

Facing climate change with innovative technologies

As the leader of a forefront country addressing challenges of climate change, Prime Minister Sheikh Hasina played a very active role at the COP15 Conference in order to demonstrate the consequences of climate change. This is high time for the scientists to prove their efficiencies to the whole world through implementation of their innovative technologies to face climate change impacts.

PROF. LUTFOR RAHMAN

An exciting and challenging message published in an English daily must have drawn attention of the conscious newspaper readers. Prime Minister Sheikh Hasina on 7th December 2009 urged the country's scientists and technology experts to come up with new technological invention and environment-friendly use of technologies to protect the people from the wrath of global climate change. It is hoped the scientists will surely prove their efficiencies through implementing innovative technology to face climate change.

"Climate change has become the biggest threat for the world civilization. Bangladesh and its hardworking people have been the worst sufferers of the climate change with no fault of their own. Now we want to increase our capacity to face the challenges of the global warming. Come up with environment-friendly technologies and ensure innovative implementation of

technologies. The mass people on whom our country depends are the biggest victim of climate change. I urge the scientists and technology experts to come forward to increase capacity of the people to face the climate threats", Sheikh Hasina said in an event held in Dhaka on 7th December 2009.

The PM has very clearly noted that many Bangladeshi scientists are working with reputation in various internationally renowned institutions abroad and they can play tremendous role for the advancement of science and technology of the country. It is also worth mentioning that many scientists and technology experts trained and experienced abroad are now in Bangladesh to help develop a digital Bangladesh.

Addressing them, Sheikh Hasina said, "I urge those scientists and technology experts who are now staying in the country to work hand to hand with those now working in foreign countries. Science and technology will be the main medium in our efforts for a changed day". She wants to give importance to invent-

ing Bangladesh's own technology instead of looking for technologies from overseas.

At the same time, "we can use other countries' technologies in our own style," she said, adding that in this regard, country's scientists and technological experts and researchers will have to play the leading role. Sheikh Hasina assured that the present democratic government would extend all types of cooperation including financial assistance to the scientists and technological experts for the advancement of science and technology of the country. She said there is a notion that people can go to the government for their various necessary services and the government will give them the services. "Such notions and practices need to be changed. We want to take the government to the doorsteps of the mass people. And for this, we need new and cost-effective implementation of modern technologies."

Prime minister also asked the persons concerned to be attentive in inventing modern effective and relevant technologies using whatever



Bangladesh has in its hand. She raised importance of mobile phone technologies, solar energy in agriculture and generation of electricity through peaceful use of the atomic energy.

The respected Prime Minister has covered almost all areas for the scientific development of the country. The secrets of success of our neighbouring countries are similar that our Prime Minister is going to adopt. The respective governments of different countries gave importance to scientific activities and due respect to the scientists working at home or abroad. In many events, the Indian scientists disclosed their secrets of rapid development in technology on request of the participants from different countries.

As the leader of a forefront country addressing challenges of climate change, Prime Minister Sheikh Hasina played a very active role at the COP15 Conference in order to demonstrate the consequences of climate change to the world and as a voice representing the developing countries. Sheikh Hasina has opened the window of opportunity to act on climate change that is one of the greatest challenges facing the world today. This is high time for the scientists to prove their efficiencies to the whole world through implementation of their innovative technologies to face climate change impacts.

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Going green with ICT

The concept of going green is virtually difficult to implement in full especially for developing countries like Bangladesh. But there is no doubt that our country is also moving forward with the development of information technology.

SALAHUDDIN AHMED

COUNTRIES around the globe try to promote various activities in mitigating the environmental degradation. One of the vital steps developing countries have undertaken is the 'Go Green' concept through which, believably, we can save resources of our planet to let our future generations survive. This environmental issue is more than important for the existence of our country.

This is understandable that countries try to implement this massive 'Go Green' initiative through some certain steps. "Going Green" is a phrase referred to the pursuit of knowledge and practices that lead to more environmentally friendly and ecologically responsible decisions and lifestyles, thus helping protect the environment and sustaining its natural resources. If we look around the globe, we can see many companies and enterprises have already had adopted the slogan 'Go Green'.

It is conceivable that latest development of information technology can make this concept more appealing. Question is, how information technology can contribute in making this concept a success? It is obvious that online transaction is a great way in saving the planet's certain resource. If we consider vari-

ous offices and business centers, we can realize how much papers and paper utilities we use that we can do without switching to online and save huge chunk of money and resources, which will ultimately help our environment to go green. Now 'Digital Bangladesh' is a concept through which we can disseminate information and knowledge. We can integrate the two concepts -- 'Go Green' and 'Digital Bangladesh' -- and can make them go together, that can make the dream of green Bangladesh a reality.

