



Bridging sustainability projects across stakeholders and educational institutions

Theme 6: Education for sustainable development



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Title: Bridging sustainability projects across stakeholders and educational institutions

Theme: 6. Education for Sustainable Development (ESD)

Track: Transforming Research, Governance, and Education within Higher Education to Support Sustainable Development

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Abstract:

Singapore is a sovereign island state in south east Asia. Located 137 kilometres (85 miles) north of equator, it has its own unique gifts and challenges. A highly developed city state, it has established itself as a major shipping and financial hub in the east. Though the high rate of strategically planned development has resulted in high GDP and living standards, it faces challenges related to its unique geography, demography and rapid urbanisation.

Though Singapore has been working towards sustainability right from its inception as a sovereign nation in 1965, in the recent past, in line with the UN agenda 2030, the Singapore government adopted 'Singapore Green Plan 2030' which is a 10 year all Singapore sustainable development agenda touching almost every dimension of life based on the Sustainable Development Goals (SDGs).

The research seeks to investigate the extent to which the institutes of higher education in Singapore have launched transformative initiatives in their education and in their systems to incorporate sustainable development. Specific research will be conducted to identify initiatives linking different educational institutions and stakeholders i.e. government, corporate sector and consumers. Many similar projects and activities are undertaken by governments and institutions in isolation because of which the outcomes are also minimal. The research will look into the possibility of conducting linked researches and projects across universities and high schools (secondary schools and junior colleges) investigating the extent of success multi-stakeholder linked projects have yielded in the past and the potential they may have for the successful achievement of SDGs.

It will aim to recommend a framework where different aspects of a government project could be executed cohesively by institutes of higher education and students of higher secondary schools so that those who will take these projects forward in future are engaged in them from the start.

Bridging sustainability projects across stakeholders and educational institutions

1. Introduction

1.1 Education for sustainable development (ESD): a powerful tool:

Education for sustainable development (ESD) is UNESCO's education sector response to the urgent challenges before our planet. (UNESCO). The potential of education as a tool to achieve Agenda 2030 is enormous. A Stanford University review of ~120 peer-reviewed studies found that environmental education improves academic performance, enhances critical thinking skills, and develops life skills. 90% of the studies reviewed saw increased skills for students and 86% saw positive changes in students. (Ardoin)

The paper will survey some of the multi-stakeholder sustainable development programs underway in South and South-East Asia to understand what they have managed to achieve or change by involving different institutions and student communities and the challenges they face.

2. Increased world focus on sustainable development

The world is seeing an increased focus on sustainable development. The increased focus can be due to many factors. In the past few years, the increased occurrence and intensity of natural disasters and the increased worldwide action by pressure groups, nonprofits and the United Nations have all contributed to the sharp global bend towards sustainable development.

3. Sustainable Development Singapore

Early government efforts towards building a green urban environment have made Singapore one of the greenest cities in the world. According to Singapore's minister for national development, Mr Desmond Lee, it is a city in a *garden* (MSE).

Leaders in Singapore have always prioritised the preserving its natural environment and greening its urban environment. (Chew). The earliest effort towards turning Singapore into a lush green city was the launch of the Garden City in 1967 by the then-prime minister, Mr Lee Kuan Yew. Through effective planning and pollution control Singapore had become a world-renowned garden city by the late 1980s.

Efforts are on across government, corporate organisations and educational institutions to propagate sustainable development projects. In Singapore, one can see a substantial increase in the government's focus on sustainability reporting, controlling emissions. In 2021, the Singapore government launched the Singapore Green Plan 2030.

4. Education for sustainable development

Education for sustainable development is considered one of the most powerful tools as we embark on the journey towards sustainable development. In the words of Prof Jeffrey Sachs, 'as we discuss the shift from global capitalism to sustainable development, education is crucial for international growth and sustainable development. (*Sachs Address*).

