

GUIDING PRINCIPLES: THE ROLE OF SCIENCE IN THE ETHICS OF SUSTAINABLE DEVELOPMENT

Liene AMANTOVA-SALMANE

Mg.soc.sc., lecturer, Rezekne Academy of Technologies, Rezekne, Latvia,
e-mail: liene.amantova-salmane@rta.lv, phone: + 371 29429895

Abstract. *Science is essential to meet objectives and tasks for ethical sustainable development, as it lays the basics of new methods and technologies to identify global challenges for the future. Science can also significantly contribute to the ethics of sustainable development. It requires a wide-ranging understanding of science as such. Scientific cooperation should be encouraged in order to provide the ethics of sustainability. The aim of research is to give guiding principles of science for the ethics of sustainable development. The tasks of the research are to describe the ethical context of sustainability and to mark the role of science in the ethics of sustainable development. The methods of research are monographic, quantitative, deductive and inductive. The key result is: the drowned up science role for sustainable ethical development. Science is a crucial tool for the ethics of sustainable development, it is even more reasonable to allocate the mission of science education and provide people with tools which allow them to maintain a critical spirit related to scientific advances.*

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Introduction

In line with humanity's present stage of development, the main contests of science in the 21st century relate to population growth and urbanization; global and regional environmental changes; the preservation of ecosystems and biodiversity; social disparities and living conditions of population. These statements are closely connected with sustainable development. Addressing all these challenges to the background of sustainable development requires breaking away from disciplinary limitations and establishing science-and-technology policies which stimulate global partnership and endorse the defragmentation and sharing of knowledge.

The ethical aspects of sustainability often remain implicit as most analyses focus on the economic, social, environmental and technical issues. Ethical context in the term of sustainability is considered as taking into account not only effectiveness, but also moral values and goals. Sustainability cannot be achieved without paying attention to its ethical dimensions. The aim of research is to give guiding principles of science for the ethics of sustainable development. The tasks of the research are to describe the ethical context of sustainability and to mark the role of science in the ethics of sustainable development. The methods of research are monographic,

quantitative, deductive and inductive. The key result is: the drowned up science role for sustainable ethical development.

Firstly, this paper clarifies the ethical context of sustainability. Secondly, it outlines the role of science in the ethics of sustainable development. These discussions clarify the questions of great significance for specialists and scientists, as well as politicians, non-governmental organizations and other citizens who search for a more sustainable society.

Sustainability is always an integrated process with multiple synergies and loops. Just as the social, environmental and economic dimensions of sustainability can reinforce each other, so do sustainable practices at work. That nevertheless proposes a set of principles to be used as a decision-making guide. These choices frequently are about technology and the approach allowing technologies to leave the laboratory without adequate debate and scrutiny, which results in complex dilemmas for the global community. The ethics of sustainability will help to change the decision-making process and ensure that the benefits of this kind of thinking will far outweigh any negative consequences for all generations.

The ethics of sustainable development

Sustainability is an important idea being generally referred to and widely supported. It is usually considered as the stable pursuit of several things: ecological sustainability, social equity, health and economic welfare. It is grounded on the ethical commitment to not only the contemporary populations' well-being, but also the comfort and enhanced opportunities for future generations.

It is normal to set a question: why should we apply the basis of sustainability? To answer this question, there should be used such terms as interdependence rights and obligations. Every person in the world has a right to have their needs for food, housing and clothing met. The present population have a duty for the future generation to leave them a complete and functioning planet in at least as good state as they got it. The request of the sustainability framework therefore requires a better understanding of the ethical concepts.

The Whistler 2020 (Canada) sustainable community movement describes sustainability as "... a minimum condition for a flourishing planet in the long-term" (Kilbert et al. It becomes harder to define the term of "sustainability"., 2010). The word "sustainability" is used more and more frequently from a wide variety of perspectives and with a number of different purposes in mind. As a result, it becomes harder to define the term of "sustainability". Probably the best known basic definition of sustainability is stated in *Our Common Future*, also known as the *Brundtland Report*, from the

United Nations World Commission on Environment and Development (WCED) published in 1987: “..meeting the needs of the present without compromising the ability of future generations to meet their needs” (Kilbert et al., 2010). Many work has occurred since the *Brundtland Report* to explain the worldwide consensus about the goals of sustainability, development of subsequent and previous global efforts (such as *Agenda 21*, *The Earth Charter*, *The Rio Declaration*) on the aims, standards and models of sustainability.

