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Food Plants of British Columbia Indians, Part 1 and Part 2: Interior Peoples. British Columbia Provincial Museum Handbook, No. 36. Victoria: British Columbia Provincial Museum.

Human Activity Versus Sustainable Environment

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What is a sustainable environment?

The definition of sustainability varies depending on the purposes of those who

use it. The economists'

definition would be based on

benefits, sociologists' on the

well-being of people (Simonovic

et al., 1997), ecologists' on

ecosystem resistance or

resilience (Vilchek, 1998). In

attempts to make the definition

of sustainable environment

understandable and acceptable

on a more common level and

especially for a women's audience, where women of many backgrounds come

to communicate their common threads, I have come to the following wording:

Sustainable environment is the environment that fulfils our present needs without

compromising the needs of future generations.

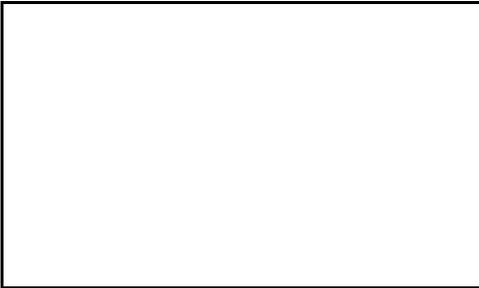
As soon as the “future generation” is mentioned, it becomes personal, waking up our maternal feelings. In the context of studies on nature, human beings are often forgotten or considered outsiders who cause

mainly negative impacts. However, since nature combines biotic communities and abiotic environments that interact with each other, human communities should also be taken as a part of nature. Therefore, human activity influences not only nature, but also human actors themselves. Some of these activities cause minor damages, some lead to environmental degradation and disastrous health and social problems. To treat nature in a way that it can sustain these damages, we have to be aware of tight interactions between all the elements of nature. We must be able to see consequences of our activities for nature and, within it, for today’s and future generations of human beings.

What position do human actors play in their natural environments?

The simple model presented in Fig. 1 illustrates the position of human actors and their activities within the natural environment. I placed the HUMAN BEING box inside the big nature box to emphasise that we are part of it. The reason we USE nature is that we have NEEDS, such as for food, building material,

metal, wood, etc. Besides, we WISH to spend some days skiing, snow-boarding, hiking, picking berries, etc. The USE box shows a human activity that, in one way or another, causes DISTURBANCES for the environment: destroying landscape by digging quarries, exposing soils to wind and water erosion by cutting trees, emitting pollutants by processing ore, smashing grass by walking on it, etc. Even minor disturbances may develop to a severe environmental



DEGRADATION when not taken care of in time. While some ecosystems can, to some extent, RECOVER naturally, due to their higher resistance or resilience, or just due to softer impacts (Figs. 2a and 2b), others can be

heavily damaged, requiring resource-consuming RESTORATION work. Restoration means return to pre-disturbed stage, which, in most cases, is impossible, especially when the disturbing activity continues for a long time (Fig. 2c). Restoration is another human activity that, when started early enough, can have positive impacts on nature.

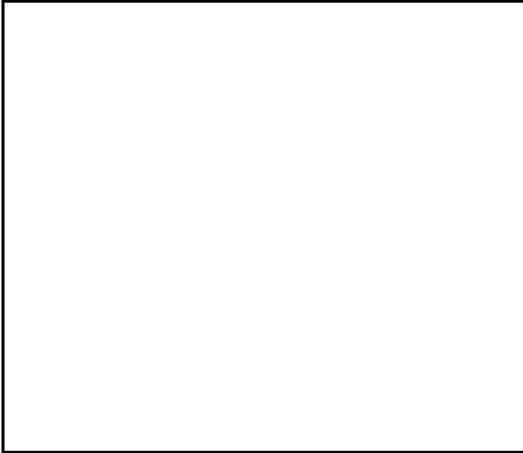
Examples of Human Activity

One example of destructive human impacts is nickel industry on the Kola Peninsula (Fig. 3), which produces sulphur dioxide and heavy metal emissions that besides vegetation, soil and water also affect human health. According to the Arctic Monitoring and Assessment Programme, yearly emissions of sulphur dioxide from Severonickel, near Monchegorsk, is about 300,000 tons. The dead forest around this industry in 1995 was as large as 400 km² (AMAP Report, 1997). It is obvious that natural recovery of the coniferous and birch forest, which existed in this area before the industrial invasion, is impossible unless there is some improvement in the industrial processes and significant reductions in polluting emissions. But who can do it? Human actors, both those who make decisions in industry (owner/steering group) and those who fulfil these decisions (workers). To achieve any improvement at such industry or in some other human activity, the human actors ought to see the necessity of changes (Ruth & Ruth, 1999). They have to understand that it can not go on as it is now. The equation

$$B_{te} * A = E,$$

which is broadly used in studies on change processes, illustrates that to achieve an effect (E) of a change, one should take into account not only technical and economic benefits (B_{te}) of new process, but also “Is this change going to be accepted (A)?” Low acceptance among key actors will result in resistance to change.

In the 1970s in Sudbury, Ontario, Canada, with a similar nickel industry, public pressure convinced decision-makers to change their nickel ore processing methods, thereby decreasing polluting emissions. Besides, major reclamation work has been done with support of local residents. This case demonstrates that, if they want to, people can, indeed, minimise their negative impacts on nature and even correct them.



Another example is clear-cutting, which often causes serious long-term disturbances in ecosystem function and increases greenhouse gas emissions. If clear-cutting occurs on dry, sandy soils, it may even cause desertification. This happened in south Kola

Peninsula near the village of Kuzomen', where there used to be a pine forest. Desertification resulted from many decades of wood cutting by local people for building and heating houses. Before being cut, the pine trees held sandy soil with their deep roots and prevented it from being eroded by the wind. Now, more than 20 km² of the area is covered by continuously growing sand desert. Under pressure from local residents in early 1980s, the regional authorities and Kola Science Centre initiated restoration work in the area. Since then researchers have been trying to bind the sand and reestablish vegetation cover there. Even though the progress in revegetation is rather slow, such activity can bring a positive result after all.

Conclusion

The examples presented here, and there are many more, demonstrate that the awareness of human actors, their will to minimise their negative impacts on nature are among the most important factors for achieving sustainable environments.

A Norwegian-Russian survey in the Kola Peninsula and northern Norway

(Norwegian-Russian Health Survey, 1994-1995) showed that women's concern about the industrial pollution is 6 to 9 percent higher than men's. Does it have social or biological background is a question. Man probably would answer "social" and woman "biological." Ms. Shirley Adamson, one of the panel speakers at the Circumpolar Women's Conference, said that "we [women] are the first environment a human being lives in." That might be an answer. So probably, we should use our natural ability to care about future, and should try to help society become more concerned about environmental health. We all can find appropriate ways to do it. Those of us who work in a school system can implement ecological education at schools. We can discuss these matters at our work-places with our colleagues. Those who hold political positions can influence their governments to give priority to environmental measures. We can be an example of being careful with nature for our children and explain to them the values of nature. There are no unimportant matters when it comes to use of nature. Even such a thing as collecting garbage in separate containers—however simple it sounds—is a significant step toward sustainable environments.

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