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DIPLOMA THESIS

Title: Cost-Benefit analysis of the
chosen capital project

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Declaration

I warrant, that the thesis is my original work and that I have not received outside assistance. Only the sources cited have been used in this draft. Parts that are direct quotes or paraphrases are identified as such.

Tomáš Havelka

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Cost-Benefit Analysis of the chosen capital project

Analýza nákladů a výnosů vybraného investičního projektu

SUMMARY

Cost-benefit analysis (CBA) is considered as well known and valuable analytical tool providing information for coherent decision making process. Project or policy is assessed through the procedures within CBA framework and decision makers make judgments whether undertake project or policy or not upon calculated socio economic indicators.

Key words: costs, benefits, cost-benefit analysis, decision making process, financial analysis, economic analysis, risk analysis, social discount rate, NPV, IRR

SHRNUTÍ

Analýza nákladů a přínosů je považována za rozšířený a hodnotný analytický nástroj, který poskytuje ucelené informace pro proces rozhodování. Projekt nebo koncepce je analyzována z pohledu nákladovo výnosové analýzy a na základě vypočtených ukazatelů se ti, kteří rozhodují o vzniku projektu (koncepce) rozhodnou zda-li má být project (koncepce) realizována či ne.

Klíčová slova: náklady, výnosy, analýza nákladů a výnosů, rozhodovací proces, finanční analýza, ekonomická analýza, analýza rizik, společenská diskontní sazba, čistá současná hodnota, vnitřní výnosové procento

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1. Introduction

Cost-benefit analysis has been seen and used for a long time as one of the major tools for analysis concerning projects and policies with wide public importance. Through reading of this thesis, the reader will become more familiar with the complexity of the analysis as such from various points of view. This brief introduction should have been seen only as such a preliminary step before the reader will be introduced into the different aspects of Cost-benefit analysis (CBA), especially its historical, economical and philosophical background, which is crucial for further introducing of theories on which cost-benefit analysis has been created or more precisely has been adopted. And the final adoption of appropriate theories and related calculations is the only way how to obtain the the answers about wheter the proposed project should have been undertaken or not. This is the purpose of performing CBA.

The decision about which appropriate theories should have been taken into the account and incorporated within analysis's process is also part of the process. When Pigou (1962), summarized the fundamental origins of economics of welfare, he based his summary on the comparison and differentiation of dynamics and economics in sense of application as such and he concluded that economics has not had one fundamental law of general application in comparison to the economics where we have known about various. Therefore, our first issue has been described by Sen (2000) and I have called that as *problematic classification of subdivisional procedures* of the main theme called Cost-benefit analysis. Basic information upon which this classificational issue has been based is concerning high number of stakeholders within CBA. Sen (2000) has not gone further enough into this aspect, because her main attention of the work done was to report her critiques about imposed additional requirements within methodology of Cost-benefit analysis currently used, trade offs between acceptability and usability and issues concerning freedom of valuation as a part of Cost-benefit analysis (more comments about all these aspects of Cost-benefit analysis will be provided). She was satisfied with classification only into to divisions as (1) protagonists and (2) the others. Even if such a classification cannot provide more concrete view on the structure of stakeholder portfolio, there is no question about the numerous participants on CBA. Nevertheless, there has not been provided full and structured listing of concrete stakeholders, further work has provided enough assurance to claim, that wide spectrum of those stakeholders has to be

taken into account. Hence, particular focus has been given to consideration of right and precise chosen procedures, performed within CBA, which are connected to stakeholders as such, because of one of CBA well-known attributes, as plasticity is considered. Sen (2000) tried to point out the high risks of choosing irrelevant procedures based on relation between procedures and stakeholders. These risks were successfully taken into consideration.

As the amount of stakeholders was increasing by the time from the very beginning of the noted existence of CBA as comprehensive framework till nowadays, also the importance for decision makers of this analysis has grown too. Historical development has shown us that from economic, ethical, psychological and other theoretical backgrounds' point of view described further it has been just a short step of implementing the concrete concepts of measurements, for example, weighting, valuation, discounting principle etc.; decision making procedures. Complexity of analysis is depicted through the performed steps of divisions and concerning procedures, their correlation and interconnection, however, for all procedures clear methodology has been formulated and adopted so wide utilization of cost-benefit analysis by governments or international organizations have been seen all around a world as Mishan (2007) commented.

CBA has become so in favour due to its quite straightforward definition of purpose, to evaluate the proposed project or policy in way, where at the end of the process is said whether the project or policy would be undertaken or not. Literature review will provide theoretical overview about theoretical background of particular analysis's procedure. Objectives and methodology will clearly state which questions analyst at the end of the process of analyzing has to answer and which and how particular procedures will be performed upon which the final decision will be made. Empirical part will consist of the evidence of adoption methodological procedures. This adoption will lead to the acquirement of the vital indicators which are then summarized in the conclusion section. There is going to be said also the final judgments about proposed project.

2. Literature review

2.1. Historical, economical and philosophical overview

2.1.1. Modern economics

As the economist are not clear about various issues which will be mentioned later, the both parties of economists; those who support analysis and those who critique analysis are quite clear about the roots of CBA as such. Mishan (2000) proposed that the origins of the CBA are connected to the several important concepts and thoughts of their time.

Short note should have been mentioned at the very beginning about the father of the modern Economics, Adam Smith. Smith's brought in his *Wealth of Nations*, as one of the concepts, "*invisible hand of the market*" is the key concept for the Cost-benefit analysis. Smith (1776), alongside of all the contributions, explained the functional purpose and consequences of the market. As the second example of vital importance of Smith's contribution in economics, particularly CBA, could have been seen the relation between relative income and human nature. Concept of consumers' preferences, distribution of wealth, and others, will be mentioned later in the thesis. Despite that fact it is appropriate to mention Smith's concerns as were concluded by Sen (2000), where she pointed out Smith's view on people's relative low income, their possible lack of desire to have more and better goods than one's neighbours. If I will take aside the fact that Smith's modern disciples are reluctant to apply these concerns into the modern concepts, it is necessary to emphasize the importance for its contribution concerning valuation, compensation and willingness-to-pay concepts.

2.1.2. Dupuit, Marshall and first mention of the concept of consumer surplus

Another concept is known as the concept of consumer surplus, which was first presented by French engineer and economist Julis Dupuit (1804-1866). Dupuit (1844) showed till that time no further analysed finding that the users of French bridges were enjoying the benefits of using those bridges, despite that fact, that these users were paying tolls for that usage. Also well-known improvement of this concept has been performed by Englishman, Alfred Marshall, great economist and philosopher of his time, who established this concept in broader coherent in his work. Alongside with consumer surplus, Marshall (1890) in his *Principles of Economics* introduced and illustrated other concepts

also important for CBA as supply and demand, marginal utility and costs of production in his Principles of Economics.

2.1.3. Consequentialism (Utilitarianism)

The one's preferences and intensities of desire are closely related to status of someone's well-being (theory of subjective well-being). This theory has found its roots within Utilitarianism perspective about the world, which is conceded as one of the branches of moral theories known as Consequentialism. Supporters of theories are convinced that only right course of actions lead to the best consequences as Frank (2000) supposed. The fundamental features and of this perspective was introduced by Bentham during second half of 18th century. For the modern economists as Little (2002) represents, Utilitarianism is considered as a theory of ethics in sense that moral legitimacy of consequences is questionable, nevertheless, Bentham proposed *the greatest happiness principle*, economic principle, where the happiness of individual occurred in sense of level of well-being of individual, however, the happiness of the society should have been considered as the welfare of the community. Welfare in that sense is represented by the sum of well-beings of the every individual member of the community. Little (2002) explained that Bentham's aim was to introduce the man's great happiness in economic terms, in other words the community's welfare. Afterwards he revealed how the ethical principle was linked to the economic principle, maximization of the utility. Happiness or increased welfare could be seen as the legitimate level of total satisfaction. Hence, the measurement of level of total satisfaction is performed by the measurement of the overall utility, but desire status was perceived by adding additional dimension represented by the increase of the community's welfare by the time. Fulfilment of this desired status was performed by usage of specific economic tool – maximization of the utility.

2.1.4. Welfare Economics

There are known disputes against consequentialist theories made by their critics and the defences made by consequentialist moral philosophers as Frank (2000) noted, where the central point of the disputes was the inconsistency of philosophers' conclusions based on theories and readers' (critics) ethical intuition. Among the most favourable critical examples is known someone called "utility monster". Person is called utility monster when his efficiency of transformation of resources rises above anyone else's. Frank (2000) observed that critics went so far in adoption of this "utility monster" that they suggested

rejecting the whole Utilitarian philosophy. It has not happened, also because that already mention defences of consequentialist philosophers have explained their thoughts on used and particular examples. These disputes were never fully resolved.

Another economist who formulated the view of today's perceived economy is Pigou (1920). He reintroduced draft concerning today's well-known branch of economy; the Welfare economy. Pigou (1920) proposed new comprehension of economics, where central aspect was regarded as welfare; thing of wide range and attributes of relation between its elements represented by consciousness. Another determining attribute has been shown on the example of categorization of welfare as great and less. Between various divisions of welfare, Pigou (1920) has focused on social welfare, particularly on direct and indirect relation between measuring-rod of money and the outcome of the utilization of the money. Outcomes of these utilizations could represent the state of satisfaction or dissatisfaction. However, the measurements do not follow the procedure with the aim to obtain the level of satisfaction or opposite for person who acquires that thing, as it could suggest, but high concern of these measurement are seen from the reason to obtain level or intensity of desire, in other words – utility. Basic utility function is based on intensity of desire of thing, where stronger desire for thing/good leads to higher utility of that good which possesses as Pigou (1920) commented. Another and probably more precise explanation of theory of utility has been provided by Broom (2000), where he stated that preferences for thing/good could be based on utility function. The numbers obtained through this function, so called utilities, are determinants of state of affairs. Each state has its own utility and utility of one thing is higher than utility of another thing only if the personal preferences for that particular thing are higher than for another thing. Another concept also linked to the economics of welfare is the concept of externality. Mishan (2000) pointed out the importance of notion of externalities for the whole framework of Cost-benefit analysis. This concept has origins among differentiation of private economic production and public economic production. Pigou provided these examples to make clear the differences between these two productions; examples are child labour, alcohol or factory pollution.

2.1.5. Pareto optimum

Next concept to be mentioned, which formulated the fundamental principle the Cost-benefit analysis has served, and also has been known as foundational concept of welfare

economics, is known as the concept of Pareto optimum. Zerbe (2006) describes the essence of Pareto optimum as follows:

[In its strong form, Pareto efficiency states that state A is preferred to state B when state A is ranked higher than state B for one person and all other persons rank A at least as high as B. If the utility (well-being) of each individual is higher in state A, then state A is preferred according to the weak form of Pareto efficiency]

When another dimension, in this case time, is applied the notion so called Pareto improvement is found. Then the criteria is known as the situation where no person is made worse off and in the same time at least one person has to be better off, then the state (project,policy) is appropriate and valid to undertake. The issue concerning adoption of Pareto improvement is based on observation that only very limited amount of projects or policies have not had losers Zerbe (2006) analysed. Real and wide application of Pareto improvement as such has its limits.

The roots of these limits might be seen as the application of sale at market economy, because as Zerbe (2006) pointed out even voluntary sale from one person to another has signs of unfulfilled conditions of Pareto improvement. As the sale proceeded, it might be observed that both seller and buyer have increased their well-being, in other words their high satisfaction caused performed business and they are both better off. Nevertheless, as both the seller and the buyer, they are part of the community; also the analysis of influence of this business upon that community should have been taken into the consideration. Thus, one of the possible scenario of influence upon community and its market is that the occurrence of sale might drive the price of the thing up due to possible market forces, externalities, etc. Thanks to that increase of price another members of community and market might suffer, even if only marginally, and it made them to be worse off. Hence, the requirements of Pareto improvement were not fulfilled then. One of the possible ways how to nevertheless implement Pareto improvement even on such a scenario is the sale locate not within market economy driven by supply and demand, but into the business environment of exchange. The question if such step back in evaluation of the economy is worthwhile, should take a place and probably another issue such a consideration might bring (for example valuation of exchanged goods), but for sure is solving the problem of driving price up. Main significant difference among both scenarios, particularly business environment, should be considered as sale experience. On one hand, market forces are

driven and are shaping future status of market condition before another interaction (sale for example) could occur. On the other hand, each exchange of things/goods interaction is individual, one way procedure, where exchange participant A and exchange participant B have to first agree on the conditions of such an exchange and only based on the common agreement upon the conditions of an exchange, the exchange is processed. Obviously, in case that participant A and B of current exchange has performed similar exchange before *ceteris paribus* the agreement and following exchange might occur in a shorter time. The partial conclusion then grants that previous experience from sale/exchange and information based on that experience are able to influence both of these scenarios, but under the different conditions, where sale within a market economy has to include information obtained from previous interaction in comparison to exchange, where such an experience might be applied, might help but its not necessary for processing the exchange. Deep analysis of the consequences of both scenarios even under the same and different conditions was not performed, but still such an example could observe that new theories and policies do not have to be built necessary on the latest version of notions but also some older theories should have been assessed within the nowadays reality.

The most significant critics were linked in case of Pareto improvement to the theory of measurement of enjoyment; respectively the common economists' conviction was based on principle of free and direct comparability of gains and losses among individuals as Zerbe (2006) conceded. The turning point might be connected to the work of economist Robinson (1932), who pointed out that the basic assumptions for comparison are not valid and should be adjusted. He ment by that the comparisons among individual has had more attributes and conclusion closer related to the ethical rather than scientific results, because simple reason that utility as unable to be measured.

Other examples of limits, in this case concerning Pareto improvement were recorded by Zerbe (2006), limits related more to the possible issue of potential Pareto improvement are related to work of Mishan (2007). He claims that despite of distributional effects, economists keen to accept the fact that potential Pareto improvement may claim consensus within Western society. Furthermore, this consensus should have been illustrated by acceptance of potential Pareto improvement as a part of virtual constitution. This claim is based upon these three assumptions.

- 1) Mishan (2007) concluded that there exist economic institutions within Western societies, which have as the theoretical principle the aim to transform the potential Pareto improvement into the actual Pareto improvement. The time necessary for successful transformation has no critical importance in this case, because it has been dependent on the existence of those economic institutions itself. This notion secures the overall increase of welfare. Higher interests should have been given to the volume about which welfare is increasing during repetitive periods. Both of these aspects of transformation are conditional to the electoral system within society. Those economic institutions are considered progressive taxation and system of welfare assistance. Especially progressive taxation is highly conditional to the result of elections, because the law in Western societies in majority of cases set the interval between two elections. Despite the fact that also majority of societies have already established these economic institutions, it is unreasonable to believe that proper function of these institutions will lead to situation where all members of community would be better off and none would be worse off even if theory said so.
- 2) Mishan (2007) also found that possible losses created by the adoption of change or by other words by undertaken projects will not affect the same group overtime. The group of people who were identified as those who were worst off is constantly changing. The issue of time is fundamental for this notion, because after some time of continuously adoption of potential Pareto improvement everyone or almost everyone will be made better off.
- 3) Third Mishan's (2007) thought revealed the policies applicated to decrease welfare inequality in sense of proper identification of group of people (in many cases among the lower income brackets). Afterwards, the decision makers responsible for concerns of all income brackets which he should represent suggest the proposal about acceptance or rejection of schemes and also in some cases further recommendations about adequate options of compensation for the losers.

Those limits mentioned before were pointed out by economists who were supporting the whole notion of potential Pareto improvement and the consequences caused by the application of that notion. Little (2002) in comparison to previous economists, he has been distinguished as the critique of Utilitarian economics, the Welfare economics, potential

Pareto improvement or also principle of consumers' surplus. He has made the three fold classification of theory how was developed according to his deduction and provided criticism of its course, content and conclusions. Little (2002) assessed that threefold classification is based according to the three different approaches or positions towards the theory as such. Those three schools of thoughts are identified according to the major difference of their attitude toward the classification and origins of the theory. Hence, first school of thoughts is more tend to analyse the welfare economics from strictly ethical point of view, in comparison to the second school of thoughts which has not recognised ethical concept within at all and has concentrated to recognition of the causes of satisfaction. Third school of thoughts has taken the idea about potential Pareto improvement and compared to utopian planning presented by Popper (1966). The school of thoughts were then summarized like this:

- 1) Little (2002) concluded that first school of thoughts looked into the issue of welfare only through the ethical concerns, therefore, it has been constructed the ethical presumption about one who has the right to mediate crucial ethical premises and let members of the community to become familiar with them. Afterwards the conclusions about welfare as such within community are then deduced from those ethical premises. Little (2002) then proposed the presumption that "the one", who has the right to mediate those ethical premises, has in mind only the welfare of the community as such and welfare of particular individual as a member of the community is put aside. When the potential Pareto improvement is applied on the evaluation of state/project which influences the community, the accent is set on the interest of the individual members of the community. Where in comparison Little (2002) argues that in case of this particular school of thoughts, there is no reason for "the one", who has the right to mediate ethical premises, to consciously incorporate the interests of individual under the consideration of community welfare. Little nevertheless noted that it is "the one" choice whether he will act on behalf of this theory or not, moreover, the decision about the use of the satisfaction and happiness as the relevant and even hypothetical measures is upon "the one". But even the one has to follow any knowledge or ethical framework acquired in past, so there is no reason to argue that "the one" should act without relation with the theory.

Second fundamental concern of this school has been recorded by Little (2002) as the the concern about the ideal distribution. One might argue about validity of consideration the ideal distribution as the ethical concern, but as the author of summarization also reported, “the one” has the right to put into the group of all concerns anything what has the value.

In this particular case we may see the rare area of harmony between the supporters, represented in this thesis by Mishan, and critic, represented by thoughts of Little. Both have seen the ideal distribution as vital for the principle of adoption potential Pareto improvement. Mishan (2007) saw the reflection of the utilization of the ideal distribution by examples as welfare assistance for the community and in some range adoption of the progressive taxation system. Despite the fact that Mishan consideration of potential Pareto improvement was more focus on the presumption of acceptance this improvement within virtual constitution. And despite the fact that Little considerations tent to be more focused on ethical principles of identified school of thoughts, there might be identified the areas of comparable considerations and in one of them there has been identified even consensus about the importance of that concern.

- 2) The second school of thought according to the Little (2002) from the ethical nature of the recognition of Welfare economics to the more traditionall one. By traditional is ment the emphasis of importance of the concept of satisfaction and its causes. Further more author of sammurization explained, that main difference between the school of thought and pure utilitarian way of thinking is the denying of interpersonal comparisons. But also as it has happened with the previous school, huge importance is given also to the distribution of income. Little (2002) illustrated the consequences of determination of desired Pareto optimum state situation as black and white light (all or nothing), potential Pareto improvement was analysed in way where the optimal state is just one and all other states are than less desired. Logicall consequence of this conclusion is that however the optimal state is found, it is not necessary to compare with any other, because it was found as the optimal. It makes the sense of the appropriate critique, but as the critic wrote, that ideal distribution of income as it has been so in favour by Little, has to be part of the

optimal solution too. Thus, the criticism of the application potential Pareto principal represented by no only theoretical (as in case of Pareto improvement, where the intercomparison was not possible to adopt due to more ethical than scientific attributs) procedure how determinants of decision, wheather state is Pareto optimum or not, might be shaken. Unfortunately Little did not go further with the analysis of differences among optimal and suboptimal states/projects and particularly their consequences. Therefore he could found out that the application of potential Pareto improvement in the long term process is fundamentally established on the principle of maximization of welfare, but in sense of the individual decisions, it is not so important whether the state/project is the most optimal rather than any sub-optimal. The application of potential Pareto improvement will, by itself, secure the principle of maximization of welfare within the community as noted Mishan (2006). The reason of the adoption tools as the Cost-benefit analysis is to shorten the time necessary for that maximization of welfare; in other words, Cost-benefit analysis will provide the assurance that the optimal states/projects will generate the maximum welfare and the groups of community identified as losers will be strictly different as different the states projects will be.

- 3) The third school of thought according to the same critic as previous is differentiated from the last one by the acceptance of distribution of income as irrelevant for the decision about which situation could bring greater welfare than another. Thus, it remains the same that the role of the choice that optimal state/project in the light of the potential Pareto improvement is seen as better for the maximization of welfare of the community than any other sub-optimal state. Little (2002) claimed that the role of rejected interpersonal comparisons by economists of this third school of thoughts is significant. Therefore the economists are not able even to analyse the differences between satisfactions which concerns the rich or poor people. This claim is built on the utilitarians' assumption that there is no difference between satisfactions between people of the one pound. Economists and supporters of the utilitarian thoughts on the other hand maintain the opinion that further application of potential Pareto improvement might identified as the losers the group of people considered as the poor. And when it happened, the overall aim to maximize the

community welfare is still possible to reach, because the decision makers have that power to reject the state/project or better to compensate possible losers. Then there is the way how to increase overall satisfaction of the group considered as the losers so the aim in sense of maximization of welfare still holds.

