

SELECTED ASPECTS OF PUBLIC HEALTH PROTECTION RELATED TO RENEWABLE ENERGY USE

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Abstract: Public health protection is a complex and multidisciplinary issue. It is related, *inter alia*, to the process of environmental impact assessment. However, there are gaps in relevant legal regulation from the viewpoint of health risk assessment. Although the technologies using renewable energy are considered having benign environmental consequences, some projects can have negative impacts on human health. These effects must be taken into consideration by administrative authorities within relevant procedures. Their decision-making may be influenced by public participation when executing fundamental human rights.

Keywords: Public health, impact assessment, precautionary principle, renewable energy, administrative procedures.

1 Introduction

Currently, public health protection associated with the use of energy from renewable sources is the issue of pressing importance. However, awareness of this subject-matter cannot be considered sufficient although it significantly affects decisions of public authorities, in addition to attitudes of the public in decision-making procedures.

In order to answer the question of whether or not public health protection is adequately taken into account by public authorities, especially in processes connected with granting investors/operators permission to locate and/or operate the equipment for the production of energy from renewable sources, it is necessary to analyse relevant legal regulations, impacts of power plants generating energy from renewable sources, a position of concerned authorities, relevant administrative procedures as well as their consequences in practice.

2 Public health protection

Public health protection against environmental risk factors is examined from two different perspectives in the Czech Republic. The first viewpoint is represented by the public health protection including medical care, and the second one is the perspective of environment protection. However, these two approaches are not sufficiently interconnected. The legal regulation for public health protection by virtue of Public Health Protection Act No 258/2000 Coll. includes only some aspects of environmental hygiene namely in the connection with the health risk assessment. The legal regulation relating primarily to the environment protection regulates the procedure of the environmental impact assessment. These procedures should serve *de lege lata* for complying with the precautionary principle. These issues emphasize especially the part of the procedure of the environmental impact assessment aimed at the public health impact assessment. Current legal regulation of health impact assessment in the procedure of the environmental impact assessment fails to provide the guaranties for overall and objective environmental health risks in compliance with the precautionary principle. The public health impact assessment is not clearly formulated as the part of the procedure of environmental impact assessment. That is reflected even in the Strategic impact assessment. In respect of public health, Strategic impact assessment should be instituted *de lege lata* as early as possible in the screening phase. However, by virtue of the current legal regulation, the procedure has not been clearly determined when the screening phase fails to find the strategic impact assessment on the environment, but the impacts on the public health may be expected at the same time.

Another imperfection of the current legal regulation (consisting of the ignorance of the precautionary principle in the sphere of public health protection against the environmental risk factors) can be seen in health risk assessment. The concept of the health risk assessment can be compared to the concept of the reasonably attainable extent that has been defined in special provisions of the Public Health Protection Act (therefore taking precedence over general provisions). The consistent essence of both terms consists in preventive assessment of environmental burden affecting the health of an individual. Reasonably attainable extent can be expressed in general as the proportion between the costs for taking measures in respect of the health protection of an individual on one hand, and their contribution to decreasing environmental burden harmful to the health of an individual on the other hand. The proportion between the costs and the effectiveness of possible measures can also be determined even with respect to the number of natural persons exposed to noise exceeding the limits, e.g. in the area of protection against noise. In this context, the implicit consequence of considering the number of the persons exposed is not only immoral but (moreover) it is incompatible with the constitutional principle of equality and the constitutional establishment of the right to health protection by virtue of Article 31 of the Charter of Fundamental Rights and Freedoms (Constitutional Act No 2/1993 Coll.).

Thus, it may be observed that within the intention of the legal regulation directly relating to the public health protection, the requirements for the health protection of an individual may be limited or limited by the effect of economic expenses for the elimination of harmful consequences. The protection of public health is therefore limited not only by economic assets or advantages but (furthermore) it is limited by determining the limits for exposition to risk factors only on the basis of directly shown harmful health impacts. Legal regulations can take into consideration the risk at the threshold of science i.e. the risk that has not been yet proven to result in harmful health consequences.

The same attitude has also been taken by the European Court of Justice in its case law. Some formulations of the current legal regulation give rise to the question of whether or not they can be understood, by means of logical interpretation, to be subsumed under the term of the health risk or whether even the danger to health should not be taken into consideration when interpreting and applying them. In the sphere of the public health protection against the environmental risk factors, the precautionary principle has not been consistently and adequately implemented in Czech legal legislation.

