

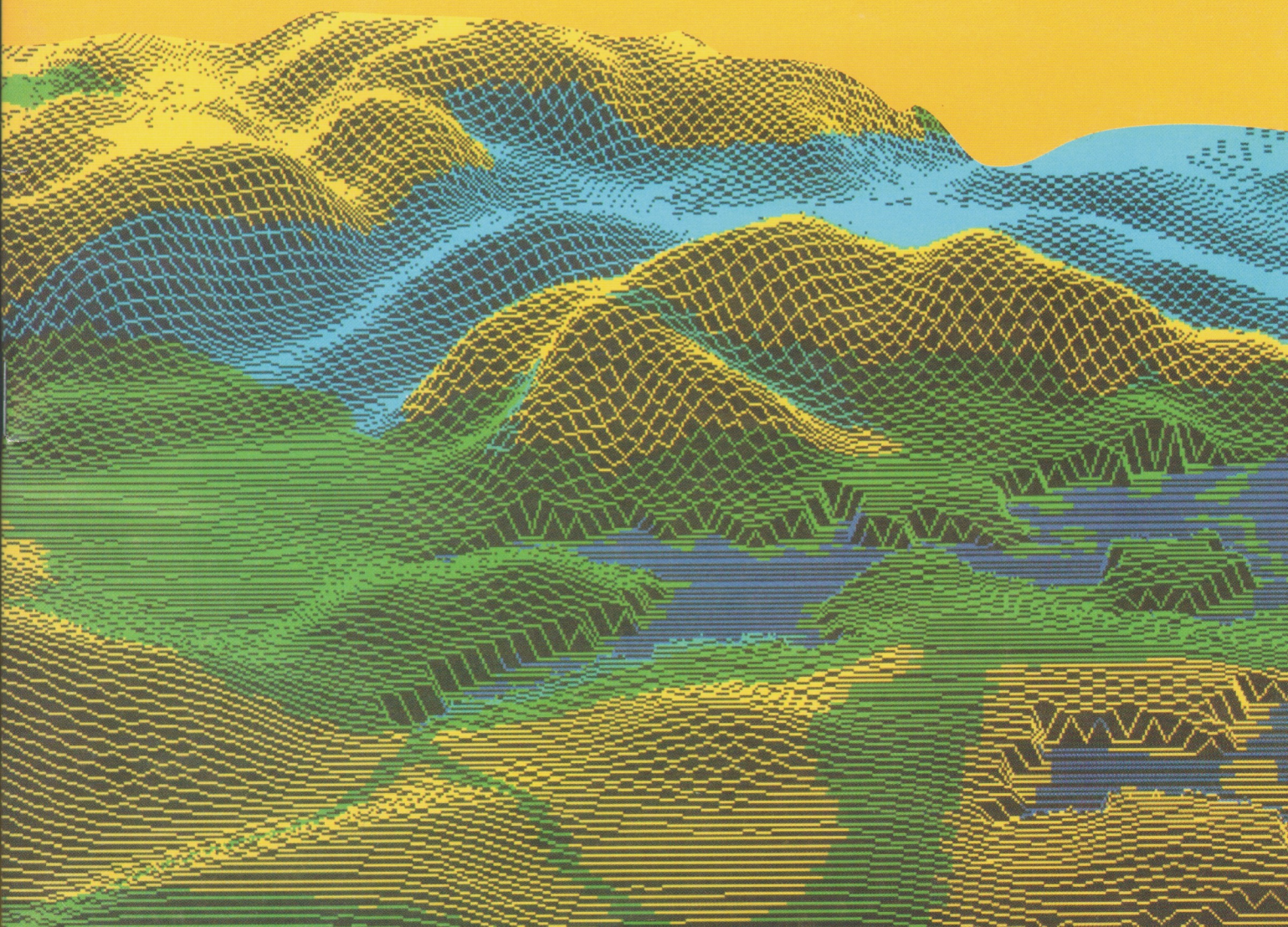
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PERCEPTION OF THE DUKOVANY NUCLEAR POWER PLANT (CZECH REPUBLIC) BY LOCAL POPULATION

Hana HORSKÁ - Oldřich MIKULÍK - Antonín VAISHAR - Jana ZAPLETALOVÁ

Abstract

The paper deals with some social consequences and regional impact of the nuclear power plant at Dukovany, south Moravia. It presents summaries and evaluation of results from several public inquiries made in the surroundings of the power generation system Dukovany-Dalešice in 1994 and 1995. The public inquiries were focused on problems of social environment in the region, perception of the nuclear power plant operating in the region by the local population, and also on recreation in the background of the nuclear power plant. Inquiries were addressed to local authorities, local inhabitants, owners of individual recreational facilities, and visitors of the camp at Hartvíkovice. Results bring an evidence of both positive and negative influences of the power generation system on social environment and its perception. The majority of population and holiday-makers feel endangered by the nuclear power plant. Nevertheless, the danger is often perceived less intensively than other kinds of risks. In any case, the future of the region as well as its future possible social revitalization are connected with the nuclear power plant and the associated waterworks at Dalešice.

Shrnutí

Percepce jaderné elektrárny Dukovany místním obyvatelstvem.

Článek se zabývá některými sociálními důsledky provozu jaderné elektrárny v regionu Dukovan na jižní Moravě. Shrnuje a hodnotí výsledky několika anketárních šetření, která proběhla v letech 1994 a 1995 v okolí energetické soustavy Dukovany-Dalešice. Tato anketární šetření byla zaměřena na problematiku sociálního prostředí v oblasti, na percepce jaderné elektrárny místním obyvatelstvem a rovněž na rekreaci v zázemí jaderné elektrárny. Dotazovány byly obecní úřady, místní obyvatelé, majitelé individuálních rekreačních objektů a návštěvníci kempu Hartvíkovice. Výsledky svědčí o pozitivních i negativních vlivech energetické soustavy na sociální prostředí a jeho percepce. Obyvatelé a rekreační se většinou cítí jadernou elektrárnou ohroženi, ale toto ohrožení je vnímáno často méně intenzivně než jiná ohrožení. V každém případě je budoucnost regionu a možnost jeho sociální revitalizace spojena s jadernou elektrárnou a navazujícím dalešickým vodním dílem.

Key words: nuclear power plant, social environment, perception, Dukovany-Dalešice

1. Introduction

The paper is the result of a partial research of social environment in the vicinity of Nuclear Power Plant (NPP) Dukovany. The work is an integral part of an extensive project whose objective was to assess in detail all environment components in the surroundings of the Nuclear Power Plant Dukovany taking into regard operation of the near military airport at Náměštl nad Oslovou. The project was funded by the foundation Ecology and Power Engineering, and it was worked out and coordinated by the West Moravian Museum in Třebíč. The study was aimed at a comparison of environmental changes in the close vicinity of the nuclear power plant, which occurred in the time period before the construction and after the works were put into operation.

Evaluation of impacts of large technical works on landscape and environment belongs to priority activities

of the Brno Subsidiary of Institute of Geonics, Czech Academy of Sciences. The probably largest structures of this type have recently been nuclear power plants at Dukovany and Temelín. The great technical works such