5. Methodology

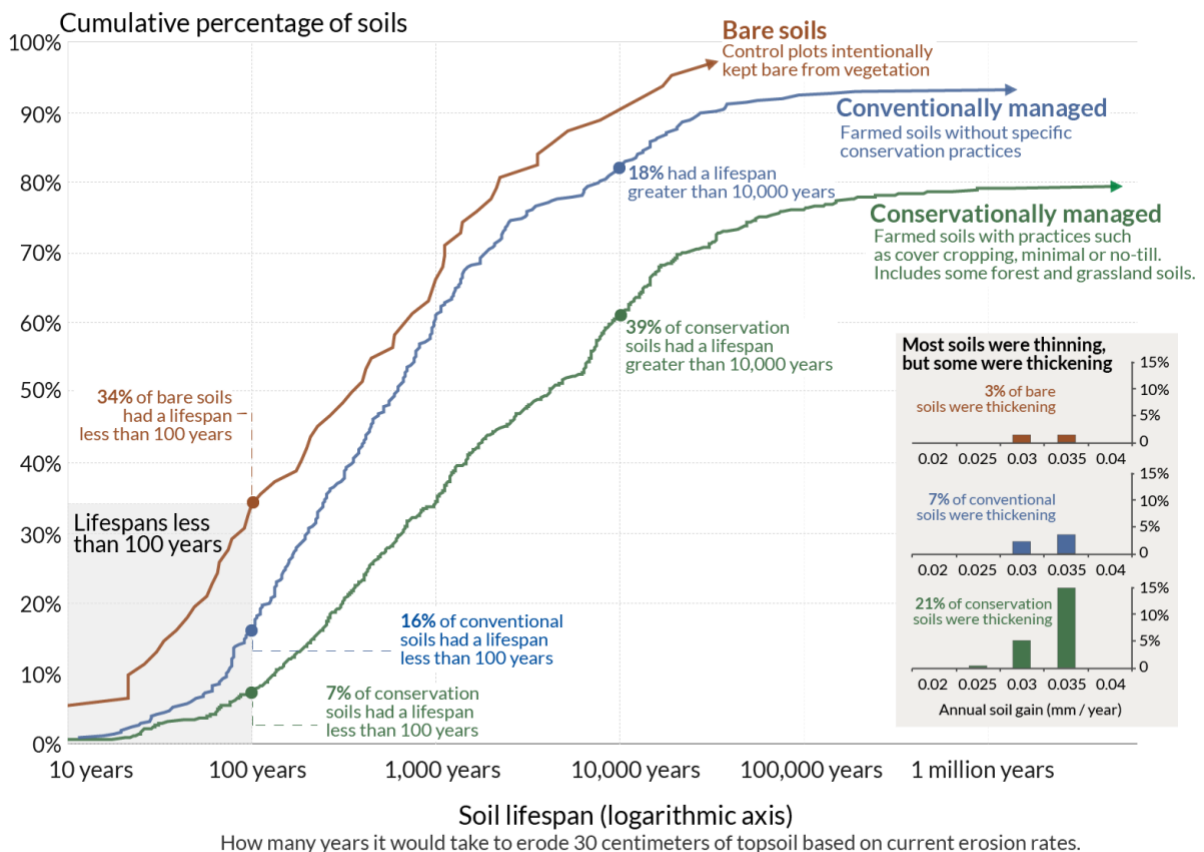
Primary research was conducted to gain insight into some remarkable multi-stakeholder projects in Singapore and in other regions of South and South-East Asia. Secondary sources used include research papers on the impact of education for sustainable development and publications and vital information published by the Ministry of Sustainability and Environment, Singapore. The paper investigates deeper into sustainable development projects that either involve educational institutions or involve educating students about a certain sustainable development need and initiative.

6. Soil Regeneration

Our soil is dying. Claims say that only about 30 to 100 years of harvests left in the world as our soil is dying. Though these claims may be overblown to an extent, it is a fact that soil on earth is degenerating at a rapid pace. Cropping and farming practices involving intensive use of pesticides and other inputs, have led to the exhaustion and erosion of natural systems. The resilience and sustainability of our ecosystems is in danger. (Ritchie)

Distribution of soil lifespans across the world

Data is based on a global assessment of 4285 erosion estimates from 240 studies across 38 countries.



Source: Daniel Evans et al. (2020). Soil lifespans and how they can be extended by land use and management change. OurWorldinData.org - Research and data to make progress against the world's largest problems. Licensed under CC-BY by the author Hannah Ritchie.

