# THE ENVIRONMENTAL IMPERATIVE IN DECISION-MAKING

**Albert ten Houten**
Member of the Dutch National Advisory Council
for Environmental Research (RMNO)
Netherlands

The buzzword of the late eighties and early nineties is sustainable development. We all somehow feel good about it. But what is it? Many realize that the environmental implications of our traditional economies are jeopardizing our joint future. One way or another we must find adjustments in production and consumption, in order to reduce them to a level in accordance with the environmental carrying capacity. We must find ways to halt or drastically reduce resource depletion, environmental pollution, and degradation of natural systems. These are the three general parameters for decision-making when we seriously take future generations into account as shareholders in the sustainable development process.

Technological development is viewed by some as the cause of all environmental disorders and instabilities. On the other hand, others look at technological development as the only viable way to forestall the course of environmental destruction.

Sustainable development is not technology-oriented, but society-oriented. It has to do with our practical application of technology, satisfying the needs of present and future generations. One may wonder if the answer is a drastic reduction of resources depletion, pollution and natural degradation in order to reach a support level in accordance with the carrying capacity. Yet, reduction should take place to what levels? An answer is, to safe limits, but then what limits should be considered as safe? This is an area of rave uncertainty.

In the Netherlands, we are trying to identify realistic limits for these criteria. Recently the following general indicators for sustainable development have been proposed:

- Resource depletion should never reach absolute depletion; this means for non-renewable resources an availability level of 50 years approximately or more. For renewable resources this means that the proportion of human usage remain small as compared to the normal natural production rate. This is particularly important for fossil fuels and metals.
- Pollution should not result in an accumulation of pollutants or continuing impacts on future generations. This is important for global emissions, greenhouse gases, acid deposition on continents and emissions of heavy metals to surface waters on a local scale.
- Degradation of natural systems should not result in losses of an area larger than the natural or artificial supplementation or restoration of the same. This criterion is of particular importance for soils where desertification and erosion are threatening.

Technologically, these criteria mean a drastic change in the direction of recycling base materials instead of massive diffusion, a reduction of emissions of pollutants close to zero, no leakage production, which means preventing rather than remedying. Final emissions must remain below the carrying capacity levels of the global, regional, and local ecosystems.

Breaking trends in production and consumption patterns will be required, curbing the recognized detrimental environmental degradation. But innovation of technologies cannot be forced, neither can the change in public perception. In order to reach sustainable development, the Netherlands have embraced the following concepts:

- the principle of integral material cycling management; creating a closed circuit from raw materials to waste substances;
- energy diversification; reducing the use of fossil fuels through energy conservation and usage of renewable energy sources such as solar, aeolic, and hydropower; and
- quality promotion; improving the quality of raw materials and products; increasing product lifecycles and environmental quality.

**Expected Developments**

The future remains unpredictable, but some developments can be identified within the boundaries, such as the prediction that the world population will grow to between 9 and 12 billion people before stabilizing. The problem is identified once the staggering numbers are multiplied with the desirable level of economic development and welfare for all in combination with the very limited carrying capacity of the global environment. Each unit of wealth is linked with a certain quantity of environmental carrying capacity. The sum-total of environmental

pressure, in general, equates as EP = p*w*m (formulated by Opschoor) in which:

- EP = Environmental Pressure,
- p = population,
- w = average wealth per capita, and
- m = the metabolism or occupation of environmental carrying capacity per unit of wealth.

It is not difficult to see that we are on a collision course if we do not immediately control and change several of these variables: w is directly linked to the perceived material needs of humans, so we must produce more cleanly if we want to improve the wealth of many people; m can be influenced by some stretching of the limited carrying capacity or also by a better satisfaction for human needs. Our basic patterns of thinking will have to adjust from product-management towards the aforementioned integrated material cycling management. In the latter case, we link raw material extraction with material production, with product-manufacturing, product-consumption, and with waste-removal. We try, conceptually, to close the cycle as well as possible, limiting environmental damage to the possible minimum.

Our networks of combined interests are changing fundamentally if we apply these principles. Cleaner raw materials are made to input more environmentally sound production schemes and with more environmentally conscious product designs. Finally we arrive at better reparability, recyclability, longer life, and less harmful waste materials.

These drastic changes are virtually impossible to manage and difficult to control. The environmental imperative, however, is to change the focus. The real problem is the uncontrollable greed of humans, in combination with the unconditional short-term, goal-orientation of politicians and most managers making the decisions in our societies. Technological development can only marginally help to improve this situation.

---

**Albert Th. Ten Houten**, an M.Sc. graduate in Chemical Engineering, is the owner and general manager of ATHMO, a Dutch firm specialising in the management of environmental projects, impact assessments and decision-making processes. Since 1993, he has been Chairman of the Board of de Straat Environmental Consultancy, and Vice Chairman of the Verifying Committee, Dutch Environmental Education. He has also been a partner of CEC-International, Environmental Consultants, Edinburgh, Scotland since 1992. Other activities have included involvement with the PRISMA project in Holland, working for the Indian Ministry of the Environment (GEOPLAN-team) in India, and assistance with information for industrial start-ups in Berenschot, White Plains, New York. His publications include co-authorship of the book What is Environment and he is editor-in-chief of the handbook Recycling of Industrial Wastes (1991).