This section about the Pareto improvement criterion has brought more common information about its content. This section also has brought more familiarity about theoretical insides of this criterion significant for the later determination of range application of CBA and why it is so vital during that preparation the CBA to keep that theoretical background in mind. Even if in later sub-chapters, readers will be introduced with another criterion which has actually taken the role as the theoretical core of deterministic assumption.

The reason, why there have been presented several supporting and also critical thoughts of economists, was exactly in that sense to suggest under which condition it was decided about further inappropriateness and unutilization of potential Pareto improvement criteria. The synthesis of thoughts then might illustrate that not all of the critics and even defences are so impenetrable but also the scale of possible significant deficits of the theory.

2.1.6. Kaldor-Hicks criterion, Scitovsky criterion

But the process of broad scientific acceptability of such a Robinson's view (1932) was slow and it took several years that majority of economists accepted that perspective. When one of the greatest economists of 20th century, British Nobel Prize winner in economics, Sir John Hicks (1939) was asking questions concerning the similar issue as Robinson (1932) about comparability of individual gains and losses caused by individual enjoyment. Zerbe (2006) analysed that it was the economist Kaldor (1939) who brought welfare measure which has become more applicable than Pareto efficiency improvement. He took into the account of Robinson (1932) work and set up the criterion called potential Pareto improvement. This Kaldor's (1939) criterion was desirable because of this reason:

[The economist's case for the policy is quite unaffected by the question of the comparability of individual satisfaction, since in all such cases it is possible to make everybody better off than before, or at any rate to make some people better off without making anybody worse off.]

There has to be also taken under the consideration that increase of real income due to the effect of policy is no any issue. But Kaldor (1939) also emphasized that it has been rather political than economical issue whether the money measured gains exceed the money measure losses. Hicks played an important role in sense of acceptability of that criterion. But when he accepted that criterion as valid, it was used broadly around the world, especially in Great Britain and USA. Later it has become the usual criterion of the Cost-benefit analysis and has been called Kaldor-Hicks criterion, adjusted potential Pareto improvement. This criterion is used up till now.

2.1.7. Development of Cost-benefit analysis in the second half of 20th century

Nevertheless, the broad establishment of Kaldor-Hicks criterion was not only historical event concerning CBA during late 1930's. Mishan (2006) reported that in USA in that time CBA was covered in US Flood Control Act. Therefore Cost-benefit analysis has been used as enactment part of valuative framework of projects which have regarded environment. On behalf of this framework the decisions about undertaken of projects were made. It did not mean only the step up of significance of analysis as such, but also caused the improvement of assessment process and documentation. The projects were not anymore accepted or rejected according to the financial appraisal only, but the entire net benefits and social costs were counted as Mishan (2006) explained. Unfortunately there still exist the lack of guidelines and every agency applied different set of standards. In that time another valid criterion was introduced. That criterion was constructed by economist Scitovsky (1942) and brought additional view how to assess the desirability of the project. Scitovsky (1942) criterion might be stated as the relation between potential losers and potential winners, where losers are unable to bribe winners in original state before the project is undertaken. Both, the Kaldor-Hicks and Scitovsky criteria are still used as the compensation tests in CBA. Zerbe (2006) admits that both of these criteria are related to the measurement of notions as Willingness-to-pay (willingness-to-accept). The notion of willingness-to-pay correlated to consumer surplus, the valuation and its methods, distribution of income and also weighting principal will have its own sub-chapter after the end of this historical review chapter.

After the publication of Scitovsky criterion in 1942, the situation did not significantly improve and only the formation of inter-agency group called US Federal Inter-Agency River Basin Committee's Subcommittee on Benefits and Costs in 1946 has

changed it in the USA. In the USA were in the first front in sense of adoption distinctive procedures and the rest of the world then followed their example in that time only. The application of CBA was used for example in the US Army Corps for evaluative purposes of Water management projects as Pearce and Nash (1981) found. Therefore, that inter-agency after its formation prepared the consistent set of standardized practices printed under common name as Green Book. Mishan (2006) reported along with other historical events which will follow that another significant importance for the extension of use of the Cost-benefit analysis was in sign of publication of Budget Circular A-47, made by the Bureau of Budget, dated in 1952.

Next step of Cost-benefit analysis wider spread might be seen within establishment of theoretical framework for companies. This theoretical framework was created by three economists within their separate publications. Those economists were, Krutilla and Eckstein (1958). They used for the purposes of creation distinctive methodology the principles of neoclassical welfare economics. Their work is considered as starting shot of rapid development and publishing books and papers for onwards years. Another reason one might see in institutionalization of utilization of Cost-benefit analysis in USA, Canada and the UK. All three countries established application of Cost-benefit analysis independently even before the consideration about policies and projects took a place. Adler (2002) concluded that in years 1970's had to face the challenges as technocratic challenges to regulation or practical issues of Cost-benefit analysis valuing the environment.

That institutionalization has taken a place in the UK in 1967 by the Government White Paper. The examples of projects which were analyzed in Cost-benefit circumstances at the first place were construction of M1 motorway project, Channel Tunnel Proposal or Third London Airport and others. In Canada the major inputs for popularization of Cost-benefit analysis were known as the publication of Guide to Benefit-Cost Analysis in 1965, prepared by Sewel et al., and the adoption of PPBS (Planning-program-budget-system) in 1967. In the USA this system was introduced even two years earlier than in Canada by President Johnson.

Few years later US President Ronald Reagan signed an order where was requested to put the efficiency criterion inside of the RIA (Regulatory Impact Analysis) for regulations with expected annual effected on the economy exceeded 100 mill dollars. Another, but

very similar order was signed by US President Clinton in 1993. That order remained relevant in force till nowadays. Except utilization of CBA by firms, agencies, in 1970's have been analysis adopted in various international organizations as OECD, UN or World Bank.

2.2.Introduction to CBA processes

2.2.1. CBA procedures

The introduction and historical overview of the development of Cost-benefit analysis have been already written, but one still might be questioning himself, what particularly CBA stands for, what are the questions analysis is trying to answer, what are the difficulties which analysis has to face before completion of outcomes from the analysis etc. This information will be provided subsequently.

The row of the economists, who have been contributing to the evaluation of Cost-benefit analysis, is quite long and everyone has its own view about the foundations of CBA. Their motives were dependent on their point views as philosophical, ethical, practical or for example point of view of decision maker. Mishan (2006) for example described CBA closely to the point of view of last mention, decision maker, because CBA should have been asking questions, also trying to find the answer on those questions, according to particular key evaluate those answers and provide the conclusion whether one or number of projects should be undertaken. In other words, CBA represents the very exact set of requirements and those requirements are reasonable to examine according to theory, Sen (2001) noted and she also added that there are known cases unfortunately, when economists are willing to accept the foundational outlook of CBA but in the same time they are willing to reject individual requirements of the mainstream application of CBA as for example evaluative indifferences or market-centered valuation. Although that is the case of scientific approach towards CBA, the practical led to conclusion concerning answer under which attributes measurements are performed. That conclusion is based particularly on the framework measuring the efficiencies of analysed projects. Boardman (2001) formulated efficiency broadly as the measuring deployment of production factors land, labour and capital in their highest valued uses in terms of created goods and services. However, as it was already mentioned before as the maximization of the specific social welfare. Nevertheless, Boardman (2001) did not explain how one could be assured that

those factors are deployed with highest value. Fortunately that assurance was provided by Bateman (2003) who pointed out that as one of the starting points or possibilities is to adopt concept of total economic value. This concept was used particularly in cases, where the considerations about production factor land took a place as major determinant of the project. Among those economists who brought significant contribution for this concept, we may find Pearce and Turner (1990), Turner (1999) or Fromm (2000).

Then, in case of limited resources what is not rare situation CBA should also underline those projects or programmes which might be qualified as appropriate to receive admission. Qualification is plausible thanks CBA which used to provide direct comparison methods among alternative policies or projects.

One might ask, what is that something which makes CBA more applicable in some situation that financial analysis with focus on profitability which has been already developed in quite comprehensive way. Mishan (2006) supposes that it has something to do with problem called the accounting stance. He brought the explanation of that problem in way that it has been impossible for example Financial analysis to deal with project which is addressed to the area which encompasses wide range of possibilities with different attributes (whole economy of the state, region covering are of several countries, on the other hand area of province or single town). Nevertheless, one might argue that analyses, CBA and Financial analysis as Mishan (2006) considered, are counting with benefits, in sense of profits, and costs. The impossibility of such Financial analysis adoption only in more detail lies in heterogenous of benefits and costs among these mentioned analyses. Benefits and costs assigned to personel engagement in the activity concerning segment of the economy (firm, industry, private public organization) do not coincide with benefits and costs assigned to personel engagement in the activity in areas mentioned before. Anyway, in both cases of used analysis the rational logic might be seen as the same concerning situation how to deal with costs and benefits, when they are known, is the same. When policy or project is undertaken, its benefits have to outweigh its costs (Sen 2001), anyway, in case of CBA it might not be so simple as the development of theories within historical development chapter showed us. Moreover Posner (2001) assessed that decision to undertake the project considered by utilization of CBA is irrelevant wheather that

particular CBA is based on adoption of Pareto efficiency or Kaldor-Hicks efficiency, but only increase of overall well-being is that what matters.

Last note in this section should have been given to the comparison between benefits and costs assigned to personnel engagement in the activity of the segment of economy or area already mentioned. This example has helped to explain the problem of accounting stance; however, it could also build misleading conclusions about unrelated affairs and strict borders between both areas and utilization of analyses. Mishan (2006) also tried to emphasize that even when we differentiated in one way both areas and considerations where is appropriate to use CBA and where is more appropriate to use for example only Financial analysis focused on profitability, he suggested to have a look on the example of accountants and economists. One might be surprised that the division of the questions is quite similar whether is asking the accountant or economists, despite the difference that accountant is asking about issues regard to the firm and economist is asking about issues regard wider group as members of the community, their tendencies are in majority of cases analogous except the fact that economists are being asked more searchingly.

2.2.2. Preferences

The examination of the preferences and afterwards their implementation within following procedures inside of the CBA framework is the essential part of preparation of all CBAs. The appropriate definition of preference should have been sought within psychological field of science because it refers to the individual (consumer) behavior. From the CBA point of view, the most appropriate definition between various psychological definitions seems to be that one, created by Scherer (2005) which states that preference mean evaluative judgment in the sense of liking or disliking an object. Liking or disliking status of individual may refer to the expression of happiness or sadness of the individual member of the community. The question of measurement of the preference is quite complicated and previously mentioned relation between preference and liking and disliking status actually cannot help with the determination appropriate solution. This relation cannot be used further, because Robinson (1932) already showed that utility (represented by happiness) cannot be measured due to closer relation to ethical concept rather than scientific. Fortunately Adler and Posner (2001) described the relation between CBA and actual preferences, where traditional CBA is defined as the sum of compensation variations. These compensation variations are then by the economists defined in terms of

actual preferences. They also created the definition of CBA in terms of preferences, although it is not without problems. The issue of that definition lies in relation among satisfaction of actual preferences and maximization of well-being, where these two variables are not in equivalent. According to the knowledge of the authors, this unequal situation does not need to undermine CBA. Thus, the authors Adler and Posner (2001) were defending the position by use of something called welfare equivalents for the redefinition of CBA in terms of preferences. CBA would not be defined through the utilization of compensation variations after the implementation of preferences' welfare equivalents.

Not only definition but also the appropriate differentiation of preferences should have been provided for better identification of various types. One of the significant types of preferences was identified by Adler and Posner (2001) as uninformed preferences. Their completeness, level of influence on individuals' lives is then uncertain. Moreover, the individuals whose preferences are under the consideration are aware of the lack of information they have. The criterion under which this lack of information is resolved depends on whether the expected gains might exceed the cost. Individuals in such a situation are willing to pay for additional information only at that time when the previous condition is valid. However this type of preference is not broadly accepted and CBA textbook have not used to mention it. Such a situation is not rare, another type of preferences was recognized by economists Adler and Posner (2001) as adaptive, but further research has to follow to accept these types of preferences and their ultimate consequences for BCA. Another type is called adaptive preference. The issue concerning this type of preferences arose from situation when these adaptive preferences are treated in the same way as preference emerged by adaption. The analysts of CBA focused on particular project also came to contact with distorted preferences. Economists concluded that the reason of this distortion is one or more psychological problem of individual. As the example of distorted preferences Adler and Posner (2001) described the adoption of policy with the aim to reduce drug use. Such a policy should be clearly recognized as beneficial for the community. However, even if drug addicts from ethical and health point of view would be beneficial too after the induction of policy into process, their preferences might occur to be negative. The possible reasons and roots, even outcomes of various distortions have to be considered within CBA. Hence, another type of preferences has to be rejected

from examination of its outcomes for the purposes of CBA at all. This type of preferences is so called morally motivated and they are identified as the extreme case of the disinterest preferences. The reason why acceptance of these preferences within CBA framework was seen as inappropriate is due to the fact that their effect on maximization of welfare within a community was considered as irrelevant.

The overall preferences are closely related to the methods of valuation; furthermore, valuation methods according to the Bateman (2003) are dependent on the preferences. Two approaches concerning valuation methods were identified.

- 1) Method is based upon preferences which are revealed through purchases of market priced allied goods.
- 2) Method is based upon expressed preferences obtained vicariously through the utilization of questionnaire surveys (contingent valuation as well).

The fundamentals of both methods are going to be revealed within the chapter *Valuation*.

2.2.3. Valuation

Almost in any moment of individuals' lives, these individuals have been interacting with things, goods, people and the way which determines the type of the interaction highly dependent on individual chart of values. Becker (1996) noted that various values are not the most crucial determinants about individuals' course of action, but for sure are significant ones. Wide ranges of valuations are also used when the consequences of possible undertaken projects are assessed. The range is even wider because the values are not used only for the purposes of finding proper actions but also actions, which are providing experiences and are determining in some range particular values based on previous experiences, are determining future modified set of values (Becker 1996). Particular importance in such a scenario has had projects which fundamental part has been based on cultural challenges, especially moving from one cultural setting to another. Because of these reasons also, valuation assumptions are made according to the standards, concerning the consequences of proposed public projects. Those standards are prepared to ensure that the efficiency claims, mainly of the mainstream approach of the CBA, upon the projects are fulfilled in valid, comprehensive way. Sen (2001) also concluded that the most critical are the public goods concerning the environmental valuations or the other public goods and their existence values. The market-based valuational method of the mainstream

CBA has utilized the approach built on willingness-to-pay principle. This approach in the case of market-based valuation has several significant merits among them we may identified tractability of relative weights and individual preferences too. When those merits as mentioned by Sen (2001) are not measurable, different methods rather than those based on market-based questioning have to be performed. Anyway, majority of valuation procedures are made on the public goods through the use of willingness-to-pay. But when economists are concern about, as it was mentioned already, environmental valuation or valuation of increase health status, people are not so sure about their own preferences, they need to know alternatives of project and they even have to know what possible choices the other might have and might to choose. Sen (2001) explained further that such a valuation procedure has to show in more details also the specification and contributions of particular proposals, and only when all these possibilities are shown, that it might be considered as the standard social choice exercise necessary to be adopted in these cases. When these possibilities are not shown (unfortunately in same cases even providing those information is not enough), people' answers are not consistent, or even worse, people refuse to answer survey on environmental goods. Particular ways of protests are seen as those which make troubles to the agencies with further work. Examples of these works are the registration of zero on unrealistically high value (Plott ...). Agencies then have no other option than to ignore these answers. The one of the ways are called Contingent valuation.

Contingent valuation is also based on utilization of surveys. Between one of the attributes so valuable regards to the use of contingent valuation is the fact that respondents of surveys are willing to pay more than one other valuations are used, as Adler and Posner (2001) revealed. Purpose of such behaviour has been called by Richard Thaler "loss aversion". Notion loss aversion is rooted in psychological affect of pain caused by loosing a given amount, where that amount exceeds the pleasure from gaining that same amount. In the reality people are paying various magnitude of money to prevent harmful effect than to undo harmful effect that has already occurred. In other, Sunstain (2001) words, loss from the status quo from the psychological point of view, is seen as less desirable; where gain is seen as desirable, but psychological aspect influencing valuation nature will be discussed later. On the other hand Adler and Posner (2001) also pointed out that another risk for the economist has lied in the estimation of the valuation. Valuation of coastline for example with associated amount of money to prevent that coastline to be fouled by an oil

spill might become too large when it would be applied to all coastlines. The disparity then between the value and actual total wealth of those coastlines should have been discovered by the economists and replaced by anything which is more connected to the reality.

2.2.4. Psychological aspect of valuation

As it was mentioned before, the recognition of psychological aspects of behaviour or perception of feelings during the process of valuation have been valuable attributes. This section will provide various examples of feelings their influences upon results of valuation. First, there has not been chosen feeling with the pure characteristics of that word, risk. One might see risk as the illegitimate feeling, but because the notion or status “be in risk” represents sum of feelings as a fear, awareness etc. Alhakami and Slovic (...) according to their research proposed interesting correlation among level of risk and public concern where even low level of risk has attracted a public concern. Next outcome from the research and no less valuable is that people are capable to perceive low benefits as well as high risks. Margolis (1996) went further in this way to the roots of the issue connected more with CBA and he focused on the behaviour of people when dealing with risks is in stake. Outcomes of his findings are that some people are capable to set regulations upon some risks, because the situation is not clear whether those fundamental activities might not have compensating benefits. He observed that in many cases activities actually do have compensating benefits, but due to perceptual illusion (cognitive bias) the only aspects which are taking into account are dangerous, benefits stay in a shadow.

Another particular and not perfectly clear, according to the divisions of feeling statuses, has been considered the difference between personal status as a consumer and personal status as a citizen. This division has differentiated divergent relation between statuses’ values and their follow-up choices. Sunstein (2001) has also explained that vital difference between these two statuses one might identify in additional set of values belonging to the citizenship. Adopted aggregate willingness-to-pay concept is able to imitate several private collective actions problems. Frank (1985) concurred with those thoughts and explained in other words that basically people are as citizens willing to pay more, because they know that other citizens will do the same.

One might argue that previous example of differentiation was based more on the national consciousness rather than on the inner feelings. This following section will more

analyse the situation regard these feelings. The work of Loewenstein (1999) has proved that there has existed strong relation among risk related concerns and feelings (rather than judgements). Sunstein (2001) maintained that it has been complicated to find a source of these feeling; one could see the source of feelings as the outcome of repetitive thinking process about some actions, another one could see the source of feeling as the emotions related to the different activities based on the previous experiences. Psychologists and economists did not find the answer yet, but they also suggest focusing more on the future rather than past represented by the source of feelings. Thus, research has supported the idea that feelings of worry for example are not sometimes more sensitive to the future outcome of situation using the probability of that outcome. More common relation has lied in connection between future outcome and its severity.

The reason why such a huge importance is given to the various divisions of feelings is based on the correlation with other processes. Feelings are correlated to the valuation of actions and its influence on decision making. Dangerous aspects of this linkage Kuran and Sunstein (1999) has emphasized that the perception of certain public risks is understood more in general and intense concerns, far from the facts based solicitudes. These generals and intense concerns then might be also supported not just by the imagination as it was sketched before, but also by lack of information (Graham ...). Nevertheless, lack of information is considered as the source of paranoia and neglect rather than social fear.

When the reasons why to bother with the individual's feeling were explained, it is necessary to mention that one of the fundamental missions of CBA is also to deal with these feelings regard to the valuation procedure to ensure that the policy or project is driven no by the hysteria, paranoia or social fear but by appreciation of effects of risks, their full understanding on facts basis and their full control if the policy or project is undertaken.

2.2.5. Willingness-to-pay principle

The valuation procedure has its value as it was mentioned for the focus on efficiency concerns. Sen (2001) highlighted that one of the crucial market-based methods of ensuring about appropriate level of efficiency and increase of economic welfare is based on the principle so called willingness-to-pay (accept). Even the valuation as such is possible only due to the attributes of market allocation system within. Sen (2001)

summarized those significant attributes as division of preferential sensitivity test of individuals and relative weights traceability and tractability. The mainstream CBA which has the main concern for the thesis, used to adopt that particular principle for valuation when it is possible, because it has been well suited just for the maximum utilization of those significant attribute of market allocation system as the market analogy.

Adler and Posner (2001) has defined the notion of willingness-to-pay principal as the situation where the consumer wants a buy a product and he is also willing to pay some price for it. Then consumer's willingness to pay approach for it has to necessarily exceed the product's costs. In this case there has to be taken into the account also effects of the production as health and safety risks. Practical example how this approach is used within the concept of CBA has provided Posner (2001). Economists are asking people how much they are willing to pay for various goods and the results of these questionnaires they are implementing into the decision making process. The results as such are providing lot of valuable information; furthermore that information might find utilization also within the process of constructing the graphs of consumer surplus. Consumer surpluses have its value for the decision making about the projects too. As it was said, construction of consumer surplus is performed with the help of information provided by willingness-to-pay measurement, thus, when consumer's willingness to pay exceeds not even the costs but also the price of good, then consumer's surplus has been generated (Campbel and Brown, 2003). However, higher importance for the economists is represented by the aggregate consumer surplus, where individual data from calculations are gathered and the overall impact for the consumers might be seen.