Fig 1. Source: Hannah Ritchie. (n.d.). Distribution of soil lifespans. Our World in Data. Retrieved October 2, 2022, from <https://ourworldindata.org/grapher/soil-lifespans>

The figure above shows expected lifespans of different soils based on the extent of the conservation and treatment efforts. As can be seen, conservation and regeneration efforts can significantly affect soil- lifespan and fertility.

6.1 Soil Regeneration Project:

An initiative that is working towards reversing this trend of degeneration of soil in Singapore is the Soil Regeneration Project. The project is a mix of three pillars; an education pod, a curriculum pod which they have run a few times and works with the SG Equal fund and the ministry of sustainability and environment.

Our Vision: To regenerate soil across borders

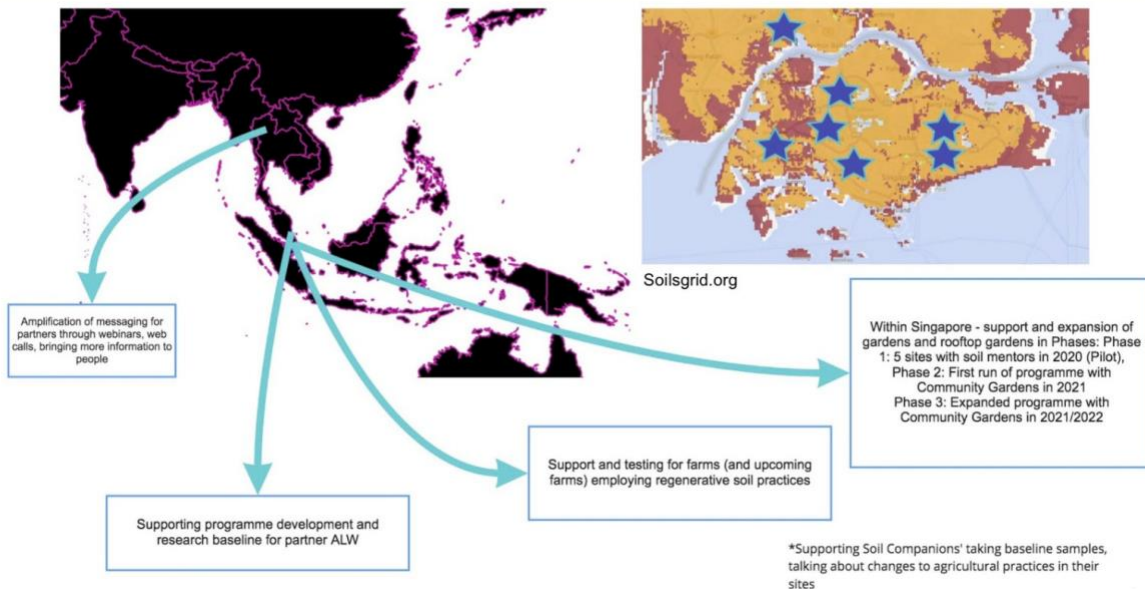


Fig 2. Source: Huiying Ng. (n.d.). *We're Regenerating City soil in Singapore. The Soil Regeneration Project*. Retrieved September 30, 2022, from <https://soilregenerationproject.com/>

Partner and research lead of the project, Ms. Huiying Ng has been part of several sustainability initiatives across south-east Asia. At present she is pursuing doctoral research in the field of agro-ecology featuring the idea of learning network around agro-ecology. Her work involves discovering and developing a regional food-system. Limiting factors are fairly closed economies and limited mobility of labour and other factors. She believes that a much greater and longer lasting impact on soil regeneration can be achieved with the involvement of the Singapore government, non- government organisations and schools in the Soil Regeneration Project.

Scope of the issue: soils, land, and knowledge

Transition within a Bioregion

While a tropical climate, Southeast Asia is home to several overlapping watersheds, and soil types. Bioregions define areas marked out by their ecological and geographical properties, home to communities and ecologies.

We use the term 'bioregions' here loosely as a way of directing our attention beyond national, ecosystemic, or political borders that currently divert our attention from seeing the opportunity and need at hand.

