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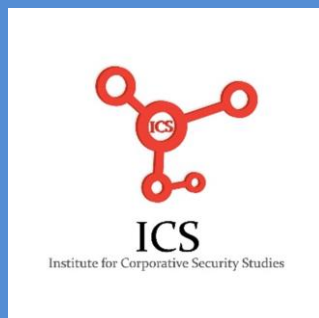
FEASIBILITY STUDY OF THE MODEL OF CRITICAL INFRASTRUCTURE PROTECTION IN THE REPUBLIC OF CROATIA

Project - Resilience of Critical Infrastructure Protection in Europe (RECIPE)

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PROJECT SUMMARY

The drafters of the study of RECIPE 2015 project have, in accordance with the objectives and planned results, prepared a proposal of the model of critical infrastructure management in the Republic of Croatia. The barycentre of the model is focused on three key areas, namely the establishment of the National Center on critical infrastructure, the establishment of a system for key information exchange and the model of public-private partnership in critical infrastructure protection. The three main areas are set out in detail by the processes and sub-processes that are planned for the realisation of the main objective. Through the feasibility study, we evaluated in details whether the planned processes and tasks are feasible regarding the legal-formal environment and other factors of influence. Each process has been analysed through SWOT analysis and evaluated through the positive and negative factors that could affect the likelihood of its practical implementation. The analysis also contains in all parts an indicative financial assessment of the feasibility of the project. In the conclusion of the feasibility study, all proposals that will make the feasibility of the set project easier are presented.

The methodological framework of the feasibility study of the proposed model to establish a system of critical infrastructure protection of the Republic of Croatia is based on an interdisciplinary approach of assessment of the proposed model. Through various methods, among which we highlight the methods of analysis, synthesis, deduction and induction and the historical method, the suggested solutions of the model of the establishment of critical infrastructure management in the Republic of Croatia were evaluated. The analysis of the individual components of the key processes in the field of critical infrastructure has also allowed a set of indicators that may serve to the operators in the later practice as a proper basis and assistance in the evaluation of the implementation of the proposed model into the direct practical social environment. Through the method of expertise we have, with the involvement of all of the above methods provided, taken into consideration also the direct good practices and years of experience in setting up systems of critical infrastructure protection in the various projects within individual countries in transition in the region.

The feasibility study of the foreseen model of critical infrastructure protection in the Republic of Croatia points to the fact that it can be implemented in all the foreseen steps. Structurally

the study needs to be concretised in some parts in more detail. This will of course be affected by the decision of the competent decision-makers on which suggested solutions they will decide. Below, the mentioned solutions will be concretised and further analysed from all angles. The biggest shortcoming of the proposed model is an estimate of the financial resources that will be necessary to provide for the realisation of the proposed. This is partly understandable because at this stage the model defines different solutions, which will be with the appropriate choice of one of the proposed options later also concretised, including the foreseen resources.

NCCI will in any event constitute a breaking point that will, by taking the right decisions and actions, represent an important step towards the relevant systemic regulation of CI protection. The proper functioning of NCCI will provide a suitable platform for guidance, assistance, exchange of good practices, counselling and control over the measures taken at different levels of the system of CI protection. This support offered by the NCCI on the one hand to the strategic management (the Government of the Republic of Croatia and the Parliament Republic of Croatia with its committees) in the public sector, as well as to the operators of CI in the private sector, will bring added value, which will be reflected in the quality of decisions, a better understanding of the situation and issues, a higher level of awareness and, finally, in the increased financial resources to ensure the effective functioning of the system of CI protection.

In the information age of rapid and secure transmission of data, the awareness of the strategic structures in the public and private sphere will play an important role also in establishing a system for the exchange of key information in the field of CI. All three main objectives which have been set in the RECIPE 2015 project are closely intertwined, and are in its implementation in a strong relationship of interdependence. It is necessary to strive to the greatest use of existing information facilities available to the state administration in the field of classified information protection, and to systemic upgrading of a specific part of the software and hardware to the existing IT backbone.

It is difficult to assess whether the well-functioning model of public-private partnership is a need or the result of a properly functioning system of CI protection. By recognising that an increasing proportion of CI passes into private ownership, a good cooperation between the public and private environment will play an even more important role in the future. A proper awareness of strategic leadership in both systems should result in pursuit of common objectives in the direction of positive factors that are brought about by such cooperation. In an era of scarce resources, working on major projects is the only one possible. Participation in

joint projects, including in the framework of EU resources, however, will further strengthen this cooperation and put it on stronger foundations of good practices and experiences gained in this process.

The political will and determination to establish and systematically regulate this important area of critical infrastructure in the Republic of Croatia remains the main factor for the realisation of the solutions of RECIPE 2015 project. In the end it is necessary to clearly define that the Republic of Croatia has laid solid foundations of the system of CI protection. The legal framework and the role that, brought about in this context by NPRD with the national coordinator for CI, delivers positive results. The RECIPE 2015 project is a good opportunity and gives the right bases to upgrade the system for CI protection. The Republic of Croatia will thus become an example of good practice, which will be applied to other countries in the region, especially the candidates for accession to the EU.

1 INTRODUCTION

The creation of an appropriate system of critical infrastructure protection constitutes an extremely demanding task for any country. Critical infrastructure is, due to its basic mission to cover those parts of the system that are necessary for the normal functioning of the wider social community, very difficult to cope. The complexity of the security environment and threats that arise for the functioning of this infrastructure put the state, its bodies and operators themselves in front of an extremely challenging task. The limited financial, human and organisational resources in the area of critical infrastructure protection constantly push the priorities of individual organisations or companies, which manage critical infrastructure, to the margins. Critical infrastructure has occurred in the EU as a term in the last twenty years. Terrorist threats, cyber-risk and natural disasters have set the need for continuity of critical infrastructure in the high priorities of the state regulation. Of course, it is necessary to realise that the system approaches of regulating that area are different from country to country. This diversity of perception of threats, past experiences, the soundness of the state structure and the degree of private ownership in the companies themselves, which manage critical infrastructure is reflected through a variety of approaches and solutions carried out in this area by the individual states. This differentiation of approaches can also be seen at the European level, where it is very difficult to come up with coordinated actions in the field of the European critical infrastructure protection. The Republic of Croatia belongs to the group of countries where the organisation of the state and legal order stems from the European