But of course as any other potential method even that using consumer's surplus and its part as willingness to pay concept has obtained some critics and their criticisms were analysed. First, Sunsten (1997) contended that willingness to pay principle has been imperfectly correlated with utility. He argued that poor people are willing to pay less than wealthy people because of the virtue to be poor. From the very narrow point of view, that conclusion is valid; nevertheless if one thought about pure meaning of that explaining sentence, he could bring some contra argument. In this particular case when, let say, wealthy individual and poor individual are considering they are willing to pay for some good regard to their health for example. The presumption is that wealthy individual would

think probably about amount of money which is higher than poor individual; unfortunately there is no even hidden reason why the poor person would think in that way. Yes, poor individual has different perception of money and when he would have to actually buy something, he would consider also his financial status and the amount would not be astronomic even for the treatment necessary for his better life. But the question at the first place has not been chosen in that way and poor individual do not have to consider other circumstances, his attention has had the only question what he is willing to pay for some treatment, his answer would probably sound anything. And anything might be less than what wealthy person would suggest, but also it might be higher amount (even if it is less probable) but there is no certainty so the test used in that way is not appropriate. Fortunately, Bateman (2003) found that the recent practice of utilization of questionnaires, where principals of willingness-to-pay and willingness-to-accept are take into the consideration, is based on the adoption of two major alternatives together:

- (i) open-ended questions, where the construction of the question as such is similar to the arguable question see above
- (ii) dichotomous choice (close-ended questions), where respondents are asked if they are willing to pay particular amount of money for any good.

Another critique is based on fundamental theoretical limitation of adoption the aggregate willingness-to-pay amount. Mishan and Quah (2007) noted that the issue of adoption lies in the contradiction of ranking policies and projects in terms of net benefits provided by that adoption, and transitive social ordering of those policies and projects. The only way how to secure the valid results of valuation is to set some restrictions on the preferences that individuals are allowed to hold (Mishan and Quah 2007). One might see this as quite significant issue The way how the allowed preferences might be chosen, who would choose them, and if those chosen preferences would be valid for all possible policies or projects or different sets of preferences according to the orientation of the policies or projects would have to be chosen. All these questions are arguable. And those questions are in sign of imperfection of such a method. Nonetheless, such a method even if those imperfective attributes were known, is used for its practical and intuitive concept fulfilling the net benefit criterion as Mishan and Quah (2007) concluded.

2.2.6. Compensation principle

Economists have brought the idea, that when the concept of willingness-to-pay is adopted; one of the outcomes is that the respondents concerning valuation procedure are divided into two major groups. Those groups are so called winners and losers and they are representing together all beneficiaries of the undertaken project or policy. Viscusi (2001) have identified the market feature upon which particular group of losers should have been compensated for the bearing the risks when the project is undertaken. There exists various compensation approaches. Sunstein (2002) suggested counting with these significant as approaches that are side payments or system of optimal taxation. By the system of optimal taxation is meant progressive tax system. He also formulated issue concerning the compensation approaches and distributional bias, where the only chance he proposed is to establish particular steps against the outcomes of distributional bias and securing the efficiency criterion.

Another, in this case theoretical issue is linked to the Kaldor-Hicks efficiency, which is used as the compensation criterion. Adler and Posner (2001) assessed the utilization of this criterion and raised the objection of its normative import. They have been said in some cases Kaldor-Hicks improvement criterion applied on the project itself, relative to the status quo, might not increase overall wellbeing. Moreover, Adler and Posner (2001) wrote that when project winners could compensate the project losers that it did not mean anything about project in normative significance.

Sen (2002) pointed out that logic behind the use of compensation criterion is based on the motivation how to read the social welfare. The issue concerns two possible situations. First, the identified losers within the project are compensated in way of payment and the logic outcome is that there is no further need of compensation criterion. Thus, the actual outcome of the analysis would already incorporate those compensating payments and so the results of analysis are plausible to be judged without further application of compensation test. Second, the identified losers within the project are not compensated in a way of payment or any other way. Sen (2002,110) observed that the way how to take into the account the results of analysis is quite uncertain and if such a results might be considered as the social improvement or not, one might find it suitable for questioning.

2.2.7. Discounting of future

When the mainstream type of CBA is put together on the basis of traditional procedure, all known beneficiaries are listed and consequently relevant costs and benefits are counted (Frank 2002). Due to the fact that between these relevant costs and benefits might exist differences in sense of their emerges in time, they are altogether considered upon temporal basis. As Zerbe (2006) also emphasized, that costs used to arise at the earlier stages of the projects or policies, rather than benefits which used to be generated at the later stages of the projects or policies. The process where values of benefits (considered those at one point in the future) and costs (also considered at one point in the future) are to be reduced is called discounting. Because of the relevant attributes of project economic cycle economists agreed to adopt one particular method; multiply those values of benefits and costs by fractional number, discount rate. That fractional number is lower or higher according to how far in the future these values emerge. When such a multiplication is performed, monetary values from different points in time are then comparable.

The practical process of discounting was already explained, but comprehend theoretical background was not yet. Zerbe (2006) admitted the general consensus among economists has been found. It has been commonly believed that as far in future as benefits and costs are generated or incurred, their values are less and less worthy today. But there are known also some critics as for example Jevons (2003). He argued that only way how to provide for an individual maximum benefits in life, all pleasures and pains represented by benefits and costs should have been equal among each other. But argument against such a theory might be used principle applied to the scenario of individual's life and his reaction to the same events (events cause pleasures and pains) in different stages in his own life. His reactions (based on his experiences) to these events would be different because pains and pleasures would have lower or greater importance for that individual. Thus, even costs and benefits emerged from different stages of future should not be equalised. Jevons (2003) at the end agreed to this argument, although from different point of view. He commented the value of future feeling for human mind, where imperfectly constituted mind (as it is) would put more weight to the present feelings rather than to the future.

Theory of less valuable or influential benefits and costs in future has been put into the practice through the application of discounting process. One of the major issues concerning discounting process then, is to set up proper discount rate. Frank (2003) concurred to adopt

for calculations, as majority of agencies providing CBA, interest rate taken from the financial markets.

Also some questions, which are not coherently solved by the economists so far, how to deal with projects and policies regard to discounting processes, where the presumed utilization time of these projects and policies might exceed that one chosen as the maximum in general. EU guide has provided information, where the general maximum lifetime of project is equal to 50 years (European Commission – Directorate General Regional Policy 2008, p. 41). When the project's lifespan is going to exceed such a period significantly, so project's lifespan is expected to be 100 years, then the question about appropriateness of basic discount rate is valid. Further more, Zerbe (2006, p.216) identified the area of plausible inconsistency. Imagine the project of construction a facility, where the benefits would be generated during quite early stages of project's lifespan, initial costs of that project would be low in comparison to the generated future benefits, but the waste generated also by facility would be stored. Appropriate technology would have not been found and task to deal with this waste material would hold for future generations, when this waste material might cause huge environmental and other damages. One might argue that future generations will have the advanced technologies capable to deal with that waste with quite certainty, as it has been known from history and utilization of more advance technologies later in time, but it is rather scientific question whether yes or not and this thesis will not provide a sufficient proves for none of the answers. But this theoretical part of the thesis fulfilled in quite satisfactory way the purpose of this section, to mentioned range of issues and stances for discounting procedure used in mainstream CBA.

2.2.8. Adoption of CBA procedure

Basically, the mainstream way of the adoption and performing of CBA is based on the following listed procedures in advance. In this section, the division of types, according to analysed time period, of CBA will be provided and also the reader will be familiarized with these procedures in more practical way.

As it was mentioned before in different context, the purpose of the CBA is to help with the decision making process, particularly to bring analysed data about project or policy and make a judgment whether such a project or policy has its social benefits exceeding social costs. In other words, CBA is the tool to make sure that society's

resources are allocated efficiently in a way, where CBA emphasized the alternative with the highest efficiency in comparison to the other alternatives (Boardman 2001). CBA might be divided into three separate groups due to the time period to which analysed data are linked. Those groups are:

1) *Ex ante* CBA

This term is used for the type of CBA which is standardly used in the time when the project or policy is under consideration whether the project or policy to undertake or not.

2) *In medias res* CBA

Such a type of analysis is used when there exist purported reasons for reallocation of resources. The results of analysis then show if the reallocation is feasible or not. The extreme cases have been noted when the project engineers were already closing all construction works and the whole structure was nearing to finish and projects was stopped and remaining resources were reallocated.

3) *Ex post* CBA

This type of analysis used to serve as the learning material for the future similar projects. All costs were in majority utilized and the project has reached already its maximum level of lifespan.

These explanatory notes were inspired by the work of Boardman (2001).

Listing of necessary procedure for valid decision making process will be provided at this section, just, different authors are providing different listing, and actual change is made only by interchange of the steps within listing. The listing of these steps is made on the basis of listing provided by Boardman (2001) which has been summarized into comprehensive way and should provide just the basic guideline. Concrete steps how to perform CBA are described in section Methodology.

- 1) Specification of set of alternative projects
- 2) Decide whose benefits and costs count (standing)
- 3) Catalogue the impacts and select measurement indicators (units)
- 4) Predict the impacts quantitatively over the lifespan of the project

- 5) Monetize (attach dollar values to) all impacts
- 6) Discount benefits and costs to obtain present values
- 7) Compute the net present value of each alternative
- 8) Perform sensitivity analysis
- 9) Make a recommendation based on the NPV and sensitivity analysis

3. Objectives of the thesis

- Through adoption of all procedures within the framework of CBA provide sufficient information upon which the analyst may perform the decision making process.
- Take successfully information about proposed project and its variants provided by CBA into the consideration and make a judgment whether the proposed project or any of its variant should have been undertaken.

4. Methodology

4.1. General analysis for CBA used

Methodology of CBA is divided into 7 individual sections. Each section has its own particular procedures and analyses. The listing of these procedures and analyses will follow, however; all sections have in common the application wherever it is appropriate of general analyses as:

- 1) Horizontal (trend) analysis
- 2) Vertical analysis
- 3) Comparison analysis

Of tables and figures as:

- 1) Column charts
- 2) Bar charts
- 3) Pie charts
- 4) Area charts

All different charts to be used have specified the units and type of provided information (for example prices), and also the time periods of individual occurrence.

For the quite large number of procedures, particular value or estimation are obtained through the qualitative technique – Interview. The interview was used as a tool for the gathering information which was not available anywhere else and basically, the information strongly has depended upon individual who was interviewed. Type of interview according to the classification was used:

- Standardized, open-ended interview
 - Types of topics in questions
 - Opinions/values
 - Sensory
 - Knowledge
 - Background/demographics

Interview is commonly used qualitative method. The type of interview which has been identified as the appropriate is Standardized, open-ended interview. Questions have been

predetermined. Questions are correlated to the range of topics as interviewee opinions and values, sensory, knowledge and background.

4.2.Context analysis and project objectives

Context analysis is based on the results of socio-economic assessment of the area where the project has been located. Determinants of socio-economic assessment are identified as:

4.2.1. Socio-economic assessment

- Demographic indicators
 - Population

The graph of the population has depicted the progress of the development between years 1998-2010.

- Population structure – age groups

The graph of the population structure – age groups has depicted the progress of the development and the trends of development between years 1998-2010.

- Fertility growth

The graph of the fertility development has depicted the progress of the development between years 1998-2010.

- Composition of inhabitants in Czech Republic

The graph of the Composition of inhabitants in Czech Republic has depicted the progress of the development between years 1998-2010.

- Labour indicators
 - General Unemployment rate

The graph of the General Unemployment rate has depicted the progress of the development between years 1998-2010.

- Economic indicators
 - GDP growth

The graph of the GDP growth has depicted the progress of the development between years 1998-2010.

- CPI

The graph of CPI has depicted the progress of the development between years 1998-2010.

4.2.2. Project identification

- Definition of the project - location of the project, main construction indicators
 - Build-up area

Project is identified by its location and proportional measurements have taken under consideration.

Build-up area = $A \times B \times C$

Where:

A = height of the construction to be built

B = width of the construction to be built

C = length of the construction to be built

4.2.3. Feasibility and option analysis

- Option identification
 - Project scenario
 - BAU (Business as usual) scenario
 - “Do minimum” scenario
 - “Do something” scenario

On the basis of results obtained by interview and socio-economic analysis the optional variants of the project are identified.

All scenarios (variants) are prepared in way that scenarios are comparable between each other; the criteria of option identification are:

1) Basic building dimensions

The information gathered within construction documentation.

2) Composition of pavilions

The information gathered within construction documentation.

3) Structure of flats

The information gathered within construction documentation.

4) Employees structure

The information gathered through the outcomes of interview.

4.3. Financial analysis

Financial analysis should provide enough information for determination of project cash flow forecasts. These forecasts are then used for calculation of two main indicators as the Financial Net Present Value (FNPV) and the Financial Internal Rate of Return (FRR). For the correct cash flow forecasts the proper costs and benefits has to be performed according these divisions:

- Total investment costs
 - Fixed investment costs

Information obtained through the construction documentation.

When the fixed investment costs has to be calculated also for the different scenarios for which the particular construction fixed investment costs are not known, in such a situation has to be applied Construction Conversion Rate. These CRRs are obtained through the interview.

Prescription of calculation fixed investments costs, when the proposal about these costs is is not known:

$$TFIC = IFIV * CRR$$

Where:

TFIC = Transformed Fixed Investment Costs

IFIV = Initial Fixed Investment Costs

CRR = Construction conversion rate

- Start-up costs

Information obtained through the construction documentation.

- Total operating costs and revenues
 - Operating costs
 - Electricity

On the basis of the construction documentation was identified power demand for electricity (PDE).

Through the information provider the listing of all companies selling services concerning electricity were identified within Prague's region and average cost of year consumption was calculated.

$$APE = TPE / NPE$$

Where:

APE = Average price of electricity for chosen power demand per year

TPE = SUM of all proposed prices by companies

NPE = total number of emerged propositions

- Natural gas

On the basis of the construction documentation was identified power demand for gas (PDG).

Through the information provider the listing of all companies selling services concerning electricity were identified within Prague's region and average cost of year consumption was calculated.

$$APG = TPG / NPG$$

Where:

APG = Average price of gas for chosen power demand per year

TPG = SUM of all proposed prices by companies

NPG = total number of emerged propositions

Average costs = SUM values of all propositions / no. Of propositions

- Water

On the basis of the construction documentation was identified power demand for water (PDW).

Through the information provider the listing of all companies selling services concerning electricity were identified within Prague's region – there exist a monopoly; the only available price was used for calculation.

$$PW = PLW * PDW$$

Where:

PW = Price for the whole year consumption of water supply

PLW = Price per liter of water

PDW = identified power demand of consumption of water

- Labour

Through the information provided by Trexima Zlin co. has been obtained values of average hour wage in Prague's region, average worked hours/month in Pragues' region.

Total costs of labour (per year) = number of employees within particular group * average wage per hour of that occupation * average worked hours by month * 12 months

$$TCL = NE * AWH * AHW * 12 \text{ months}$$

Where:

TCL = Total costs of labour

NE = Number of employees inside of the facility

AWH = Average wage per hour

AHV = Average hours worked

- Administrative costs.

Amount of Administrative costs were used on the basis of information obtained through the interview with MuDr. Pičman and based on past experience.

.1.1.1.3. Maintenance costs

Amount of Maintenance costs were used on the basis of information obtained through the interview with MuDr. Pičman and based on past experience.

.1.1.1.4. ITS

Amount of ITS costs were used on the basis of information obtained through the interview with MuDr. Pičman and based on past experience.

- Discount rate

Summary of Long-term Return Estimates							
Asset Class	Annual Compound Return Estimate	=	Current Risk-free rate	+	Asset-Class Premium	Historical Annual Compound Return (1970-2009)	Ratio of Expectation to Historical Average
Large Stocks	7.3%		4.2%		3.1%	9.9%	0.74
Mid/Small Stocks	8.6%		4.2%		4.4%	10.3%	0.83
Intl Stocks	7.4%		4.2%		320.0%	9.5%	0.78
Bonds	3.8%		4.2%		-0.4%	8.3%	0.46
Cash Investments	2.3%		4.2%		-1.9%	5.8%	0.40
Inflation	2.0%					4.5%	

Source: Charles Schwab & Co. 2010; transformed by author

Discount rate is obtained through the application of recommendation made by European commission where the approximate discount rate is dependent on the level of Inflation and also on Historical Annual Compound Return. The guidance said in rough way, that if the both conditions are fulfilled the discount rate as set at at the level of 5%. The conditions are concerning about value of inflation, when the inflation has to lower value than 2,5% and also when historical Annual Compound Return has the value less than 5%; the conditions are fulfilled.

- Financial return on investment

The financial net present value is defined as the sum of the results when the expected investment and operating costs of the project (suitably discounted) are deducted from the discounted value of the expected revenue.

$$FNPV = \sum_{t=0}^n a_t S_t = \frac{S_0}{(1+i)^0} + \frac{S_1}{(1+i)^1} + \dots + \frac{S_n}{(1+i)^n}$$

Where:

S_t = the balance of cash flow at time t (net cash flow)

a_t = the financial discount factor for discounting at time t; $a_t = 1 / (1+i)^t$

t = time between 0 and n

i = the discount rate of reference

European union for the time period 2007 – 2013 has recommended this time horizon (years)

1.1 Reference time horizon

Reference time horizon recommended by EU for the period 2007-2013	
Projects by sector	Years
Energy	25
Water and environment	30
Railways	30
Roads	25
Ports and airports	25
Telecommunication	15
Industry	10
Other services	15

Source: Authors elaboration of OECD and project data.

- FRR (C)

The Financial rate of return on investment is defined as the discount rate that produces a zero FNPV

$$FNPV = \sum_{t=0}^n [S_t / (1 + FRR(C))^t] = 0$$

Where:

S_t = the balance of cash flow at time t (net cash flow)

t = time between 0 and n

4.4.Economic analysis

The economic analysis is providing coherent look at the contribution of the project on the economic welfare of the region where the project is set up. Between various tools we may find concept of shadow pricing which should bring the equal image of inputs and outputs representing by their social value. Areas where the shadow pricing will be implemented:

4.4.1. Socio economic benefits

- Employees' wage surplus

Through the information provided by Trexima Zlin co. has been obtained values of average month wage in Prague's region.

$$EWS = AMW * NE * 12$$

Where:

EWS = Employees' wages surpluses

AMW = Average month wage in Prague's region

NE = No of employees operating as a part of considered variant

12 = amount of months per year

Increase of social and health insurance payment = Employees' wage surplus * 35%

Increase of Income tax = Employees' wage surplus * 15%

Increase of net wage employees = Employees' wage surplus – Increase of social and health insurance payment – increase of income tax

- Socio economic benefits concerning provided services

For all types of revenues generated by providing therapies, following calculation is valid.

$$IY = NC * PS * NH * 5 * 52$$

Where:

IY = Income per year

NC = Number of clients utilizing the servis per hour

PS = price per hour of the utilized servis

5 = number of working days during a calendar week

52 = number of working weeks during a year

○ Social discounting

Costs and benefits which are generating in the different times have to be discounted. The discount rate in the economic analysis of investment project reflects the social view on how future benefits and costs should be valued against present ones. The discount rate may differ from the capital market discount rate because of its inefficiency.

According to the EU in the period 2007-2013, the proposed social discount rates are:

For cohesion countries equals to 5.5%

4.4.2. Calculation of economic performance indicators

4.4.2.1. ENPV – economic net present value

$$ENPV = \sum_{t=0}^n a_t S_t = \frac{S_0}{(1+i)^0} + \frac{S_1}{(1+i)^1} + \dots + \frac{S_n}{(1+i)^n}$$

Where:

S_t = the balance of cash flow at time t (net cash flow)

a_t = the financial discount factor for discounting at time t; $a_t = 1 / (1+i)^t$

t = time between 0 and n

i = the discount rate of reference

4.4.2.2. ERR – economic internal rate of return

$$FNPV = \sum_{t=0}^n [S_t / (1 + ERR)^t] = 0$$

Where:

S_t = the balance of cash flow at time t (net cash flow)

t = time between 0 and n

4.5. Risk assessment

4.5.1. Sensitivity analysis

When the sensitivity analysis is going to be performed, the critical areas have to be identified. For the purposes of this thesis these areas were identified as:

- 1) Operating costs
- 2) Operating revenues
- 3) Socio economic costs (these are divided into 2 subsection)

In case of socio economic costs, these subsections should have been analysed separately and results also should have been presented separately.

When these areas are already identified, separately those areas are changed, particularly their values are separately increased by 1% of their initial value. The another ENPV and ERR are calculated upon these changed values and these new values of these criteria are then compared with the initial values of ENPV and ERR. The changes are assessed.