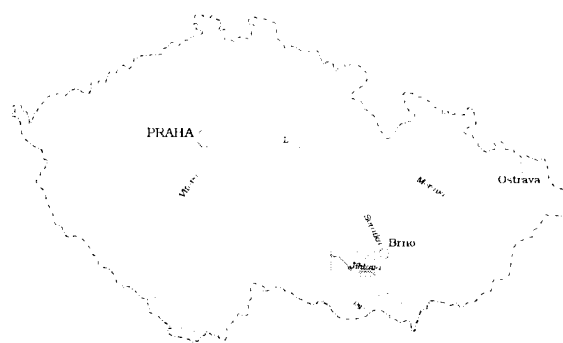


Fig. 1 Location of the area under study

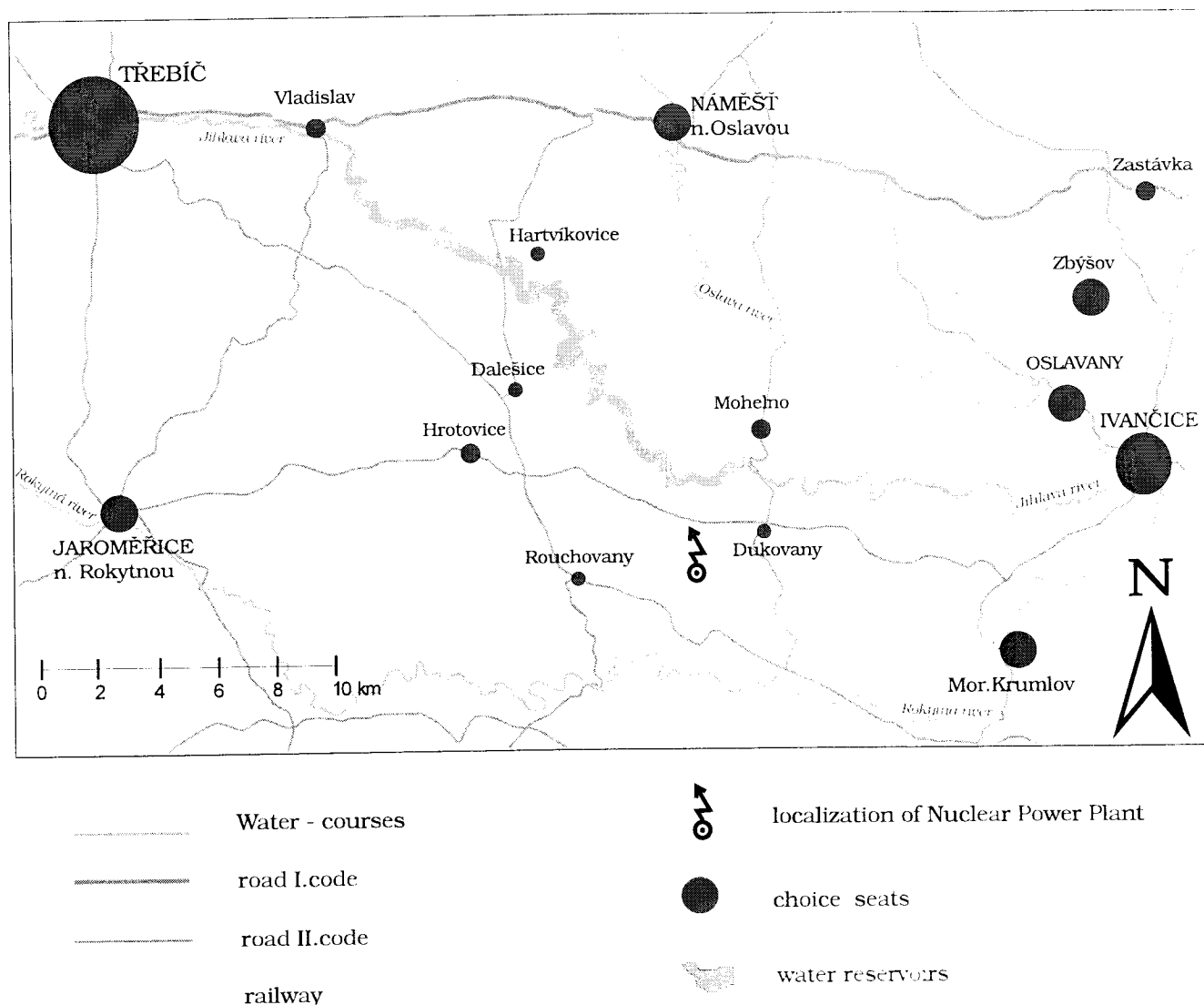


Fig. 2 The area under study

as nuclear power plants cause fundamental changes not only to the natural landscape system but also - and most probably even to larger extent - to the social system. In connection with the construction of power plant and later on with its operation there is a huge mechanical migration of population whose structure exhibits changes of nearly all aspects. The nuclear power plant itself needs further activities such as a water reservoir Dalešice for cooling, extensive dwelling facilities and infrastructure. The power plant affects the local population that has to get used to life with a certain permanent risk. On the other hand, the power plant may also mean an important stimulation of further development.

Operation of the Dukovany NPP has given rise to many disputes that even ended in problems of political character including international issues. These problems have become deeper after transformation of economic and social mechanisms in the Czech Republic. In addition to arguments that honestly aim at environmental impacts caused by operation of the nuclear

power plant, there are also political and narrowly economic interests concerning reputation of various politicians and experts. The problems penetrate into awareness of local population and induce an atmosphere which is hardly opened to rational argumentation. Even this is one of social impacts of operating the nuclear power plants.

There were relatively a very few studies concerning the social consequences made prior to the construction with the exception of a general work by Buček - Lacina (1981) intended for internal use at the Dukovany NPP. The work includes a chapter on population, housing and recreation in the area of construction and operation of the nuclear power plant. Of these issues, only that of recreation was studied in depth. Synthesis of the entire problem in the study mentioned does not at all mention social phenomena. It probably follows out of the environmental policy and understanding of those times as well as of the fact that the social issue was of peripheral concern under conditions of centrally planned economy.

Social research was also made by the Institute of Radioecology and Utilization of Nuclear Technique in Košice within the project „Research of possibilities for complex utilization of nuclear energy in national economy and environment protection in given localities” whose one theme were „Sociodemographical and economic aspects of nuclear power plant construction”. Methodology for economic evaluation of social impacts of construction and operation of the nuclear power plant was worked out by Koudelka (1985). However, this study is a mere information on the given issue. It indicates, nevertheless, that - taking into regard some actually social problems - the research team did a pioneer work. The era called for transformation of these social problems into economic terms.

The work clearly shows the then system of priorities. The first stage included economic aspects of the construction and operation of the nuclear power plant, the environmental viewpoint was added later on under the pressure of circumstances, and only in the end, there was a place for certain social considerations which, however, were to be converted into economic calculations in order to find arguments against the then technocracy. The social criteria were limited to two at the very beginning:

- *minimalization of the number of entities impacted by evacuation,*
- *minimalization of uncomfot issuing from the vicinity of the nuclear power plant (expressed by the number of inhabitants in 10 km surroundings).*

The research team of Koudelka also dealt with other phenomena such as formation of new communities at the place of mass construction of new settlements or temporary housing facilities, life style changes, and the like. Division of the individual issues was as follows:

- *sociological (close-down of existing communities and formation of new ones, integration of evacuated population into new communities, disturbance of human relations, free sex, change of life style and leisure activities),*
- *socio-psychological (defence mechanisms exhibited in e.g. aggression in individuals, negativism, psychopathic reactions, deviated social behaviour, restructuring of the hierarchy of needs and values),*
- *paedagogical (re-education of adults, education of children, requalification, the issue of illegitimate children, etc.),*
- *socio-pathological (criminality, alcoholism, prostitution),*
- *political (changes in political moral, demands for operation of political and government authorities, changes in organization of regions, area attractiveness and the like).*

The above hypotheses were subjected to field tests and an attempt was made at their economic and non-economic evaluation.

2. Geographical characteristic of the area under study

As to its geomorphology, the region of the Dukovany NPP belongs to the Jevišovská pahorkatina (Upland) and to its sub-complex of Znojemská pahorkatina (Upland) which is characteristic of a flat relief. Individual plateaux are separated from one another by deeply incised valleys of the Jihlava, Oslava and Rokytná rivers. Typical are steep valley slopes. The Jihlava river formed numerous meanders whose greater part was flooded with waters of dam reservoirs Dalešice and Mohelno.

The slopes of the incised valleys are covered with coniferous stands with dominating pine and remnants of deciduous forests (oak, hornbeam, debris) which are typical of the local landscape together with denudated rock formations. There is a whole range of valuable geographical localities in the area, which were declared natural preserves or natural parks. As to climate, the area under study belongs to the mild warm and dry zone that can be characterized by long, dry and warm summer and short, warm and very dry winter seasons. Snow cover is very short and the average annual total precipitations amount to some 550 mm.

Colonisation of the immediate surroundings of the power generation system is of pronounced rural character. With the exception of four villages, all settlements are less than 500 inhabitants. The rural population shrinks similarly as in other marginal regions. In the last 25 years, the number of permanent residences and the number of permanent residents dropped by 12% and 19.1%, respectively. The majority of uninhabited houses was transformed into recreational objects owned by individuals.

The area under study does not rank with recreational areas of national significance. Yet, it belongs to the wider recreational background of Brno conurbation the distance of which is some 50-60 km, and it is a territory of short-term recreation for 35 000 inhabitants of Třebíč. The river valleys and the geographically unique serpentine steppe of Mohelno are sought localities for hiking and short-term recreation. The mentioned area was sought by tourists and the first summer house owners as early as in the second half of the 30's. This was the period of time when the first cottages and summer houses were built of which the majority disappeared under the water of present reservoirs though.

