

Forests, forestry and space management in climate change scenarios

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ABSTRACT

The necessity to combine forest resource management with regional development is a social requirement. The halting of the forestry marginalization trend is the result, among other things, of the lack of strong links between forest management and local communities' development, as well as the lack of a holistic approach to the space management principles. The paper analyses the causes and possibilities of solving forest, forestry and regional development problems.

KEY WORDS

space management, rural development, climate change scenarios

INTRODUCTION

The deeper lack of interest in combining regional development with forestry development, in spite of years-long discussions thereon taking place globally, is reflected in very few Polish publications.

Combining issues related to forestry and its influence on regional development in the face of climate change seems to be one of the most important challenges of the 21st century (Clive 2001). These are, at the same time, interweaving issues, requiring both cross-sectional and multidisciplinary knowledge, constituting the basis for understanding the role, significance and potential of utilizing forests and forestry in regional development. Difficulties with sustainable development also include the unsolvable problem of its measurement, both in time and space.

SCALE OF THE PROBLEM

In analysing the directions of regional development, extremely interesting are the matters related to the socio-economic consequences of assessment of the environmental costs of investments, including infrastructure, and of reaching a higher level of societal development.

The assessment and valuation of environmental costs incurred for the benefit of civilization development is one of the main challenges of science, first of all, for developing the methodological bases of quantifying these phenomena. Another important element in addressing these issues is the need to set a certain hierarchy of phenomena with which we are dealing, using objective measures. There is no doubt that setting such a hierarchy will lead us to answering the question about whether this is to be a universal or local measure, or regionally selected for a concrete case.

The above discussed range of topics is one of the most conflicting with respect to social sphere and societal responses. We have to do here with both irrational and rational behaviour that must be taken into consideration at every stage of investment planning and execution for regional development. We should also be aware of the lack of scientific knowledge needed for the assessment of the consequences of environmental changes in the long run.

Forestry should become one of the driving forces of regional development, also linking its further development to it. Difficulties with making in-depth analyses in this respect are intensified by the following reasons:

- lack of a separate range of courses in forestry at university level. In most of the curricula of forest faculties, too little time is devoted to space management issues, including not only the forest ecosystem, but also other neighbouring ecosystems that co-decide about the directions of regional development. In my opinion, these issues should be included in the curricula of forest studies as having a strong stimulating effect on research development in this area,
- the problem of the increasingly higher requirements set by society for forest functions which in European forestry is not yet regarded as a priority. In a certain simplification, this is a tendency towards “flattening” of the multiple forest functions into one social function. This process is very worrisome, as it is dynamic, largely unrecognised, and having far-reaching environmental and social consequences,
- too slow development of the directions of research whose findings will be decisive in defining change scenarios for forest resources and forestry, as well as regional development in the face of climate change. This only does not concern land use, land use change and forestry, or changes to which both protection of forest ecosystems in a spatial sense and their utilization will be exposed.

SUSTAINED DEVELOPMENT VERSUS SPATIAL DEVELOPMENT

In referring to the terms related to space management, we assume as a reasoning base, that both forest management and regional development are set on sustainable development principles.

In discussions thereon, increasingly more attention is being given to the understanding of the reasons for which economic growth is not most important for the development of the state and its citizens (Paschalis 2003, Yasmi 2003), and there is growing awareness of the phenomena taking place on a global scale.

The unsolvable difficulty in meeting future generations’ expectations towards the performed functions, condition, appearance and diversity of the surrounding space in the future is an additional problem in the implementation of the sustainable development concept.

The methodological problems related to the fulfilment of these tasks in the area of assessing the directions of rural and forestry development is a joint challenge not only for the land use principles but also for spatial rural development.

CLIMATE CHANGE SCENARIOS IN REGIONAL DEVELOPMENT AND FORESTRY

The United Nations Framework Convention on Climate Change and the Kyoto Protocol, regarded as one of the most important conventions from the point of view of economic and environmental effects in state development, has many references to spatial development in terms of land use, land use change and forestry. The provisions of the Convention arouse controversies as to their real chances of implementation, impacting the directions of regional development. These limits to a certain degree the possibility of making decisions on a state or continent scale that would have a global effect (e.g. concerning climate change, Paschalis 2007).