5. Empirical part

5.1. Definition of the type CBA according to the lifespan of the project, introduction of Jedlička Institute and Schools, non-profit organization

The analysis has been performed within the range of the *in medias res* CBA. Details of the project explained further actually cannot let the resources to be reallocated, because the construction works on the project has been already closed. But due to the fact that the investment project was undertaken for the purposes to build facility providing large scale of services for non-profit organization Jedlička Institute and Schools (JÚŠ), and JÚŠ is recognized as semi-budgetary organization. The funds provided by three main contributors as Prague City Council, Ministry of Education, Youth and Sports, and Ministry of Labour and Social Affairs has granted for the operations of the whole organization and investment project to be analyzed is incorporated within the organization structure. Thus, the analysis should have provided enough information about the usefulness of the undertaken project, if the allocated resources are efficiently availed, or whether funds provided for the activities within the facility regards to the project should have been limited and relocated for the next time period of the project's lifespan.

Targeted project to be analysed is called, according to the construction documents; Construction of the Rehabilitation Pavilion (Pavilion C) and Pavilion for Independence Residence (Pavilion D). The provider of the services operating within these both pavilions is JÚŠ and this institution was also the most important champion defending the benefits of this project. The origins of JÚŠ are rooted in 1920's when the institution was established and since that time has been based in central Prague at Vyšehrad. JÚŠ are the establishment with specialisation for education for children and young people primarily with physical disability. JÚŠ has been providing its services for aprox. 180 students and children, where first half of these clients are directly accomodated in the area of JÚŠ and another half is living in the Prague city and near surroundings. The concept of the missions JÚŠ has been presented and approved by Prague city council (1996). This concept is based on the principle of inclusion (integration) of people with specific needs into the society. The organization has held the stance to maintain the openness of itself and everyone who has been working within. As one of the most significant attributes of the organization activities are creation of the bridge among organization's clients and other profit or non

profit organizations which also help JÚŠ clients with the tranzitivity programme. Transitivity programme is the procedure where the people with special needs are moving from the one environment (in this case from the Institute environment) to the ordinary life environment. The fulfilment of this concept is maintained through the performing the services with the professional touch. JÚŠ is providing for thier clients these services (JÚŠ, 2010):

- 1) Elementary and middle-school education in their schools with both mainstream and specialist attitude
- 2) Therapeutic rehabilitation with the orientation to:
 - a. Physiotherapy
 - b. Occupational therapy (ergo-therapy)
 - c. Hydrotherapy
 - d. Speechtherapy
 - e. Computer assistance
 - f. Social skills for the workplace
 - g. Flat for developing independent domestic skills
 - h. Transition programme and employment support
- 3) Mobility consultancy services
 - a. Wide range support for children with physical disabilities in mainstream schools
 - b. Assistance with:
 - i. Selection proper schools
 - ii. Diagnostics
 - iii. Help concerning psychological help
 - iv. Various range of therapies
- 4) Short-term stays as:
 - a. Respite programme
 - b. Diagnostics seVICES
 - c. Consultancy
- 5) Extra curriculum activites
 - a. Accomodation for children and young people in modern dormitories
 - b. Supporting social contact among clients and non clients of JÚŠ

- c. Establishment and supporting of hobby groups, sports clubs, weekend stays

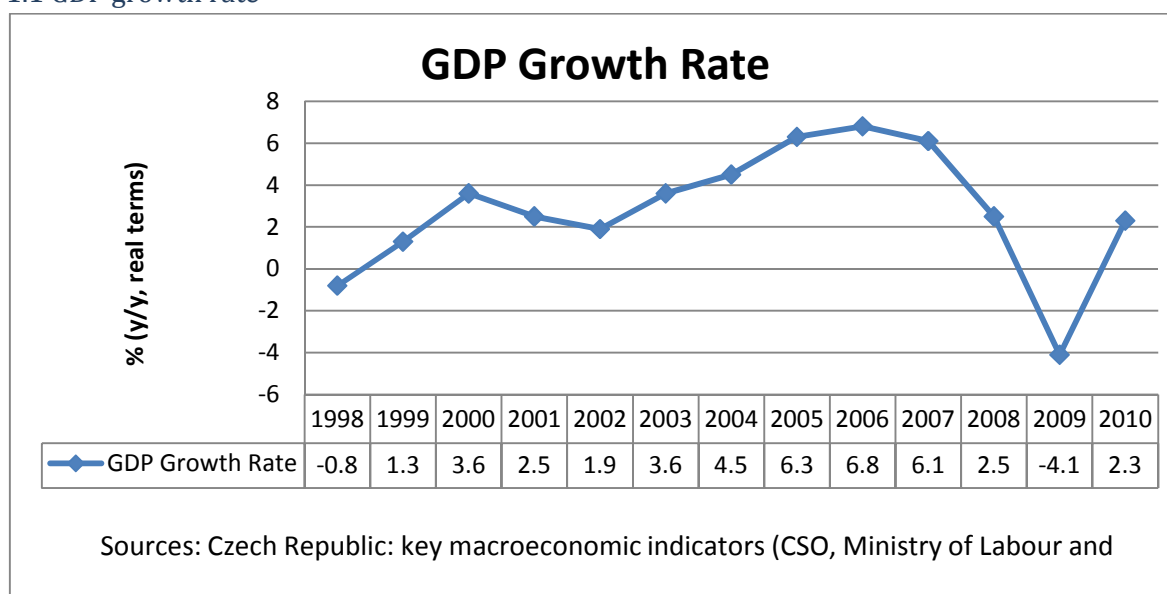
The clients of the JÚŠ utilizing these services are clients as students and children, former students of JÚŠ and any other people with specific needs. Another important group of clients are former students, parents of families with children with specific needs and other specialists with the orientation on support for people with specific needs. JÚŠ is the only organization within Prague and central bohemian region providing such a complex services. Thus, the importance of the organization one might see from regional and even country perspective, where JÚŠ for example is only one organization in the Czech Republic with possibility to use already mentioned service as developing independent domestic skills in specialised flats.

5.2.Socio economic assessment

The socio economic assessment is considered as the initial and fundamental step how to prepare CBA. The range of performed particular analyses within socio economic assessment depends on the complexity level of overall CBA, standing issue; especially in case when the different beneficiaries influenced by the proposed project are able to be identified in different regional levels, and also in which type of industry the proposed project should have been operating.

In case of project, which is analysed through this thesis, the incremental sections and their aspects are found and identified as Macroeconomic Indicators of Czech Republic between years 1998 – 2010 and Population indicators of Czech Republic between years 1998 – 2010. The information obtained through the analysis of these indicators will meaningfully help to understand the economic background of the Czech Republic and also will provide insight look on the base of the estimations of demand schedules regard to the purpose of the origin of the proposed project.

1.1 GDP growth rate

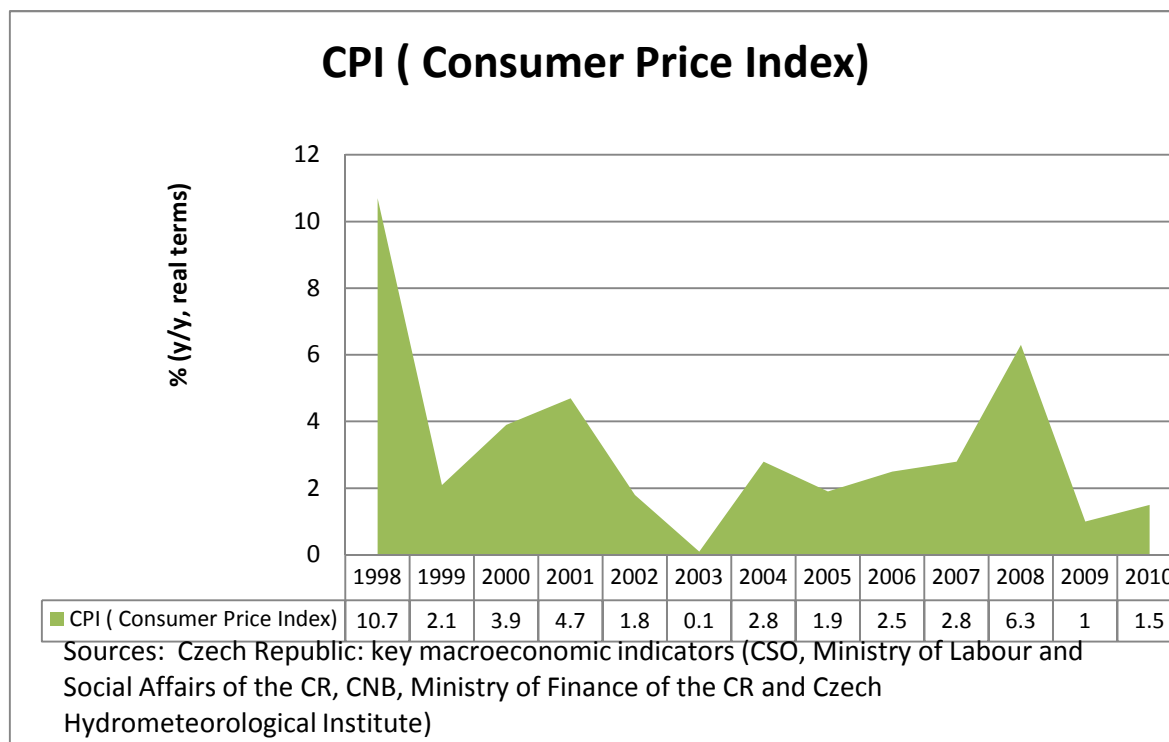


As the reader may see, curve line of the GDP growth rate one might divide into group of rises and falls. The curve line has started in year 1998 with negative value, which has been connected to the whole set of events at the end of 20th century, particularly affecting the post communist countries as the Czech Republic should have been identified within. But due to the structural changes and developments of the economy especially connected to the higher efficiency, this negative value has preceded the continual growth except the years 2001 and 2001. The economic growth slowed down in these years and according to the rate, the situation in those years were quite similar to the nowadays. Upcoming years were in sign of the economically rich years from 2003 till first half of 2008. During these years Czech economy has profited on the key players of the sectors within economy, where in secondary sector the high demand for cars within and even over the boards of Europe has been known. The Czech Republic has had long term tradition of car industry making and also related spare parts. Also in case of tertiary sector, the process of privatization of Czech banks has finished years ago, new managerial skills and focus towards customers' needs led to the one of the highest profits growth rates on y-o-y basis in the whole portfolio of the Czech banks as the daughter companies of international banking institutions.

As the advantages of the pro exporting country were known in example of Czech Republic and our location in the middle of Europe has made its benefits, the vital importance has had for the Czech economy close distance as (geographical neighbours)

and easy access to the German market. The German market has had in long term its privileged place of exports destinations. On the other also this close relation between economic growth and exports to the German market caused worsened results of GDP growth rate at the end of 2008. When the outcomes of crisis of financial markets started to influence the world economy and so these troubles transformed their impacts into the world economic crisis. The Czech Republic has fully tasted the outcomes of worlds economic slow down in 2009. But as it is just matter of time when the economic crisis will find its bottom, the results of Czech economy in 2010 might suggest that Czech Republic has already overcome the consequences of economic crisis.

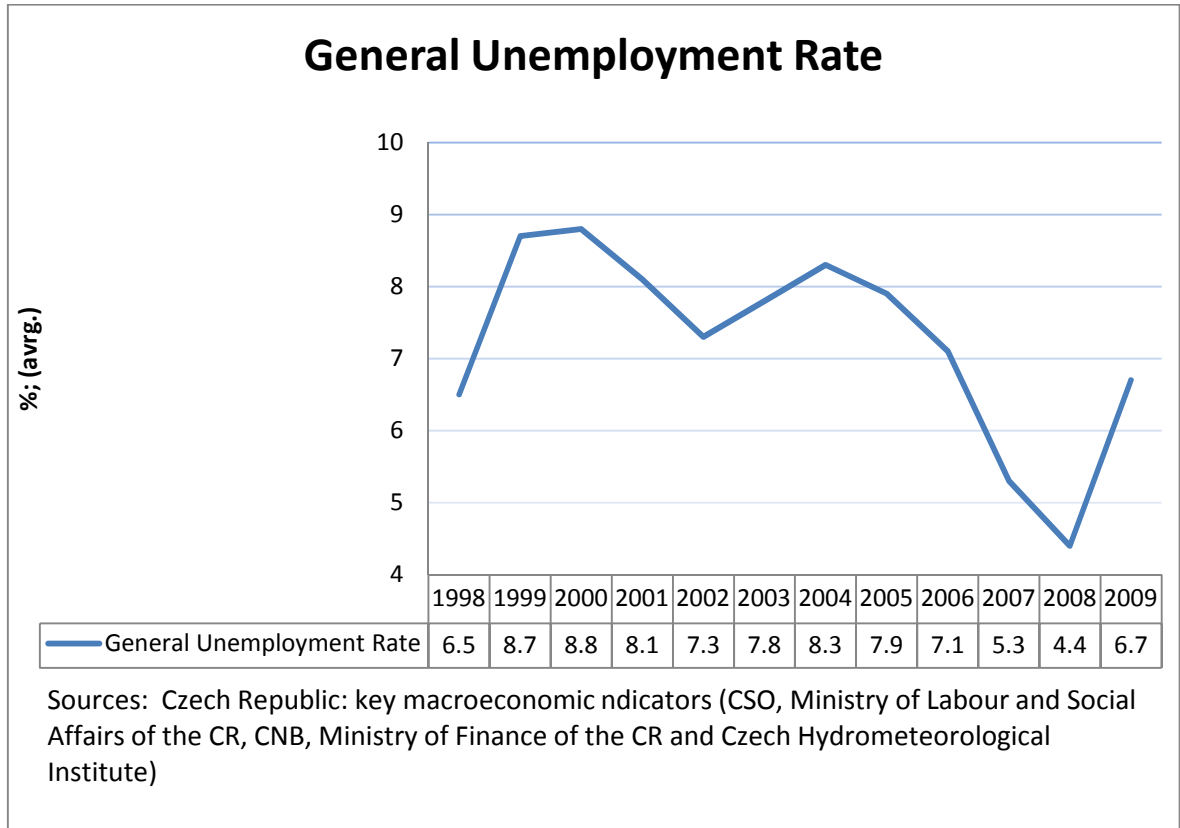
1.2 Consumer Price Index



Another Macroeconomic indicator of the common agreed importance is the indicator so called Consumer Price Index (CPI). The value of CPI is actually copying the tendencies of curve line of GDP growth rate, just not in such a rounded way. As the critical points of development one might identify the years at the very beginning of the graph, where the CPI was found with high values over the 10 percentage point. On the other hand another not so much obvious outcome of the downward trend is located in year 2003 when the CPI did not reach even the level of 0,5 %. Estimations about recent developments of growth of CPI and not only about this have been said by Governer, Czech National Bank Miroslav

Singer (2011) during business brunch in American Chamber of Commerce. Due to following food price inflation, the expected value has been around 2%.

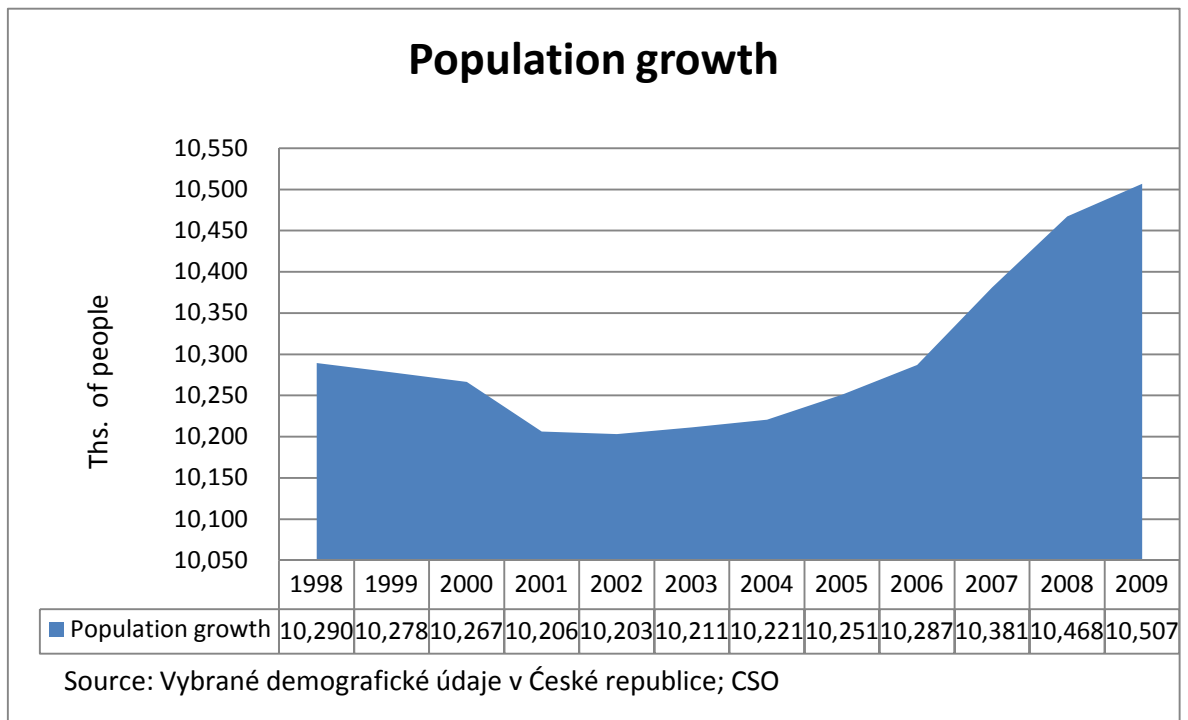
1.3 General unemployment rate



The graph of general unemployment rate is depicting the situation of continues tendency of decreasing unemployment rate. The peak in recent historical development should have been identified in the year 2000 with value around 9%. Increasing competetiveness with relation to the relative low wages has led to decrease about more than 1.5% in two years period. The reflection of economic slowdown in 2002 is able to be seen by increase of uneploymnet rate in following years. The inertia of the economic development has has impact even in 2008, but the worse economic situation as it was already mentioned caused significant jump increase. It is reasonable to expect that this trend continued even in 2010.

Last three sections supported by graphs have shown the general economic development within close past. Another section will focus on pouplaton growth, structure and particular developments.

1.4 Population growth



CBA used in the process of decision making is considered as tool utilized for the purpose of providing coherent look about the outcomes of undertaken project. When that project then is focused on particular group of inhabitants for whom the institution related to the proposed project is providing services, it has vital importance to map out the trends and possible evolutions of that particular group of inhabitants. In the case of this CBA, the thesis is critically influenced by the demand of the disabled people and their volume within the whole population of the Czech Republic.

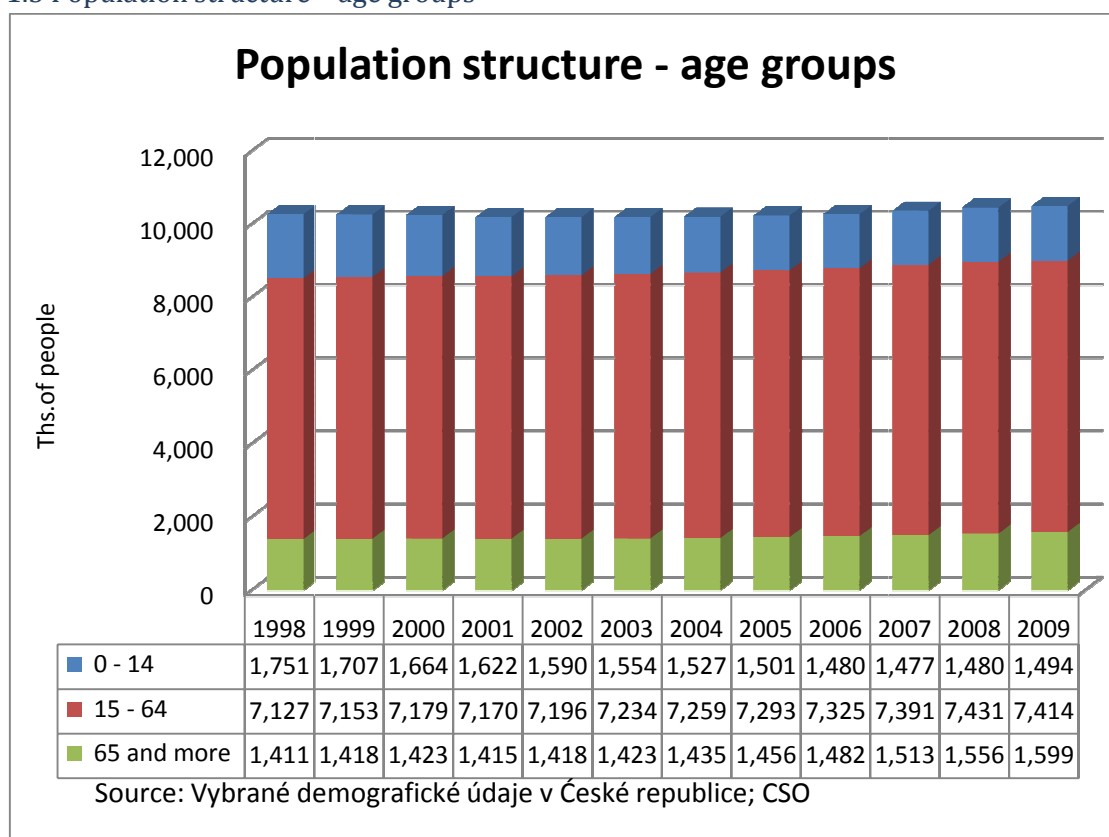
In the first part of examination the composition and progress of amount Czech inhabitants the concentration is given to the overall population growth. From simple graph 1.12 Population growth, is visible the recent trend of the increase in thousands of people in during last five years. This trend has begun in 2002 from which year we may find only increasing values on y-o-y basis up till now. From that perspective, even the portion of disabled people and people without disability is increasing in real terms too.