The government is trying its best to spread the ICT knowledge in various sectors of the country. The number of internet users is getting higher day by day and many offices and industries are trying to go online and promoting communication through e-mail, audio-video conferencing etc. Research shows that even we can save a huge bulk of money only if we can reduce using papers and paper utilities. This is why many developed countries try to do everything online that also ultimately save natural resources. The volume of paper used for statements and envelopes is considerable. There are also the energy costs of running the printing machines, and the costs of delivery.

In our country it is still not possible to deliver the electric, gas bill online or to do online

banking for all banks. But this is the real time we can promote a thorough online activities. With the initiative on digital Bangladesh, it is obvious that it can make the concept 'Go Green' workable in our country.

It is apparent that we talk about many things regarding environmental protection, but time has come when we do need to think something practical that can make something different. Through digital Bangladesh effort, our government can also come up with various websites on environmental issues to inform and enlighten people.

The concept of going green is virtually difficult to implement in full especially for developing countries like Bangladesh, where there is very high density of population and great extent of poverty. But there is no doubt that our country is also moving forward with the development of information technology. We need to make sure utilizing this technology to keep our development process alive. Digital Bangladesh will definitely be consequential also for enhancing environmental awareness if we can truly proliferate the ICT application in our country.

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HUMAN IMPACTS ON NATURE

European hemeroby approach for appropriate measuring

DR. MD. MIZANUR RAHMAN

NATURE conservation anchors a discourse that articulates a nexus of nature-culture-artificiality-stability-biodiversity. The concepts of human disturbances have been enjoying increasing popularity in the discussion of biodiversity conservation. Anthropogenic behaviour that harms nature or "human activities contrary to nature" leads to unnatural conditions. The notions of pure naturalness are the products of a plethora of human disturbances. Human activities are the result of evolution of the other life forms in the biosphere. The Homo faber ("man the maker") plays the most significant role on the highly complex manipulations of the nature.

Hemeroby approach

The term hemeroby derives from the Greek hemeros (cultivated, modified and disturbed) and this work is not found in English dictionary. At first a Finnish botanist Jaakko Jalas introduced this term in ecology to classify the plant species based on the share in neophytic species.

German ecologist Hubert Sukopp (1966) expanded this term to measure the degree of naturalness and human impact on the environment. Another German ecologist Ingo Kowarik (1990) defines hemeroby as "the sum of the effects of past and present human activities on the current site conditions or vegetation, which prevent the development to a final stage".

Europe has developed two main concepts for assessing the human impacts on habitats and vegetation: 1) historical concept (comparison of vegetation and habitat with pristine nature/untouched nature) and 2) status-quo oriented concept (This is the hemeroby concept, which assesses the human impacts and naturalness of a site without reference to former conditions). It is obvious to have knowledge on the improvable "primal condition" of the nature to define "naturalness", "close to nature", "unnaturalness" and "human impacts" in accordance with historical concept. In this concept, "back to nature" means no more return than the pre-human (unknown) condition of the nature; The hemeroby concept has the advantage of excluding the dogma of pure natural (pre-human and

unknown) conditions. The hemeroby approach is an essential tool for the ecological analysis.

The levels of hemeroby are measured on the basis of the proportion of neophytic and therophytic species, soil characteristics and land use patterns. There are seven levels of hemeroby which determine the degree of human impacts on a specific landscape.

Actually the hemeroby scale depends on the vegetation coverage and the properties of habitats. Natural plant communities are sensitive to changes in the hemeroby scale (intensity of anthropopression).

How to use in Bangladesh

Most of the European countries use the hemeroby to study the dynamics of plant communities in urban areas and to assess the human disturbances on different habitats. It describes the spectrum of severity of human impact for any particular plant community. The writer assessed the dynamics of Oak dominated natural forest reserves of Central Europe. He found 12.8% increased stand volume and 8.6% deadwood (indicator of naturalness)

The levels of human impacts have never been determined in our country. The writer measured the human impacts on the biodiversity of Dipterocarpus forests of Bangladesh during his PhD programme (Rahman et al. 2007, Rahman et al. 2009, Rahman and Vacik 2009) giving attention on the floristic composition and species richness, and ignoring the habitat and landscape conditions. He developed a very new and self-explanatory disturbance index based on the diversified disturbance gradients. These works can be the baseline of hemeroby assessment in Bangladesh.