Do ethical issues matter in sustainability? The most essential aspect is the planned responsibility of contemporary society for the quality of life of today’s population plus the preservation of resources, the environment and other ingredients needed for future population to also experience a good quality of life. It is a quite huge and daunting mission and requires enormous changes in the way of thinking, policy, and basic economic assumptions for its full implementation. At present, it could mean that wealthier, more technologically urban societies could have to contribute materially through a wide range of assistance programmes to increase the wealth of poorer nations. They have to aid them by rising the ability to provide the basic needs of their population. Accordingly, for the future generation it means guaranteeing the availability of a wide range of resources, for example, natural, cultural, educational and etc., providing a good quality of life.

At the end of the 19th century and the beginning of the 20th century, rationality became more and more important in economic studies. But at the end of the past century this perspective has changed and more attention was paid to the ethical aspect of the economy. Considering it, the analysis of core economic problems of the countries could get better.

One example of this new point of view is the work of Nobel Prize winner Amartya Sen (1999) *On Ethics and Economics*: it is the analysis of the economic impoverishment due to excluding ethical components of its analysis. The author also states that there are relevant advantages and improvements in the analysis when economics introduces ethical characteristics in its studies (Rogers, 2008).

Another contemporary author Elizabeth Anderson (2004) investigates the social relations of creditors and debtors what she calls the ethics of debt and the ethical assumptions of the economic theory. She describes the history of the ethical and moral dimension of debt from the Biblical time to the latest schools of economic thought.

However, when the economic analysis introduced such a concept as efficiency, the main objectives were the maximization of profits and efficiency in the allocation of resources. This new concept implied that the ethical base of the economy lost its importance. More relevance was given to the practical aspect of the economy. This point of view was changed just at

the end of the twentieth century and the interest in ethical issues of the economy was converted.

Professionals can reinforce the values of sustainability by multiple faces, first educating themselves about the choices that will make a difference and then seek changes – personal and structural – allowing these choices to take root. We cannot change our society if we ignore sustainability in one aspect of our lives. Instead, we must see and seek out contacts among diverse activities at home, at work, and in the society. Through a better understanding of the ethics of sustainability it becomes clear why the sustainability framework is not only an approach to answering many difficult problems we face, but why it is, in fact, the right approach, the right thing to do.

The issue of how to frame the ethical problems in constructive and fruitful ways is vital but underappreciated, as is especially applicable for problems that concern sustainability when popular discourse often defines problems as stark choices between economic or environmental goods. One of the most important tasks of the ethics in such situations is to ask questions that could help lead to good solutions. Philosopher Anthony Weston (1971) notes that “if we are to find the best solutions to our ethical problems, we first need to find the best problems” (Kilbert et al., 2010).

Ethical societies provide tools for thinking of problematic issues in a complicated world. Therefore it is a vital component of a successful and effective decision-making process. It is especially important for sustainability, which seeks to integrate diverse and sometimes conflicting ethical and practical goals.

The goal of the ethics of sustainability is to guide people in their efforts to address real global problems and build more socially, environmentally and economically sustainable institutions, practices and societies. The ethics of sustainability cannot succeed only in the realm of theory, because, as Kant famously declared, ought to imply can (Kilbert et al., 2010). Sustainability without ethics is an empty shell, e.g., sustainability lacks a generative purpose and ends serving as a guide for reflection if we do not reflect the culture, values, and methods to realize durability.

Sustainability is about ethics because it requests the existing people not only to consider the condition of the current impoverished population, but also the possible condition of future inhabitants. Obviously we are approaching the consequences of climate changes and resource depletion. Therefore, the question of our responsibility for the future is ethical responsibility to be addressed and better understood. Sustainability forces us to pay attention to the consequences of our behaviour in a way which is different from any other concept and as a result, developing ethical underpinnings of sustainability. That accordingly is essential to apply as a

solution for the number of problems being met or shall be faced by current and future individuals.