With several bioregions, comprising factors making up different soil climates (though map on the right shows only soil classification following World Reference Base, which focuses on soil morphology), soil regeneration in Southeast Asia gives us a base of similarity to work from together.

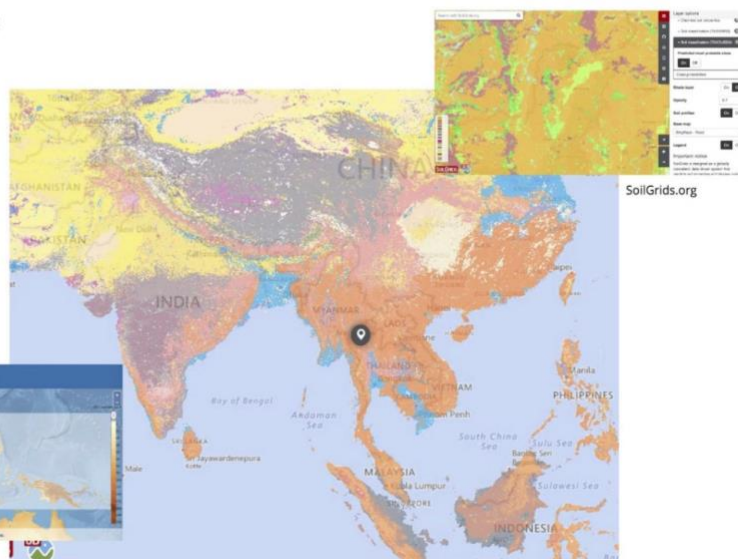


Fig 3. Source: Huiying Ng. (n.d.). We're Regenerating City soil in Singapore. The Soil Regeneration Project. Retrieved September 30, 2022, from <https://soilregenerationproject.com/>

The Soil Regeneration project has been working with National Parks Board Singapore (Nparks for short). Soil in the gardens is tested at zero before they start regenerative agriculture. Subsequently, they are tested at 12 and 24 months. They started with about 5 parks in Singapore that were undertaking composting, mulching and similar beneficial practices. Then they started working on 5 parks that were not engaged in these practices. The contrasting results from the two different sets of parks help them assess the effectiveness of the measures.

6.2 Soil Regeneration Education:

Ms. Aditi Punj Sood, who leads the education pod of the Soil Regeneration project, has a background in anthropology and has a deep passion for exploring sustainable practices in food and agriculture. The intention is to have a large conversation layering it with science and information. She feels that every individual's actions are guided by the psychology behind them. In other words, "actions of one working with a scarcity mindset will be very different from those of one with an abundance mindset. More recently, she has designed a curriculum to educate teenagers about soil regeneration so that they understand the need for it and get involved. In her words, "we want the engagements to be as diverse as possible; emulating the soil systems, how they connect the ones above with those below".

6.2.1 Takeaways:

The problems created by overconsumption and overuse of resources is deep rooted and can have far-reaching impact on the health and well-being of all life-forms on

earth including humans. The solution lies in identifying the root cause such as soil-degeneration and focused action in the direction which the Soil Regeneration Project should be commended for. Furthermore, taking it to schools will ensure the continuity of the project and its effectiveness in the long run.

7. Waste management

7.1 Earthful Foundation:

Based in Guwahati India, The Earthful Foundation is a not-for-profit organization which was founded in March, 2018 with the aim of conserving the environment, spreading knowledge and awareness about sustainable development practices and making a lasting change in the lives of people. The project has successfully brought different stakeholders such as government, corporations, non-government organizations and schools together to work towards changing systems and habits focusing on sustainable practices.

The chairperson and founder of Earthful Foundation, Mrs. Shweta Mishra Mahanta gave us insight into Project Good Waste which aims at developing identified areas into beautiful, garbage-free green zones. Under the project, people are guided to segregate their waste at source so that recyclable waste can find its way to recycling plants and wet compostable waste can be composted. Starting with a few areas, the model is replicated in various areas. She feels that transformative change is possible only when communities, industries and government join hands and share a common vision. (*Mahanta*)

7.1.1 Takeaways;

India is a diverse, populous country with a section of population that does not have access to good education or standards of living. The Earthful Foundation has been successful in taking up the challenging task of bringing together the government machinery, private organisations and educational institutions together towards achieving a shared vision.