3 Promotion of renewable energy use

The problem of global warming, which should be solved *inter alia* through the use of renewable energy, has led to the adoption of legal documents at the international, the European Union and national levels.

The international level is represented by the Kyoto Protocol to the United Nations Framework Convention on Climate Change (1992, New York). The preamble of the Convention expresses the interest in ensuring the responses to climate change in an integrated manner coordinated with social and economic development. Under Article 2 of Kyoto Protocol, adopted in 1997, each Party shall implement and/or further elaborate policies and measures such as research on, promotion of, and the development and the increased use of new and renewable forms of energy, etc.

Directive 2009/28/EC of the European Parliament and of the Council of 23 April 2009 on the promotion of the use of energy from renewable sources and amending and subsequently repealing Directives 2001/77/EC and 2003/30/EC is the most important source of European Union law on the issue in

question. This Directive sets, *inter alia*, mandatory national targets for the overall share of energy from renewable sources in the gross final consumption of energy and for the share of energy from renewable sources in transport (without binding mechanisms). When providing a binding national target, the need for consistency in energy and environmental policy should be taken into account. This Directive was adopted in order to implement the aforementioned international commitments in addition to reducing the dependence on energy imports, to create new jobs through decentralized energy production, to support rural development, long-term stability of the business environment, research and development, and so forth. The Directive should be implemented by several Czech laws such as Renewable Energy Act No 180/2005 Coll., Promoted Energy Sources Act No 165/2012 Coll., Energy Act No 458/2000 Coll. and so forth.

However, it is essential to realize that Article 7 of the Constitution of the Czech Republic (the Constitutional Act No 1/1993 Coll.) obliges the State to ensure prudent use of natural resources and protection of natural wealth. This provision gives a basis for interpretation of the relevant regulations on the promotion of energy from renewable sources; the duty of the state to protect the environment and to respect this priority in its own affairs as well as a legitimate reason for the governmental regulation of certain activities carried out by private entities can be deduced.¹ This article is associated with the Environmental Act No 17/1992 Coll., as amended, which should not be ignored when interpreting relevant legislation. Under its Section 17, every individual is obliged to prevent environmental pollution or to minimize the unfavourable environmental impact, to carry out activities such as building structures only after assessing their impact on the environment, and to provide for the assessment of their potential impact on the environment in cases stipulated by special regulations.

4 Impacts of renewable energy use

Generally speaking, the technologies using renewable energy are considered having benign environmental consequences because they do not release carbon dioxide or nitrous oxide into the atmosphere, produce no water pollution and involve no toxic or hazardous waste, and pose minimal threats to public safety and to the environment. However, some projects do face environmental and other hurdles.²

The use of renewable resources is considered the solution to the situation caused by fossil fuels including emissions of pollutants and the greenhouse gases that are causing climate change and risks to the security of their energy supplies.³ According to a number of representative organizations of producers of energy from renewable sources, a major barrier to the further development of the use of energy from renewable sources in the European Union is the administrative and planning procedures that potential generators must meet.⁴

These procedures deal with impact of the use of energy from renewable sources on the environment and human health. It is essential to realize that *'all forms of energy have their price ... no form of energy provides us ... energy use free from negative environmental, public health, and other societal costs.'*⁵ Therefore, it is necessary to assess if positives of the use of renewable energy outweigh negatives and if negatives are more manageable than those of fossil or nuclear fuels.⁶

4.1 Impacts of power plants generating energy from renewable sources on human health

According to the *Committee on Environmental Impacts of Wind Energy Projects*,⁷ wind-energy projects can have positive as well as negative impacts on human health; the positive impacts accrue through improvements in air quality and the negative impacts are experienced mainly by people living near wind turbines whose are affected by noise and shadow flicker (i.e. moving shadows on the ground resulting in alternating changes in light intensity). Wind turbines generate noise during operation as machine involving moving parts. There are several types of noise, its levels and sources. The perception of noise depends in part on the individual, his or her subjective tolerance; subjective impressions of the noise from wind turbines are not totally idiosyncratic. Noise impacts can result from project maintenance such as noise associated with traffic into and out of the facility. Older turbines emit some infrasound but it is believed that it does not pose a health hazard. However, there have been ongoing debates over deterioration in sleep quality to people living nearby; sensitivity to low-frequency vibration resulting from wind-turbine noise is highly variable among humans. As noise-emission measurements are subject to problems, methods for assessing noise levels produced by wind turbines located in various terrains need further development. Therefore, implementation of various measures to reduce noise in addition to acceptability standards for noise is important. The phenomenon of shadow flicker is different from a strobe-like phenomenon (caused by intermittent chopping of the sunlight behind the rotating blades); it can be a nuisance to nearby humans, and its effects need to be considered during the design of a wind-energy project.