Science in the ethics of sustainable development

Sustainability suggests that in the decision-making process societies, while having a good quality of life, have an obligation to ensure that both future societies and contemporary, less well-off societies are also able to achieve a standard of living in which their basic needs are met.

Science is universal and scientific knowledge is pure, so it is considered as a global public good. Science itself is a way of crossing national, cultural and mental borders (Stiglitz, 1999). It is more than a tool for the achievement of the ethics of sustainable development.

Science is a crucial tool for sustainable development, it is even more reasonable to allocate the science education mission for the ethics of sustainable development and to provide people with tools, which allow them to maintain a critical spirit related to scientific advances.

The creation of knowledge is as important as its spread through both formal education and the popularization of science. The more widespread knowledge is, the better possibility of its use and more chance that sustainability interest is actually being included in scientific plans.

The scientific community's responsibility is quite clear. It is not only responsible for development and gathering knowledge, but also for transmitting to decision makers and translating, so that public ethical aspects of sustainable development are achieved.

Scientific development and technological progress made it possible to use natural resources, taking into account environmental values of sustainability. However, the sustainable exploitation of natural resources is still a significant objective to be followed by the international scientific community. Science should contribute to reducing environmental vulnerabilities by recognising and using local capabilities to deal with the adverse effects of climate change. Science has to unconditionally presume the employment of ethics in the research of sustainability and preserve the principle of sharing and collectively exploiting information for all groups of the society.

Science is fundamental to promotion of the ethics of sustainable development, whether to provide tools for adaptation of current development plans or to endorse greater knowledge of the problems that affect society. We need more good examples to demonstrate that science can help eliminate poverty through contributions to natural resources, remembering the needs of the next generation and the formulation of new paradigms of sustainability.

An obligation arising from the progressively complex environment of the society's problems is to practice interdisciplinary methods over a combined approach, focusing on complementarities of the various areas of knowledge. In addition, the pursuit of overcoming boundaries among cultures is vital to social justice, ethical sustainable development.

Science contributes directly to the ethics of sustainable development. It also demonstrates that science requires a broad understanding of ethical aspects in the ethics of sustainable development. Science is essential to get in with the challenges of ethical sustainable development, as it lays the basis of new methods and solutions. It can clarify global problems for the future generation. Science spans from the understanding of human impact to the organization of social systems, particularly health and well-being, and to ways to meet the goal of poverty reduction. Science can offer answers that are testable and also provide the basis for a convincing decision-making process and actual influence assessments.

Science has an actual educational component. Increasing investments in education (support science education and scientific research; building up scientific infrastructure) will contribute to scientific progress and economic development. A stable allocation of resources in fundamental and applied science in line with individual state priorities is advisable to achieve sustainable growth in the long-term. Science can provide the basis of solutions to the ethics of sustainable development. Education is necessary for mind training, consideration of global problems, making choices and solving difficulties. It identifies the necessity to activate science at multiple levels and across disciplines to address current and future global changes.

The new possibilities of information and communication technologies provide online data transfer for scientific research. International cooperation in scientific research is also extremely significant in addressing sustainable development challenges and would promote the ethics of policy-making.

The environment, the economy and society are three pillars of supporting the sustainability framework. Sustainability is commonly considered as a requirement of the balanced pursuit of these pillars. It is grounded on the ethical commitment to the well-being and enhanced opportunities for the future generation. The concept of the ethics of sustainable development has to be planned for a try to endorse a new way of thinking, which may incorporate all sustainability pillars.

Suitable and complete ethics of sustainability must deal with the pillars of sustainability (see Fig.1). Building a sustainable world requires multidisciplinary cooperation with these pillars and at the same time cooperation with ethics. All these concepts are integrated into the scientific approach. It should be based on a wide understanding of science, which

provides the whole variety of disciplines from natural sciences to engineering, from social sciences to humanities, and addresses the social, economic and environmental dimensions of sustainable development.

