

Plant-based education in Indonesia: Practice, gaps and challenges - Target 14

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1. Introduction

The Global Strategy for Plant Conservation (GSPC), including outcome-oriented global targets for 2010 is approved in Decision VI/9 of the Conference of the Parties to the Convention on Biological Diversity, on 19 April 2002, in The Hague. The strategy and its 16 targets are intended to provide a framework for policy makers and public opinion and catalyse the reforms necessary to achieve plant conservation. The ultimate and long-term objective of the GSPC is to halt the current and continuing loss of plant diversity.

One of the sub-objectives of the Strategy is “promoting education and awareness about plant diversity”. The outcome-oriented for this is Target 14 (T14), “the importance of plant diversity and the need for its conservation incorporated into communication, educational and public-awareness programmes” (Global Strategy for Plant Conservation 2002). This target refers to both formal and informal education at all levels. Key target audience will include not only children and students, but also policy-makers and the public in general.

Indonesia as a developing country and a very rich in plant diversity needs to develop relevant plans, programmes and initiatives, which involves all stakeholders to achieve T14 according to national priorities and capacities. To address this issue, a meeting which involved government officers for education, government officers for environment, university lecturers and students, teachers, NGOs, Botanic Gardens education officers and research staff, protected area officers, education and environment experts has been conducted in Bogor, Indonesia in April 2006. The results of the meeting are explained at this paper.

2. Indonesian plant-based education status and practices

Ministry of National Education of Indonesia has published books for guiding the achievement of the standard of national education (Curriculum-2004 2003). The schools have the authority to develop curriculum based on the standard of the government. Plant-based education at schools is usually included in the subjects of Science, Biology and Environment Education. The material of plant diversity and conservation could also include in relevant subjects such as Social Science, Geography, Arts and Religion. Environmental education could be a part of intra curriculum or extra curriculum at schools and universities.

Environmental education is an effort to change behaviour and attitude of the society that aims at increasing the knowledge, skill and awareness of the environment value and the environment problem issues. Therefore, people become actively involve in the conservation activities for the importance of present and future generations. Many Integrated modules of environmental education are available at the moment. The modules have been prepared by Universities, NGO, National Parks and other Institutions. Moreover, the document regarding the biodiversity strategy

and action plan (IBSAP 2004) and the policy of environmental education in Indonesia is available for the reference.

At University level, especially at the Faculty of Biology and other Faculties with Biology as a base, such as Faculty of Agriculture and Faculty of Forestry, the subjects of intra curriculum with regard to plants diversity and conservation include Taxonomy, Structure and Development of Plants, Nomenclature, Plant Ecology, Ethnobotany, Plant Protection, Germ-plasm Conservation, Vegetation, Conservation Biology and Conservation Management. For extra curriculum, there are many environmental education activities have been done by student clubs such as scientific visits, field work and orientation, research and environmental courses for many government institution staff.

Environmental education is also conducted for non formal education (not a school and a part of government institution) and informal education (not a school and not a government institution). The environmental education programs of the Ministry of Environment (including plant-based education) for non formal and informal sectors are (1) develop the capacity of local government for conducting the environment public administration, (2) use of the capacity of the society efficiently, (3) manage the resource of the institution, (4) manage the resource of non institution, (5) conserve the nature environment, (6) develop the institutions, (7) develop the communication and information system

3. Gaps for implementing T14

Since Indonesian independence in 1945, education has never been the main focus of the country's development agenda. Government budget for education is relatively low and school facilities are even below standards. Beside that, Indonesia needs a network and good collaboration to overcome the lack of coordination, synergic and sporadic in delivering environmental education. The network should compile the information including make a map of the environmental education activities (stakeholders, modules, models), which is very important in developing the curriculum of biodiversity and environment for schools in all Indonesian areas. At formal education, the materials of the school's curriculum are too many and difficult to be done properly by teachers and students, too general, less interesting, less flexible, less examples for local conditions and not yet integrated with the environment aspects.

The awareness of Indonesian people to the environment needs to be increased. These are due to the lack of understanding, capacity, ability, participation and capability of human resource in Indonesia from the science (cognitive), skill (psychomotor) and attitude (affective). The assumption that environmental education is not important, the materials and methods are not applicative, lack of facilities, lack of funding, lack of efficient, effective and beneficial programs are amongst the problems. Beside that, the reason for the lack of people awareness is because the results of the environmental program are not directly related with the economic aspects and could only be seen after quite long time. Moreover, the environmental education activities and programs in Indonesia are usually conducted temporarily and not continuously.