In the 60's, this was still a rural landscape that was changed into agrarian-industrial landscape after building the nuclear power plant. The complex of nuclear power plant became a pronounced dominant which cannot be incorporated into the surrounding landscape due to its size. Landscape aesthetics and perception were essentially changed. At the beginning of the 70's, the originally rural landscape completely changed its

appearances by enlargement of field units and removal of dispersed greenery. Thus, a monotonous rural landscape came into existence with civilization elements dominating over natural ones. Forest stands as a landscape-forming element mainly skirt river valleys and cover valley slopes of incised water streams.

There are two water reservoirs that were constructed on the river Jihlava in connection with building the nuclear power plant. A pumped-storage hydro-electric power plant was installed in the dam of Dalešice reservoir, which covers the peak demand for energy. The fact together with water being taken for the nuclear power plant cause a considerable fluctuation of water table and denudation of banks which is not good for recreational use of the area. Another adverse factor of local environment impacting population in the region is excessive noise from the military airport Náměšť-Sedlec.

3. Opinions of local self-governments and inhabitants

There were inquiries made in the region, whose results are presented in this part of the contribution. The research was anonymous and was made in two respondent groups: representatives of local self-government authorities, and inhabitants of the area under study.

The responding group of **representatives of local self-government authorities** consisted mainly of mayors and councilmen. Inquired were 50 municipalities. The investigation was made repeatedly in the Autumn of 1994 prior the communal elections (return of only 32%) and in February-March 1995 when the majority of municipalities in the area under study was addressed again and the return was 62% this time (ie. 31 returned questionnaires). The questionnaire for „decision” evaluation of opinions in the self-governed territory contained 24 questions which included following groups of issues:

- *evaluation of the opinion group percentage in the opinion scale in connection with the impact of the „works” on their social conditions and social environment, on assessment of influence of individual social indicators conditioning global approach in the individual groups of citizens and on possible environmental agents affecting these global approaches,*
- *evaluation of opinions of citizens as related to the influence of the „works” on natural environment of inhabitants in the area under study, on the conception of „environment” in awareness of the citizens, and on assessment of*

participation of organizations, institutions, interest groups or individuals at the creation and protection of local environment,

- *evaluation of stratification and differentiation (growth of social differences) in the position of inhabitants in the village (both in economic and psychological context) in reflexion of the ongoing economic, political and social transformation, classification of reasons and directions of the differentiation, assessment of local development of private enterprising in the village as well as of the contribution of political parties to village prosperity,*
- *evaluation of the present structure of values in local population, the position of „utility activities of citizens” within this structure, and assessment of shifts within restauration of values, relationships and life style in the village (countryside regeneration),*
- *evaluation of the present situation and future development as to migration of inhabitants including the reasons for evacuation of villages.*

Although the inquiry was anonymous, the majority of villages mentioned their names and it was therefore possible to set up two territorially differentiated groups of municipalities defined by the character of the „work”:

- *the problem micro-region of Dukovany-Dalešice: 27 municipalities were inquired - 16 of them (59.2%) responded,*
- *the problem micro-region of Náměšť-Oslavany: 23 municipalities were inquired - 15 of them (65.2%) responded.*

The research into opinions of **the population living in the area under study** was made through the regional newspaper **REGION T** to the date of 21 March, 1995. However, the people showed a minimum concern

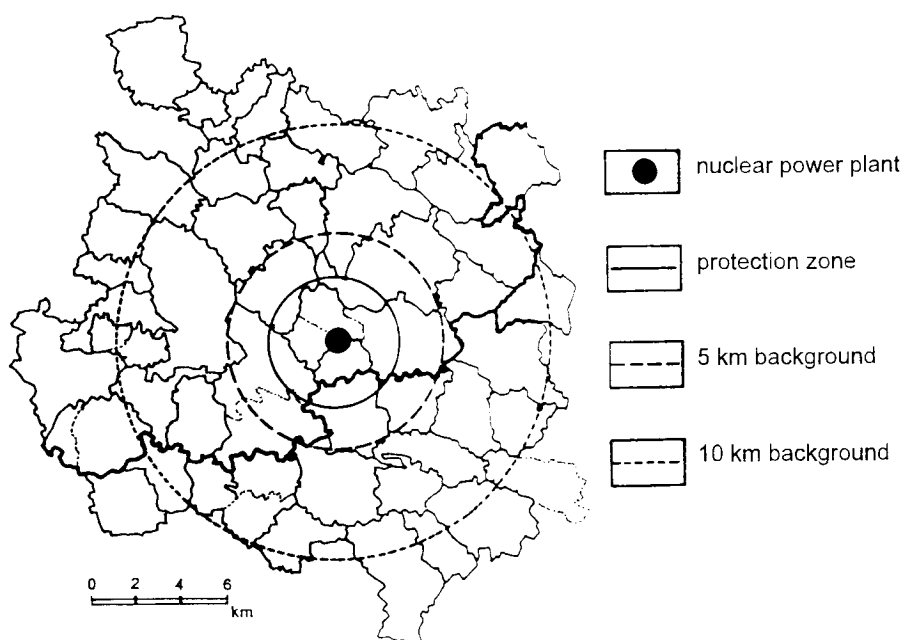


Fig. 3 Delineation of the nuclear power plant background

and the set contains only 27 respondents. Interpretation of results can thus be not considered representative but rather illustrative or expressing present trends. Nevertheless, participation in the public inquiry always demonstrates the measure of citizens, concern and their willingness to take part in the solution of environmental problems in their locality by at least having and expressing their own opinion.

The set was represented mostly by women (66.6%), persons with the secondary education (55.6%) and skilled workers (29.6%). In terms of occupational structure, dominating were administrative workers (22.2%), retired people, private entrepreneurs - natural persons, employees in enterprising subjects of both natural and legal entities (14.8%) and civil servants (11.1%). Average age of respondents was 40.8 years (of which only 18.2% of persons aged up to 30 years and the same percentage of retired persons). Nearly three quarters of them live in towns.

The questionnaire used was based on a form applied in a research of opinions on the level of local authorities, which was modified for anonymous public inquiry (adequately to possibilities of publishing in press). The inquiry contained only 9 questions and an identification block of data on the respondent. It was focused on approaches of citizens to consequences of the „works” in social and natural environment, significance of social environment indicators, system of values, approach towards the solution of potential unemployment, existence and influence of „social actors” in the town or village, and evaluation of participation of individuals or institutions in the creation of social and natural environment in the area.

3.1 Opinions of local population as to consequences of the „works” operation in social environment

- a) Representatives of 31 municipal councils are of the opinion that 44.8% of inhabitants take a negative stand to the influence of the works on their social environment (23.5% unambiguously negative, 21.3% mostly negative). More than a third of inhabitants from the set of citizens (34.8%) admits positive impacts of the works operation on the social environment, 13.6% of inhabitants do not care about the impacts, and 6.8% of population assume that the works operation is of no social significance.
- b) From the comparative point of view according to territorially delineated problem regions, there were differences in the evaluation of two fundamental impacts on social and natural environment: positive and negative. It was shown that a priority opinion group of citizens with adverse approach to the influence of the works on environment (46.6%) and at the same time, a significantly higher percentage (26.7%) of citizens with negative approach to the influence of the works on their social environment can be found

in the region of Náměšť-Oslavany. In contrast, priority positive approaches to the consequences of works operation in their social environment (43.7%) were characteristic opinion of citizens living in the Dukovany-Dalešice region as well as less frequent approaches expressing negative impacts of works operation on natural environment (37.5%) as compared with the population in the Náměšť-Oslavany region.

- c) Interesting appeared to be also the comparison of differences in the evaluation of approaches towards impacts of the „works” on the social and natural environments from the „decision” point of view and from the standpoint of inhabitants. Although the respondents from the group of citizens do not claim to be indifferent, the result can apparently be accounted to the fact that it was exactly those who are concerned with the issue that responded in the public inquiry. At the same time, they represent the opinion group with negative approach towards the influence of the works on both natural and social environments. It can be assumed that the frequency of the „decisive” view is more representative.
- d) Conditional character of the opinions by indicators of social environment. Representatives of local authorities assume that reasons for global approach in the positive group (for which the works operation means an important contribution in the social area) are particularly based on labour market, level of income and living standard of inhabitants in the following order of the individual social indicators:
 1. jobs available in the nuclear power plant,
 2. higher income,
 3. safe jobs and good prospects,
 4. jobs in services and private businesses,
 5. development of social infrastructure in the municipality,
 6. good conditions for self-realization,
 7. improved standard of living,
 8. improved transport connections.

Major reasons for negative approach of the population are seen in impacts of the works operation on social aspects which are mainly of environmental character and their order is as follows:

1. adverse impacts on recreational value of the territory,
2. adverse impacts on (natural) components of environment,
3. adverse impacts on urban and residential structure.