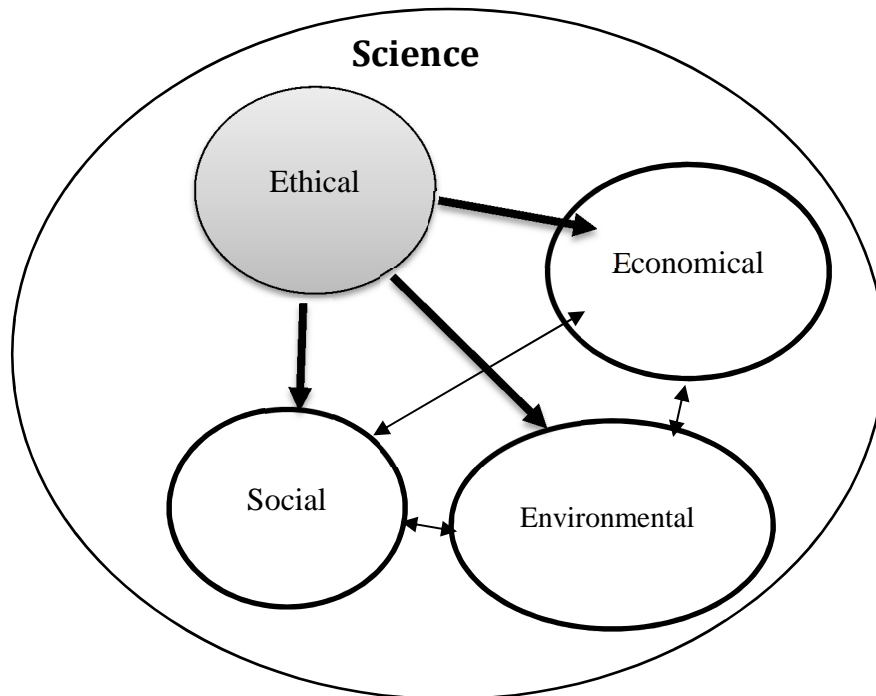


Fig. 1 The role of science in the ethics of sustainable development
(Source: constructed by the author)

All these principles emphasize the individuals responsible for implementing technologies must be ready to address the possible consequences of their implementation. It requires policy-makers to reflect as many different choices as possible before acting and consider as fully as possible not just the likely but also possible outcomes of these actions. Individual human welfares, even the collective interests of a certain generation, are not complete, they are significantly limited by responsibilities for others, including those who are not yet born.

Conclusions and suggestions

All forms of sustainability in society depend on the human conduct. Therefore, the ethical aspects of reality are of larger significance in ensuring sustainability. Ethical sustainability needs to be realized in order to get sustainable political and social systems and processes.

Sustainability is a meta-concept applied in the formation of the bases that are planned to be useful for real conditions to guide the government, organizations, citizens, etc. on a route where both the present and the future

generations can have the potential for a good quality of life. Sustainability has proved its stable power nowadays. Behaviour conducive to sustainability can be learned and passed to the future generations.

An aspect of sustainability is the attempt to integrate a diverse set of ethical principles and goals in both practice and theory. Thus, sustainability is not only a combination of different values, but also a combined scheme in which its parts cooperate to reinforce each other.

Sustainability offers traction to the idea that we are obliged to reflect to the future generation in our policies, interactions with the nature, production and daily decision-making. These are all matters that require an ongoing ethical discussion.

In order to summarize this discussion, it can be recommended to take into consideration following guiding principles of science for the ethics of sustainable development:

- achieving the ethical of sustainable development requires that its social, economic and environmental pillars are addressed in a balanced manner;
- open and equal access to scientific data and knowledge is vital for science to reach sustainable development;
- regional and international cooperation among sciences needs to be ensured, it plays an important role in ensuring sustainability;
- science education and capacity needs to be supported to make the ethical aspect of sustainability stronger;
- development programmes need to be based on combined scientific methods, guided by the targets of sustainability and must be grounded in the top accessible knowledge.

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