In the Czech Republic, it is assumed that aforementioned and other possible impacts are primarily of a local nature. In comparison with conventional sources of energy, there are not important. As far as wind turbines are concerned, their appropriate location can reduce or eliminate negative impacts. Effects of wind turbines vary depending on their location, number, technical design, and construction method. From the investor's perspective, the decisive factor for the location of wind turbines is the power of wind in a certain area. In addition, it is necessary to observe natural minimum distances from the nearest human settlements and legally established distance from protective zones, roads, power lines, air corridors and buildings, etc.⁸

Biogas plants can serve as a different example of questionable power plants generating energy from renewable sources. Biogas technology is based on the principle of anaerobic digestion. The most common form is the use of combustion in cogeneration plants for the production of electricity and heat. Biogas is the gas consisting of methane, carbon dioxide, nitrogen, hydrogen sulphide, ammonia, water, ethane, and other lower hydrocarbons. The public generally considers biogas plants as a source of odour nuisance. However, there were some cases caused by poor-quality, low-cost technology or technological indiscipline during operation, or their combination. Some operators failed to fulfil their legal obligations and did not hesitate to do business at the expense of the health of their fellow citizens. Furthermore, administrative authorities have not been able to stop such behaviour. Nevertheless, the vast majority of biogas plants operate without any problem or they have even achieved a reduction of odour in the area (e.g. if it concerned processed manure). Hence, modern technology and adequately trained staff are essential. Properly designed biogas plants can be placed into built-up area, especially in brownfields (within the

¹ Šimíček, V. In Bahýlová, L., Filip, J., Molek, P. et al.: *Ústava České republiky: komentář*. Praha: Linde, 2010. 1533 p. ISBN 9788072018147. P. 132-133.

² Tomain, J. P., Cudahy R. D.: *Energy law: in a nutshell*. St. Paul: Thomson, 2004. 392 p. ISBN 0314150587. P. 354-361.

³ Jones, Ch. W. (ed.): *EU energy law. III. EU environmental law: energy efficiency and renewable energy sources*. Leuven: Claeys & Casteels, 2006. 706 p. ISBN 9077644032. P. 1.

⁴ *Ibidem*, p. 52.

⁵ Pring, G. R. et al.: *The Impact of Energy on Health, Environment, and Sustainable Development: The TANSTAAFL Problem*. In Zillman, D. et al. (eds): *Beyond the Carbon Economy: Energy Law in Transition*. Oxford: Oxford University Press, 2008. 562 p. ISBN 9780199532698. P. 13-15.

⁶ *Ibidem*, p. 26.

⁷ Committee on Environmental Impacts of Wind Energy Projects, National Research Council: *Environmental Impacts of Wind-Energy Projects*. Washington, D.C.: The National Academies Press, 2007. 394 p. ISBN 0309108357. Available at: http://www.nap.edu/catalog.php?record_id=11935. P. 157-162.

⁸ *Povolovací proces obnovitelných zdrojů energie* [online]. Ministerstvo životního prostředí, 2010. 103 p. [cit. 31.10.2012]. Available at: http://www.sysnet.cz/C125774C00336141/cz/povolovani_a_predpisy/FILE/Povolovaci_ci_proces_OZE_2010_01_13.pdf. P. 42.

necessary distance from residential areas). Administrative authorities should carefully check the parts of project documentation which are crucial for protection against odour. Their decisions should be convincingly justified including specific conditions in order to ensure odourless operation of a biogas plant.⁹

5 Relevant administrative procedures

Energy activities have their impact upon the individual, raising human rights implications, and upon the environment.¹⁰ Environmental protection, health and safety are primarily regulated on the basis of separate laws.

In the Czech Republic, the issue in question is regulated by several laws (within the procedures of land-use planning, spatial process, building permission, licensing of operation, final inspection, etc.), especially: Building Act No. 183/2006 Coll., as amended, Environmental Impact Assessment Act No. 100/2001 Coll., as amended, Public Health Act No. 258/2000 Coll., as amended, and Code of Administrative Procedure No. 500/2004 Coll., as amended.