In the case of comparison between the two groups of respondents under study, it appeared that the positive impacts of „works” operation are also seen by the citizen group in the area of labour market (77.8% citizens mentioned the indicator of „job opportunities at works operation”) and the corresponding growth of living standard in persons employed at

the works (55.6%). However, a certain role is also played by social benefits provided for the employees (59.3%) as well as availability of flats built up in connection with works construction (51.9%). On the other hand, no positive influence was seen by this group of respondents on transport connection and development of opportunities for self-realization of inhabitants. The negative approach of the citizens to the works operation concerns impairment of environment (77.8%), impairment of recreational possibilities in the area (74.1%), and impairment of human relations (40.7%). Nevertheless, the group of citizens - in spite of expressing mainly negative attitude to the works operation (59.3%) - much more frequently speaks of individual positive social indicators rather than negative ones in the structure of reasons for their general approach. In comparison, the group of local authority representatives assumed the total of 58.6% positive impacts and the group of citizens 68.9%. It seems therefore that the „environmental” negative consequences have greater influence on the resulting attitude than specifically social consequences that are in fact produced by the „works” operation.

- e) Possible negative impacts on social environment quality in the village were analyzed in connection with the migration of labour power needed for the „works” operation. The total of 89.3% municipalities did not mention any social problems. In 16.1% of cases, the inflow of new labour power caused insufficient housing possibilities for local inhabitants, insufficient services, unsuitable changes in transport connections, impaired job opportunities for women (wives of workers at the NPP) and no job opportunities for people with low skills. Price drop of immovables in the region and its secondary social effect should not be overseen either.

- f) In connection with the saturation of needs for work engagement of inhabitants in the region, the approach and willingness to independently find a solution in the case of possible loss of job were studied in the group of citizens. It showed that 51.9% citizens do not exhibit too much fear (this was probably conditioned by non-representative character of the group and its structure) since 37.1% of them were certain as to finding another job in the vicinity of their abode and 14.8% had absolutely secured jobs. 11.1% of the jobless would start a business, 7.4% might move outside the region to get another job,

7.4% would make use of the labour office, and 22.2% would not be able to find any solution to the situation or were already in the post-productive age.

- g) No significant coincidence was revealed between the background of citizens, attitudes and the action of interest (lobby) groups at the local, regional or supra-regional level or mass-medial or mass-psychological influences at studying other effects of environment that influence the global attitude of citizens since - according to the local authority representatives - nearly 70% of citizens form the approach of their own mainly on the basis of their own experience.

3.2 Opinions of local population as to consequences of the „works” operation in natural environment

- a) In the group of local authority representatives, the environment is understood as a factor affecting people's health (61.3%), as a complex category including the links among natural, technical and social factors determining sustainable living conditions for inhabitants in the region (19.4%), and as nature protection (16.1%). The conception is very much different from that in the group of citizens where a system viewpoint is preferred (55.6% of respondents), environment is felt as a synonymum of nature and landscape protection (25.9%), and closely related to the health of inhabitants (18.5%).
- b) Results indicated by the local authorities show that as to the influence of the „works” on environment in the village and its surroundings the citizens take clearly negative approach (36.4%), mainly negative approach (17.0%), 19.2% of citizens do not assume

The number of objects
in the cadaster

- 1 to 5
- 6 to 30
- 31 and more

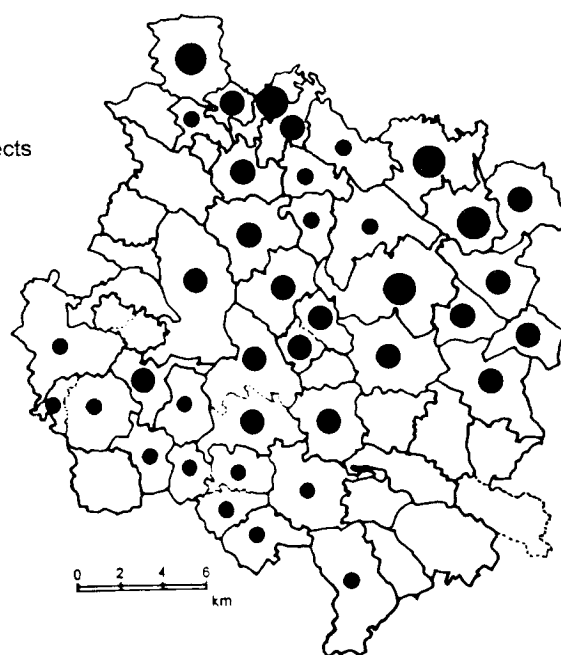


Fig. 4 Individual summer houses in 1971

the environmental impacts important, 13.7% of citizens feel indifferent to the consequences, and 13.7% have mainly positive approach (adverse effects on environment are sufficiently compensated by positive influence on social environment). The most important components of environment for the group of citizens are as follows: value and aesthetics of the surrounding landscape (33.3%), ie. natural profit for inhabitants), clean water (26.7%), clean air (31.1%), less important seems to be the peaceful and silent environment (8.9%).

3.3 Profitable budgeting of municipalities thanks to existence and operation of the works in the area under study

The total of 74.2% respondents from local authorities claim that in addition to the valid system of taxes their budgets are being contributed to from the Fund of Environment, supporting regional programmes, sponsoring (mentioned as „gifts”) by the Dukovany Nuclear Power Plant and Czech Power Engineering Corporation (ČEZ) as well as from financial subsidies provided to municipalities associated in „Energoregion”. For 16.1% of municipalities the funds in connection with the „works” operation are still not available but are expected to arrive soon, 9.7% of municipalities do not get the funds in this way and do not expect to get them in the future.

3.4 Summary

The research showed that consequences of operation of large technical and power generation plants in natural and social environments significantly and by a different way condition opinions of population in the region under study. The largest group of citizens (both from the viewpoint of councilmen and actual inhabitants of the territory) take a generally negative approach to the consequences of „works” operation in natural (53.4%) and social (44.8%) environments, 59.3% of respondents from the group of local inhabitants feel endangered by the „works” operation.

However, the opinions differ by the defined territorial criterion. Inhabitants of the Dukovany-Dalešice microregion incline more often to positive approaches due to beneficial developmental impacts of the „works” on their social situation (43.7%). In contrast, inhabitants of the Náměšť-Oslavany region show generally negative approaches due to unfavourable impacts of the „works” on natural environment (46.6%) that are not sufficiently compensated by the generation of favourable impacts of the „works” operation in social environment as in the region of Dukovany and Dalešice.

The two groups of respondents have a different awareness of „environment”, too. Environment is understood to be a category related to the health of population in the groups of councilmen (61.3%), and a complex

category including natural, technical, economic and social factors in the group of citizens.

It has appeared that the reasons which condition the general positive approach of a citizen can be found in the social area. This is first of all the influence of the „works” on labour market in the region (job opportunities, secure jobs and good prospects, self-realization), on economic functions of living background of inhabitants (ie. contribution of the „works” to better income, improved living standard, social stratification namely in employees at the „works”, etc.), and finally also the positive consequences of construction and operation of the „works” in the area of civil and technical infrastructure of municipalities in the area under study.

Reasons for negative opinions are either of the purely ecological character (contamination of natural environment, water, air, noise and the like), or they concern living environment of people (impaired recreational value of the area, unfavourable consequences for aesthetics, landscape formation and urban and housing structure of the area).

The labour inflow for job opportunities at the „works” caused social problems only in 16% of municipalities (e.g. pressure on flats, lesser employment possibilities for originally settled women, unfavourable changes in transport structure, dropped prices of real-estates). On the other hand, it helped to relieve or stabilize evacuation processes in some 42% of municipalities. Villages that anticipate future continuation in the process of evacuation of their inhabitants (38%) are not situated within the nearest vicinity of the „works” and at the same time, these villages exhibit insufficient or minimum development of private enterprising with some 1 to 3 enterprising legal or natural entities in the village, and the absence of supporting funds in the municipal budgeting in connection with the „works” operation. The reasons for evacuation are seen mainly in the insufficient social security of village inhabitants (security of job and income), impairment of social and technical infrastructure, increasing costs for transport to work, unfitting transport system, and psychological effects following out of worries about the health of inhabitants and natural environment in this ecologically loaded area.

With regard to the resulting general attitude of local population it can be expected that more important are ecological and environmental consequences of the „works” operation than favourable products of the „works” of social nature, which seem to be received as a matter of course and are more frequent. However, there is no evidence so far that this resulting approach of citizens was manipulated by for example „lobby” groups or massmedia.