continental tradition. In this context, the state represents a very important and central place for the regulation of relationships in terms of the authorities and responsibilities of the institutions for regulating individual social processes. Managing and ensuring the continuity of critical infrastructure certainly belongs among them. Certainly it cannot be said that the Republic of Croatia has no experience with the provision of appropriate security environment for a continuous control of key buildings, institutions and processes which are necessary for the functioning of the social community. The fact is that a big part of the processes and activities that we know today under the definition of critical infrastructure protection was covered by other processes in the field of the protection of facilities important for defence operations, institutions and companies, which were important for the society and have been subject to a specific statutory definition of organisations which as a result of their activities had to have a mandatory protection. A lot of related processes can be found in the field of normative regulations which governed the field of civil protection and the management of the consequences of natural disasters. All of this clearly indicates that there is no way to argue that the Republic of Croatia has no experience in the field of the protection of key facilities, institutions and processes that are today terminologically defined as critical infrastructure. In this work not only in the Republic of Croatia, but in the majority of transition countries it has always come mainly to inadequate understanding of the term critical infrastructure and the process itself, which it brings together in its operation. A proper understanding of this process in relation to the system, which was until recently established in the transition countries, represented a key moment which with the correct understanding accelerated the system measures in the field of regulating critical infrastructure protection. Of course, during this transition period, due to the changes in socio-political relations in the direction of a market economy, in the extent of stakeholders that are important for the effective operation of the system of critical infrastructure, private capital appeared, which through the ownership in companies which manage critical infrastructure is becoming one of the key factors. This represents that one additional moment, which is crucial for the perception of changes in the situation from the system which operated prior to the transition. Due to the above mentioned, the processes and effective models of public-private partnership are the key to a successful system of critical infrastructure protection. The system of critical infrastructure protection can only be successful assuming a win-win combination, where all stakeholders understand the positive aspects of the regulation of the system of critical infrastructure protection, and are from this point ready to invest the necessary efforts and other resources in building this system.

In this stage of development in the Republic of Croatia, the level of awareness and understanding of the importance of uninterrupted operation of critical infrastructure and of the process itself covered by critical infrastructure, is a necessary factor as a relatively new concept in social relations. However, it should be emphasised immediately that the Republic of Croatia has made significant and important steps in the field of critical infrastructure protection among the countries in the region. The country adopted the Law on the protection of critical infrastructure, which provides an adequate legal basis for the development of comprehensive and systemic approaches of critical infrastructure protection. Of course, the adopted law is by itself not a sufficient guarantee for the success of the system of critical infrastructure. The practical implementation of its provisions is of particular importance. A wider social perception is also important that the critical infrastructure protection and the ensurance of its continuous operation is an important goal not only in the narrow domain of individual state agencies or operators of critical infrastructure, but it is the task of the whole spectrum of different institutions, in both public and private environments. For the construction of such an approach there is a need to ensure a strong and functioning public-private partnership.

It is precisely because of the complexity of critical infrastructure protection in this context necessary to highlight the importance of coordination. This arrangement requires both procedural as well as an organisational dimension, which is reflected through the appropriate involvement of the National Centre for Critical Infrastructure into the structure of state administration. However, this alone is not enough, because the mentioned institution should constitute a central place in the Republic of Croatia, which will, in addition to the organisational and coordination requirements, implement also an appropriate environment for the exchange of good practices and experiences. This will substantially contribute to strengthening the system of public-private partnership between state institutions and operators of critical infrastructure, which in the majority result from the economic environment. A well organised system of the exchange of sensitive information relevant to the effective critical infrastructure protection certainly represents an upgrade of this process. The current solution, when the State National Protection and Rescue Directorate (NPRD hereinafter) was determined for the central state institution, has not proved to be entirely appropriate. The decision was more and less bureaucratic without appropriate additional resources (personnel, financial and organizational). Some important changes should be implemented in the low and additional resources should be put in NPRD. For this reason the implementation of project

RECIPE 2015 solutions will upgrade role and position NPRD as a central state institution for critical infrastructure protection.

1.1 The purpose of the study and expected results

The drafters of the study have in accordance with the objectives and the intended results prepared a proposal of a model of managing critical infrastructure in the Republic of Croatia. The center of gravity is focused on three key areas, namely the establishment of the National Center for Critical Infrastructure, the establishment of a system for the exchange of key information and the model of public-private partnership in protecting critical infrastructure. The three main areas are hereinafter set out in detail by the processes and sub-processes that are planned for the realisation of the main objective. Through the feasibility study we will evaluate in detail whether the planned processes and the tasks resulting are feasible regarding the legal-formal environment and other factors of influence. Each process will be analysed through SWOT analysis and evaluated through the positive and negative factors that could affect the likelihood of its practical implementation. The analysis will in all parts include also the financial assessment of the feasibility of the project. In the conclusion of the feasibility study, the proposals that will enable an easier implementation of the project will be presented.

1.2 Methodology

The methodological framework of the feasibility study of the proposed model to establish a system of critical infrastructure protection of the Republic of Croatia is based on an interdisciplinary approach of assessment of the proposed model. Through the method of deduction, we checked the proposed solutions according to the wider social processes. In the following part the method of induction was used, in which a concrete solution was analysed in the direction of placing conclusions and their impact for a further understanding and the response of the wider social environment, especially the institutions of the state and operators of critical infrastructure, to the proposed concrete solutions.

By the method of analysis, we dissected the individual components of the proposed model and analysed the individual processes and factors. The analysis of the individual components of the key processes in the field of critical infrastructure has also allowed to set certain indicators that can, in practice, later serve the operators as a proper basis and help in the evaluation of

the implementation of the proposed model into the direct practical social environment. By the method of synthesis we then ensured that all the essential findings of the individual parts of the process were combined into a whole and evaluated from the perspective of the feasibility and effectiveness of the overall operation of the proposed model. Of course, in the feasibility study, we could not avoid the comparative historical method, since the historical dimension of the development of each company is one of the key determinants to understand the situation and the consequences of the company's development in the Republic of Croatia and of course the current regulation of relations in the field of critical infrastructure protection.