5.1 Documentation, permits, and binding opinions of concerned authorities

With regard to impacts of power plants generating energy from renewable sources on public health, concerned authorities may apply their requirements for the processing of materials in order to assess impacts of projects of power plants on the environment and public health within relevant procedures such as the process of environmental impact assessment and others. Typical documentation includes noise study and study of health risks (analysis of the effects on public health).

There are many permits, binding opinions, and observations that are required for different types of power plants in addition to a number of recommendations and requirements for the operating rules. Their strict compliance should prevent cases of a public nuisance.

For example, under Section 14, Sub-section 1 of Waste Management Act No. 185/2001 Coll., as amended, a heating plant or a biomass power plant that burns waste may be operated only with the consent to the operation of waste treatment facilities. The consent has the form of an administrative decision; a set of operational rules shall be an integral part of the consent as its annex. When approving the set of operational rules, a locally competent authority of public health protection is the concerned authority. The required consent cannot be granted without an affirmative statement of this authority to the part of the set of operational rules regarding safety, protection of the environment and human health.

6 NIMBY syndrome in decision-making

According to McHarg and Rønne,¹¹ whereas environmental benefits of renewable generation are national and even global in their scope, environmental harms are typically borne by local communities. The long-term success of the generation depends upon the public's consent and their willingness to bear the additional costs involved. *Many of their objections are selfish or misinformed*.¹²

Attitudes of the public to the power generation from renewable energy sources plants are affected by many different factors associated with physical and technological aspects, contextually-environmental aspects, energy policy, social relations, representation of renewable energy sources, socio-economic

aspects, local aspects such as so-called *NIMBY syndrome*, or knowledge of the subject-matter in question.¹³

The aforementioned acronym (*Not In My Backyard*) expresses (in its pure form) unwillingness to tolerate in a certain territory some negative impacts of the activity that is beneficial to a whole. Therefore, it is a spatial isolation of advantages and disadvantages. This approach has other variations; it relates to a wider range of projects pressing 'higher interest'. It is controversial whether this is a manifestation of provincial, short-sighted and selfish interests.¹⁴

According to Improta and Pinheiro,¹⁵ it is still important to widen the options for renewable energies having a softer impact on the environment than other forms of energy but this development must be followed by the provision of better information and greater participation of the community in addition to narrowing the gap between advanced energy technologies and the general living conditions of the people who coexist alongside power plants.

7 Conclusions

When considering the answer to the question of whether or not public health protection is sufficiently taken into account in processes of issuing a permit to the location and operation of some equipment for the production of energy from renewable sources, it is essential to admit that the current state of relevant legal regulation cannot be seen optimal due to several imperfections regarding health risk assessment in addition to inadequate application of the precautionary principle. As far as public health protection related to the renewable energy use in practice is concerned, there were some examples of improper functioning of administrative authorities in cases of investor failure to fulfil their legal obligations. However, both groups of entities must be controlled by the public in relevant administrative procedures through realizing constitutionally guaranteed fundamental rights such as the right to participate in administration of public matters and the right to access to information on the environment.

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⁹ *Povolovací proces obnovitelných zdrojů energie*. Op. cit., p. 55-57.

¹⁰ Roggenkamp, M. M., Redgwell, C., Guayo, I. (eds): *Energy Law in Europe. National, EU and International Regulation*. 2nd ed. New York: Oxford University Press, 2007. 1488 p. ISBN 978019921719-9. P. 14.

¹¹ McHarg, A., Rønne, A.: Reducing Carbon-Based Electricity Generation: Is the Answer Blowing in the Wind? In Zillman op. cit. P. 292.

¹² *Ibidem*, p. 315.

¹³ Cetkovský, S., Frantál, B., Štekl, J. et al.: *Větrná energie v České republice: hodnocení prostorových vztahů, environmentálních aspektů a socioekonomických souvislostí*. Brno: Ústav geoniky Akademie věd ČR, 2010. 208 p. ISBN 9788086407845. P. 198.

¹⁴ *Ibidem*, p. 158.

¹⁵ Devine-Wright, P. (ed.): *Renewable energy and the public: from NIMBY to participation*. London: Earthscan, 2011. 336 p. ISBN 9781844078639. P. 230.

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