And again, the activities of institutions, organizations, political parties, enterprising subjects or individuals at the protection of environment and development of prosperity in the individual municipalities are evaluated

in a different way by the two groups of „councilmen” and „citizens”. Three quarters of respondents from the „citizens”, group do not consider these activities to be important (or they even do not know about them). In contrast, two thirds of the „councilmen's” group of respondents admit some beneficial activities on the part of an interest association in the village and the local authorities. In this connection, it is necessary to mention that some 14% of local population feels indifferent towards possible ecological and social impacts of the „works” and approximately 16% of local inhabitants are not prepared to take any active part in the development or protection of environment at all, and in 55% of the case there only a few same enthusiasts who are prepared for the action. At the same time, 23% of respondents assume that their village either actually misses a „social actor” (anybody with appropriate social or economic position, a personality, an authority with good influence on inhabitants or village proceedings), or the personalities in the village act one against another, against concerns of the village, or have a rather negative influence on citizens and human relations in the village. In municipalities that report such a personality, it is usually the mayor (evaluated from the viewpoint of the „councilmen's” group of respondents).

The facts are further confirmed by the finding that some 71% of villages in the area under study cannot yet speak about starting the process of „village regeneration” (regeneration of ways and values of country life, the feel of integrity and good neighbour relationships) and, in contrast, can bring an evidence of things going to the worse. The results are supported by findings in the group of councilmen about the quality of human relations in the structure of values being ranked at the position before the very last one and the need of utility activities in the village on the very last place. Should we abstract from the priority position of the group of values such as „health and family”, the most important thing in the lives of people become „money, property, rank”.

The growth of social inequality (differences in income and standard of living) in some social groups in the village was mentioned by 68% of respondents from the group of „councilmen”. This applies mostly to enterprising subjects of natural persons who self-employ themselves and members of their families in agriculture, trade and building industries, possibly also to managers in legal entities (including the Nuclear Power Plant).

The picture of developing business in the villages is not favour-

able. In some 45% of them, enterprising develops very slowly since the very beginning of transformation, and only a quarter of the villages consider the pace of development even. The most frequent form of enterprising are private businesses of natural persons with the average of 0-21 employees in the whole group of villages under study.

4. Recreation in the surroundings of the Dalešice water works

Geographical conditions for recreation and both the structure and location of recreational facilities were evaluated at the research of recreational potential in the surroundings of the Dalešice water works. The public inquiry meant for owners of individual recreational facilities was made in summer of 1995 in order to record present utilization of the recreational facilities and subjective opinions of owners on the presence and operation of the nuclear power plant in their recreational area. There are 1041 objects of individual recreation within the ten kilometer background of the nuclear power plant. This means that there are some 4000 persons spending regularly their leisure time here (voluntarily - in contrast to the local population). Results of the research can be used to compare perception of the nuclear power plant in permanent residents and those who arrive just for recreation.

The main area of interest for the research was defined by the cadasters surrounding the complex of the nuclear power plant within 10 kilometers and the defined area was further subdivided into two parts: the closer area within 3-5 km from the plant (with the protection zone of 3 km being completely without any dwelling

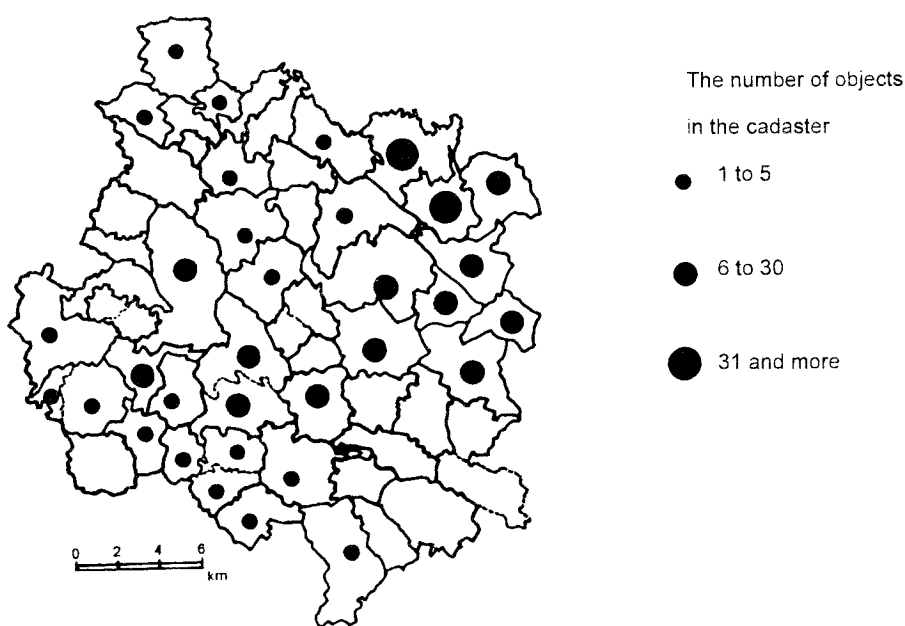


Fig. 5 Individual summer houses in 1995

houses) and the more distant area within 5-10 km. There are 6 villages (7 settlements) and 26 municipalities (28 settlements) in the internal and external background of the power plant, respectively.

Beside the defined territory, the research was made also in cadasters of several other municipalities situated within 10 to 15 kilometers from the nuclear power plant. The area was originally planned for building of new individual recreational objects in order to replace those liquidated during the construction of dams or the nuclear power plant (3 km protection zone). The investigation included the cadasters up to 15 km of distance in the case that they were places concentrating a greater number of cottages and summer houses.

The public inquiry contained 29 questions which focused the following groups of problems:

- 1) *time of construction of recreational facility and its technical infrastructure,*
- 2) *general perception of the landscape, opinions concerning the existence and safety operation of the nuclear power plant,*
- 3) *sales competitiveness and realistic prices of recreational facilities on the market with real-estates,*
- 4) *ways and frequency of utilization of the recreational facilities and changes on their utilization in the last five years due to new economic conditions,*
- 5) *relationship between the holiday-makers and the local population, utilization of services in villages and the way of transport to the recreational area,*
- 6) *future utilization of existing recreational facilities including possibilities of their use for permanent residence.*

The group of respondents consisted of heads of households in the recreational facilities. Most numerous were respondents beyond 60 years of age (39%), and two groups of respondents in the categories of 51-60 and 41-50 years of age, respectively (each of 25%). The group of respondents falling between 31-40 years of age amounted to 8%, and only 3% of them were younger than 30 years. The most frequent group in terms of education was represented by respondents with secondary education (44%), skilled persons (33%), university graduates (19%), and 4% were persons with only primary education. As to professional structure, the group included 43% of retired persons, 22% employees in state enterprises, and 22% of employees of private companies. Self-employed persons (natural persons) amounted to only 10% and persons working in agriculture (members of agricultural cooperatives) only 1%.

The acquired set was divided into three groups by the distance of responding recreational facilities from the nuclear power plant as follows: respondents living in the closer background (3 to 5 km), respondents living in the more distant background (5 to 10 km), and the third group that was represented by owners of recreational facilities localized in the distance of 10-15 km from the nuclear power plant. All subgroups were then di-

vided into owners of cottages and owners of summer houses. In the presented paper, this differentiation is observed only in cases when the responses differed either by the criterion of distance from the plant or by the character of the recreational facility (cottage, summer house). The inquiry was made in more than 15% of owners of recreational facilities, which can be considered a representative sample.

4.1 Present recreational use of the area

The delineated background of the nuclear power plant contains mainly objects of individual recreation, summer camps for children and young people, and exceptionally also recreational facilities of former state enterprises. There are only a few facilities that would fall into the category of „free tourism” in the area. The largest facility for mass recreation is the camp at Hartvík-ovice, situated on the left bank of the Dalešice dam lake. The camp has a standard equipment with no hot water supply neither central kitchen, with 39 permanent beds in 13 cabins and a relatively large open area for tents and caravans. The camp is some 8 km distant from the nuclear power plant and in spite of this fact, it is usually fully booked in summer months. All this thanks to beautiful natural surroundings, bathing possibilities on a well maintained beach, a dense network of marked tourist paths in the very immediate vicinity, numerous cultural sightseeings and natural beauty spots in the wider background (castle in Náměšť nad Oslavou, Kralická printing shop - a medieval printing shop in which the first bible in the Czech language was printed), the serpentine steppe at Mohelno with a typical meander right below the steppe. Other localities used for summer recreation are public campings near Mohelno and at the Stejskal lake (Rouchovany cadaster).