Through the method of expertise we have, with the involvement of all of the above methods, also considered the direct good practices and our own years of experience in setting up systems of critical infrastructure protection in the various projects within individual countries in transition in the region.

1.3 Development of the national centre for critical infrastructure of the Republic of Croatia

In the introduction, it should be noted that the establishment of the model of the public-private partnership is a key dimension for the success of establishing a comprehensive and effective system of critical infrastructure protection in each country but also in the Republic of Croatia. Without establishing this cooperation all attempts are doomed to low-level performance, and often non-systemic measures which bring their increase of the need to the resources invested. The result of such an approach through clearly established experiences in several cases is lower than expected. However, an analysis of this system will be specifically made in the third part of this study.

The next fact, which is very important in the introduction of the analysis of this part of the model, is the role of the state. The state represents the central point in any system and the motor in ensuring an effective system of critical infrastructure protection. The state's biggest interest is, in fact, that critical infrastructure, irrespective of which ownership structure the organisation that manages critical infrastructure is currently in, operates continuously, thus ensuring the smooth functioning of the community. From this perspective, it is necessary to put the understanding of the situation and the measures into raising of awareness and proper understanding of the importance of critical infrastructure in the strategic management of the state and its institutions. The proposed model of "top-bottom" approach is the most appropriate at this time, as the country has to take with its organisational levers significant

legal and substantive steps for the final establishment of an effective model of critical infrastructure protection. This understanding of this approach is particularly necessary in the phase of installing adequate regulatory frameworks for the operation of this system, and more importantly in the step of determining the criteria for determining critical infrastructure in specific sectors. In the comparative practice, because of the different views, understanding of the importance of critical infrastructure, and not least because of partial interests of individual organisations and also state institutions (ministries), here came the biggest tensions that accompanied by inadequate management of this process endangered the functioning of the entire system of critical infrastructure protection in the country. This position could bring about significant delays in the development of a system of critical infrastructure protection, which had the effect of undermining the normal functioning of the wider community, which was in the situations of the need of continuous operation of critical infrastructure directly affected.

The drafters of the Croatian model have derived from the current regulatory frameworks that are in the Republic of Croatia arranged at a fairly high level. The Republic of Croatia has adopted the Act on Critical Infrastructure that directly identifies indicative activities and responsibilities of each stakeholder in the field of critical infrastructure protection.

1.4 National and EU legal framework in the project specific area

In the introduction to the analysis of the legal framework it is necessary to emphasise that the Republic of Croatia has at this moment with its legal framework, which consists largely of the Act on Critical Infrastructure (Official Gazette No. 56/2013) and the later adopted Decision on the determination of sectors from which the central government bodies identify national critical infrastructure and lists the order of the critical infrastructure sectors (Official Gazette No. 108/2013) and The Ordinance on methodology for critical infrastructure operation risk analysis (Official Gazette No. 128/2013), adopted all the essential provisions foreseen by the Community acquis contained in the Council Directive 2008/114/EC of 8 December 2008. The aforementioned Act regulates the rights, authority and obligation of the Government of the Republic of Croatia, the National Protection and Rescue Directorate and the central state administration bodies (ministries), as well as authority, rights and obligations of owners and managers of critical infrastructures in identification, determination and protection of national critical infrastructures and ensuring their continuous operation. The need to protect them against all types of threats, ranging from natural and anthropogenic disasters to threats of

terrorist activities is particularly defined. The Ordinance on methodology for critical infrastructure operation risk analysis defines risk analysis procedures, determines cross-sectoral benchmarks, risk identification method, defines criteria for assessment of criticality, defines threat analysis and scenario development procedures, prescribes measures and criteria for identification of vulnerabilities and determines risk calculation methods. National Standpoints of the Republic of Croatia, p. 7).

The Government of the Republic of Croatia has determined eleven (11) sectors where national critical infrastructures are identified, authorised the National Protection and Rescue Directorate to monitor, assess threats and propose operational and other measures to assess criticality and propose measures for critical infrastructure protection and management (Ibidem, p.7). In principle, this is also an appropriate legal solution, but in practice it has shown that NPRD, due to the structural organisation and the lack of specific resources, is unable to fully perform all of the tasks defined in the Act on Critical Infrastructure. In the provided solutions of this study, two models are proposed to the forefront, which in their basis, primarily due to the organisational placement of the National Centre for Critical Infrastructure (NCCI), derive from the different legal positions and needs. The fact is that any system of critical infrastructure requires a central coordinating institution which brings together all the necessary processes in the field of critical infrastructure protection. The model No. 1 that NCCI becomes an internal organisational unit of NPRD, in its essence requires minimal corrections of the current legislation. With certain bases, all the necessary tasks and relationships are later defined by a regulation (decree) for the smooth functioning of NCCI. The proposed model No. 3, where NCCI would become an independent Government agency directly subordinate to the Government of the Republic of Croatia, presents a major interference with the legislative framework. However, we will discuss the positive and negative aspects and the necessary extent of amendments to legislation in a concrete analysis of the model of establishing NCCI.

In each case, it can be seen through the analysis of the legal sources and in particular their implementation in practice that the legal provisions are not fully implemented. That is the factor which is essential when it comes to adaptability of the whole system to the particular needs and requirements of the national and international environment.

1.5 Compliance of the project goals with strategic documents and strategic objectives of the Republic of Croatia and with EU documents

The RECIPE 2015 project has in its implementation phase defined the basic objectives and results which will be further compared with the implemented proposal for a project model for the management of critical infrastructure in the Republic of Croatia.

Overall expected results of the project are (RECIPE 2015 National standpoints of the Republic of Croatia, 2015: p. 8):

1. Easier exchange of knowledge and experience between countries
2. Increased awareness of risks threatening critical infrastructures
3. Increased disaster event prevention knowledge base
4. Improved communication among national and international stakeholders
5. Strengthened mutual support and cooperation among all relevant public and private sector partners
6. Increased scientific and research activity in the field of critical infrastructures risk management
7. Guidelines for establishment of optimal critical infrastructures risk management systems in partner states
8. The guidelines are made available to the European Commission for further dissemination and use.
9. Increased resilience and level of protection of European critical infrastructures as a result of improved coordination and cooperation among the stakeholders
10. Established methodology for assessment of system protection based on a systematic approach
11. Defined long-term strategy for critical infrastructures management in the encompassed states
12. Defined needs for further education and training of public and private sectors (education programmes, exchange of professionals).