4. Challenges for taking T14 forward

4.1. Formal education

The policy of public education that supports the environment should be urged. Whereas, the government policies that endeavour the sustainable of natural resources should relate with the

school curriculum. The environment and biodiversity problems locally are very important to be included in education materials. The continuity of the curriculum from primary school, junior high school, senior high school and universities is needed. The materials of education should be simple and easy to be done by teachers and students. Therefore, it is very important to urge, motivate and increase the ability and capability of teachers, for example by organise and activate the teacher's forum.

The directions of policy, approach and application are very important in the changes of education process. The learning processes should be open, active, dialogist and applicative at schools. Education is not only inside the class, more practical proportion should be applied, for example the methods at laboratories and fields, project work, social work, industrial visit/practice and many other activities related with the environment. The learning process should be fun for teachers and students. The students are not only know, but they should be deeply understood the environmental education materials. The assessment of the students is not only the cognitive ability but also the psychomotor skill.

The cooperation among local government, teachers (not only biological teachers), parents, universities and botanical gardens is needed. The establishment of school parks by industries, NGO and local government, the establishment new botanical gardens, national parks and city parks as well as the development of school models such as "eco-school", "green school" and "nature school" are very important for the education.

4.2. Informal and formal education

The rise of public awareness on environment could be done by conducting the environment information programs, increasing the appreciation, campaigning, mass media information (printing and electronic) and increasing the feeling of love to the environment. The establishment of the environment reporter forum is a very good idea for increasing the public awareness. Environmental education should be nationalised through the integrated system and good packages. If needed, it could involve celebrities and plants icons.

Establish and strengthen the stakeholders network is also very important to increase the quality of environmental education. The stakeholders like reporters, teachers, artists, nature lover groups, boy scouts, NGOs, Industries, executives, legislatives and educated people are the mediator or agent of changes for this education. The increase of their knowledge and understanding on the environment and biodiversity (for example the interaction of plants and ecosystem that service the ecology) could be done by lectures, workshops and trainings. Actively learning from the resource person (farmers, fishers, animal breeders, environmental education staff, businessman), watching the real activities and doing the field application will help the education process. The use of local and tradition knowledge and wisdom should be applied in environmental education. Cooperation with industry or business sectors will help "the biodiversity marketing" through developing alternative and mass media as well as increasing the business involvement in managing the sustainable of natural resources. Funding from institutions is needed to support the distribution of information, such as BGCI, Private companies and society communities. Self funding activities could be done also with much creativity.

5. Indicators proposed for T14's success and progress

The indicators proposed will include all aspects in education of plant diversity and conservation, which comprise of awareness, attitude, skill, knowledge, participation, independent/self ability.

Quantitative indicator could be determined but not too strict, because Indonesia is a heterogenic and very large country. In general those indicators are:

- The increase of the number of nature lover groups, volunteers, plant tour activities, businessmen and NGOs that aware to the plants, its products and conservation.
- Development the role and individual partisipation as well as tradition people group locally, regionally and nationally in the management, education, wise use and conservation of the biodiversity resources.
- The increase of the awareness, knowledge, attitude, understanding and sensitiveness to the natural resources, roles and its problems as well as capacity of teachers group, reporter, industrial people, parents, NGO and other stakeholders.
- The availability of the models, modules for environment and biodiversity education
- The environment become clean; more plants at the city areas, at the yard and lawn; more food variation and medicines from plants, the people are becoming healthier; more articles and discussion about the environment and biodiversities exposed by press.
- A dynamic equilibrium of the ecosystem is guaranteed (reduce in flooding, drying, and burning/fired).

For formal education, the indicators for T14's success and progress include:

- The ability to understand (verbal information) about plant diversity and conservation
- Intellectual competence in the subject of plant diversity and conservation that comprised of (a) discrimination, (b) concrete concept, (c) defined concept, (d) rule, and (e) higher order rule
- Cognitive strategy in developing and broader the knowledge about plant diversity and conservation
- Having the attitude and the psychomotor skill in developing plant diversity and preventing the loss of plant diversity.
- The school yard becomes green as a representative of love to the plants, the students like to do the outdoor activities, the increase of curiosity and research in plants, love and protect the plant's diversity, use the plants product wisely and sustainable

6. Acknowledgements

The author would like to thank to BGCI and Center for Plant Conservation-Bogor Botanical Garden (CPC-BBG) for the funding support to the meeting, Dr. Irawati (the Director of CPC-BBG), the organiser of the meeting (Dr. Didik Widyatmoko, Ir. Sugiarti, Melani K. Riswati S.Si. and many others) and all participants of the meeting.

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