Last comment about this recent development has indirect relation with the CBA. As it was already mentined several times, CBA serves for the puposes of assesment the project's or policy's efficiency concerning utilization of public funds (even not

necessarily). Regard to the policies, in the light of that development observable inside of the graph, not only decisions about future projects whether to undertake them or not should have been ensued by proper analysed facts, but also decisions about already built projects and institutions would have been ensued by proper analyses as well. If such a prescription was fulfilled step by step, the likelihood to happen the situations of amount of kindergartens in the Czech area would have been much lower. Few years ago, the vast amount of kindergartens were closed due to less supply of children, unfortunately, policy makers in that time have not had the proper predictions are have not used to appropriately, otherwise there is no other reason to find why these schools are known closed when they are so desperately needed. Anyway, this provided socio economic analysis has been performed based on the learning effect to not follow the wrong or inappropriately used predictions about the population, especially fertility growth.

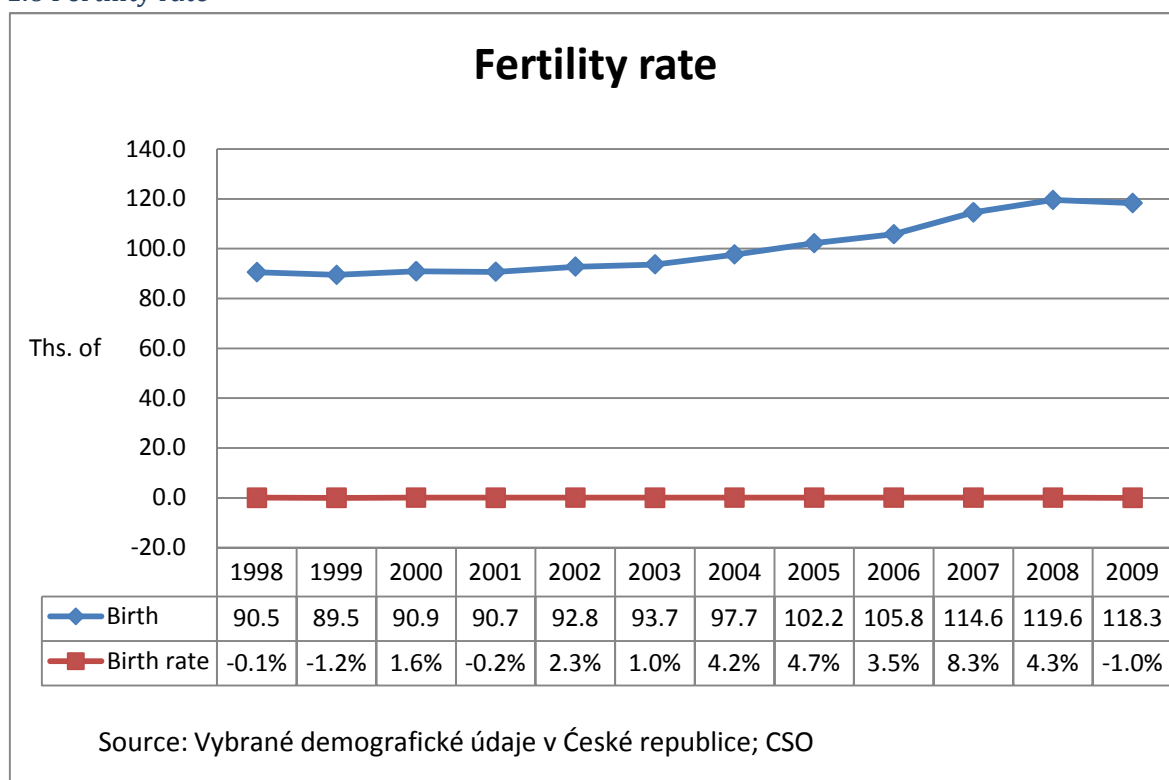
Before the section regard to the fertility growth will be provided, for the purposes of the thesis the summary of population structure – age groups will follow.

1.5 Population structure – age groups



The population structure of the inhabitants of the Czech Republic has gone through the structural changes as the whole population is getting older. Clear view of these shifts should have brought the comparison of the beginning of the chosen time period and the end. In the graph one is able to see sets of inhabitants represented by a slope, comprise the sections chosen according to the age affiliation. The group of inhabitants between years 15-64 as well as other inhabitants' group (65 and more) has increased almost about 200 ths people. In comparison to the development of amount of young people between 0-14 years old, where the population has been facing continues decrease almost about 150 ths of people during years 1998 till 2009.

1.6 Fertility rate



Even if the last paragraph has showed significant decrease of portion of young people within society, one of the supporting factors of that aspect is considered the national fertility rate. In the case of Czech Republic during last years, the development has increasing tendency except the last year 2009, however that value -1.0% is still assumed as relatively close to the 0 value, so y-o-y development the trend is being seen as flat rather than decreasing. Nevertheless the return into the positive figures has been quite important even for the purposes of this analysis.

This division of socio economic analysis has brought valuable information for the rest of analytical procedures, unfortunately, the closer focus on particular group of inhabitants and clients has not been provided yet. The proposed project has been targeting the group of inhabitants with various types of disabilities. The access to the data and even the data itself are quite rare and only limited scale of information was found.

1.2 No. of disabled people in Czech Republic (2006)

No. of disabled people in Czech Republic (2006)		
	Population CR	Citizens of CR with disability
Population (2006)	10,287.2	1,015.5
Gender		
Men	5,026.2	490.4
Women	5,261.0	525.1
Population structure - age groups (years)		
0-14	1,479.5	46.2
15-29	2,175.7	60.6
30-44	2,312.9	101.3
45-59	2,195.6	245.7
60-74	1,462.6	283.7
75 and more	660.8	276.7
* values are in ths. of people		
Source: Lidé se zdravotním postižením; CSO		

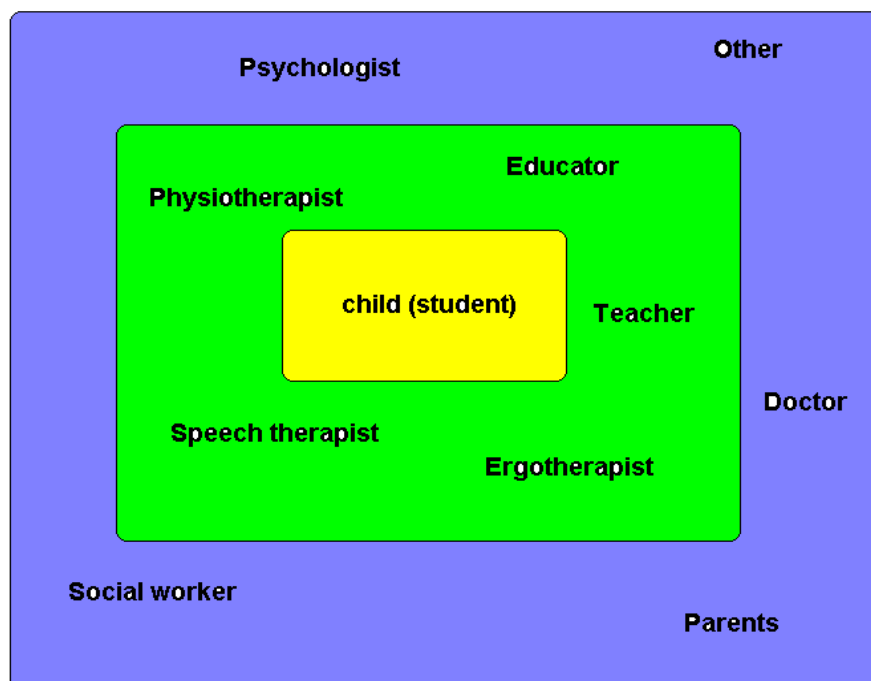
It has been generally said that the portion of disabled people and people without disability is close to the ratio 10:1. In case of Czech Republic with the overall population in 2006 around 10.3 million of people, the expectations had become true about proved amounts around 1.02 million disabled citizens of Czech Republic. Up to date data are not available, but if the estimation was approved and taken into the account. The table itself, except the overall amount of disabled people has brought also the relative complex information about age structural groups. The presumption about increasing consistency of each group is depicted on the amount from 30-44 years up to 75 and more. For the purposes of the proposed project no particular division of men nor women is important, important targeted groups of future clients are due to the services provided within the area

of the whole complex the first two groups, 0-14 and 15-29 years with the total amount of 106.8 ths of people. For these people, the project would have brought increase and improvement in providing services, emerges of new services.

5.3. Definition of the project; specification of set of alternatives

Before the reader will become more familiarized with the whole set of alternatives and their details, particular note should have been mentioned in connection to the history and original ideas of proposed project. When the specialists of the JÚŠ and current managing director PhDr. Jan Pičman were having meetings with the aim to set up the critical points of JÚŠ's future development and considering needs as technological, equipment, facilities etc, first, they prepared the new conception of JÚŠ. New conception has concluded crucial importance of team work where all specialist and parents have significant roles in the student/child's life. These roles are divided into inner and outer circles. The inner circle is represented by the educator, teacher, physiotherapist, logopedics specialist and ergotherapist. The outer circle is represented by psychologist, social worker, doctor, parents or other.

1.7 Teamwork concept of JÚŠ

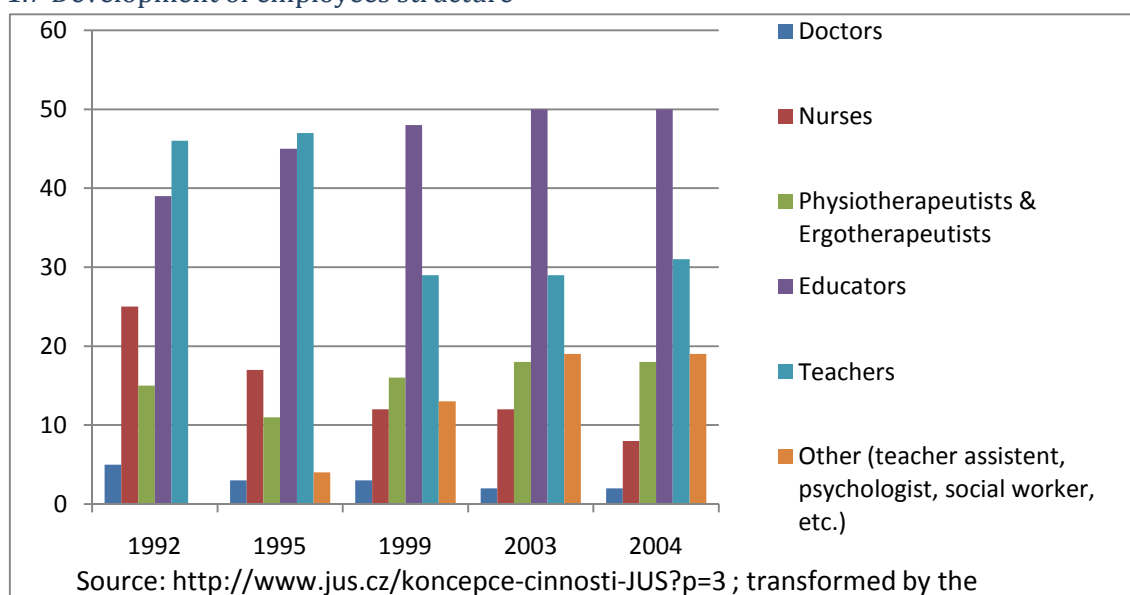


Source: JÚŠ websites; transformed by the author

Therefore, on the basis of this conception the top level preferences of needs was identified. The absolute cooperation between all these specialists and parents and for example all these specialists have the access to the documentation of the student/child. Another outcome of this system is the report written on y-o-y basis, where student/child may find the commentaries about last year, how successful was the student with fulfilling his goals for particular year, where are possible areas of improvement and proposed goals for next year. These commentaries are written by the specialists from both; inner and outer circles.

The application of this concept into the reality one might upon the example of the development of employees structure in the graph 1.10 Development of employees structure.

1.7 Development of employees structure



As it was already seen in the *team work concept JÚŠ*, this example shows the following spread out of accent to the complexity of provided services and structural shift from the situation when almost one fourth of all employees consisted from medical personnel as nurses and doctor. The outcome of this structural shift has been identified as strengthening of importance of educators within the concept, lowering the occupancy of teachers and approximate equalization of other occupations. Up-to-date data are not available; nevertheless the continuation of the transformation process is expected.

Thus, when the concept was proposed and agreed with the founder of JÚŠ; Prague City Council, another step was to establish the listing of preferred equipment / facilities necessary for improvement in quality of provided services, which would have served for the purposes of that concept. This listing was taking into the consideration through knowledge of the critical aspects of students' physiological, psychological and general fulfillment. These three major aspects are influenced through the quality and supply of different kinds of rehabilitation and high volume of social interactions of all kinds possible. Thus, the listing has consisted from these facilities:

- 1) Dormitories for clients (separate the life within school and life afterschool)
- 2) Swimming pool
- 3) Facility providing equipment for hydrotherapy, massages, ergotherapy, other kinds of therapies; all set up on high level of standard
- 4) Building providing additional parking spaces

The reason why this listing and concerning concept of provided services and its valume is so important in this stage of analysis is simple. When the project of construction pavilions C and D was proposed, there did not exist pressure to present other variants, but the focus was put on the preferred one. So there have not been any concrete additional variants to be used. Thus, possible variants have been prepared for the needs of analysis by the author of this thesis. The knowledge of JÚŠ preferences and plans for future presented by PhDr. Pičman were taken into the consideration and the aims of the all variants were in sign to maximize the JÚŠ clients' welfare.

Due to the fact that constructed buildings as they are going to be described as a variant A have been quite large construction, the additional variants are focused on limited range of therapies. In other words, not all services as provided in variant A would have been available at all other variants, because the sizes of proposed constructions in variant B, C and D are just smaller than variant A.

5.3.1. Realization stages of the project scenario

When the decision about the project scenario has been made and the appropriate variant has been chosen, the project itself has to go through several steps or better, stages.

This simple listing of the stages and consequent information about these stages should have provided enough knowledge to differentiate time periods of lifespan of the project itself and also differentiate between various types of costs to be included or excluded from the following calculations. Whatever variant has been chosen, these consequent stages are used to apply for all types of investment project with no difference according to the orientation of servis that particular investment project should have been providing.

Just before the reader will become more familiar with all variants of the scenarios, the additional structure of the implementation procedure has to be mentioned. Structure considere the the time periods during which the project is undertaken.

1) Pre-investment stage

Within this stage the most significant concern is to prepare investment project construction documentation with the precise plans of the future construction. These plans are then handed into particular Investment Bureau for authorization of investment appraisal. Another part of the pre-investmant stage is the preparation of feasibility study about project and possible CBA. Within this stage, the public assessment competition is announced according to the Czech law no. 199/1994 Sb. And the most suitable and efficient proposal of competitor of the competition is chosen. All the costs concerning this pre-investment stage are considered as so called sunk costs and aer not implemented within further calculations of CBA.

1) Investment stage

Within this stage, the investment project is undertaken and the provider of construction works was already chosen according to the results of public assessment competition, agreement is singed. The investor was funding construction works due to agreed progress chart. When the rough works are finished the facility is also equipped so the areas of facility are at the end of this stage ready for use. Usually, during this stage any concerning financial or social benefits are not identified except the situation, when the version of progress chart of the construction site is set up with the subsequent finished areas of the

whole facility. However, this approach is not commonly used because additional costs of project due to increase of transportation are related. The whole sum of costs identified within this stage is incorporated into the calculations of CBA.

2) Operating stage

Within this stage the construction works are finished and the facility in majority areas is fully operational. For the purposes of CBA this stage is considered as crucial for its operating costs and benefits. Those values are incorporated into the calculations within the scheme of appropriate horizon of the appropriate economic lifespan of the project. This horizon is chosen according to the industrial sector for which the facility is operating.

5.4.Variant A - Project scenario

5.4.1.Introduction to the project scenario

The project is defined as the construction of the almost separate pavilions C and D. Pavilion C has been located for therapeutic rehabilitation procedures and pavilion D was constructed for the pupose to serve as the pavilion with flats for the independent living. The projection of the whole structure you may see below at the 1.1 Project scenario – sketch. This sketch is created as a constant copy of the real pivilions. The basic data about the proportions of the whole structure is possible to find in the tab 1.2 Basic construction ranges.

1.8 Project scenario – variant A - sketch



Source: prepared by author

1.3 Basic building dimensions

Basic building dimensions		
Total maximum length of the building site	69.76	m2
Total maximum width of the building site	13.32	m2
Build-up area	884.7	m2
Source: construction documentation, Inženýrské stavby a.s. , transformed by author		

Pavilion C (left pavilion on the picture) was built with the basement, groundfloor and 4 additional floors, where at the basement was developed background for the hydrotherapy and also in another section one might find technology background. The spaces at the ground floor have served for the purposes of the JÚŠ foundation, reception desk, JÚŠ laundry service and the rest of spaces are for rent for the organizations which support and complement services provided by the JÚŠ. In the first up to fifth floor the areas are provided for the purposes of physiotherapy, occupational therapy (ergo-therapy), speech therapy, computer assistance.

1.4 Composition of the pavilion C

Pavilion C	Basement	Ground floor	1st floor	2nd floor	3rd floor	4th floor	Total	units
Administrative rooms	0.0	65.8	12.0	0.0	0.0	0.0	77.8	m2
Rooms for therapies' purposes	93.6	35.0	118.4	0.0	0.0	104.3	351.3	m2
Medical rooms	0.0	0.0	0.0	140.8	0.0	0.0	140.8	m2
Rooms for leisure time activities	78.5	0.0	12.9	26.9	86.7	66.7	271.8	m2
Other	0.0	51.7	0.0	0.0	0.0	0.0	51.7	m2
Source: construction documentation, Inženýrské stavby a.s. , transformed by author								

Ground floor of the Pavilion D (right pavilion on the picture) is occupied by the JÚŠ coffee shop and gathering place. The rest of spaces within the ground floor are not utilized by the JÚŠ, these areas let for rent for other supporting organizations outside of the JÚŠ organizational structure.

1.5 Composition of the pavilion D

Pavilion D	Basement	Ground floor	1st floor	2nd floor	3rd floor	4th floor	Total	units
Administrative rooms	0	69.78	0	0	0	0	69.78	m2
Rooms for therapies' session	0	104.11	0	0	0	106.42	210.53	m2
Medical rooms	0	0	0	0	0	0	0	m2
Rooms for leisure time activities	0	0	14.24	0	26.71	135.87	176.82	m2
Other / flats	0	0	153.51	208.32	175.67	0	537.5	m2
Source: construction documentation, Inženýrské stavby a.s. , transformed by author								

The majority of spaces in the 1st floor up to 4th floor have been serving for the purposes of living for clients or former clients of JÚŠ. Additional table 1.5 Flat structures will provide summary of types of accommodation available for use in the pavilion D. The rest of the rooms are specialised for performing leisure time activities or particular therapy (ergo-therapy).

1.6 Flat structure

Pavilion D - flats	Basement	Ground floor	1st floor	2nd floor	3rd floor	4th floor	Total amount	Total m2
Bachelor room	0	0	0	6	0	0	6	153.6
Double bachelor	0	0	0	2	2	0	4	109.44
Flat (2+1)	0	0	3	0	3	0	6	294.48
Source: construction documentation, Inženýrské stavby a.s. , transformed by author								

Due to the smart system of paths and stairs within the glass-concrete structure between both pavilions, the entries of the whole structure are without barriers, anyone may reach any part of the building anytime.

The whole structure is operating due to continues work of almost 55 employess, when aprox. Half of employees have had the stabile position there in sense of no movement to the another organizational facilities during a shift, however, second half of employees have operated according to the needs of clients at different facilities in different period of the day. Table no. 1.6 *Employees structure* – has summarized all the occupations of employees providing all the services listed above.