Although the research was focused on the study of recreational utilization of facilities for individual recreation, the research team made a public inquiry also in the Hartvík-ovice camp which is being visited by holiday-makers from the whole Czech Republic but mainly by those from the districts of Brno-City, Brno-Province, Třebíč and Žďár nad Sázavou. The camp operator recorded some 500 thousand overnights in the camp in the summer season of 1995. There are many guests who come here every year the reason for their repeated comeback being mainly the beautiful surroundings. It is in this locality where the majority of holiday-makers do not consider the fact that there is a nuclear power plant in the close vicinity to be important. The phenomenon is apparently psychologically conditioned as the power plant cannot be seen from any place in the close vicinity. On the other hand, the majority of the guests complains about the near military airport at Sedlec near Náměšť nad Oslavou that impairs the given locality with excessive noise.

There are practically no hotels, guest houses or temporary accommodation facilities operated through-

out the year in the area under study. A larger capacity of some 60 beds can be found in the guest house situated in the former castle at Dukovany. Although the guest house has a standard equipment, it is used as a temporary accommodation facility for construction workers employed in the microregion. There are abundant summer camps for children in the area of which the largest ones are situated in the cadasters of Biskoupky, Mohelno and Rešice. However, the camp at Biskoupky has been out of operation for economic reasons already two years. The recreational facilities of former state enterprises are being commercially used at present (being either sold or rented).

Since 1970, ie. since the construction permit for the power generation complex Dukovany-Dalešice), there have been many changes in numbers of recreational facilities for individual recreation. 280 private recreational objects were demolished in the flooded area of Dukovany and Mohelno and in the protection zone of the nuclear power plant. To compensate for these, two other localities at Koněšín and Kozlany were predetermined for new cottages and chalets. It was expected that there will be more than 800 private summer houses erected in these cadasters and some 250 chalets to rent at Hartvíkovice. The cadaster area of Kramolín was to become a recreational center for the so called „company recreation” (Foretová, 1977).

However, the reality is more sober. The total of 126 private summer houses were built at Koněšín and Kozlany, and there was no construction of chalets to rent at all at Hartvíkovice. Yet, the number of summer houses increased in the studied area from 1975 despite the presence of the nuclear power plant. In some recreational localities, the building has been going on at present. However, its extent is much lesser than originally anticipated. According to the statistic data from census of people, houses and individual apartments, there were 1041 recreational objects for individual recreation within the ten kilometers' background of the nuclear power plant, of which 573 were summer houses and 468 holiday cottages.

4.2 Results of public inquiry

The time of acquisition of the recreational object in the loaded area is essential as related to the study of respondents opinions concerning the nuclear power plant as well as to the study of changed values of the local landscape. The total of 40% respondents were owners of recreational facilities in this area before the year 1970 (ie. prior to the construction permit for

the power generation complex). Of these, 5% of respondents had to sell their summer houses to the municipal authorities due to the construction in order to build new ones in newly built recreational localities (mainly at Koněšín and Kozlany). In 1971-1975, ie. roughly until the time when the construction of the nuclear power plant was started in 1974, 11% of respondents acquired recreational objects in this area. In the period of time before the first unit was phased in (1984), there were other 36% of respondents who acquired recreational facilities here. The remaining 13% acquired their holiday cottages and summer houses already at the time of power plant being operated. These data indicate that nearly a half of the inquired respondents acquired the recreational facility in this area being well aware of the nuclear power plant existence. In the cottages, the research team recorded only the year and way of their acquisition. 35% of the inquired were given the cottages from their parents. In these cases, these people are local countrymen with feelings to the given area. The remaining 65% of respondents bought the cottages from their original owners. There was no case of a repeated purchase and sale of the cottage within the public inquiry.

Technical equipment of recreational facilities (electricity, water supply, elimination of sewage water and waste) is at a very low standard. The majority of summer houses are situated outside the intravillan of municipalities, which means that building of technical infrastructure would not be economical and in some cases technically hardly feasible. Technical infrastructure of cottages corresponds with the installed technical infrastructure of municipalities. Relatively best seems to be the connection of recreational objects to the electrical energy distribution network. All cottages in the area

The number of objects
in the cadaster

- 1 to 5
- 6 to 30
- 31 and more

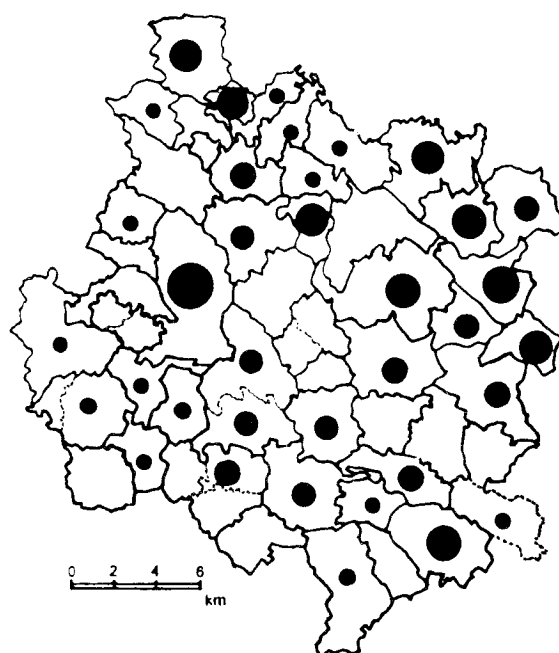


Fig. 6 Individual summer houses in 1991

under study are connected, ie. 33% of all facilities for individual recreation in the studied area. On the other hand, only 22% of summer houses can make use of advantages of being connected to the power supply with regard to their location. However, some of summer house owners generate electricity by means of diesel aggregates mainly at localities where electrification of holiday colonies had originally been planned.

Supplies of the recreational facilities with drinking water is very difficult. There are only 25% of them supplied from the public water supply system, other 5% make use of their own or public wells, and the remaining 70% objects do not have any running water. The group of cottage owners indicates better water supply with 60% of them being connected to running water (of whom 73% are connected to the municipal water supply system, 18% have a waterpipe connected to the local well, and 9% dispose of a pipeline connected to the well of their own), 37% of the cottages have a water source of their own - a well (46%) or a public well (54%), and 3% of the cottages are with no water supply and water must be brought in from a distance.

Water supplies to the summer houses are much worse. Running water is available to only 11% objects (of which 63% and 47% make use of the public and own well, respectively), owners of 74% summer houses make use of non-running water from the public or own well (93% and 7%, resp.). The remaining 15% of summer houses do not have any source of drinking water available and the water is being brought either from the place of permanent residence or from the public well in the nearest village. This applies to summer houses situated in valleys of water streams where water from the stream is used for utility purposes.

Possibilities of sewage water elimination correspond with water availability in the recreational objects. 12% of them are connected to the local sewage system (ie. some cottages situated in intravillans of villages with established sewage systems), 45% of the objects have a septic of their own, and the remaining 43% do not have any adequate liquidation of sewage waters available. The majority of recreational facilities have a dry WC and - with regard to the problems with water supply - also a minimum water consumption.

The way of solid communal waste elimination is mostly individual (82%). The half-a-year waste collection was contracted by 8% owners, and 10% of the owners went for an annual waste collection contract, which mainly applies to the cottage owners in municipalities with organized collection of solid communal waste). Neither in the immediate nor farther vicinity of the individual recreational facilities in extravillans of villages we could see wild dumps or any kind of mess. We found only clean places and even the forest cleared of debris and fallen trees.

Perception of the local landscape as a whole. Owners of recreational facilities in the inquired group include in their perception of the „surrounding landscape“ mainly the river valleys (even in the case that the rivers or water streams do not pass the cadaster of village, in which their own facility is). In the case of summer house owners the finding is connected with localitation of the objects usually in attractive river valleys. The same evaluation was found in the cottage owners whose objects are situated in the intravillans of villages. However, under the term of landscape they do not mean the village and its immediate surroundings but again the landscape parts around water streams. In addition, an approximately half of the cottage owners are local countrymen who are bound to the area with their youth. The wider perception of the „landscape“ is also reflected into their answer to a question whether they would again would like to have a recreational facility in the same area. The presence of the nuclear power plant is of the secondary importance.