In a detailed analysis of the proposed model of operating of critical infrastructure of the Republic of Croatia and with regard to all the preparatory workshops, it can with certainty be stated that the above conclusions and the study itself have ensured the achievement of most of the set goals. The goals 1-9 were directly included in the presented solutions and conclusions of the RECIPE 2015 project up to this point. The entire project was primarily intended for the participating countries that through the proposed solutions and feasibility analysis of the mentioned solutions provide raising the quality of the systemic approach of the critical

infrastructure protection. Of course, it is necessary to recognise that interdependence is one of the very important factors of European critical infrastructure. This means that each country, in addition to national factors that can be posed by the risks for the continuous operation of critical infrastructure, is directly fastened with a specific part of critical infrastructure to the wider international arena. From this perspective, the importance of fulfillment of the set goals is all the more important since the Republic of Croatia through the proposed model gets a good basis for systemic improvement of critical infrastructure protection. With their approach and implementation of the proposed model in the practical solutions it can provide an example of good practice for all the countries that have not yet adequately regulated and established their own national models of critical infrastructure. With the establishment of these solutions it represents a pilot case for the countries of the region, which are currently candidates for entering the European Union.

The Republic of Croatia has also in its strategic documents stated that through the various levers of national security mechanisms it ensures the implementation of its national interests, and above all the establishment of a secure environment for its development. The strategy of the national security is currently in the phase of re-defining the strategic factors of ensuring the national security. The area of critical infrastructure protection management will in any case have to be re-installed among the important areas. The importance of critical infrastructure protection is evident also from other legal and strategic documents that are directly or indirectly tied to the area of critical infrastructure. The most important statutory provision at a strategic level is certainly the Act on Critical Infrastructure. It needs to be stressed, though, that the Republic of Croatia has some difficulty with a direct implementation of the accepted legal solutions into practice. In certain parts, the area of law differs from the direct practice and deficient implementation processes.

This is a factor that is characteristic of most countries in transition, which include the Republic of Croatia. There are several reasons for this, the most exposed mainly the one that adaptation to *acquis* has required very extensive adaptations, which were otherwise defined by changes in legal solutions, but there was not enough experiences and resources for the full implementation of the statutory system requirements. This is understandable for this point of view. An important factor can certainly be found in political culture and direct awareness of the importance of critical infrastructure for the smooth functioning of the wider community. Strategic management of companies and the ruling policy make the proper operation of critical infrastructure, in a whole series of challenges posed by the difficult environment, difficult to put on very important places on the list of their priorities. However, the objectives

pursued by the proposed model of operation of critical infrastructure are realised in the important part. A well-functioning system of critical infrastructure in the Republic of Croatia, its resistance of operation to exposed security risks provides the continuity of operation, which is a key moment and the expectation of the citizens of the Republic of Croatia, as well as the international environment in which it is involved. The model specifically highlights the need for the establishment of a central coordination point for managing systematic coordinated activities for critical infrastructure protection, which would be with the realisation of the proposed model managed by NCCI with close coordination with operators of CI. This moment is represented by one of the fundamental factors for the realisation of the objectives, which are related to the exchange of experience and the latest knowledge and its transmission to other countries within the EU. The strategic objective of the Republic of Croatia is that it wants to play an important role in the region, especially in the field of mentoring the other candidate countries. The above exposed factor of the effective coordination in the central institution is in harmony with these strategic goals of the Republic of Croatia.

Establishing a proper system of public-private partnership in the area of critical infrastructure protection is a constantly ongoing process, which practically never ends. However, this component is one of the utmost importance for the effective establishment and in the later period the functioning of critical infrastructure protection. In making a strategic and legislative frameworks in the Republic of Croatia, it is necessary to ensure the widest possible participation of proposals. Hereinafter, it will be required, in addition to providing an appropriate level of awareness, to clearly define the authorities and responsibilities also at the level of critical infrastructure operators themselves. This is an important basis for the establishment of long-term trust among all partners in the process of critical infrastructure protection in the Republic of Croatia. Whether at this time it is necessary to change the provisions of the Act on public-private partnership, we believe that the problem is more at the level of understanding and implementation of these solutions rather than the inadequacy of the legislative basis. In this context, we need to understand and take into account also the system of public procurement, which is a very important factor, especially in that part of critical infrastructure, where operators of critical infrastructure are public organisations.

1.6 Socio-economic cost-benefit analysis

The analysed critical infrastructure management model in the Republic of Croatia through the social economic dimension of the analysis is very important for a proper understanding of the

importance of the continuity of the functioning of critical infrastructure. This is essential for the smooth functioning of the wider social community and especially its vital processes and organisational components. The complexity of the security environment puts the modern society increasingly in front of the fact of the need for an appropriate and comprehensive approach to the management of safety risks. If in this context we are talking about critical infrastructure and the need for its continuity, this fact becomes all the more important. When it comes to safety, especially if we are talking about such an important segment, such as critical infrastructure, we cannot directly take a rough economic and cost-benefit analysis as a base. This was until recently the main basis for the development of the neo-liberal concept of development of the society, where at minimum input we try to ensure maximum profits. In such an important field, such as the continuity of critical infrastructure, it is necessary to assess the necessary input in relation to the optimal solutions and results. Although the proposed model does not directly define the necessary financial resources for the realisation of the above processes in the field of the establishment of the National Center of critical infrastructure, an appropriate public-private partnership model and organisational structure of the information system for the management of critical infrastructure in the Republic of Croatia, we can roughly estimate that the financial resources for the direct practical implementation of the measures foreseen are relatively high. Certainly the greatest extent of the derogations in the necessary financing for the realisation of the proposed models can be assessed during the selection of the offered variants 1 or 3 in establishing NCCI. We will give a detailed analysis in the following chapters related to the assessment of the financial resources.