1.7 Employees structure

Pavilion C & D - employees structure		
Occupation	no. of emp.	
Administrative employees	6	
Drivers	4	
Employees of reception desk	5	
Rehabilitation assistants	Ergotherapy	8
	Physiotherapy	8
	Hydrotherapy	1
Consultants	20	
Educators	2	
Coaches in coffee shop	2	
Employees of laundry service	2	
Source: data obtained by author during interview with senior manager of the organization		

5.4.2. Decide whose benefits counts – listing of beneficiaries (variant A)

The champion of the project, defending its benefits has been JÚŠ and as the semi-budgetary organization which has been receiving financial contributions from the main founder Prague City Council, the direct beneficiary has been identified as Prague City and its citizens. Such a undertaken investment appraisal has been providing large scale of centralised complex services for various types of disabled people, particularly for children and students from Prague. When these services were put all together with those already long-established, JÚŠ organization has become the largest institution providing that set of services not just in Prague region but also in Central Bohemian region and some of these services have even national importance recognition.

Detail listing of beneficiaries:

- Groups of citizens positively or negatively affected by the undertaken project
 - People with various types of disabilities
 - Clients of JÚŠ as children and students who are or who are not using dormitories of JÚŠ for accommodation – rehabilitation therapies, leisure time activities; social interaction fulfilment
 - Former clients of JÚŠ; people who were studying at JÚŠ or participating in any programme provided by JÚŠ – rehabilitation

- therapies; exhibitions, coffee shop services, place for social interaction
- People with particular needs and orientation towards stability and social interaction – participation in various types of interest groups; consultancy
- People looking for the accommodation suitable for their status – one year contract for renting a flat; assistency
- People without disabilities
 - People living in the close neighbourhood of the Vyšehrad Prague district – rehabilitation; coffee shop services, exhibitions
 - Prague citizens – part of the construction works were improved the quality of environment; additional services laundry service
- University students – internship and practical training environment
- Non profit organizations – organizations providing complementary services for disabled people
- Families with disabled children – accommodation; consultancy; assistance
- Local construction companies – public competition has won international company, however, these companies used to delegate particular works for local companies
- Architects and supervising companies over the project – project has been funded through the public expenditures, thus, Prague City Council delegated supervision over the construction works to the local companies
- Business people – shops with specialised equipment

5.4.3. Financial analysis

5.4.3.1. Fixed investment costs

As it was already mentioned in methodological section, financial analysis provides the valuable information for the establishment of cash flow forecasts of particular project. And further application of these forecasts follows. For these forecasts analysts are assessing various scales of different costs and benefits (revenues). At this particular section the main concern of the analysis towards to the divisions of total investment costs (1.10 Final Investment Costs) and total operating costs and benefits (1.14 Operating costs and

benefits during a lifespan of the project) and listing of sunk costs which are not incorporated into the following FNPV and FRR.

According to the Czech law no. 199/1994 Sb. Was announced the terms upon which the best proposal would have been identified thanks to the criteria as efficiency for example. The winner competitor and his proposal were found and agreement about the construction of the project between the company and supervising authority was signed. The table 1.17 Total Investment Costs has summarized the critical aspect of construction and provided enough information about the most critical and fund consuming aspects of reconstruction as the reader is able to see from the composition percentage.

1.8 Total Investment Costs

Total Investment Costs			
#	Description	Amount in TCZK	%
1	Static part	27,664	18.4%
2	Construction part - construction of buildings C & D	97,353	64.6%
3	Construction part - reconstruction of building F	1,211	0.8%
4	Construction part - outside ramp	571	0.4%
5	Construction part - pedestrian precinct	5,531	3.7%
6	Health equipment installation - building C	1,933	1.3%
7	Health equipment installation - building D	1,633	1.1%
8	Heating system - building C	3,141	2.1%
9	Heating system - building D	2,701	1.8%
10	Electric current – teak	4,048	2.7%
11	Electric current - strong	1,849	1.2%
12	Ventilation equipment	1,353	0.9%
13	Control and regulation systém	738	0.5%
14	Orchard landscaping	966	0.6%
Total (without TA)		150,693	100.0%
Source: data obtained from the Investment appraisal construction documentatio			

Identified and reasonably most critical aspects parts of the investment appraisal were no. 1 – static part and no.2 – construction part – construction of buildings C&D. On the other hand even if it is reasonable to suggest that the majority of funds would be used for pure construction of the building, the rest of the items and related 17% of the overall investment

costs one might see as quite low. Especially when is taken into the account fact that both beuildings should serve as an open rehabilitation facility.

When the works had started already, the additional construction costs were identified due to the change of construction plan and project design. Also newer technologies and materials were taken into the account. These changes led to the increase of overall investment costs as in particular areas as the table 1.18 Adjusted costs summarized.

1.9 Adjusted Costs

Adjusted Costs			
#	Description	Amount in TCZK	%
1	Static part	3,359	11%
2	Construction part - construction of buildings C & D	5,723	19%
3	Construction part - reconstruction of building F	7,522	25%
4	Construction part - outside ramp	0	0%
5	Construction part - pedestrian precinct	1,097	4%
6	Health equipment installation - building C	254	1%
7	Health equipment installation - building D	254	1%
8	Heating system - building C	0	0%
9	Heating system - building D	0	0%
10	Electric current – teak	8,333	28%
11	Electric current - strong	1,040	3%
12	Ventilation equipment	0	0%
13	Control and regulation systém	2,158	7%
14	Orchard landscaping	170	1%
Total (without TA)		29,910	100%
Source: data obtained from the Investment appraisal construction documentatio			

This table has summarized the changes and additional costs of construction. Particular interest should have been given to the no.10 – Electric current – weak which represented 28% of the total amounts. On the other hand, also savings were identified. No.2 – Construction part – construction of building C&D would have had much greater impact for the overall costs if different materials as applied steel frame within construction were not found. The value in the table is already adjusted for savings up to 4 855 TCZK.

When the initial proposal and adjusted summary were put together, the overall investment costs are able to be seen in the table 1.19 Final Investment Costs.

1.10 Final Investment Costs

Final Investment Costs			
#	Description	Amount in TCZK	%
1	Static part	31,023	17.2%
2	Construction part - construction of buildings C & D	103,076	57.1%
3	Construction part - reconstruction of building F	8,732	4.8%
4	Construction part - outside ramp	571	0.3%
5	Construction part - pedestrian precinct	6,628	3.7%
6	Health equipment installation - building C	2,187	1.2%
7	Health equipment installation - building D	1,886	1.0%
8	Heating system - building C	3,141	1.7%
9	Heating system - building D	2,701	1.5%
10	Electric current – teak	12,381	6.9%
11	Electric current - strong	2,889	1.6%
12	Ventilation equipment	1,353	0.7%
13	Control and regulation systém	2,896	1.6%
14	Orchard landscaping	1,136	0.6%
Total (without TA)		180,603	100.0%
Source: data obtained from the Investment appraisal construction documentatio			

Due to the additional costs and also applied savings, the overall structure of costs has moved toward the less predominance of the construction costs. These costs were representing then 74.3 % of the overall investment costs. The table Final Investment Costs is representing the overall investment costs already excluded from sunk costs. The summary of the sunk costs will follow.

As it was said already, for the calculations of cash flow forecasts, the time horizon has to be chosen upon which the project economic lifespan would be illustrated. The OECD has proposed the table 1.1 Reference time horizon, where the project of construction of pavilion C&D should have been identified within the section “Other services” and related time horizon 15 years should have been taken into the consideration. The EU commission has recommended this listing of projects according to the sector of economy and related time horizons as reference for the period 2007-2013.

5.4.3.2. Sunk costs

This project as any other project generated also some value of sunk costs. These costs have to be identified and also excluded from the calculation of the overall investment costs. The table no. 1.20 Sunk Costs is providing listing of all costs related to the investment stage of the construction of pavilions.

1.11 Sunk Costs

Purchase price of the investment project		
#	Description	Amount in TCZK
1	Construction costs	217,652
2	Project design and Engineering supervision	1,469
3	Other costs	532
Total purchase price		219,653
Source: construction documentation, Inženýrské stavby a.s., transformed by author		

The sunk costs are then representing value over 2 mil CZK, precisely 2 001 ths. CZK. The item “Other costs” has to be identified as part of sunk costs as well. The origin of this item in general is rooted into the processes when the provider of construction works, or (in this case) Architect Company due to some problems or another institution has to be swapped for another one. These costs then used to emerge as the consequence of the transportation documentation, the changes of work procedure etc.

Last comment, the value of construction costs within this table above is uncomparable to the table 1.19 Fianl Investment Costs, because for the calculation purposes that amount is not adjusted for the VAT in comparison this value which is increased for the VAT as the other costs. Deduction of VAT in advance for lack of detailed information about project design, engineering supervision and other costs was not possible to perform.

Financial analysis of the whole set of projects consist from the detail look insight of operating costs, and operating revenues. Subdivision of operating costs is listed as costs concerning labour, water, electricity, gas, maintenance, administrative costs and costs for properly functioning IT system within the organization. On the other hand, between the

listing of operating revenues it has been listed rent of spaces or offices for non profit organizations, rent of other types of available space as for Gym or TaKavarna coffee shop, rent of flats, rent of bachelor flats and funds generated from the selling goods within the coffee shop.

1.12 Operating costs per year

Operating costs						
Description	Units	Commentary	Price / Unit (in CZK; VAT excluded)	Commetary	Total (in CZK; VAT excluded)	%
Labour costs	28	employees surplus	22,177	monthly wage/hour	7,451,370	69%
Water	7,315	m3	55	price KC / m3	401,594	4%
Electricity	306,448	kW	4	price KC / kW	1,290,592	12%
Gas	75,600	m3	10	price KC / m3	734,658	7%
Maintanance	n/a	-	n/a	-	750,000	7%
Administrative costs	n/a	-	n/a	-	100,000	1%
IT	n/a	-	n/a	-	60,000	1%
Total Operating Costs	-	-	-	-	10,788,214	100%
Source: Author's calculations						

The majority of the overall costs are created by funds necessary for the employees' wages. These costs represent almost 70% of the whole operating costs. These costs are spread out between 28 employees with the average wage per month around 22.17 ths CZK. Almost one fourth of the overall wages are then related to the expenses for consumption of water, electricity and gas. The rest of the expenses are related to the maintenance, administrative costs and IT.

1.13 Operating revenues per year

Operating revenues			
#	Description	Total amount (VAT excluded)	%
1	Rent of spaces for non profit organizations	476,527	15%
2	Rent of another type of spaces (TaKavarna, Gym, ..)	163,800	5%
3	Rent of flats	1,603,080	50%
4	Rent of bachelor flat	591,300	19%
5	Operating coffee shop - sold goods	345,600	11%
Total operating revenues (3rd parties)		3,180,307	100%
Source: Author's calculations			

Operating revenues are generated through the rents of flats and bachelor flats, these services are located within the pavilion D. On the other hand the rest of services as rents of spaces for non profit organizations, other types of rent of spaces or revenue from sold goods, these services are generating one third of the overall income.

1.14 Operating costs and revenues during lifespan of the project

Operating costs and revenues (MCZK)															
Years	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Operating costs	-	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8
Labour costs	-	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5
Water	-	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
Electricity	-	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3
Gas	-	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7
Maintanance	-	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8
Administrative costs	-	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
IT	-	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Operating revenues	-	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2
Rent of spaces for non profit organizations	-	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Rent of another type of spaces (TaKavarna, Gym, ..)	-	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Rent of flats	-	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6
Rent of bachelor flat	-	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6
Operating coffee shop - sold goods	-	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
Net Operating Profit	-	7.6	7.6	7.6	7.6	7.6	7.6	7.6	7.6	7.6	7.6	7.6	7.6	7.6	7.6

The projection of the overall costs and benefits (revenues) through the whole lifespan of the project has shown the lack of revenues in the whole schedule. Continues spread of both, revenues and costs is maintained through the maximum capacity of utilization of the whole building from the very beginning of the project lifespan. This quite unusull utilization of the spaces and considered costs has been obtained through the close cooperation between non profit organization and JÚŠ even before. The project was already

undertaken, so the time necessary for observation of the market and proper supply advertisement campaign was saved. That is one of the reasons why these costs and benefits did not grow over time but has emerged from the very beginning. In case of rent of flats, the situation has been even quite special. The concept of the renting the flats as it was announced and provided has been unique in the Czech Republic. The programme for improvement independent living skills with one year contracts and fully equipped flats has become very popular in short time after the notice. The overall amount of operating costs and benefits has been found as negative, so the benefits are lower than costs. This lacks of revenues are represented by negative values of Net Operating Profit row.

1.15 FNPV and FRR

Financial return on investment															
Description/Years	1	2.0	3	4	5	6	7	8	9	10	11	12	13	14	15
Total operating revenues	0.0	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1
Total inflows	0.0	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1
Total operating costs	0.0	10.4	10.4	10.4	10.4	10.4	10.4	10.4	10.4	10.4	10.4	10.4	10.4	10.4	10.4
Total investment costs	180.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total outflows	-180.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Net cash flow	-180.6	-7.3	-7.3	-7.3	-7.3	-7.3	-7.3	-7.3	-7.3	-7.3	-7.3	-7.3	-7.3	-7.3	-7.3
Discounted net cash flow	-180.6	-6.9	-6.6	-6.3	-6.0	-5.7	-5.4	-5.2	-4.9	-4.7	-4.5	-4.3	-4.1	-3.9	-3.7
FNPV	-252.7														
FRR	#DIV/0!														
Discount rate	5%														
Source: calculation made by author															

In the table 1.15 FNPV and FRR, the reader may identify the total inflows and total outflows which are then gathered in the projection of the Net cash flows. These monetized flows has to be then discounted and totalled to obtain the financial net present value (FNPV) of the the investment project. FNPV value is negative due to the high investment

costs of the project and also the projection of the net cash flow has been negative too. Because of this reason the internal rate of return has not been calculated because from the financial point of view, the project is not generating any revenue in any of the years during lifespan of the project.

5.4.4. Economic analysis

For the purposes of the economic analysis, the projection of the monetized financial cash flows has to be transformed into the accounting flows. For the conversion of this projection conversion factor is used to apply. In case of the variant A, conversion factor was set up as 1.

1.16 Socio economic return on investment - converted Financial return on investment

Socio economic return on investment - before the socio benefits added																
Description	Years	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
	CV															
Total operating revenues		-	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1
Rent of spaces for non profit organizations	1	-	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
Rent of another type of spaces (TaKavarna, Gym, ..)	1	-	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Rent of flats	1	-	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6
Rent of bachelor flat	1	-	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6
Operating coffee shop - sold goods	1	-	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
Total inflows		-	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1
Total operating costs		-	10.4	10.4	10.4	10.4	10.4	10.4	10.4	10.4	10.4	10.4	10.4	10.4	10.4	10.4
Labour costs	1	-	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5
Water	1	-	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
Electricity	1	-	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3
Gas	1	-	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Maintanance	1	-	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8
Administrative costs	1	-	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
IT	1	-	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
Total investment costs		180.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Construction	1	180.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total outflows		-180.6	-10.4	-10.4	-10.4	-10.4	-10.4	-10.4	-10.4	-10.4	-10.4	-10.4	-10.4	-10.4	-10.4	-10.4
Net cash flow		-180.6	-7.3	-7.3	-7.3	-7.3	-7.3	-7.3	-7.3	-7.3	-7.3	-7.3	-7.3	-7.3	-7.3	-7.3

Source: author's calculations

Before the Economic cash flow projection should have been implemented, the listing of the socio economic benefits has to be transformed into the accounting flows and incorporated into converted financial projection. When the conversion rate is properly set up, any other changes are no incorporated within the caluculation of economic cash flow. Only the flows concerning the values of possible socio economic benefits (costs) should have been adjusted.

1.17 Socio economic benefits (costs)

Socio economic benefits (revenue)		
Description	Amount	%
Benefits concerning new work positions	9,755,424	26%
Increase of social and health insurance payment	3,414,398	9%
Increase of income tax	951,154	3%
Increase of net wage employees	5,389,872	15%
Benefits concerning processes within pivilions	27,100,320	74%
Speech therapy	1,560,000	4%
Hydrotherapy	929,760	3%
Ergotherapy	6,240,000	17%
Fyziotherapy	5,341,440	14%
Consultancy	12,480,000	34%
Electro therapy	549,120	1%
Total Socio economic benefits (revenue)	36,855,744	100%
Source: author's calculations		

The socio economic benefits were identified along two major sections, first, section concerning the emerge of new work positions and its related benefits of the increase of payments for the state as part of social and health insurance paid by employer, part of the income tax and also the increase of net wages of employees. Second, section concerning the emerge of processes within pavilions (particular pavilion C) in form of providing therapies as speech, hydro, ergo, fyzio and electro and also general consultancy services. The demand schedule for these services was prepared on the basis of the past performance results of these provided services.

The composition of these benefits is unequal where the section concerning the emerge of new work positions represent only 25% of the overall benefits (revenues) in comparion to the 75% represented by benefits concerning the provided services within

especially pavilion C. Among these services, special emphasize should have been given to the consultancy and ergotherapy which both are representing 50% of the overall socio economic benefits.

1.18 Socio economic return on investment – var. A

Socio economic return on investment															
Description / Years	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Total operating revenues	0.0	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1
Total socio economic revenues	0.0	36.9	36.9	36.9	36.9	36.9	36.9	36.9	36.9	36.9	36.9	36.9	36.9	36.9	36.9
Total inflows	0.0	39.9	39.9	39.9	39.9	39.9	39.9	39.9	39.9	39.9	39.9	39.9	39.9	39.9	39.9
Total operating costs	0.0	10.4	10.4	10.4	10.4	10.4	10.4	10.4	10.4	10.4	10.4	10.4	10.4	10.4	10.4
Total investment costs	180.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total outflows	-180.6	-10.4	-10.4	-10.4	-10.4	-10.4	-10.4	-10.4	-10.4	-10.4	-10.4	-10.4	-10.4	-10.4	-10.4
Economic net cash flow	-180.6	29.6	29.6	29.6	29.6	29.6	29.6	29.6	29.6	29.6	29.6	29.6	29.6	29.6	29.6
Social discounted net cash flow (5,5%)	-180.6	28.0	26.6	25.2	23.9	22.6	21.4	20.3	19.3	18.3	17.3	16.4	15.6	14.7	14.0
ENPV	102.99														
ERR	7.72%														
Social discount rate	5.50%														
Source: author's calculations															

When the projection of socio economic benefits (costs) over the lifespan of the project was adjusted for these benefits and incorporated into the framework of financial analysis section converted to the accounting values, the identification of economic net present value (ENPV) and also economic internal rate of return on investment were identified (ERR). But before this identification will be evaluated net economic cash flows have to be discounted by social discount rate. The economic net cash flow has the only negative value during the first year of the lifespan of the project due to the initial investment costs when no operating or economic revenues have not emerged. When the socio economic benefits (costs) were incorporated into the calculation, no other year within

lifespan of the project has been identified as that with negative value. Discounting procedure was performed with the utilization of social discounted rate which has been suggested by European commission in period of time 2007-2013 in value of 5.5%. The total of social discounted net cash flows over the lifespan of the project is given as ENPV where the value is equal to the 102.99 million CZK and with the ERR equal to the 7.72%. Due to the fact that general interest rate of return on investment within financial markets has been considered around 5.5%, the ERR of the project makes it quite valuable. Also in relation to the fact, that it is not plausible that demand for the provided services should have been dropped in upcoming years due to the lack of clients.

5.4.5. Risk analysis - sensitivity analysis

1.19 Sensitivity analysis – var. A

Sensitivity analysis					
1)	Results of economic analysis		Amount		
		ENPV	102.99		
		ERR	7.72%		
2)	Change of operating expenses - increase by 1%		Amount	Change (real terms, mill CZK/%)	Change %
		ENPV	102.00	-0.99	-0.96%
		ERR	7.65%	-0.07%	-0.87%
3)	Change of operating revenues - increase by 1%		Amount	Change (real terms, mill CZK/%)	Change %
		ENPV	103.29	0.30	0.29%
		ERR	7.74%	0.02%	0.29%
4)	Change of socio economic benefits concerning new work positions - increase by 1%		Amount	Change (real terms, mill CZK/%)	Change %
		ENPV	103.93	0.94	0.91%
		ERR	7.78%	0.06%	0.81%
5)	Change of socio economic benefits concerning processes within pavilions - increase by 1%		Amount	Change (real terms, mill CZK/%)	Change %
		ENPV	105.59	2.60	2.52%
		ERR	7.90%	0.18%	2.37%
Source: author's calculations					

Part of the assessment procedure concerning the project is also the performed sensitivity analysis upon which the analysts used to have the broader knowledge about possible movements in value of financial and even socio economical costs and benefits. The most crucial area of possible movements were identified as change of operating expenses, change of operating revenue, change of socio economic benefits concerning emerge of new work positions and change of socio economic benefits concerning provided services. The all analysed changes in the value of benefits and costs are performed on the level 1%.

After the adoption of this 1% increase of operating costs and its influence on the ENPV and ERR we may identify decrease of value in real terms about 0.99 million CZK which reflects 0.96 percentage decrease. In case of ERR the value has decreased about 0.07% which ment to be equal to 0.87 decrease.