Perception of nuclear power plant existence and a feel of potential jeopardy. As it was indicated by the research, this is a psychological problem which does not depend on education or age of respondents. It followed out of the public inquiry that the feel of danger drops with the increasing distance, important being also the fact that the inquired persons identified the power plant with the cooling towers rather than with the proper facility operated. There were 32% of respondents in the whole set who had a positive answer to the question if they have an unpleasant feeling of being endangered by a potential breakdown. The feeling was not shared by 66% of owners and 2% of respondents could not make their decision at all. 50% respondents in the 5 km distance from the nuclear power plant feel a certain risk. In the distance of 5 to 10 km and 10 to 15 km it is 45% and 24% of respondents, respectively. At evaluating replies to this question it is necessary to bear in mind that the majority of owners of recreational facilities have their permanent residence in the districts of Třebíč, Brno-City and Brno-Province, ie. in the wider background of the nuclear power plant. This means that these people feel the potential risk even in their permanent residence and consider it to be a constant fact.

There is a general awareness within the broader surroundings of the nuclear power plant that the recreational facilities situated within this background are not marketable at all or available to sales for only a price which does not correspond with their market value. The research confirmed the presumption only to some extent.

All holiday-makers are content with the environs of their summer house and have no intention to sell it. The majority of them assume that their facilities would be well marketable in the case they wished to sell in spite of the fact that many of them have no electricity or a source of drinking water of their own, and sometimes

even the access is difficult to them. According to the opinions of owners, the difficult access would even contribute to a better price at possible sales. The good competitiveness and realistic market price are corroborated also by summer house owners who acquired their facilities here after 1990.

On the other hand, the opinions concerning possible sales of the cottages reflect the presence of the plant very clearly. In contrast to the summer house owners, the cottage owners are convinced in their majority that they would have problems not only with the sales but also with the market price of the real estate. It remains a question, however, what role would be played in these cases by the insufficient technical infrastructure. With regard to non-attractiveness of village intravillans, their poor technical infrastructure, insufficient services and ever worsening transport accessibility, the nuclear power plant is the last argument for poor marketability of immovables.

Although there were many changes made in the area under study in the last two decades, the local landscape is still very attractive for short-term recreation and hiking. It seems that the construction and operation of the nuclear power plant were not the reason to any limitations in recreational use of existing facilities. Nevertheless, the idea that the Dalešice dam lake will become an important locality for summer recreation did not come true.

Nearly two thirds of owners of recreational objects are over 50 years of age. The recreational facilities are being used not only by themselves but also by their married children and their families. Thanks to the „second domicile“ the population within ten kilometers around the nuclear power plant may rise by 4 000 in the summer season. With some exceptions, there are no friction planes between the communities of local inhabitants and owners of recreational facilities. A great majority of respondents mention very good relations with the local population and local authorities, feeling appurtenance with village communities.

The majority of recreational facilities lack the corresponding technical infrastructure and their owners claim them not to be fitted for permanent residence (no running water or even the source of drinking water, no elimination of sewage waters and solid communal waste, no electricity in some cases). It is therefore not expected that these facilities would contribute in helping the permanently decreasing population in the area. On the top of it, the owners of recrea-

tional facilities cannot be counted with at economic and social transformation of the villages. The respondents - owners of former farms with agricultural land, do not consider any economic activities in this field. On the other hand, it is worth mentioning that the cottage owners contribute to better appearances of villages by maintaining their own recreational objects, and the summer house owners to the maintenance and cultivation of those part of the landscape, in which their summer houses are located.

To the owners of individual recreational facilities in this area the nuclear power plant is an unavoidable evil that has to be but accepted, 35% respondents feel worried about the potential breakdown. The percentage of worrying respondents decreases with the increasing distance from the plant and is greatest among cottage owners within 5 kilometers from the power plant, which can well be attributed to the adverse opinion of local inhabitants. However, even these respondents like the surrounding landscape. 54% of the inquired gave a positive answer to the question whether they would again go for a recreational facility in this area. 32% of respondents - mainly cottage owners - gave a negative answer with the nuclear power plant not being the main reason, though. The public inquiry further indicated that the responding owners of summer houses do not consider possible sales of their recreational objects. This kind of thinking was rather found in cottage owners but even here the main reason is not the existence and operation of the power plant.

5. Future prospects of the region

Technology used in the Dukovany nuclear power plant calls for a great number of skilled workers as well

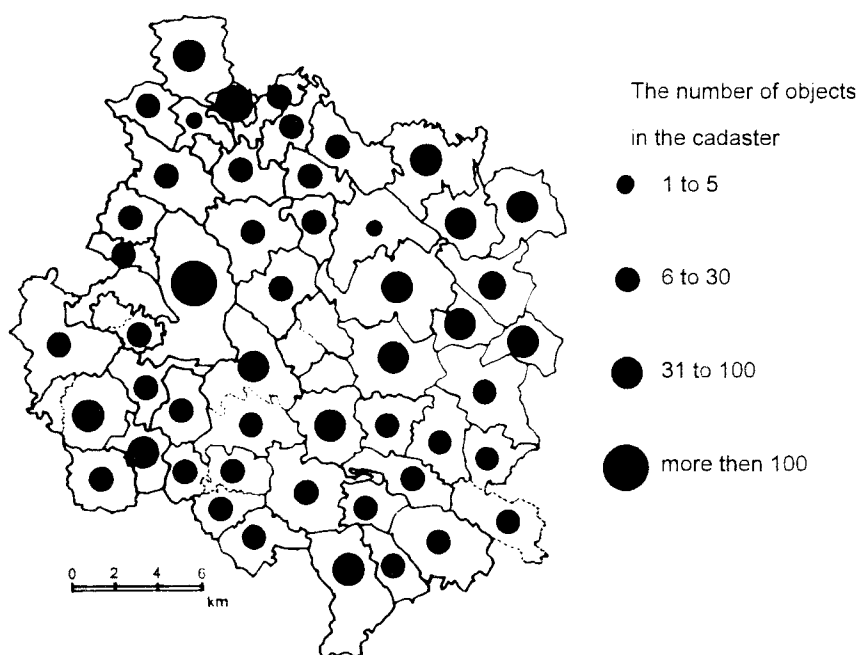


Fig. 7 Total number of facilities for individual recreation in 1995

as well educated and experienced technical and operational personnel. The fact induced expectations of some changes in social environment of the region which has been affected by this huge technical work. Yet, the original plans could not take into consideration the transformation changes which have been going on in the Czech Republic since 1990. These changes have influenced the present situation in the region to considerable extent. It seems that the impact of the transformation changes is more important for the majority of villages than the issue of the nuclear power plant, which is given the secondary importance. Exception may be the village of Dukovany itself and recreational areas or villages in the near vicinity.

An area with the greatest concentration of housing facilities is that of Třebíč where the nuclear power plant became the most important developmental stimulation. Some more important construction was made within the immediate vicinity of the works. However, the building activities reflected in the liquidation of some buildings and recreational facilities.

The general situation in the region corresponds with the problems of transformation in this type of territory. Prospects of agriculture in the region are foggy, there is no firm conception of labour recruitment in the area, the tertiary sector is underestimated, transport accessibility by means of public transport goes worse, and the enterprising activities of local population are insufficient.

Social impact of the power plant - viewed from this point - is objectively rather beneficial since the technological procedure applied does not allow greater migration of labour power which makes the power plant a stabilizing factor for labour in the whole region. Employment in power generation industry helps to maintain purchasing power of the local population, which may stimulate development of services should the local inhabitants be capable of responding to the challenges. The positive social influence of the nuclear power plant is being recognized partly also by the local population.

There is no doubt that the recreational function of the landscape were impaired. However, negative seems to be rather the subjective effect of the plant than actual danger. This can be documented by the results of public inquiry, which indicated that it is mainly the aesthetic impact of its silhouette in the landscape that matters most. In other words: recreational value of the landscape was impaired within a direct visibility of cooling towers. In this connection it is worth mentioning that the power plant is many times identified by many people with the cooling towers that usually dominate the landscape rather than the process of nuclear reaction itself or the process of power generation. Noise of aircrafts from the military airport at Sedlec u Náměště is objectively and subjectively much worse for recreation and permanent dwelling.

Recreation will not develop by expanding construction of summer houses but rather will be used the existing housing facilities for cottages. However, a considerable barrier to any development of recreation is the absolutely insufficient technical and social infrastructure of both permanent settlements and summer house colonies. It is therefore quite logical that there is a tendency in holiday-makers of higher age categories to return to towns with medical and social service and retail network of higher standard. Any further development of recreation that would bring finance into the region is conditioned by considerable improvements of the infrastructure.