7.2 The Incubation Network:

Another innovative multi-stakeholder network is The Incubation Network. The very nature of their work is to connect different stakeholders to facilitate minimize plastic pollution from flowing into our oceans. Their work involves business development to address the issue of minimizing ocean waste and to address issues of waste workers, Mr. Joshua Foong from the Incubation Network informs that though their main objective is prevention of waste that goes into oceans but in order to prevent waste going into oceans, they also have to go and change the methods higher up in the supply chain to prevent waste/plastics from ending in the oceans. Working across South and South-East Asia, the organization is trying to create a network of incubators, companies, NGOs and governments to help arrange resources to fund waste reduction and management campaigns. (*Foong*)

They also aid waste companies and their NGO arms working towards elevating the status of waste workers. These projects are often executed with the help of student volunteers. University students were involved in projects comprising the use of technology such as digital tracking platforms, EPR (Extended Producer Responsibility, traceability and plastic tracking.



Fig 4. Source: *EPR - extended producer responsibility - learn more & register now. Global VAT Compliance. (n.d.). Retrieved October 21, 2022, from <https://www.globalvatcompliance.com/epr-extended-producer-responsibility/>*

7.3 Extended Producer Responsibility:

Extended producer responsibility is a policy being enforced by an increasing number of countries under which a producer is responsible for the entire life-cycle of the product that they introduce into the market right from product design until the end of its life-cycle. (EPR)

7.3.1 Takeaways:

The incubation network provides corporations and their NGO arms, a platform to link their initiatives. The network also connects them with local and overseas governments which can lead to alignment of these initiatives with government programmes thereby facilitating their funding and execution. Involving students can help educate the youth about the issues and create long term engagement.

Furthermore, youth can come up with new innovative ideas such as a project in Thailand works to prototype some vehicle to collect waste on the streets. University students would prototype this vehicle and work with NGOs and introduce this to community waste workers. In the Philippines, University students helped to provide these workers with better digital tools like digital tracking platforms

8. Corporate-Educational Institution collaboration

8.1 NTU Peak:

National Technological University (NTU), a leading university in Singapore runs NTU Peak which is a Leadership Development Programme that is co-designed with industry partners to develop high potential NTU students into industry-relevant future leaders for the workplace and community. They concluded the 10th edition with a special theme on Food Sustainability in September 2021. An NTU student, Suhaani Nigam, informed the author about a sustainability solutions project between NTU and a premiere news publication company in Singapore, Mediacorp where they together worked to develop a framework towards the company's sustainability journey.

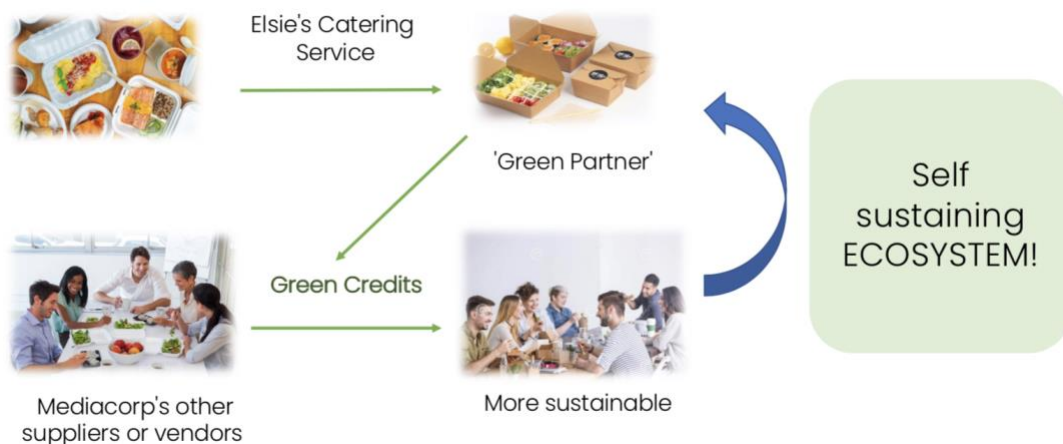


Fig 5. Source: Koh, J. (n.d.). NTU Peak. Cao Connex. Retrieved October 2, 2022, from <https://blogs.ntu.edu.sg/caoconnex/ntu-peak/>

After comprehensive research and engagement with the Company, the students came up with suggestions to help Mediacorp achieve greater sustainability. One of the suggestions provided by NTU students was sharing of green credits between the company and its vendors as shown in Fig 5 above.