In the context of the cost-benefit analysis of the socio-economic factors, it is necessary to directly point out that the continuity of critical infrastructure is indispensable to the smooth development of the society. It is impossible to practically identify all the harmful consequences that may occur with the loss of the key components of this infrastructure. If taking this into account we deal with the interdependence of the functioning of critical infrastructure and society at large, we can very quickly find out that some sectors of critical infrastructure are especially exposed. In this context, it is necessary to highlight the production sector and the provision of electricity, transport and information and communication technologies, of course. The domino effect of the failure of the mentioned subsectors of critical infrastructure has, in addition to the social, also exposed the economic negative impacts for the functioning of society and the economy in this context. Of course, it is necessary to add to the complexity the fact that an important part of critical infrastructure

passes over to the environment of private owners. In this context, the proposed public-private partnership model is extremely important. The cost-benefit analysis in a company with private ownership gets this new moment, which is not necessarily in tune with the public interest. There a country must with all its levers ensure that both partners find appropriate approaches that meet their basic expectations and objectives set. At least in the field of raising awareness and perceptions of seriousness that is required by the orderliness of this area, this process will be of important help in that the key institutions and the strategic management of the Republic of Croatia will rank the area of critical infrastructure protection in the list of national priorities more importantly. In the area of raising awareness of strategic management in enterprises it is necessary to form the information on the importance of uninterrupted operation of critical infrastructure into the business framework of competitive advantages and business success of the sound operation of the infrastructure. The financial aspect for continuous operation of critical infrastructure will be the message factor that will lead strategic business organisations to better understand and thus successfully position critical infrastructure protection as one of the major priorities for the performance of their companies. Financial investments in critical infrastructure protection should become investments in continuity and efficiency of their organisations and not mere costs. This finding, however, is also on the national level when it comes to inputs of the state in providing the continuity of critical infrastructure.

2 ANALYSIS OF SOLUTION/MODELS FOR THE REPUBLIC OF CROATIA

Below, we will look in detail at the analysis of the models in all three discussed areas of development of NCCI, the system of key data exchange and the system of public-private partnership. All three areas will be analysed through the feasibility analysis by the identified positive and negative indicators, which will have an impact on the direct implementation of the foreseen solutions. Each process will be analysed through a SWOT analysis, which will give providers additional information and an analysis of the factors which could directly affect the practical implementation.

2.1 Proposal of NCCI model

Model makers have foreseen four variants for the establishment of NCCI:

1. NCCI as the organisational part of NPRD;
2. NCCI as an integral part of another state authority;

3. NCCI organised within the offices and Government services of the Republic of Croatia;
4. NCCI as an independent body of the state administration.

For a more concrete analysis, two models were identified as topical by those preparing the study, both of which are intended for a more in depth implementation of further analysis. In this context we are talking about model No. 1 and model No. 3. Hereinafter, both models will also have a more detailed analysis. Before that, we will make an analysis of the basic structure of NCCI itself and its essential tasks that are foreseen in the basic framework regardless of which model will be selected.

The tasks scheduled for NCCI by those preparing the studies are appropriate and absolutely comparable with the international practice of the countries which have established the mentioned center. In this context of the envisaged tasks, NCCI is put as a focal point and a direct promoter of the systems of public-private partnership and the model for the transfer of key information in the field of critical infrastructure protection. The Republic of Croatia gets through the foreseen tasks the central coordinative authority to manage the operational, educational, monitoring and development measures in establishing an effective system of managing critical infrastructure. A special mention in the context of the tasks goes to the supervision and guidance of identifying and making sectoral analyses of risks for the operation of critical infrastructure. This is a crucial step for an effective systemic approach and continued realisation of the currently accepted legal obligations. An inadequate and non-systemic approach to establishing the criteria for determining critical infrastructure results in a disorderly situation and in particular irrational use of resources for its protection. In small countries, which include the Republic of Croatia, such a non-systemic approach can be fatal for the operation of critical infrastructure and the significant effects that the nonsystematic use of funds have. The next step or task needs to be mentioned in this context, which through the supervision and guidance of making threat assessments and security plans provide a uniform approach and standardised measures. In this part, the system unifies with the central supervision and guidelines and directs the implementation of counselling in all sub-sectors of critical infrastructure, as well as on the other hand, prevents non-systemic approaches in risk assessment, introduction of non-systemic steps in the area of outsourcing engagement and standardisation of measures which in general reduce the amount of resources which must be invested in building security systems for critical infrastructure protection. It is important to highlight the importance of the task, which defines a focal contact point for European critical infrastructure protection. Particularly worth noting are the very demanding tasks that the Act

on Critical Infrastructure gives to other state bodies¹ in the area of the development of the system for critical infrastructure management of the Republic of Croatia.

The identification of critical infrastructure, an analysis of the risks to critical infrastructure from its sphere of tasks, the definition of the sectoral criteria, the proposal of the European critical infrastructure and the nomination of the security coordinator and his deputy are here especially highlighted. Most of these tasks are for individual ministries extremely demanding. The biggest challenge is the systemic approach in all areas which will ultimately deliver a mutually comparable and a comprehensive, well-functioning system of critical infrastructure protection. In this section, the NCCI will play the key coordinating and supporting role, which will significantly contribute to the effective functioning of this system.

In the proposed tasks of the National Council for Critical Infrastructure (NCCI), which is organisationally based on both models, organised in many forms, there are some very important open dilemmas related to its task. A very important issue in this context is the structure of the mentioned Board. In the currently proposed form of tasks it can be estimated that it is not just an advisory body which passes specific suggestions and findings in the field of critical infrastructure system to the Government of the Republic of Croatia. As its main task, the drafters of the model foresaw the primary task of monitoring and coordination of all activities related to the development of the system of critical infrastructure protection. In the detailed definition of the tasks below which have been identified as (a) proposal of measures for the development of critical infrastructure protection; (b) making recommendations, opinions and guidance on the development of the system; (c) analysis of the key issues in the field of protection and management of critical infrastructure; (d) evaluation of the reports on the state of the system that would periodically be transmitted to it by NPRD and other organs. In this detailed review of the tasks we see that it is a classical advisory body, which could serve the Government of the Republic of Croatia to facilitate the assessment of the state of CI. In this context, it is necessary to pay attention to two essential things, namely streamlining in the organisational sense. Too many consultative and coordinating bodies make the national security system and the overall management of the country extremely untransparent and hard to handle. The narrow viewing of the problems of the committed area brings in charge duplication or other arguments at national level. The Government can not escape from their essential responsibilities and tasks in the field of CI protection through the establishment of such a body. Maybe it would be reasonable to think that the mentioned consultative body

