

Biology for Sustainable Development in Sri Lanka

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Conserving, and consuming all kinds of resources in a responsible manner leaving enough for the future generations is the core definition of sustainability. Sustainability in Sri Lanka is difficult to define; as a country rich in resources, it is easy to be driven to exploit them for money. There are many facets to this scenario, as there are some resources that we over exploit, and some that we don't use to its maximum potential. Biology as a basic science plays an important role behind the curtains of everything we see – and this includes sustainable development. It can help identify and rectify erroneous practices in the society that could lead to great damage due to their unsustainable nature.

Agriculture is a major field where sustainability comes into play in Sri Lanka. The first step to sustainable agriculture starts before the paddy field. It begins with choosing the right variety of rice for the soil and season. It has to be followed through by sharing the right knowledge to farmers, especially regarding the correct use of fertilizer. The simplest of biological reactions can be looked into to improve agriculture. Photosynthesis is such an example. Ongoing research in trying to convert C3 rice varieties into C4 varieties brings hope for this sector. Having such higher yield crops that can be grown continuously is a big part of sustainable agriculture.

Another area that is important to Sri Lanka would be energy. The current research interest in biofuels is a great path to the future. The current use of biofuels is extremely unsustainable, especially considering the economic situation in the country. An interesting approach is distilling isopropyl alcohol using Mana plant to be used as vehicle fuel. Biofuel also has the potential to replace fuel in industries.

Our national policies highlight the need for “creating awareness of biotechnology amongst people to enable informed decision making and position biotechnology in our society” and “enhancing local industries through biotechnology.” This includes promoting food production in agriculture, improving health & wellbeing through improved healthcare,

promotion of bio energy and sustainable use of biodiversity and promoting clean energy. These policies are well versed, which would be vastly beneficial if implemented properly with good governance. Not only in Sri Lanka, biotechnology should be used wisely globally to improve quality of life sustainably.

As an example of how we can improve the healthcare sector, more than a century ago, two young graduates from the University of California started an innovative entrepreneurial venture. Their small business was based on producing insulin in bacteria. By 1982, their insulin was approved by the FDA to treat type I diabetes. Their drug was even able to create the highest gain in stocks for this type of product. The same process continues to be used to produce vaccines as well. Sri Lanka has the potential to lead this kind of innovation. We definitely have skilled minds to come up with innovative ideas. But what is holding us back?

Extracting anti-cancer compounds from local plants and producing finished products is another example of biology (in combination with chemistry) in healthcare. However, to make this sustainable, we need to make sure we replace the natural resources that are exploited. Sri Lanka is rich in biodiversity, and there are many avenues for scientists to explore plants with bioactive compounds. Countries like Sudan are producing some of their own vaccines at this point; in this perspective, we are falling behind.

We need more national forums for our young minds to share their ideas. These should also be multi-disciplinary, and that is when true sustainability can be achieved, as a single subject cannot do it alone. More connections need to be made between investors and bright young minds. We see many students face a lack of resources, coming in from rural areas, or unable to access a good network to bring their innovative ideas to fruition. Focusing on balancing “brain drain” and “brain gain” is the key. As Sri Lankans, we all need to think about moving forward as a country, and work together to build the future we wish to see. This requires

individuals to work hard to follow their passions- make new roads to reach beyond the obstacles presented to us. We need to make better networks with global scientists so that we can carry out better research, and expose ourselves to new technology.

Having large scale physical buildings for the sake of establishing scientific institutes is proving to be redundant, and exhausts more of the limited resources we have. What we need is to exemplify working hard, in a minimalist environment. Focusing on the work rather than the facilities available is what we need. This is sustainable; otherwise, we unknowingly spend our money, time, electricity, etc into a small amount of work that does not produce good results.

Incorporating modern biology in school syllabi and university courses going beyond the old basics would be a great way to encourage the young generation towards this field. It is important to focus on it, especially in A/L syllabi, clearly stating why we need to focus on using biology in new ways. Including practical courses in syllabi is also important, rather than moving towards a memory-based education system. We keep losing

our talent because our industries fail to cater to our graduates. We have to go beyond the traditional paths beyond school, and explore what our sciences have to offer.

As a country, we should also promote extra reading among students. The world is full of knowledge, and many areas remain untouched. If we push our young minds beyond the customary boundaries, our country will surely reap the results. Improving English literacy among our youngsters is also a must. It is impossible to penetrate the market today without good language skills. Encouraging science-based entrepreneurship to go beyond just publishing papers is important. That is how we have to move forwards as a country. Slowly, we can reduce losing our knowledge pool to foreign countries. We can retain our graduates if we expand our horizons, not only in using biology for sustainability, but for advancement of our country as a whole.

Interviewed and drafted by Yohara Ranasinghe, CCS Media Circle

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