8.2 The Overseas Family School Singapore- Multi-stakeholder activities at a K-12 institution:

A part of the Global Schools Network, actively working towards ESD and sustainable development, The Overseas Family School Singapore has been participating in various collaborative activities and service projects.

- The school ran a Blood Donation Drive in collaboration with The Red Cross. Eligible parents, teachers and students from the school community and outside participate. The numbers were not as big as expected perhaps because it was held during the time when Covid19 was affecting large sections of population.
- Movement for the Intellectually Disabled (MINDS). Students conduct physical education lessons for children with down's syndrome and other mental disabilities. A challenging activity. It teaches students to be patient and persistent. Students take up this activity periodically.

- Riding for the Disabled (RDA): Students help disabled youth to ride horses and gain balance skills and confidence. This is an extremely time consuming (lots of training and long hours) experience, but one that students really gain a lot from. Students have first-hand experience working with the children who are all physically disabled in some way and some have some mental disabilities as well. (*Courses, OFS*)

According to the school's Community Action Service coordinator Ms. Arin Mares, Through these activities students build great real relationships with these children and have an insight into their world that they would not get as part of their routine otherwise. The school is working with towards collaborative projects with local beach cleaning organisation and others in order to develop further engagement of students with their community.

9. Takeaways from and challenges before multi-stakeholder projects:

The essence of these collaborative efforts is that the impact can be much wider and deeper than what an isolated project could have achieved. Furthermore, involving governments would help to achieve the systemic and policy changes which could stimulate the transformation the initiative is aiming to achieve. Student participation brings fresh thought process and energy into such projects. Youth also come with new and innovative ideas using digital technology such as digital tracking and EPR (*section 7.3*) mentioned above which can help scale up the impact.

Student engagement in training children with disabilities impacts their thought-process and value systems which can be transformative, developing in them empathy and understanding of people who are differently abled (*section 8.2*). Furthermore they learn to be patient and conscious of each other's well-being which is vital for long term sustainable development.

However, the challenges faced by all of the organisations are quite similar. NGOs working on sustainable development projects are of the opinion that educational institutions follow rigid structures, curricula and timetables with little room to accommodate the extent of engagement that the community and students could benefit from. Ms. Sood from the Soil Regeneration Project (*section 6.2*) expressed that though schools show excitement towards the initiative, they express inability to accommodate more than one or two hour sessions which she feels is insufficient to educate the students on the vast topic and to get them engaged to take action.

Students and educational institutions have expressed that the suggestions and solutions that they provide after any collaborative project are seldom implemented by the corporates or government organisations as they conflict with their profitability or growth objectives.

Furthermore, sometimes organisations sign up for sustainability initiatives only because it has been mandated by a government or to build a brand image.

10. Breakthroughs

10.1 The Singapore Green Plan 2030:

The Singapore Green Plan 2030 is the whole of nation sustainable development agenda with firm action plans touching every dimension of our lives. While the first environmental blueprint of the Singapore Green Plan was released in 1992 by the then Ministry of Environment and Water Resources, (MSE), The Singapore Green Plan 2030 was unveiled in 2021 in line with the United Nation's Sustainable Development Goals and Agenda 2030 and Paris Agreement. The plan is led by five key ministries of the Singapore government namely,

- Ministry of Education
- Ministry of National Development
- Ministry of Sustainability and the Environment
- Ministry of Trade and Industry
- Ministry of Transport

Furthermore, The Singapore Green Plan 2030 has five key pillars;

- City in Nature,
- Sustainable Living, Energy Reset, Green
- Economy and Resilient Future.
- While drafting the Singapore Green Plan 2030, the different members of the government agreed that more needs to be done regarding climate change and sustainable development. (MSE)

Under the Singapore Green Plan 2030, the Singapore government has set fairly high targets for itself. These include doubling of tree planting rate, increasing solar energy deployment fivefold which can meet 3% of Singapore's projected energy demand, reduce waste sent to landfills by 30%, green 80% of Singapore's buildings, all new car registrations to be cleaner energy models, achieve 85% mass public transport, more than double the national Electric Vehicle charging point targets from 28,000 to 60,000 charging points and many more. (MSE)

10.1.1 Education Related Targets:

Singapore Green Plan 2030 targets: at least 30% reduction in net carbon emissions from the Singapore school sector and least 20% schools to be carbon neutral by 2030.