To measure the scale of hemeroby it takes qualitative and quantitative assessments of human impacts on the flora and habitats. It has been argued that quantitative assessment is highly complex and costly. The emphasis on qualitative assessment is understandable and cost effective as hemeroby is a new concept that should first create support among crucial stakeholders, generate knowledge in order to be able to set priorities, and disseminate information to the general public to increase awareness.

The parameters differ from landscape to landscape, ecosystem to ecosystem and country to country based on human impact and habitat conditions. The writer focuses a set of parameters from the viewpoint of our perspectives (Figure 1).

The qualitative value of each parameter can be com-

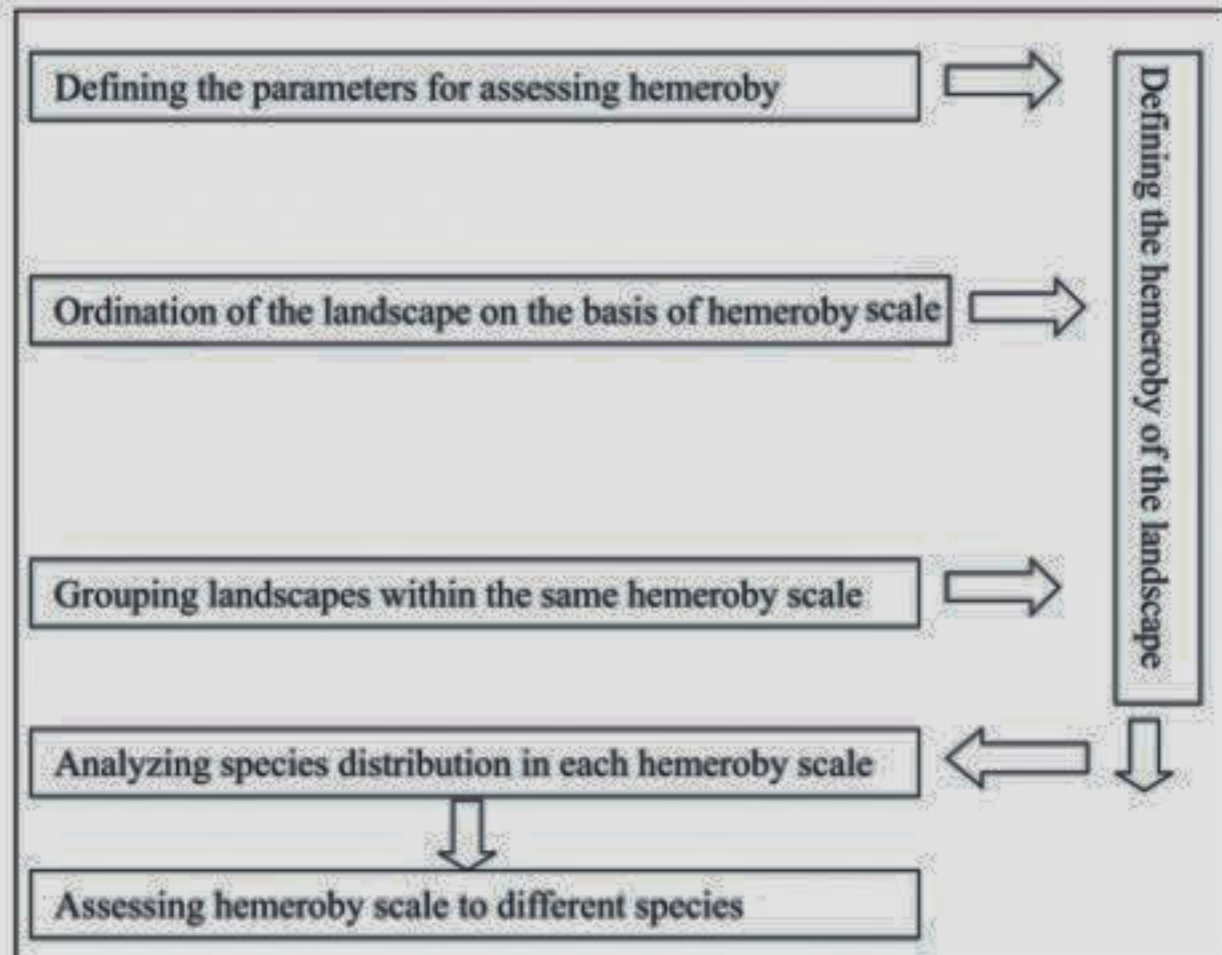


Figure 2: Assessment of the hemeroby level for habitats and plant species

volume in 10-year pure natural conditions (Botanica Helvetica, 119:2329). Those natural reserves are ahemorobic (disturbance free) habitats, which is an illusion in our country.