The population in their majority feels endangered by impacts of the nuclear power plant on natural environment. However, it would be rather difficult to quantify the significance of this opinion with regard to the list of preferences in the population. The found out data do not indicate that the feel of danger is so high that it would make the inhabitants think of moving into another region. Neither the majority of holiday-makers think of leaving their recreational facilities in the surroundings of the nuclear power plant. It should be mentioned, however, that the change in domicile is neither easy nor usual in the Czech Republic. Nevertheless, the fact is that the camp at Hartvíkovice, not far away from the plant, is rather well-off.

It follows from the above that the population feels a certain negative relation towards the power generation complex of Dukovany-Dalešice that is to a certain extent justified. A percentage of it, however, is prepared to recognize beneficial influence of the power plant on well-being of a wider area. Intensity of the negative relation does not reach values which might become a serious social problem. It is assumed that activities of non-governmental organizations against the nuclear power plant usually do not originate from the local population since - as it was said before - the most important items in the hierarchy of values for the local population is money, property and a good rank.

A far more visible problem in the region is the capability of its population and self-government authorities of coming to terms with all consequences of transformation and providing good prosperity for their villages. It was found that the programme of village restoration had not been even started in the majority of municipalities in the region under study. There are even signals that the municipalities feel somewhat uneasy about the development of enterprising. The existence of the nuclear power plant for communal development and for support of local businesses and enterprising is utilized to minimum extent.

The research of marginal regions indicated that human factor is entirely decisive for their present and future prosperity. Objective conditions of the territory and financial situation are of the secondary importance. The main barrier is seen in the insufficient awareness

of the local population, the fact which is usually conditioned by two following factors:

- *reduced percentage of people with good skills and qualification in population structure,*
- *traditional mistrust of innovations in the marginal social environment.*

In both cases the nuclear power plant plays a favourable role since it helps to considerably increase numbers of highly qualified people who work on the basis of advanced technologies. Workers in the plant bring their families into the area, whose qualifications are also higher than the average because qualification has a faculty of self-reproduction. The problem consists in the fact that these people are concentrated in Třebíč and the rest of the region could not yet find a way of how to make use of their potential.

A principal idea for regional prosperity in the present situation is to make use of local resources. Should the local conditions include serious disadvantages, it is necessary to find methods how to use these disadvantages to the benefit of the region. This fully applies also to the power generation complex of Dukovany-Dalešice. Economic power of the corporation as well as qualities of its employees bring to the region the potential necessary for future prosperity. Villages in the region should focus their activities onto cooperation with the company which can be the first to help in improving technical infrastructure. This is an elementar precondition for development of small and medium-size businesses.

6. Discussion and conclusion

Environmental risks accompany the mankind throughout its existence. When the man lived in caves, he was endangered by hunger, diseases, predators, natural disasters. With the developing science and technique the danger of natural risks is reduced. On the other hand, the significance of anthropogenic risks has been increasing. This is the price that we have to pay for technical progress. One of these risks is undoubtedly nuclear power engineering. However, the risk presented by the industry is neither the only nor the most important technogenic risk surrounding the man in general, and the man in vicinity of a nuclear power plant in particular.

Realistic measure of risk represented by nuclear power generation industry for instance in comparison with the use of a car can be relatively easily calculated. It is obvious that both in absolute and relative conception, driving a car comes out as an activity which is much more hazardous to the environment both from the viewpoint of its consequences and in terms of possible accidents. And, there is a cruel experience for the mankind from consequences after the nuclear bomb was thrown onto Hiroshima as well as from the breakdown of the Chernobyl nuclear power plant (Vaishar, 1993). The consequences were monstrous not only for the number of victims but for the fact that they impacted a single place within a relatively short time and with

reduced options of individual choice. It is usually the individual who makes a decision about using the car and the government who decides about location of a nuclear power plant or use of a nuclear weapon. Here, we arrive at the problem of risk perception.

It is most probable that it is aircraft passengers rather than car passengers, who feel a certain risk although the aircraft is in fact a safer means of transport. It is because aircraft accidents have wider publicity in mass media than those of cars, and also thanks to the fact that nearly everybody can drive a car whilst there are a few to pilot an aircraft. This is why there are only a few serious estimates of the realistic measure of hazard in the aircraft. And it is very similar with the nuclear power plant. The reason for sensitive perception of the nuclear risk is both the wide publicity spread by mass media and non-governmental organizations, and poor knowledge of the used technology. In comparison with other serious environmental problems in the Czech Republic such as storage of conventional wastes, it is necessary to consider the actual concern of these movements against the nuclear power plant and whether they are interested to really find a solution to the issue of just to make themselves more visible.

There is no doubt that the population in the vicinity of the plant is at the risk. The question stands, however, how much the people living here are willing to add this hazard to other dangers surrounding them, which are often even more risky. What is a realistic choice for these people? They can certainly move into relatively safer places and they can come to terms with the existence of the nuclear power plant in their locality. In the latter case, an adequate approach could possibly be seen in certain compensation measures that the local population would require in order to improve the standard of living.

An alternative to nuclear power plants can neither be seen in restoration and expansion of classic heat generation plants nor in utilization of non-traditional resources that are limited in our country and restricted to relatively short and irregular time periods. The only alternative possible is to save electrical energy. However, this would be contradictory with the present trend since the consumption of electrical energy shows a dramatic increase. On comparison with the first half-a-year of 1994, it was increased by 5.3% in the first half-a-year of 1995. First time in the last few years the imports exceeded exports. According to an analysis made by ČEZ, the main cause consists in a relatively favourable price of electrical energy for heating households. To reduce the consumption in market economy would mean to raise the price. Thus, those who demonstrate against the nuclear power plants demonstrate in fact for higher prices of electrical energy. Nevertheless, reduction of consumption is very much desirable, and it should be achieved through restructuring of production and transfer to energy-saving technologies rather than

via increasing prices and restricting consumption in households to the detriment of their living standard.

Intention of this study does not consist in finding a new strategy for power generation and supplies. The most essential fact is that any stoppage of nuclear power generation in the future years would be unrealistic. But the technology calls for storage and transportation of both active and burnt nuclear fuels. We attempted at a schematic outline of how the social system responds to these facts and tried to include other marginal problems of the region under study. The citizen should be informed of actual risks associated with the operation of the nuclear power plant, and also their weight within the set of other anthropogenic risks. This knowledge should serve for a decision whether he or she are prepared to bear the risks, possibly for defining their price and negotiate the price with representatives of power industry and government.

Perception of environmental risks by common population is a great problem of present environment protection plan. This study has brought an evidence that people perceive mainly visible risks with direct impact on them, and in particular the risks impacting their comfort rather than their health. Willingness of people to commit themselves in the issue is generally poor and so is their preparedness to pay more for environment-friendly products, for elimination of wastes or energies.

On the other hand, there are only a very few environmentally oriented non-governmental organizations with positive influence in the process of recognition of serious environmental issues. It is because they mostly overestimate nature protection and underestimate rea-

sonable utilization of the nature, calling for the solution of consequences and not for the solution of phenomena. It is often a case that these initiatives advocate projects or strategies that are adverse to environment: when advocating other than nuclear power generation source, they also advocate the longer effect of coal burning power plants on air pollution, or their fight against motorways multiplies negative impacts of road traffic on existing communications. They often fail to convince other people when for example an environmentalist with a cigarette in his hand tries to explain the principles of fight for clean air. One cannot help a feeling that events of some environmental initiatives are funded by concrete commercial or political groups.

It is obvious that the Czech Republic needs a good conception for the sphere of environment. The AGENDA 21, accepted at the world conference in Rio de Janeiro is being considered an important document in the majority of countries in the civilized world, whilst it is a mere marginality in Czech conditions. Environmental education is an integral part of environment protection. Yet, there are big mistakes even here if the education is entrusted to one-sided ecologists and the mistakes reflect in the perception of environment by inhabitants.

Our study has shown that the nuclear power plant does not represent such a risk for the local populations and holiday-makers that could be expected from activities of various local and foreign initiatives. In the other hand, however, it has revealed a low weight of environmental problems in the system of values and an unclear awareness of environment and its scope.

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Reviewer

Prof. RNDr. Miroslav HAVRLANT, CSc.



The nuclear power plant Dukovany - an anthropogenic element in the landscape
a view from the East



The past and the present: cooling towers of the nuclear power plant at Dukovany
and the chapel of the destroyed village of Lipňany

Illustrations to the paper of H. Horská et al.; photos: Mojmir HRÁDEK



Mohelno: the lower water reservoir for the pump power plant Dalešice - a part of the power generation system Dukovany-Dalešice.



The bank of the Dalešice water reservoir - near at Hartvíkovice camp: 8 km from the nuclear power plant

Illustrations to the paper of H. Horská et al.; photos: Mojmír HRÁDEK