¹-Act on State Administration System, Official Gazette no. 150/11 and 12/13.

would be set up under the National Security Council, or at least as an integral part of it. This would eliminate the fear of non-systemacy of the approach and above all, a more effective coordination at the national level. Another important thing that needs to be highlighted in this context is the division of responsibilities in the area of coordination of systemic measures to develop the system of CI protection between the NCCI and the mentioned National Council for CI. The processes where duplication or ambiguity could come up will be also clearly pointed out through an analysis of each process.

Evaluation of compliance of tasks of NVCI: The tasks of the Council must be further refined and organisationally installed according to the admission of one of the proposed models. This will require a clear decision whether it is an advisory or a co-ordinating body with clearly defined authorities. In any case, it is necessary to look for its place in the existing frameworks of the National Security Council and thus reduce the chances for non-systemic approaches and excessive proliferation of consultative organisational structures, which are not the most optimal solution for the functioning of the system. On this basis, the proposal calls for a more clear definition of its structure to be able to perform the designated tasks.

Evaluation of compliance of tasks of NCCI: The tasks are entirely appropriately designed and are fully comparable with international practice. In the subsequent assessment of the two proposed models it will be seen that these tasks are more suitable for NCCI, which is under NPRD. This estimate is based on the fact that the majority of processes in NPRD are already in place.

With reference to the above-defined tasks of NCCI also the basic processes are divided into four key areas that are adequately defined. The business processes in the field of (a) the system of critical infrastructure management; (b) critical infrastructure protection; (c) public-private partnership and (d) development and transfer of knowledge, the NCCI encompasses all the main segments where the Republic of Croatia needs a central coordinating body to manage the whole system of critical infrastructure.

Analysis of the organisational placement of NCCI:

Model No. 1.

The proposed model No. 1 provides the organisational establishment of NCCI in the form of internal organisational units within NPRD.

Not feasible	Partially feasible	Entirely feasible
		X

Positive indicators:

- NPRD already performs an essential part of the tasks in the area of coordination and system development in the Republic of Croatia;
- Knowledge and experience acquired by the employees of NPRD in the field of the establishment and operation of the system, which will be the key generator of the necessary skills for the future establishment and operation of NCCI;
- NPRD with its basic mission of the implementation of protection and rescue in addition to the police and the army constitutes the only institution which is with its mechanisms of coordination, the implementation of the activities, organisation and resources present in all parts of the Republic of Croatia. This means that, in the establishment of NCCI, this fact will through the streamlining of the resources result in the utmost importance for the future performance of the NCCI. Having developed the mechanisms it is necessary to strive to their upgrade and not to embark on an entirely new organisational and coordinative mechanisms;
- According to the analysis of threats to CI and examination of risks, which critical infrastructure has been exposed to in the international environment, it can with a lot of certainty be estimated that natural disasters and the associated risks are most exposed for the protection of critical infrastructure. Given the fact that the prevention and control of the risks of natural disasters, and the subsequent elimination of the aftermath of natural disasters are one of the essential tasks of the system of NPRD, you can very quickly find out that the organisational placement of NCCI is very suitable. From this point of view the measures brought about by the establishment of NCCI under NPRD as a result of experience, the already established mechanisms and human resources, which have among their tasks already dealt with individual parts of the protection of CI, will be much more effective;
- The Republic of Croatia ranks among the small countries, so the rational use of resources is a very important factor in the adoption of such important decisions such as the setting-up and placement of NCCI.

Negative indicators:

- In the case of legal incompleteness of authorities and duties, difficulties may arise in the coordination of other ministries in the areas of their duties, as they are now allowed by the

Act of Critical Infrastructure. For this reason National Security Council should take role in the strategic coordination processes;

- There is missing important process related with intelligence and security information which would be necessary for evaluation of national and specific threats to critical infrastructure. National Security Council could be adequate body for esurience of this process;
- A change or supplement of the existing, above mentioned law is needed. In the procedure of the change partial interests of individual ministries may be encountered, which would want to take on a more important role in the field of coordination of CI protection. These interests need to be understood through the provision of a larger share of the national budget devoted to this area;
- For the effective functioning of the NCCI additional human, material and financial resources will be required. At the moment when the countries face the rationalisation of expenditure for its operation, it will be very difficult to convince the ruling policy that the mentioned area should receive additional funds. The risk that NPRD is assigned to establish and ensure the functioning of the NCCI only with the administrative act, and to ensure that funds are provided from the scope of the current resources for the operation of the NPRD. Without additional resources of NCCI, despite the establishment, it would not be able to carry out all the tasks foreseen;
- A great dependence for the establishment and realisation of the proposed model on the awareness of the importance of the regulation of this area of CI protection.

Indicators for assessing progress:

- Understanding of the ruling policy and validation of model No. 1;
- Amendments to the existing legislation;
- Definition of additional financial resources of NPRD for the establishment of NCCI;
- Providing additional human resources for the operation of the NCCI;
- Number of participating organisations and representatives;
- Percentage of carried out set tasks;
- Number of events organised by NCCI.

Figure 1: SWOT analysis of enforcing model No. 1

<p>Strengths Continuation of the current processes in the NPRD as the centre line of the organisation for the coordination of the establishment of CI system; Established inner circle of experts in the field of CI protection; In the national system and with the operators, NPRD is already identified as central authority of coordination up to this point; Strengthening the national network of experts; Given the current organisation the best and most rational approach to achieve the objective; Lesser corrections of existing legislation required to establish an appropriate situation;</p>	<p>Opportunities Raising awareness of the importance of CI protection; Better coordination; Cost reduction of the establishment of the system of CI protection; Designation of state institution, which will in the future bear the weight of the coordination and development of the CI system; Central body for exchanging experience and good practices; Strengthening the public-private cooperation; Appropriate arrangement of systemic cooperation with the EU and other international partners in the field;</p>
<p>Weaknesses Harder reaching consensus due to the level of the placement of NCCI; Regulation of the relationships of authorities and responsibilities; More difficult to reach the target group during the economic work of the CI management; No clear process for ensure adequate intelligence and security information flow.</p>	<p>Threats Narrow departmental interests which might harm the national interest; Failure to provide additional resources for the establishment and realisation of the foreseen NCCI model No. 1</p>

Model No. 3.