Change of operating revenues by increase of 1% has influenced the ENPV and ERR with no massive effect. The ENPV has increased in real terms about 300 ths CZK which represented percentage change about 0.29%. ERR has changed in value about 0.02%, this change corresponds the the percentage change equal to 0.29%.

Change of socio economic benefits concerning the emerge of new work positions by 1% increase has had impact to the overall ENPV in real terms equal to the 0.94 million CZK which represents less then 1 % of the overl all value of ENPV, particularly 0.91% and the procedure has pointed out also the invrease of ERR by 0.06% in value which correcsponds to the change as increase in percentage about 0.81%.

The last change of socio economic benefits concerning provided services is able to be seen in the light of the significant impact upon the ENPV and even ERR. ENPV has increased by this change in real terms about 2.6 million CZK which correspond to the 2.52% which should have been considered as almost 150% percentage increase in comparison to the percentage point increase in case of socio economic benefits. ERR has increased in value about 0.18% which corresponds to the percentage change about 2.37%.

Between all these sensitivity analyses the significant importance has had in general the change of operating costs and much more the change of socio economic benefits concerning provided services. In case of operating costs, the likelihood of increase of costs

for energies as gas, electricity on one hand and on the other hand the enter of one additional employee would have had significant impact on shortening the ENPV of the project and it's ERR. In case of socio economic benefits, it has been possible to note that due to the specialization of the provided services, their complexity within one place and particular uniqueness of some of them may the capacity of the facility might be reached. In that case, the impact on the increase of ENPV has been significant.

5.5.Variant B - BAU (Business as usual) scenario

5.5.1. Introduction to BAU variant

The BAU scenario focuses on the operations before the considered project was constructed. In the area of construction site, there was located only the small warehouse at the site. This warehouse was built in 1980's and the status at the end the year 2004, when the construction works of the project started, was unsatisfactory and necessary funds would had to be used for reconstruction up to five years or the variant of the forced demolition should had been considered.

1.8 Variant B - sketch



Source: prepared by author

1.20 Basic building dimensions

Basic building dimensions		
Total maximum length of the building site	15.84	M
Total maximum width of the building site	12.74	M
Build-up area	201.8	m ²
Purpose of building		
Warehouse	200.2	m ²
Structure of employees		
Administrative employees	2	
Source: Chosen by author according to the preferences of JUS		

The warehouse was operating under the control of 2 administrative employees. The purpose of its work was to store and reallocate the unutilized equipment of JÚŠ or as the gathering area for goods as bed linen for example for further processing with cooperation with 3rd parties. As it was already mentioned, because of the building safety status regarding its necessary reconstruction works, two optional variants would have been proposed. First, use the additional funds to secure the safety and fire regulations to be fulfilled. Second, when structure would have been found as unsatisfactory for its contradiction of building status and safety and fire regulations, another procedure as demolition of that building would have been applied. Due to the information obtained during the interview with PhDr. Pičman the second variant would have been plausibly chosen if such a variant has been still actual, because many different areas at different JÚŠ's facilities could take over the activities linked to this warehouse.

5.5.2. Decide whose benefits counts – listing of beneficiaries (var. B)

The listing of beneficiaries in case of this variant is quite short, due to the fact that all services warehouse was providing on behalf of JÚŠ. Thus, as the only beneficiary should have been considered JÚŠ.

5.5.3. Economic Analysis (var. B)

The process of particular writing each single aspects (Investment costs, operating costs, operating revenues, FNPV and FRR, Socio economic revenues) of the results as ENPV and ERR within thesis was shortened. The reason was to present only final

outcome of the analysis. The calculations as they were made in variant A, were made in the same way, the same principle and they are available to be find at ANNEX.

1.21 Socio economic return on investment – var. B

Socio economic return on investment															
Description / Years	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Total operating revenues	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total socio economic revenues	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Total inflows	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Total operating costs	0.7	0.7	0.7	0.7	0.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total investment costs	0.0	0.0	0.0	0.0	0.0	1.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total outflows	-0.7	0.7	0.7	0.7	0.7	1.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Economic net cash flow	0.2	0.2	0.2	0.2	0.2	2.2	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Social discounted net cash flow (5,5%)	0.2	0.2	0.2	0.2	0.2	1.7	0.7	0.7	0.6	0.6	0.6	0.5	0.5	0.5	0.5
ENPV	-5.82														
ERR	-40.67%														
Social discount rate	5.50%														
Source: author's calculations															

When the projection of socio economic benefits (costs) over the lifespan of the project was adjusted for these benefits and incorporated into the framework of financial analysis section converted to the accounting values, the identification of economic net present value (ENPV) and also economic internal rate of return on investment were performed (ERR). These procedures were followed by the discounting procedure as utilization social discount rate. The total of social discounted net cash flows over the lifespan of the project is given as ENPV where the value is equal to the -5.82 million CZK and with the ERR equal to the -40.67%.

5.5.4. Risk Analysis – sensitivity analysis (var. B)

1.22 Sensitivity analysis – var. B

Sensitivity analysis					
1)	Results of economic analysis		Amount		
		ENPV		-5.82	
	ERR		-40.67%		
2)	Change of operating expenses - increase by 1%		Amount	Change (real terms, mill CZK/%)	Change %
		ENPV	-5.85	-0.03	0.49%
		ERR	-41.65%	-0.98%	2.41%
3)	Change of operating revenues - increase by 1%		Amount	Change (real terms, mill CZK/%)	Change %
		ENPV	-5.82	0.00	0.00%
		ERR	-40.67%	0.00%	0.00%
4)	Change of socio economic benefits concerning new work positions - increase by 1%		Amount	Change (real terms, mill CZK/%)	Change %
		ENPV	-5.83	-0.01	0.15%
		ERR	-39.93%	0.74%	-1.82%
5)	Change of socio economic benefits concerning processes within pavilions - increase by 1%		Amount	Change (real terms, mill CZK/%)	Change %
		ENPV	-5.83	-0.01	0.15%
		ERR	-40.38%	0.29%	-0.71%
Source: author's calculations					

When the sensitivity analysis of variant B was performed, the change of operating expense by increase about 1% has led to the increase of negative value of ENPV about 0.3 millions which represented 0.49% of ENPV. In case of ERR this change has made even significant impact on ERR, because the percentage change was over 2%, particularly 2.41%.

The change of operating revenues did not bring any significant results because in case of variant B there did not exist any operating revenues at all.

The change of socio economic benefits by 1% increase has increased negative value of ENPV by 100 ths CZK which corresponded to the change of 0.15%. On the other

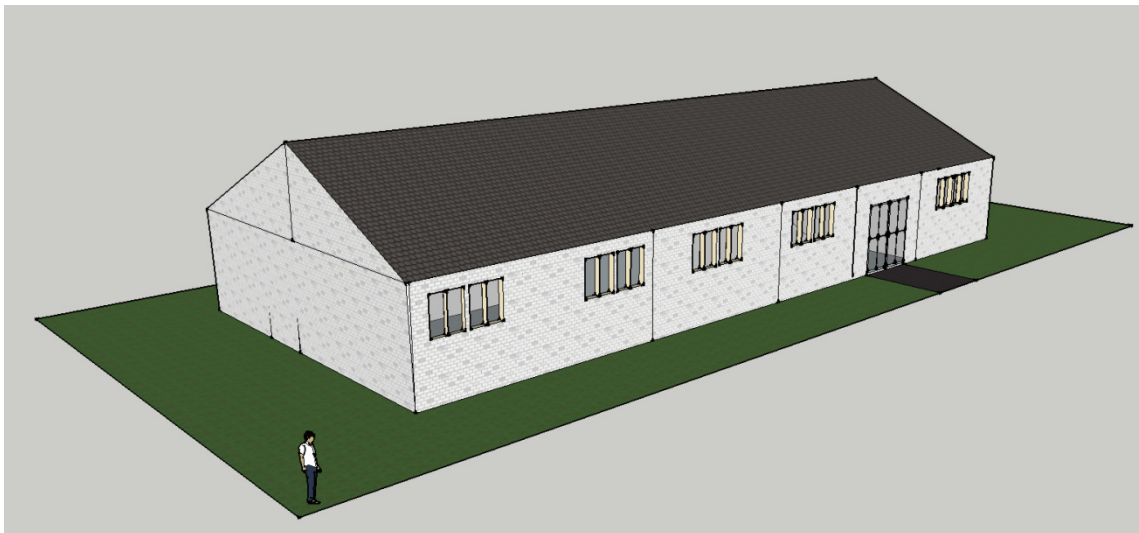
hand that change has different impacts on ERR in both cases. Change of socio economic benefits concerning new work position, its ERR changed about -1.82% in comparison to the ERR of benefits concerning provided services, where the change was only about -0.71%.

5.6. Variant C - “Do minimum” scenario

5.6.1. Introduction to the “Do minimum” scenario

Variant C has been considered for its obvious attributes that in comparison to the other variants, this particular one is based on relatively low investment costs and providing additional services as the outcome. These additional services are suggested as different types of rehabilitation and space for practising of consultancy services. The scale of these services has been proposed in the same range and quality as in the case of variant A for concerning services.

1.10 Variant C - sketch



Source: prepared by author

Except the obvious differences between variants A and C as size of the building and number of floors, there has not been proposed any room or space for 3rd parties

(foundation, agencies etc.) as the additional income in sense of rent and also benefit for clients as complementary services within range of accessibility which are not provided by JÚŠ.

1.22 Variant C – Basic building dimensions

Basic building dimensions		
Total maximum length of the building site	32.36	m2
Total maximum width of the building site	12.74	m2
Build-up area	379.65	m2
Source: created by author on the basis of construction documentation, Inženýrské stavby a.s.		
Do minimum alternative	Ground floor	units
Rooms for therapies' purposes	185.3	m2
Medical rooms	52.3	m2
Do minimum alternative - employees structure		
Rehabilitation assistants	Ergotherapy	0
	Physiotherapy	8
	Hydrotherapy	0
Consultants		10
Source: Chosen by author according to the preferences of JUS		

In the whole building would be operating only physiotherapists and consultants. Physiotherapists in comparison to the variant A would have had the same conditions and even the number of employees is equal. On the other hand number of consultants had to be lowered because of the lack of space in connection to the reasonability of the project as such. The equipment inside of their offices is the same, only difference is in number of rooms where these consultants would work.

5.6.2. Decide whose benefits counts – listing of beneficiaries (var. C)

- People with various types of disabilities
- Clients of JÚŠ as children and students who are or who are not using dormitories of JÚŠ for accommodation – rehabilitation therapies, leisure time activities; social interaction fulfilment

- Former clients of JÚŠ; people who were studying at JÚŠ or participating in any programme provided by JÚŠ – rehabilitation therapies; exhibitions, coffee shop services, place for social interaction
- People living in the close neighbourhood of the Vyšehrad Prague district – rehabilitation; coffee shop services, exhibitions
- Families with disabled children – accommodation; consultancy; assistance
- Local construction companies – public competition has won international company, however, these companies used to delegate particular works for local companies
- Architects and supervising companies over the project – project has been funded through the public expenditures, thus, Prague City Council delegated supervision over the construction works to the local companies

5.6.3. Economic Analysis (var. C)

The process of particular writing each single aspects (Investment costs, operating costs, operating revenues, FNPV and FRR, Socio economic revenues) of the results as ENPV and ERR within thesis was shortened. The reason was to present only final outcome of the analysis. The calculations as they were made in variant A, were made in the same way, the same principle and they are available to be found at ANNEX.

1.23 Socio economic return on investment – var. C

Socio economic return on investment															
Description / Years	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Total operating revenues	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total socio economic revenues	0.0	11.2	11.2	11.2	11.2	11.2	11.2	11.2	11.2	11.2	11.2	11.2	11.2	11.2	11.2
Total inflows	0.0	11.2	11.2	11.2	11.2	11.2	11.2	11.2	11.2	11.2	11.2	11.2	11.2	11.2	11.2
Total operating costs	0.0	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7
Total investment costs	38.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total outflows	-38.2	-1.7	-1.7	-1.7	-1.7	-1.7	-1.7	-1.7	-1.7	-1.7	-1.7	-1.7	-1.7	-1.7	-1.7
Economic net cash flow	-38.2	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5
Social discounted net cash flow (5,5%)	-38.2	9.0	8.5	8.1	7.7	7.3	6.9	6.5	6.2	5.9	5.6	5.3	5.0	4.7	4.5
ENPV	52.74														
ERR	17.11%														
Social discount rate	5.50%														
Source: author's calculations															

Also in case of variant C and its socio economic return on investment was calculated when all operating and economic revenues and costs were calculated, the total investments were added into the framework and the accounting cash flow were discounted by social discount rate. ENPV in case of var. C is equal to 52.74 millin CZK and ERR is equal to the 17.11%.

5.6.4. Risk Analysis – sensitivity analysis (var. C)

1.24 Sensitivity analysis – var. C

Sensitivity analysis					
1)	Results of economic analysis			Amount	
		ENPV	52.74		
		ERR	17.11%		
2)	Change of operating expenses - increase by 1%		Amount	Change (real terms, mill CZK/%)	Change %
		ENPV	52.58	-0.16	-0.31%
		ERR	17.06%	-0.05%	-0.27%
3)	Change of operating revenues - increase by 1%		Amount	Change (real terms, mill CZK/%)	Change %
		ENPV	52.74	0.00	0.00%
		ERR	17.11%	0.00%	0.00%
4)	Change of socio economic benefits concerning new work positions - increase by 1%		Amount	Change (real terms, mill CZK/%)	Change %
		ENPV	52.88	0.14	0.26%
		ERR	17.14%	0.03%	0.20%
5)	Change of socio economic benefits concerning processes within pavilions - increase by 1%		Amount	Change (real terms, mill CZK/%)	Change %
		ENPV	53.68	0.94	1.78%
		ERR	17.38%	0.27%	1.60%
Source: author's calculations					

The ENPV and ERR of the variant C emerged as a great result and this variant should have been taken into the consideration. The results of performed sensitivity analysis has shown in case of change of operating expense by its increase about 1% only 0.16 millin CZK in real terms and which corresponds to the decrease of 0.31%. The situation regard ERR was quite similar where ERR decrease by 0.05% which corresponds to the decrease of percentage about 0.27%.

The change of operating revenues should have been left due to the same reason as in sensitivity ananalysis of var. B – these variants were would not make a operating revenue so the change by 1 % is equal to change about 0 in both aspects.

In comparison the change of socio economic benefits concerning new work positions where one might identify significant changes about 0.26% and 0.20% which correspond to the change in real terms of 0.14 million CZK and relative small change of percentage about 0.03%.

Change of socio economic benefits concerning provided services should have had the impact by 1% increase much more visible in comparison to the another part of socio economic benefits due to reason that provided services were managed by actual quite small number of new staff as the employees' surplus was considered as well. The change in real terms is equal to the 0.94 million CZK as 1.78% of the overall ENPV. The change in percentage is equal to change about 0.27% representing 1.6%.

5.7. Variant D - "Do something" scenario

5.7.1. Introduction to the variant D

1.11 Variant D - sketch



Source: prepared by author

As the reader can see, the variant D is counting with the building consists of basement and 3 another floors. The transportation between different floors has been designed in two ways. First, visitor may use the flat gradually ascending path which goes through the

middle of the building or the lift, but with limited amount of people inside for one way. The location of provided services within an each floor has followed the preferences as they were already listed above.

1.25 Basic building dimensions – variant D

Basic construction range		
Total maximum length of the building site	32.36	m2
Total maximum width of the building site	12.74	m2
Build-up area	412.67	m2
Source: Chosen by author according to the preferences of JUS		

1.26 Building structure according to the orientation – variant D

Do something alternative	Basement	Ground floor	1st floor	2nd floor	Total	units
Administrative rooms	0.0	32.0	0.0	0.0	32.0	m2
Rooms for therapies' purposes	130.44	205.6	152.2	0.0	488.2	m2
Medical rooms	68.5	0.0	71.7	0.0	140.2	m2
Other – flats	0.0	0.0	0.0	230.0	230.0	m2
Source: Chosen by author according to the preferences of JUS						

Just to remind and specify; basement should serve as the center of hydrotherapy. The spaces arranged for hydrotherapy should side with small gym. Groundfloor, where different types of rehabilitation should be provided might also use this gym for its purposes. And also three rooms with total area of 32 m² should have been provided for 3rd parties, in this case particularly for the purposes of JÚŠ foundation. First floor should accommodate specialists for ergotherapy and also their fully equipped training areas and also specialists for speech therapy. This type of therapy should stretch out upon one fourth of the floor area and ergo therapy should stretch out the rest. The second floor should have served as the training area for developing independent domestic skills. For this purposes three independent flat units should have been built and equipped.

1.27 Employees structure – variant D

Do something alternative - employees structure		
Occupation		no. of emp.
Administrative employees		6
Rehabilitation assistants	Ergotherapy	8
	Physiotherapy	8
	Hydrotherapy	1
Consultants		12
Educators		2
Source: based on the data about utilization of building, which have been based on JUS preferences		

The employees structure is actually based on the aims for which this variant has been chosen, thus for the listed areas of services adequate amount of specialist should have been working there. The numbers of specialist are based on the actual working pattern as it was showed in variant A.

5.7.2. Decide whose benefits counts – listing of beneficiaries (var. D)

Detail listing of beneficiaries:

- Groups of citizens positively or negatively affected by the undertaken project
 - People with various types of disabilities
 - Clients of JÚŠ as children and students who are or who are not using dormitories of JÚŠ for accommodation – rehabilitation therapies
 - Former clients of JÚŠ; people who were studying at JÚŠ or participating in any programme provided by JÚŠ – rehabilitation therapies
 - People looking for the accommodation suitable for their status – one year contract for renting a flat; assistency
 - People without disabilities
 - People living in the close neighbourhood of the Vyšehrad Prague district – rehabilitation

- Prague citizens – part of the construction works were improved the quality of environment
- University students – internship and practical training environment
- Non profit organizations – organizations providing complementary services for disabled people
- Families with disabled children – accomodation; consultancy; assistance
- Local construction companies – public competition has won international company, however, these companies used to delegate particular works for local companies
- Architects and supervising companies over the project – project has been funded through the public expenditures, thus, Prague City Council delegated supervisit over the construction works to the local companies
- Business people

5.7.3. Economic Analysis (var. D)

The process of particular writing each single aspects (Investment costs, operating costs, operating revenues, FNPV and FRR, Socio economic revenues) of the results as ENPV a and ERR within thesis was shortened. The reason was to present only final outcome of the analysis. The calculations as they were made in variant A, were made in the same way, the same principle and they are available to be find at ANNEX.

1.28 Socio economic return on investment (var. D)

Socio economic return on investment															
Description / Years	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Total operating revenues	0.0	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7
Total socio economic revenues	0.0	23.1	23.1	23.1	23.1	23.1	23.1	23.1	23.1	23.1	23.1	23.1	23.1	23.1	23.1
Total inflows	0.0	24.8	24.8	24.8	24.8	24.8	24.8	24.8	24.8	24.8	24.8	24.8	24.8	24.8	24.8
Total operating costs	0.0	6.9	6.9	6.9	6.9	6.9	6.9	6.9	6.9	6.9	6.9	6.9	6.9	6.9	6.9
Total investment costs	115.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total outflows	-115.6	-6.9	-6.9	-6.9	-6.9	-6.9	-6.9	-6.9	-6.9	-6.9	-6.9	-6.9	-6.9	-6.9	-6.9
Economic net cash flow	-115.6	17.9	17.9	17.9	17.9	17.9	17.9	17.9	17.9	17.9	17.9	17.9	17.9	17.9	17.9
Social discounted net cash flow (5,5%)	-115.6	16.9	16.1	15.2	14.4	13.7	13.0	12.3	11.6	11.0	10.5	9.9	9.4	8.9	8.4
ENPV	55.76														
ERR	6.62%														
Social discount rate	5.50%														
Source: author's calculations															

As in the same case of other variants, the process of incorporation of total operating costs and benefits adjusted by total investment costs was the same. Even the next step went through the process of performing CBA procedures without any difference, so socio economic benefits were incorporated too, and the summarized values spread over the lifespan of the variant D were discounted by social discount rate. The ENPV then is equal to the 55.76 million CZK and ERR to 6.62%.

