



## **Bridging Sustainable Agriculture and Education for Sustainable Development**

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**Abstract** When multi-stakeholders in local communities come together to tackle sustainable development problems, they not only offer solutions to local constituents, but also create impact to the broader policymaking process at local, regional and national levels. A United Nations University flagship project, namely a network of Regional Centres of Expertise (RCE) on Education for Sustainable Development (ESD) indicates that local networking for sustainable development, and in particular for sustainable agriculture, can be an effective approach for local communities to employ learning tools in ESD to improve the situation and render positive influence in policymaking. RCEs on ESD, as an innovative platform for multi-stakeholder networking at the local and regional level, has proven to be an effective vehicle for promoting sustainable agriculture, linking sustainable livelihood and ESD, involving farmers, school teachers, students, non-governmental organizations, and other stakeholders in the community.

**Keywords** sustainable agriculture, Education for Sustainable Development, ESD, Regional Centre of Expertise, sustainability, UNU, RCE

### **UNSUSTAINABLE AGRICULTURE PRACTICES – A CASE IN CAMBODIA**

Kampong Cham is a rural province of Cambodia with an area of nearly 10,000 square kilometers. Due to the rapid increase in population, the province faces food security concerns. Farmers have resorted to the use of chemical fertilizers and pesticides, and other unsustainable practices, to increase farm productivity. These practices have not only affected the health of farmers and their families, but have contaminated the soil, jeopardizing the environment and degrading the area as a whole. Specifically in the investigated target areas, located in the Samroung commune of the Kampong Cham province, the use of agricultural fertilizers and pesticides has rapidly increased over the past decade, contributing to a higher agricultural productivity in the short term. Local farmers that suffered from several ailments such as throat pain or dermatitis have been eager to shift to a more sustainable farming system, based on natural resource circulation. However, the lack of knowledge and resources has hampered the shift towards practicing sustainable agriculture. Government policy to rectify unsustainable agricultural practices was deemed imperative.

### **MULTI-STAKEHOLDER NETWORKING**

The RCE network<sup>1</sup> in Cambodia known as RCE Greater Phnom Penh (GPP) initiated a project on

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<sup>1</sup> A Regional Centre of Expertise (RCE) is a network of existing formal and non-formal education organizations mobilized to deliver ESD in the region or locality where it is situated. It creates a platform for dialogue among regional and local ESD stakeholders and for exchanging information, experience and good practices on ESD. It develops a regional and local knowledge base and assists in

‘Promoting Sustainable Agriculture at Kampong Cham Province in Cambodia’, funded by the Japan International Cooperation Agency (JICA) and executed by the stakeholders of RCE GPP led by ERECON<sup>2</sup> and the Royal University of Agriculture (RUA) of Cambodia, with the cooperation of the local government. The aim of the project, which ran from April 2011 to March 2016, was to promote sustainable agriculture, based on natural resource circulation in 11 villages in the Samroung commune. The project’s goals were to switch to sustainable farming practices and to increase public awareness on how a region can achieve acceptable economic benefits together with high and sustained production levels, while concurrently conserving the environment. The project gave evidence of successful transformative learning through sustainable agriculture, by teaching farmers about sustainable practices without or the use of low chemicals, and integrating sustainable agriculture and ESD in school curricula in the region. Lessons learned from reformed farmers’ practices together with ESD general knowledge and practices were used by the community schools in the area. The school students were themselves mostly children of farmers, and so learning conversations and practices continued at home. Knowledge on sustainable agriculture was also passed on from pupils to their non-farming parents. A number of farmers and farmers’ families as well as schools were identified as models, where other members of the community could learn from on sustainable agriculture and ESD.

This project made a case of addressing national policy towards improving agricultural production, both in terms of quantity and quality of produce in line with the principles of a Green Economy, resulting in improved human well-being and social equity, while significantly reducing environmental risks and ecological scarcities.<sup>3</sup> At the same time, the project addressed several Sustainable Development Goals such as SDG-2 on Hunger, SDG-4 on Education, and SDG-12 on Sustainable Consumption and Production and was implemented in line with the goals of the Stockholm Convention on Persistent Organic Pollutants.<sup>4</sup> According to the Rector of the Royal University of Agriculture of Cambodia, the project “*supports the vision of the Cambodian Ministry of Agriculture, Forestry and Fisheries towards sustainable natural resource management and conservation, and in particular the Ministry’s policy on agricultural extension. The project has influenced policymaking in the Ministry and created a good model case for promoting the policy of the Cambodian Government on organic agriculture and ESD transformative learning*”.

## CAPACITY BUILDING OF FARMERS

In order to effectively change agricultural production practices, farmers’ groups were formed and a series of workshops conducted, explaining the concept and benefits of sustainable agriculture, including technical aspects as well as how to manage farms and distribute their products. The principal project proponents – RCE GPP stakeholders such as RUA, ERECON, and local government authorities – worked together to train farmers how to make organic fertilizer, organic pesticides, and utilize techniques that render the use of chemicals unnecessary, including the use of nets to protect plants and vegetables from various insects. Farmers were also trained how to build and manage composts using model composts. Learning by using real examples and demonstration models inside the farms proved effective. In order to widen the participation of farmers across the region, sharing of experiences among the farming community was encouraged and ‘workshops-on-the-field’ together with farmers already practicing agriculture sustainably were organised. A farmers’ committee was set up and a common pellet compost center built. Training for pellet compost production was conducted for village

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promoting vertical alignment of curricula from primary through university education and in linking formal and non-formal sectors of the education community.