Proposal for model No. 3 provides for the organisational establishment of NCCI within the departments and offices of the Government of the Republic of Croatia.

Not feasible	Partially feasible	Entirely feasible
	X	

Positive indicators:

- The mentioned organisational structure is closer to the strategic decision making level and from this point of view in a particular case an easier process of persuasion for the adoption of the necessary decisions;
- In the case of the proposal NCCI would be organised within the NPRD, which would mean a certain amount of rationality and ease of organisation²;
- Because of its strategic level it would make it easier to cooperate with industry and provide more serious approaches on the part of the strategic management of companies that manage CI;
- Easier cooperation on the international scene, in particular as a result of strategic organisational level;

Negative indicators:

- To establish this model of NCCI a fairly major change to legal regulations in the field of critical infrastructure protection, as well as the organisation of public administration would be required;
- The mentioned solution would demand considerably more financial resources for the establishment of all the necessary resources;
- The problem of lack of experts would in this case get a more explicit influence. In case of all the experts leaving the framework of the NPRD it would become personnel- and professional-wise strongly impoverished;
- All current Government departments and offices have in their function a completely different character of their mission, which in addition to editing the strategic issues is not so much aimed at direct coordinative and guidance activities. From this point of view, through the establishment of NCCI, directly under the Government certain significant logistical, communication and organisational problems would incur, which would in the initial stage greatly reduce the already achieved level of coordination in the field of the system CI regulation;

² But in a previous analysis of tasks and organisation of NCCI, this solution is estimated as inadequately completed as it leaves too many open dilemmas which should be additionally defined.

- Due to the independent operation this logistical support would need additional human resources potential, which in an era of rationalisation and limited resources, mainly in smaller countries, needs to be highlighted;
- Problems would also arise in the immediate operational communication between all segments of the system, which would also in the financial and organisational sense mean a big mouthful for the size of the country, such as the Republic of Croatia;
- At the entry into force of this model it would be very difficult to exploit those levers of coordination and the transfer of sensitive information, which are already in place in NPRD;
- In a short time without major organisational and financial inputs, this model is not even possible to be established. As a result, its operational activity referred can be looked at over a long period of time in spite of the decision taken.

Indicators for assessing progress:

- Understanding of the ruling policy and validation of model No. 3;
- Amendments to the existing legislation;
- Definition of additional financial resources in the state budget for the establishment of NCCI;
- Providing additional human resources (professional and supporting) for the operation of the NCCI;
- Number of participating organisations and representatives;
- Percentage of carried out set tasks;
- Number of events organised by NCCI.

Figure 2: SWOT analysis of enforcing model No. 3

<p>Strengths Greater impact on the strategic level of decision making; Unity of jurisdiction of NCCI and NVCI because of the strategic role; Greater impact on the processes of public-private partnership; Easier cooperation with comparable centers in an international environment;</p>	<p>Opportunities Raising awareness of the importance of CI protection in strategic management (Government of Croatia); Better coordination; The central body for exchanging experience and good practices; Strengthening the public-private cooperation; Appropriate arrangement of the systemic cooperation with the EU and other international partners in the field;</p>
<p>Weaknesses Harder achievement of interoperability of its operation;</p>	<p>Threats Narrow departmental interests which might harm the national interest;</p>

<p>Great need for a new human resources potential;</p> <p>Great financial difficulty for the implementation of this model;</p> <p>Current organisation of state administration in the field of Government offices and services is not ready for the placement of such complex and challenging organisational forms;</p> <p>Despite the adoption of the decision a longer period should be provided for the operational functioning of NCCI;</p>	<p>Non-acceptance of the decision for the establishment of NCCI;</p> <p>Failure to provide additional resources for the establishment and realisation of the intended NCCI model No. 3;</p> <p>Establishment of a new administrative organisation without the necessary operational and coordination capacity;</p>
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The findings of the analysis of the organisational placement of NCCI:

After a detailed analysis of all factors of impact on the implementation of the proposed solutions of model No. 1 and model No. 3, we find that the current level of the structure of the system of CI protection and acknowledgement for the individual system measures model No. 1 is more plausible and rational. The finding can be substantiated above all with the facts that model No. 1 would mean a continuation of the current systemic measures for the final regulation of the situation in the field of CI protection. The fact that the rational deployment of the solution at this point is a very important factor helped a lot in supporting the decision, especially due to the fact that the Republic of Croatia is just about to undergo important structural reforms, which will require a large amount of resources. In addition to operativeness, the suitability of coordination and other professional references, rationality of investment for building this system will have a major influence on the choice of suitability. Through cost-benefit analyses, it is necessary to accept the fact that input in this solution is a lot lower, the results, however, as expected much higher due to the continuation of the current processes. The next important fact, which turns the decision in the favour of model No. 1, is definitely the analysis of processes, which shows that the system of CI protection is very much associated with the system of providing protection and rescue and handling the aftermath of natural and other disasters. In this context, the operation of NCCI can lean very closely on those processes that are already running and are effectively tested. This segment provides more effective and certainly more high-quality operation of the new organisational structure, which would be a logical continuation of already up to now set bases. Of course, it is necessary to be aware of the importance of the impact on the strategic decision-making level, which is definitely formed by the Government of the Republic of Croatia. In this model,

additional efforts need to be devoted to this factor as model No. 3 would be, due to its placement, by all means more effective.