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The qualitative value of each parameter can be com-

pared in a matrix and thereby the different levels of hemeroby can be assessed (Figure 2).

How to decrease severity of human disturbances

On the basis of hemeroby assessments the following conservation strategies can be adopted: a) establishing at least 01 hectare pure natural habitat within each protected forest to promote ahemorobic condition, which will serve the reference value of naturalness; b) building bridge between human and nature by removing the ideology from and the demystification of the phenomena of nature and human; c) pragmatic-sustainable development; d) maintaining equilibrium between the stability and sustainable productivity of the environment; e) adopting scientifically and economically congenial strategies for biodiversity conservation; f) protecting habitat, landscape, biodiversity to attain the goals that were outlined in the "Convention on Biodiversity"; g) ecosystem management through participation of all stakeholders; h) creating public relations for nature conservation; i) minimizing the use of chemical fertilizers; j) prohibiting the application of long residual and acute toxic pesticides; k) protecting habitat fragmentation; l) increasing urban vegetation; m) establishing more botanical park in each city and town; n) minimizing soil pollution; o) afforestation, reforestation and vegetation in the denuded area; p) stopping clear felling; and q) eco-friendly garbage management.

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An abode of wildernesses in urbanity

MAHFUJUR RAHMAN

KEEPING animals in zoo for public recreation is an old concept. In a few past centuries many zoos have been established around the world as refuge for the captured wild animals mainly for giving people pleasure. Even today the zoos are not discarded in the face of movements by animal rights groups. Rather, some new zoos are being set up with a view to promoting care of people for the wild animals, reproduction of endangered species and scope of research on wild animals.

'Arannalaya' abode of wilderness set up in 1999 is such an initiative of Savar Cantonment. On 27th February in 1999 the mini-zoo was inaugurated by the then Chief of Staff, Bangladesh Army, Lieutenant General Muhammad Mostafizur Rahman.

Naming of the zoological park

Naming of the park seems worthy enough with both its centre and outskirts being green and pristine with undisturbed vegetation comprising Sal trees as dominant species. While visiting the site you may misperceive these trees as natural growth. On one side you find a very large patch littered with fallen leaves but none allowed to collect them. Such a park can naturally be termed as 'Abode of wildernesses'.

Physiographic characteristics

The mini zoo is situated in the heart of military farm of Cantonment about 35 kilometers north-west of Dhaka. If you travel from Dhaka to Savar the mini zoo will come on your right after you have passed CRP, a dedicated organization for rehabilitation of paralyzed people.

The patch of land on which the zoo stands is under the Madhupur Tract, a distinct physiographic unit of Bangladesh that is originally a table-land surrounded by the old gangetic flood plain. The soil is reddish because it contains oxidized iron mottles formed with Madhupur clay. Some hillocks are also found throughout Ashulia union, which is an administrative unit of Savar Thana. The landscape has some highlands with gentle slope.



Aerial view of 'Arannalaya.'

Representation of the erstwhile canopy

These green covers contain the remnant biotic diversity of this part of erstwhile green and vast landscape of Madhupur tract. There are several patches of Sal plantation in Arannalaya.

Animals

There are many types of birds and animals in the Arannalaya mini-zoo. Among the mammals three species of deer, rhesus monkey, common langur and a pair of bears are notable. Pigeon, peacock, Tark, dove, titer and bajirigar are among the birds of Arannalaya. A male python of 7-10 years age is the only snake in the zoo.

Status of wildlife

Veterinary specialists of military farm supervise the health and nutrition of the animals. Breeding is only possible for the monkeys and deer in Arannalaya. Treatment facility for the inhabitants is yet to be adequate. Spaces are still not sufficient for healthy living of the animals.

Things are, of course, expected to improve.

Ecosystem analysis

Arannalaya is situated in plantation of high yielding varieties of grass used as fodder in the military farm. The leaves and dead branches of the sal trees are not harvested or removed from there. Even the litter that fall and accumulate on the horizontal bottom of the trees are kept in place. In the rainy season the area encounters huge amount of downpour. The wet, humid

and hot weather prevailing in July-August favours the decomposition of litters that definitely improve the soil fertility under the canopy.

But what occurs to many forests is people from enter the forest and collect different types of biomass (branches and leaves) for utilizing in hearth. Many studies showed that the poor people near forest and rangeland collect fuelwood and other solid fuel in a huge quantity from the natural ecosystems. The soil does not get back the nutrients especially the nutrients that are got from minerals. As a result the soil of the ecosystem gets nutrient poor with time and becomes unable to support healthy tree populations.