<sup>2</sup> Institute of Environmental Rehabilitation and Conservation, headquartered in Tokyo, Japan, with branch office in Phnom Penh, Cambodia.

<sup>3</sup> UNEP, 2011

<sup>4</sup> Stockholm Convention, <http://chm.pops.int/TheConvention/ThePOPs/TheNewPOPs/tabid/2511/Default.aspx>

leaders and members of farmers' groups. Transformative learning and real change hinged on capacity building and in turn influenced the local government to adopt and promote sustainable practices.

### **PROMOTING EDUCATION FOR SUSTAINABLE DEVELOPMENT**

Food, agriculture and environmental education that focuses on sustainable agriculture based on natural resource circulation was promoted in form of experiential learning using local schools as living laboratories. With the support of the farmers' groups, school teachers managed organic school gardens and compost boxes to teach students on the different practices of sustainable agriculture. Together with farmers, workshops were conducted at selected schools and students demonstrated learning outcomes using poems and songs pertaining to ESD. In addition, training activities on mixed cropping were introduced in schools where students shared their experience from a field visit to Thailand as part of the project ESD learning activities. The stakeholders of RCE GPP, mainly RUA, ERECON Cambodia, school teachers and project advisers, developed teaching materials for the schools. The project transformed the schools in the region to adopt ESD in their curricula. It is important to underscore the fact that a majority of these elementary school students do not pursue secondary let alone tertiary education, and a vast majority of them become farmers themselves. Thus there is a real need to ingrain the moral imperative of ESD amongst the Youth, so that they create sustainable lifestyles and livelihoods and carry these on into adult life.

### **PROMOTING DISTRIBUTION OF GREEN NO/LOW-CHEMICAL INPUT PRODUCTS**

By improving the distribution of products with no or low chemical input, the number of farmers who sold their products on the green market increased. Market surveys were conducted by RCE GPP stakeholders and the results were shared with the farmers' respective communities. Farmers were encouraged to join the Cambodian Organic Agriculture Association (COAA) to market chemical-free and organic products with COAA certification. Market research was carried out to develop a plan for sustainable agriculture product fairs. The Samroung Safe Agricultural Products (SSAP) Shop was established to serve as the main outlet for green agricultural products. During regular meetings, the farmers shared information on trends of sales of different types of vegetables sold at the SSAP Shop. The shop has great potential to expand as more farmers come on board and consumers become more aware of the benefits of healthy organic products. Local governments were advised to promote these activities considering the benefit of healthy communities, by drafting policies that encourage the population to consume chemical-free and organic agricultural products.

### **POLICY RELEVANCE, IMPACT AND SUSTAINABILITY**

Leading by example is an effective approach to policymaking. Stakeholders of the policy-relevant initiative were not simply beneficiaries, but were also directly involved in project activities on the ground. This project is a good example of a local-based network on ESD, RCE GPP assuming leadership and demonstrating the important role of communities in shaping national and local policies on sustainable development, specifically in the area of sustainable agriculture. Lessons learned from this project can be used to shape government policies that can be implemented in other regions across the country and elsewhere. Farmers have become increasingly committed to sustainable agriculture and now sell products through the SSAP outlet and other third party buyers. They have also pledged to continue the scheme, even beyond the official end of the project, believing wholeheartedly that organic farming is a pathway to creating sustainable agriculture communities.

## **RECOMMENDATIONS**

Based on experiences and lessons learned from this project, the following policy recommendations to implement sustainable agriculture may be considered:

- The use of agricultural chemicals is damaging the soil and water environment of farmlands and has direct impact on the health of not only of farmers and their families but also the consumers. Effective policies to reduce and eventually eliminate the use of these chemicals need to be formulated. This would not only address the relevant goals of the 2030 Sustainable Development Agenda and Sustainable Development Goals, but also of the purpose of the Stockholm Convention on Persistent Organic Pollutants.
- Regional challenges need to be addressed in a broader context. This can be achieved by addressing the issues in a triangular manner – sustainable farming, ESD and the social use of sustainable lifestyle and livelihood.
- To increase the adaptability of local farmers and the understanding of students to sustainable agriculture, the policy should reflect the need for a multi-stakeholder networking approach that leads to a series of activities through awareness-raising and learning among farmers, curriculum transformation in schools, and implementing the notion of sustainable livelihood.
- For promoting sustainable agriculture practices through organic farming at primary schools, field practices such as vegetable gardening are effective to supplement classroom teaching as life-skill education. Training for primary school teachers are to be promoted.
- To move towards ascertaining the quality of education with increasing teachers' and students' understanding, offering ESD knowledge and practices conjunctively and providing materials and equipment in an organized and coordinated fashion enhances motivation and learning.
- On the local community level, workshops on sustainable agriculture, demonstrating how to make a compost box, the use of compost and pellet compost, liquid bio-fertilizer and liquid bio-pesticide, establishing a model garden, organizing leadership training and study tours will increase the awareness and understanding of sustainable agriculture.

Overall, it is recommended that to aspire for sustainability at the local and regional (subnational) level, national policy must embrace a type of multi-stakeholder approach, and have a strong evidenced-based, science-society-policy interface. Regional Centres of Expertise on ESD, a global network on ESD at the local and regional level, can play an important role by bringing all concerned stakeholders together and join community efforts to make transformative changes.

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