The interweaving of the methods and techniques of land use with the possibilities of generating renewable energy, building engineering, transport infrastructure, health care, education, etc., as well as with many natural ecosystem-related processes, are crucial elements linking forests, forestry and regional development with climate change.

Efforts at mitigating the negative effects of climate change may include appropriate land use, land use change and forestry (LULUCF), as well as, which is much more difficult, adequate adaptation strategies, regional development strategies included (Schlamadinger and Yamagata 2007). In the case of land use, three main strategies are applied: avoiding deforestation, restock-

ing, tree planting and forest renewal, as well as substitution of fossil fuels with the energy from burning or decomposition of biomass. Actions taken to this end must be supported by agricultural activity and agro-technical treatments which retain carbon in soil, prevent erosion, enable introduction of rotation crops and novel crop varieties, increase productivity, ensure new jobs, enhance the level of education, cultural development, and many others.

It should be emphasized that there will be winners and losers of the ongoing climate change. Whole regions and states, or their fragments, may change into a desert, or be flooded by ocean waters, or turn into fertile land. Adoption of the appropriate regional development strategy is also important. This in the first place refers to land use and forestry management, as well as to the solving of local community problems.

It can be assumed (after other researchers) that integrated forest and surrounding space management is regarded as the future of regional development which, assessed on the basis of sustainable development criteria and indicators, increasingly evolves towards individual management of a given administration or property unit – like e.g. forest (Kates *et. al.* 2005). At the same time, it should be included in the regional and global framework.

However, in many regions of the world, we have to do with so many factors limiting the development of transport infrastructure, industry, construction and other forms of space management of a given country, that forest management confined exclusively to one forest function, e.g. tourism and recreation remains one of the few possibilities of regional development.

The needs and consequences resulting from the requirement placed on the State-Parties of the Climate Convention to report on the state of the environment are an important addition to the list of interrelationships and conditions linking forests, forestry and regional development. These include references which well fit within the range of monitoring of the state of different ecosystems, with a long list of requirements to be met by the regional development strategies. The requirements list of the report on the state of the environment practically covers man's entire economic activity, therefore there are valid premises for undertaking actions, both on a regional and global scale, aimed at further recognition, and in consequence, activation of the processes

of ecosystem adaptation to climate change and partial mitigation of the pace and effects of these changes.

This concerns, among other things, the necessity to report, under Climate Conventions, figures concerning collection and processing of data on waterlogged and agricultural land, meadows and pastures, as well as areas turned into forestland, and on any changes in carbon resources in soil and biomass.

It should be added that space data are also necessary for assessing the flow of biomass and energy in forest ecosystems.

Only a complete analysis of this complex set of interrelations, together with spatial phenomena, will make it possible to remove regional development barriers. Studying, only on a selected example, the issue of renewable energy production from forest biomass, we practically bring it down to the following question: "can we set out a boundary that is define what area of a forest, or fields, may or should be appropriated for that purpose? This requires taking into consideration a whole range of other interrelationships which largely complicate the whole matter, by referring directly to the complex of forest issues and regional development.

Is therefore an increase in the area of cropland and forest plantations for the production of plant biomass an optimum solution? Without touching the area of competition conflicts between the methods of land use and nutrition problems, it should be emphasized that changes in the nature and size of plantations will have a substantial effect on the surrounding space and the method of its further use, also impacting regional development.

The literature dealing with this subject matter justifies treating space as a crucial element of social, economic, environmental and cultural functions. At the same time, correct understanding of these elements requires assuming that the future of the development of these interrelationships consists in a parallel removal and minimization of the harmful effects of human activity, simultaneously ensuring further development of societies.

SUMMARY

Implementation of the theory of sustainable development into practice meets with serious problems, both in forestry – managing forest resources, and in regional

development which also manages space. Difficulties with sustainable development also include the unsolvable problem of its measurement, both in time and space. These are further challenges for research teams dealing with the role of forestry in the context of regional development.

The answers to these questions also involve our approach to the entire, highly complex set of issues, that is our attitude towards the natural environment with its spatial, cultural, moral, religious, ethical, economic references, and many others.

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