'Arannalaya' appears exceptional to me for a couple of reasons. Firstly, it is my everyday neighbour. To others also because of it being just within the city. Everyday, I used to take its glimpse twice -- once, when I went to my university (Jahangirnagar) and again when I returned home (old Dhaka) from there. Secondly, the presence of pristine Sal vegetation. Healthy condition of those trees is even rare at Sal forest of Modhupur tract due to human encroachment and other disturbances. 'Arannalaya' may be replicated in possible other parts of Dhaka and in other cities as well for enhancing environment and conserving biodiversity.

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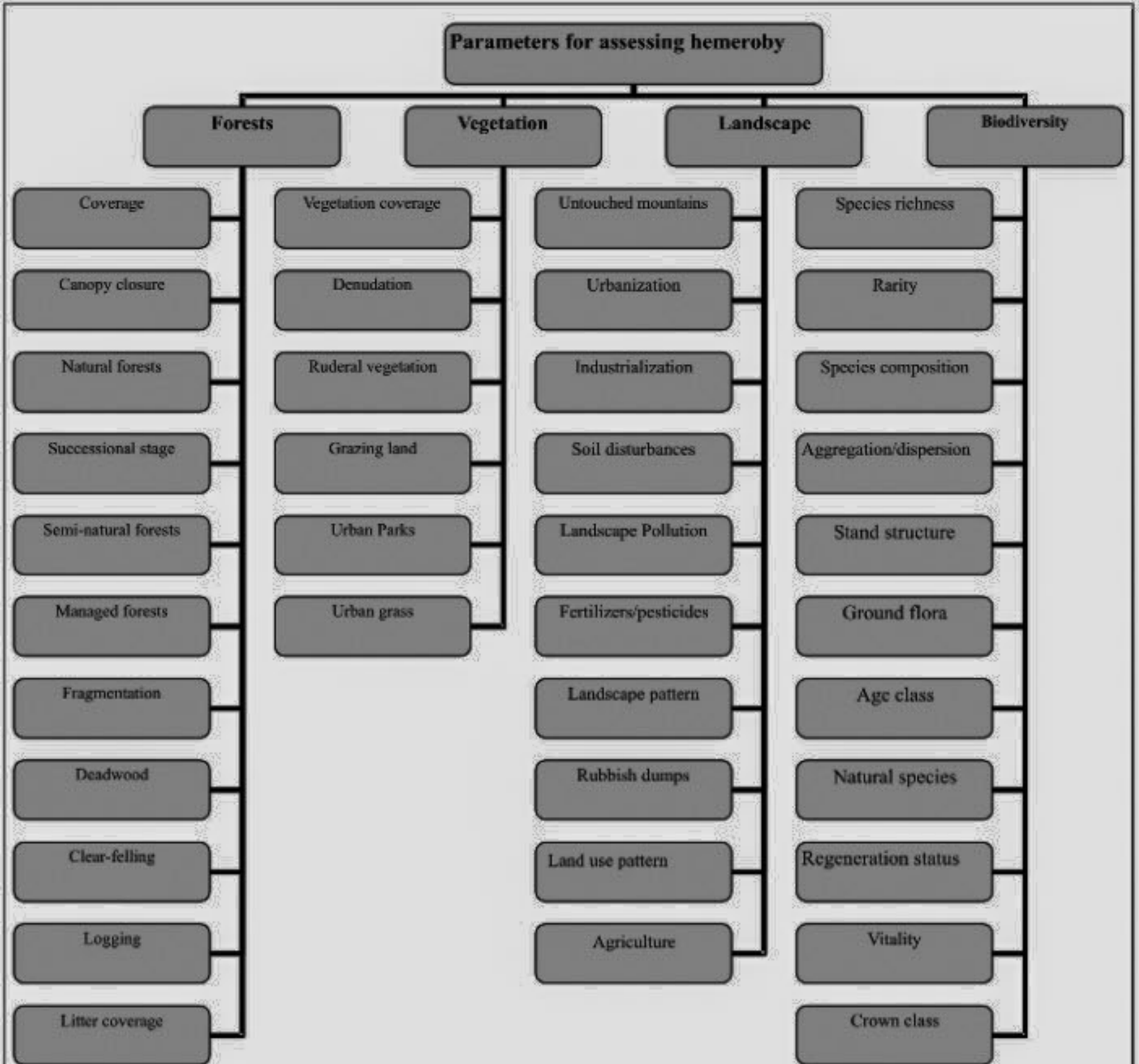


Figure1: Parameters for assessing the hemeroby level in the context of Bangladesh