් ගහට පියාඹා
 - iii. ඉන්නැවා බය වුණා.
ඉන්නැවා බය
 - iv. ලොකු වලහෙක් ආවා.
ලොකු වලහෙක්
 - v. ඉන්නැවා ඇපල් ගෙඩිය හතරට බෙදුවා.
ඉන්නැවා ඇපල් ගෙඩිය හතරට
4. මෙම කතාව පන්තිය ඉදිරියේ කියන්න. රහ දක්වන්න.
5. කතාවේ මඛ කැමති අවස්ථාවක් චිත්‍රයට නගන්න.