Eco Stewardship Programme

In 2021, Mr Lawrence Wong, the then Minister for Education, announced that the Ministry of Education (MOE) will work with schools and education institutions to strengthen green efforts. MOE will introduce an Eco Stewardship Programme to enhance environmental education in all schools, and pilot sustainability features and related concepts in selected schools. In addition, the new Science Centre will

champion public education on sustainability, and Institutes of Higher Learning will build on existing sustainability efforts. [See Minister Wong's speech in the Joint Segment and MOE's media release.] (*MSE*).

The Eco Stewardship Programme builds on the current environmental efforts in schools. This will be done holistically through the 4 Cs; Curriculum, Campus, Culture and Community.

Youth for Environment and Sustainability (YES) Programme:

Youth for Environment and Sustainability (YES) Programme by the National Environment Agency (NEA) Singapore facilitates youth involvement in tackling environment and sustainability through ongoing digital engagement, leadership training, youth forum and other projects. (*Clean and Green Singapore*)

10.2 ESD and Global Schools Program:

The inclusion by the United Nations of Quality Education as one of the sustainable development goals and education for sustainable as a powerful tool which can empower young minds to tackle with the uncertainties of the future and to shape the future has brought about a much-needed global focus on education.

The Global Schools Program is an initiative of the UN Sustainable Development Solutions Network. The mission of the program is to create a world where every primary and secondary school is equipped with the knowledge, value and skills necessary to shape a sustainable and prosperous world. It is a pioneering effort to communicate UN programs directly with the teachers who will take it to their classrooms. Such direct intervention will definitely go a long way in bringing about a change in the thought process of young minds. (*About Global Schools*).

10.3 Mandatory Sustainability Reporting in Singapore:

All listed Singapore Companies must provide climate reports integrated into their sustainability reporting on starting financial year 2022. The reporting requirement is gradually being widened to cover more industries and sectors year after year. Sustainability reporting complements the financial reporting of companies. In Singapore, more and more investors are demanding that companies report their sustainability impact. Hence, there is greater focus on integrating ESG (Environmental, Social and Governance) factors into business operations. (*Oxana*)

11. Conclusion

11.1 SDG centred approach;

Though sustainability activities in educational institutions have largely remained symbolic or isolated, there has been a conscious effort at bridging of sustainability projects across stakeholders from governments, non-profits and educational institutions. It may be too early to gauge the extent of impact these initiatives have had as most of these efforts have either been very recent or limited to smaller groups. However, these have certainly helped to bring the need for sustainable development to the forefront. This is a big change as it is changing the very foundation of our thought processes. As a result a number of curricular changes are taking place across the world.

11.2 Curricular changes:

Education for sustainable development using the Sustainable Development Goals provides a common framework for curriculum developers (About Global Schools). Furthermore, it brings clarity in the minds of educators and learners that sustainability is not limited to environmental measures but goes beyond to cover economic and social aspects as well.

11.3 Sustainability reporting mandate:

Sustainability reporting mandated by governments is another revolutionary structural reform which will motivate and push organisations to take measures and work towards sustainable development goals (*Oxana*). *This further creates the need for setting standards to measure and report sustainability initiatives.*

Looking ahead though the above changes and setting of targets by governments such as the Singapore Green Plan 2030 are definitely a step in the positive direction, what will be required is the sincere will and commitment by all stakeholders and consistent and transparent communication by governments, private corporations, non-profit organisations and educational institutions to stay committed to the cause and initiate and encourage projects involving multiple organisations and educational institutions as sustainable development can only be achieved collectively.

“We and our societies flourish best when we display our humanity, justice, generosity and public spirit” Kate Raworth quoting Adam Smith (*Raworth*)

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