5.7.4. Risk analysis – sensitivity analysis (var. D)

1.29 Sensitivity analysis

Sensitivity analysis					
1)	Results of economic analysis		Amount		
		ENPV	55.76		
		ERR	6.62%		
2)	Change of operating expenses - increase by 1%		Amount	Change (real terms, mill CZK/%)	Change %
		ENPV	55.12	-0.64	-1.15%
		ERR	6.55%	-0.07%	-0.99%
3)	Change of operating revenues - increase by 1%		Amount	Change (real terms, mill CZK/%)	Change %
		ENPV	55.92	0.16	0.29%
		ERR	6.63%	0.01%	0.22%
4)	Change of socio economic benefits concerning new work positions - increase by 1%		Amount	Change (real terms, mill CZK/%)	Change %
		ENPV	55.99	0.23	0.41%
		ERR	6.64%	0.02%	0.37%
5)	Change of socio economic benefits concerning processes within pavilions - increase by 1%		Amount	Change (real terms, mill CZK/%)	Change %
		ENPV	57.74	1.98	3.55%
		ERR	6.83%	0.21%	3.24%

Source: author's calculations

The change of operating expenses by increase of 1% has had similar impact on ENPV and ERR as in the case of other variants, particularly change in real terms led to decrease about 0.64 million CZK (-1.15%) and decrease about 0.07% what represented decrease about 0.99% in percentage.

Change of operating revenues in comparison to the variants B and C has its impact upon ENPV and ERR, because within variant D, there are generating some operating revenues. Increase in real terms is not actually astronomic, only 0.16 million CZK, but is representing 0.29% change in ENPV. In case of ERR the percentage change is only about 0.01% but that change correlates with 0.22% of the percentage.

Increase by 1% of socio economic benefits concerning new work positions led to the increase in real terms of ENPV by 0.23 million CZK and 0.02 % change of ERR. These increases had an impact equal to 0.41% increase as well as 0.37% increase.

Change of socio economic benefits concerning provided services by increase of 1% related to the increase of ENPV by 1.98 million CZK which corresponds to 3.55% change. The percentage change of ERR was smaller as well as percentage change, but still values of 0.21% respectively 3.24% are high in the context of the all variants.

6. Conclusion

The thesis has provided sufficient information in theoretical and even practical way how to manage the performance of the CBA in the context of project focused on services regard to the improvement of the health status. The valuable judgment whether the project should have been undertaken or not is based upon practical implementation of the theory wherever possible. The overall judgment depends then particularly on some minor and some major aspects of the analysis. Between major aspects are counted the calculation of ENPV and ERR (economic net present value and economic internal rate on investment). Between minor aspects are counted the proper established and commented outcomes of the socio economic assessment, provided division of the possible alternatives of the project and their specification, differences etc. Then the listing of the all beneficiaries could be retroactively linked in some scale to the socio economic assessment. This listing has to support their relation through the information with the project. When these procedures are performed, the calculation of financial analysis has to be taken into the consideration where the critical aspects are value of investment costs, operating cost and operating revenue, the value of discount rate upon which the FNPV and FRR is calculated. Then these results are converted into the accounting form of cash flows and socio economic benefits and costs are incorporated. Then everything is set up to calculate final ENPV and ERR.

Socio economic assessment has summarized 6 different aspects of the Macroeconomical and population growth indicators. Within Macroeconomical population indicators, the analysis of GDP growth rate commented the recent developments and also possibilities of the further improvement of the economic situation. Graph of the CPI has copied in sharpened way the development of GDP. Graph of the general unemployment rate has shown its fluctuation and overall downward tendency of development till moment when the outcomes of world economic recession has fallen down upon the Czech economy.

In the context of the performed differentiation of variants, where these variants were called according to the scale of services which they might provide as “business as usual”, “do minimum”, “do something”, and variant of the proposed project. All variants are introduced in light of their purposes, list of provided services and employees who should

have been actually performing some of these services and serving for the clients. Also for the whole set of variants the listing of beneficiaries are supported. The variants in the context of listing of beneficiaries are differentiated among one to each other basically due to the scale of provided services. Those which are providing only limited number of services have also limited set of the beneficiaries in comparison to the others. But the major groups of beneficiaries which are contented within all variants are Prague City Council and people with different scale and type of disability. In case of JÚŠ these people, clients are considered mainly as a student of grammar and high schools.

The assessment were performed in way that whole set of alternatives are able to be compared according to the main criteria as ENPV and ERR are considered within this thesis. This following section of the conclusion is focused mainly on the evaluation of proposed project and all other variants.

Financial analysis part performed as another step within the CBA range of indicators has been focused mainly on the four aspects of the overall analysis. First, there has had to be obtained the listing and identification of the appropriateness investment costs. The table concerning this information is based on the data provided by supervising institutions agreed with the Prague City Council as the main donor of necessary funds. As the most financial demanding parts of the whole investment procedure regard to construction works were identified main construction of the main building and its statics. These outcomes of analysis are coherent with the proposed CRR (conversion construction rate) which was used for the purposes of estimation construction costs of variants B, C, and D. This portion to the rest of the costs has been maintained. Second, for the calculations of the operating costs and benefits as the vital support was provided by MuDr. Pičman, director of JÚŠ. On the basis of information he has supported through the interview, the set of operating expenses and revenues could have been calculated. As the most significant parts of these revenues and expenses were recognized the costs related to the wages of employees and also costs of energies as water, gas and electricity. On the other hand as the most significant revenue was recognized the revenue granted from the rent of flats within pavilion D which has its role within variant A. This granted revenue should have been given agreed also to the variant D, which at the third floor had flats suited for the families. Third, when these costs and revenues were put together in inside of the framework of the project lifespan the Net

monetized cash flow was calculated. Due to the further procedures, particular discount rate for the purpose of discounting future costs and benefits was identified. Discount rate was identified at the level of 5%. Fourth, when the all cash flows were totaled the FNPV was able to be calculated. Due to the fact that operating costs supported vast amount of investment costs exceeded the operating revenues, the calculation of the FRR was unable to be performed due to the negative values of flows.

Economical analysis part performed as next step was in sign of the conversion of the monetized values of the operating revenues and costs into the accounting values necessary for further calculations within the framework of economical analysis. Next, identified socio economic benefits were transformed into the accounting value and incorporated along with other costs and benefits. Also this information were put together into the socio economic framework over the lifespan of the project and discounted by the social discounted rate is the European commission set up for the period of time 2007-2013. When the discounting processes were finished in all variants, we are able to compare the ENPV and ERR values of all variants.

1.30 Overview of ENPV and ERR of variants A, B, C, and D

Overview of ENPV and ERR of variants A, B, C, D				
Indicator/variants	A	B	C	D
ENPV	102.99	-5.82	52.74	55.76
ERR	7.72	-40.67	17.11	6.62
Source: author's calculations				

These results should have been taken into consideration not just from the simple point of views as the highest ENPV is the best variant or the highest ERR is the best variant but the broader consequences should have been taken into the account. The worst variant on the other hand is quite easily identified as variant B. The variant D has quite high in general point of view ERR and ENPV is even higher than variant C, but if such a notion was adjusted for the information, that variant D has quite large investment costs and the unique services in sense of programme for development skill of independent living is limited

by amount of possible flat suited for those purposes. Variant C then has in comparison to the variant D high ENPV and the highest ERR, it means that as the independent facility in some other region this project would have been valuable facility. But if there is incorporated the fact, that original idea was constructed upon basis of project established on the notion to build facility with the complex provided services variant C due to its lack of wider range of provided services will not be the best option. And then the variant A, proposed project, has generated quite high ERR and despite enormous construction costs the ENPV as equal to the 102.99 million of CZK and the range of provided services is broad. Also the range of satisfied beneficiaries is the highest.

As last step was performed the risk analysis, particular sensitivity analysis where chosen section were increased about 1% of their value and the changes upon ENPV and ERR were then analysed. The similar significant impacts have this change in the case of change in socio economic benefits (costs) concerning provided services in all variants except B. Variant B experienced the opposite effect.

The judgment whether any of variants of project should have been undertaken or not is based on the implementation of the all aspects within range of CBA together and make decision upon them. As it was mentioned there exist some minor and some major aspects, furthermore in overall range the major indicators are supported by minor indicator that variant A, as proposed project should have been undertaken. All aspects were taken into the account. Last note which might even strengthen the support for the undertake of this project is a fact, that the principle of utilization equipment and pavilions C&D is not based on the maximization of the profit but on the maximization of welfare of clients' JÚŠ in the long term. Due to this fact, the lifespan of the project might be even prolonged from the counted 15 years to wider period and the economical benefits might become even bigger.

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8. Annex

8.1. Interviews

Outcome of the interview

Interviewer Tomas Havelka
 Interviewee MuDr. Jan Pičman
 Variant A
 Employees

	no. of emp.	Administrative costs	Maintanance	ITS
driver			JUS / year	JUS / 5 years / 30 pc
administrative worker	6	100000 CZK	3000000	1000000
receptionist	4		C&D	25% C&D
physiohterapist	5			
ergo therapist	8			
rehabilitation assistant	8			
psychotherapist	1			
educator	20			
salesman	2			
employee of laundry	2			
	2			
	58			

Variant B
 Employees

	no. of emp.	Administrative costs	Maintanance	ITS
driver			JUS / year	JUS / 5 years / 30 pc
employee of laundry	2	15000 CZK	112500	
			C&D	25% C&D
	2			

Variant C

	no. of emp.	Administrative costs	Maintanance	ITS
physiohterapist	4	25000	187500	24000

	no. of emp.	Administrative costs	Maintanance	ITS
Variant D				
ergo therapist	4	85000	600000	48000
rehabilitation assistant	1			
psychotherapist	10			
educator	2			

Socio economic revenues

Var A

hydrotherapy

hours operational/day	customer price/hour	customer - former - clients	customer - former clients	others
6	3	149	2	1
				0

Ergotherapie

hours operational/day	customer price/hour	customer - former - clients	customer - former clients	others
8	6	500	6	0
				0

Consultancy

hours operational/day	customer price/hour	customer - former - clients	customer - former clients	others
8	10	500	10	2
				0

Educating

hours operational/day	customer price/hour	customer - former - clients	customer - former clients	others
8	10	500	10	

Var B

Location	Area (m2)		price (KC)	KC/1m2
Praha 10 - Hostivar		200	28000	140
Praha 4 Modrany		200	16000	80
Praha - Cercany		200	12000	60
Praha 8 - Liben		200	20000	100
Praha 8 - Liben		200	30000	150
Praha 9 - Bechovice		200	19800	99
Praha4 - Michle		200	24000	120
Praha 10 - Michle		240	28800	120
Praha 10 - Michle		368	44160	120
Praha 10 -Strasnice		200	25000	125
			AVG	111.4
warehouse		200		111.4
price month	22,280.00			
price year	267,360.00			

Fyzioterapie

hours operational/day	customers/hour	price/hour	customer - klient	customer - former clients	others
8	5		428	2	2
					1

Consultancy

hours operational/day	customers/hour	price/hour	customer - klient	customer - former clients	others
8	6		500	4	2
					0

Var D

Hydrotherapy

hours operational/day	customers/hour	price/hour	customer - klient	customer - former clients	others
6	3		149	2	1
					0

Ergotherapy

hours operational/day	customers/hour	price/hour	customer - clients	customer - former clients	others
	8	6	500	6	0

Consultancy

hours operational/day	customers/hour	price/hour	customer - clients	customer - former clients	others
	8	10	500	10	2

Educating

hours operational/day	customers/hour	price/hour	customer - clients	customer - former clients	others
	8	10	500	10	

Outcome of the interview

Interviewer	Tomas Havelka
Interviewee	Ing Železný
CRI	

Description		Var C	var D
Static part		0.2	0.7
Construction part - construction of building		0.2	0.65
Construction part - reconstruction of building F		0.25	0.6
Construction part - outside ramp		0	0
Construction part - pedestrian precinct		0.4	0.6
Health equipment installation - building C		0.6	0.6
Health equipment installation - building D		0	0.5
Heating system - building C		0.2	0.75
Heating system - building D		0	0
Electric current - weak		0.2	0.6
Electric current - strong		0.2	0.65
Ventilation equipment		0.2	0.6
Control and regulation system		0.2	0.75
Orchard landscaping		0.6	0.65

8.2. Rest of calculations

VAR B

Operating costs					
Description	Units	Commentary	Price / Unit (in CZK; VAT excluded)	Commetary	Total (in CZK; VAT excluded)
Labour costs	2	employees	12,809.23	monthly wage/hour	307,422
Water	131	m3	55	price KC / m3	7,206
Electricity	36,000	kW	7	price KC / kW	255,557
Gas	42,945	m3	1	price KC / m3	37,974
Maintanance	n/a	-	n/a	-	112,500
Administrative costs	n/a	-	n/a	-	15,000
IT	n/a	-	n/a	-	12,000
Total Operating Costs	-	-	-	-	747,659
Source: Author's calculations					

Operating revenues		
#	Description	Total amount (VAT excluded)
1	Rent of spaces for non profit organizations	-
2	Rent of another type of spaces (TaKavarna, Gym, ..)	-
3	Rent of flats	-
4	Rent of bachelor flat	-
5	Operating coffee shop - sold goods	-
Total operting revenues (3rd parties)		-
Source: Author's calculations		

Rozklad prijmu EA

Socio economic benefits (costs)		Amount
Description		Amount
Economic costs concerning loose work positions		-696,816
	Decrease of social and health insurance payment	-243,886
	Decrease of income tax	-67,940
	Decrease of net wage employees	-384,991
Cost concerning processes within warehouse		-267,360
	Rent of warehouse outside JUS	-267,360
Total Socio economic benefits (costs)		-964,176
Source: author's calculations		

VAR C

Operating costs					
Description	Units	Commentary	Price / Unit (in CZK; VAT excluded)	Commetary	Total (in CZK; VAT excluded)
Labour costs	4	employees surplus	21,100	monthly wage/hour	1,012,800
Water	1,750	m3	55	price KC / m3	96,075
Electrocity	60,112	kW	5	price KC / kW	290,572
Gas	8,180	m3	9	price KC / m3	77,386
Maintanance	n/a	-	n/a	-	187,500
Administrative costs	n/a	-	n/a	-	25,000
IT	n/a	-	n/a	-	24,000
Total Operating Costs	-	-	-	-	1,713,333
Source: Author's calculations					

Operating revenues		
#	Description	Total amount (VAT excluded)
1	Rent of spaces for non profit organizations	-
2	Rent of another type of spaces (TaKavarna, Gym, ..)	-
3	Rent of flats	-
4	Rent of bachelor flat	-
5	Operating coffee shop - sold goods	-
Total operating revenues (3rd parties)		-
Source: Author's calculations		

Socio economic benefits (revenue)		
Description		Amount
Benefits concerning new work positions		1,393,632
	Increase of social and health insurance payment	487,771
	Increase of income tax	135,879
	Increase of net wage employees	769,982
Benefits concerning processes within pivilions		9,800,960
	Physiotherapy	3,560,960
	Consultancy	6,240,000
Total Socio economic benefits (revenue)		11,194,592
Source: author's calculations		

VAR D

Operating costs					
Description	Units	Commentary	Price / Unit (in CZK; VAT excluded)	Commetary	Total (in CZK; VAT excluded)
Labour costs	17	employees surplus	23,480	monthly wage/hour	4,789,936
Water	3,343	m3	55	price KC / m3	183,503
Electrocity	195,336	kW	5	price KC / kW	942,168
Gas	30,675	m3	10	price KC / m3	298,096
Maintanance	n/a	-	n/a	-	600,000
Administrative costs	n/a	-	n/a	-	85,000
IT	n/a	-	n/a	-	48,000
Total Operating Costs	-	-	-	-	6,946,702
Source: Author's calculations					

Operating revenues		
#	Description	Total amount (VAT excluded)
1	Rent of spaces for non profit organizations	303,565
2	Rent of another type of spaces (TaKavarna, Gym, ..)	79,920
3	Rent of flats	1,300,860
4	Rent of bachelor flat	-
5	Operating coffee shop - sold goods	-
Total operting revenues (3rd parties)		1,684,345
Source: Author's calculations		

Socio economic benefits (revenue)		
Description	Amount	
Benefits concerning new work positions		2,438,856
	Increase of social and health insurance payment	853,600
	Increase of income tax	237,788
	Increase of net wage employees	1,347,468
Benefits concerning processes within pivillions		20,689,760
	Hydrotherapy	929,760
	Ergotherapy	6,240,000
	Consultancy	12,480,000
	Educating	1,040,000
Total Socio economic benefits (revenue)		23,128,616
Source: author's calculations		

8.3. Other

Jedličkův ústav a Mateřská škola a Základní škola a Střední škola

**Ceník PRONÁJMŮ v areálu JÚŠ
platí od 11.1.2010**

příloha k vnitřní směrnici JÚŠ k doplňkové činnosti

Na základě zřizovací listiny může JÚŠ provozovat pronájem nemovitostí a nebytových prostor.

JÚŠ je plátcem DPH, proto je nutno k ceně krátkodobých pronájmů (tj. do 48 hodin nepřetržitě) účtovat základní sazbu DPH. Dlouhodobé pronájmy jsou osvobozeny dle § 56, zákona 235/2004 Sb.

Poznámka ke krátkodobým pronájmům: Pokud má nájemce **nárok na osvobození** od DPH, **je povinen sám doložit** kopii listiny, která ověřuje tento nárok (živnostenský list, výpis z obchodního rejstříku apod.) při objednání nájmu nebo před podpisem nájemní smlouvy. Pokud tak neučiní, je mu účtována DPH.

Dlouhodobé pronájmy a pronájmy krátkodobé na dobu školního roku jsou realizovány na základě nájemní smlouvy.

Sazby dle typu klienta	Popis typu nájemce
A	žáci a mládež JÚŠ, jejich osobní asistenci a rodiče
B	osoby se zdravotním postižením z ČR včetně osobní asistence, bývalí žáci a studenti JÚŠ, zaměstnanci*

C	ostatní
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Ceny jsou uvedeny v Kč bez DPH na 1 hodinu (60 minut)

Objekt JÚŠ	Cena v Kč bez DPH		
	A	B	C
Tělocvična Na Topolce	55	200	250
Tělocvična v NB	55	125	200
Divadelní sál	50	185	400
Společenská místnost TOP C 409	50	185	185
Učebna NB - jednorázový pronájem	50	145	145
TaKAVÁRNA - jednorázový pronájem	x	x	1000
TaKAVÁRNA - pro Centrum služeb Vyšehrad	x	200	x
Bazén pro externí organizace	x	1050	1050
Bazén pro zaměstnance a rodinné příslušníky	zdarma		
Sauna a posilovna pro zaměstnance a jejich rodinné příslušníky	zdarma		

* pokud zaměstnanci tvoří většinu skupiny např. u pronájmu tělocvičny, použijte sazbu A

Pracovníci, vystavující daňové doklady, uvedou daňový základ (tj. počet hodin x cena za hodinu), výši daně a nakonec cenu včetně DPH.

V Praze dne 5. ledna 2010

Zpracovala: Ing. Alena Pešťová, ekonom.nám.

Schválil: PhDr. Jan Pičman, ředitel

Jedličkův ústav a Mateřská škola a Základní škola a Střední škola

CENÍK UBYTOVÁNÍ v JÚŠ

ceník platný od 11.1.2010

příloha k vnitřní směrnici JÚŠ k doplňkové činnosti

Na základě zřizovací listiny může JÚŠ provozovat ubytovací a hostinskou činnost.

JÚŠ je plátcem DPH, proto je nutno k ceně ubytování připočítat příslušnou sazbu DPH.

Dle zákona č. 235/2004 Sb. o dani z přidané hodnoty se **ubytovací služby** zařazené v SKP 55 zdaňují sníženou sazbou daně (pro rok 2010 je to 10%). Pokud zároveň s ubytováním jsou poskytovány stravovací služby, pak je možno uplatnit i na stravovací služby sníženou sazbu DPH.

Sazby dle typu klienta	Popis klientů - ubytovaných
A	žáci a mládež JÚŠ, jejich osobní asistenci a rodiče Buková - zaměstnanci a jejich rodinní příslušníci
B	osoby se zdravotním postižením z ČR včetně osobní asistence, bývalí žáci a studenti JÚŠ a externí školy v přírodě
C	ostatní

Ceny jsou uvedeny v Kč na 1 osobu na 1 noc

Cena Kč bez DPH dle typu klienta			
Objekt JÚŠ	A	B	C
Hostovský pokoj domova TOPOLKA	200	300	460
Domov TAP, pokoj s koupelnou, WC na chodbě	100	200	360
TOP F, D - pokoj s koupelnou a WC	200	300	460
TOP D - pokoj s koupelnou, WC a kuchyňkou	300	400	560
RS Buková STATEK	65	150	200
RS Buková TÁBOR	65	80	130

V době hlavních prázdnin je možné v Praze dohodnout parkování auta Kč 100/ 1 den + DPH základní sazba.

Ubytování v chatkovém táboře Buková

V ceně ubytování je zahrnuta i možnost používat kuchyň v táboře. Ubytování však hradí navíc spotřebu elektřiny dle skutečně spotřebovaného množství energie, kterou předepíše dle stavu elektroměru vedoucí rekreačního střediska Buková.

Pracovníci, vystavující daňové doklady, uvedou daňový základ (tj. počet dní x počet osob x cena), výši daně a nakonec cenu včetně daně.

V Praze dne 5. ledna 2010

Zpracovala: Ing. Alena Peštová, ekonom.náměstkyně

Schválil: PhDr. Jan Pičman, ředitel