3 ANALYSIS OF THE BASIC BUSINESS PROCESSES IN THE NCCI

A. THE SYSTEM OF CRITICAL INFRASTRUCTURE MANAGEMENT

I. Development and upgrade of the normative framework of management

Within the framework of this task all the necessary processes are provided for the proper completion and adoption of a normative basis, which will allow the final regulation of a comprehensive system of critical infrastructure protection. Processes are properly planned through the entire task and have, in addition to clearly defined operators, defined mechanisms to achieve the target state. Of utmost importance is the awareness that it is possible to effectively implement the legislation changes only with preliminary detailed analysis and taking into account the full set of factors that influence or are responsible for the development of CI field.

In the case of individual processes we would propose the following amendments:

Figur 3: Step A.I. Development and update of the normative framework of management

Not feasible	Partially feasible	Entirely feasible
		X

Step and task	Process	Proposals of updates
A.I-1	Adapting the changes and amendments of the Law on Critical Infrastructure	It is essential to include public-private partnership in the mechanisms; It is essential to include also the direct managers of CI among participants;
A.I-2	Proposing the changes and amendments to defining CI sectors	It is essential to include public-private partnership in the mechanisms; It is essential to include also the direct managers of CI among participants. Without them an appropriate analysis which would imply the reality of legal provisions and

		their potential for practical implementations can not be carried out;
A.I-3	Proposing the changes and amendments to defining CI priorities list	To take account of public-private partnership in the mechanisms. When integrating operators of CI, we have to be cautious about that the priority will not be affected by the narrow interests of individual operators of CI.
A.I-4	Making changes and amendments of the “Ordinance on methodology for critical infrastructure operation risk analysis“	It is essential to include business entities in the role of CI operators; To associate the mentioned process very closely with the process of the D.I-1, which should serve as a basis for future changes.
A.I-5	Drafting and review of cross-sectoral and specific sectoral criteria	It is essential to install an analysis of the current situation among the mechanisms, which should be a primary basis for the continuation of the other comparative analyses. To install an analysis of the financial impact, in the above analysis, which is highly correlated with the change in the criteria; To install all sectoral coordinators among the participants.

Figure 4: SWOT analysis of enforcing step A.I.

<p>Strengths</p> <p>The current legislation is adequate base for development additional legal amendments, especially if the chosen model for the organisation of NCCI is model No.1; All major normative documents are adopted and need to be adapted to current changes and the changes in the security environment;</p>	<p>Opportunities</p> <p>To achieve raising of awareness of the importance of the protection of CI in strategic management through the proposals based on the quality analysis (Government of RC); To improve the speed of implementation of the necessary solutions and operation of CI with the appropriate changes; This process can be used to strengthen public-private cooperation by taking into account all partners; Appropriate regulation of the legal field at the national level is an adequate basis for achieving the EU requirements; Croatia can become a mentor to other Member States in the region, which are at the stage of approaching the full membership in the EU.</p>
<p>Weaknesses</p> <p>Inadequate awareness in individual sectors of CI and directly with CI operators can highly</p>	<p>Threats</p> <p>Narrow departmental interests which might harm the national interest;</p>

limit and worsen the process of the analysis of necessary changes;	Non-acceptance of the decision for legislative changes; Declarative adoption of legislative changes without subsequent implementation in practice.
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II. Coordination of work and activities of the stakeholders of the CI management system

Within the framework of this task all the necessary processes are provided for the appropriate coordination of the work of stakeholders of the CI management system. It is particularly necessary to point out that effective coordination needs to be taken into account, in addition to the sectoral co-ordinators, as one of the key segments for the effective transfer of information, also the operators of CI themselves. Public-private partnership has an extremely important role in this context.

Figure 5: Step A.II. Coordination of work and activities of the stakeholders of the CI management system

Not feasible	Partially feasible	Entirely feasible
		X

Step and task	Process	Proposals of updates
A.II-1	Coordination of work of the security co-ordinators at NPRD	There is an urgent need to add common coordination of all coordinators among the cooperation mechanisms. Good mutual knowledge of coordinators can save many of the systemic problems in the field of communication and transmission of information.
A.II-2	Coordination of the activities of the owners/operators of critical infrastructure in the process of protecting it	It is essential to include security co-ordinators for each sector among the participants; This is one of the key processes of strengthening public-private partnership.
A.II-3	Coordination of activities with other EU Member States	No comments and additional proposals.
A.II-4	Coordinating of activities with EU bodies	No comments and additional proposals.

Figure 6: SWOT analysis of enforcing step A.II.

<p>Strengths Current bases of the so far carried out activities to establish a system of coordination in the field of CI protection provide a good basis for a substantive and quality progress; Security coordinators are already determined by sectors of CI; It is necessary to start from the frameworks of good practice, which is already present in specific sectors and transfer it to other sectors;</p>	<p>Opportunities To achieve raising of awareness of the importance of CI protection in strategic management through the proposals based on the quality analysis (Government of RC); To improve the speed of implementation of the necessary solutions and operation of CI with the appropriate changes; This process can be used to strengthen public-private cooperation by taking into account all partners; Increasing the efficiency of coordination in the national and international environment; Croatia can become a mentor to other Member States in the region, which are at the stage of approaching the full membership in the EU.</p>
<p>Weaknesses Inappropriate awareness of the importance of security coordinators can strongly paralyse this process; Staffing in jobs of security co-ordinators must be extremely careful; Misunderstanding of the importance of public-private partnership can deter the private sector from effective collaboration.</p>	<p>Threats Narrow departmental interests which might harm the national interest; Failure of coordination or neglect of its priority role may be reflected negatively on the the entire system of CI functioning.</p>

III. Collection, analysis and information exchange

Within the framework of this task all the necessary processes are provided for the appropriate collection, analysis and exchange of information. It is particularly necessary to point out when we assessed the processes of setting up an appropriate system of key information exchange that it is necessary to invite the representatives of institutions among the participants which are in the Republic of Croatia responsible for the protection of classified information and cyber security. The establishment of appropriate information systems to share key information

constitutes a major cost that can deter the strategic management from the intention to support the fulfillment of this task with the relevant resources.

Figure 7: Step A.III. Collection, analysis and information exchange

Not feasible	Partially feasible	Entirely feasible
		X

Step and task	Process	Proposals of updates
A.III-1	Management of databases on national and European CI	It will be necessary to include also security co-ordinators in the process of cooperation, who will confirm the relevance of the information from their areas of jurisdiction. This applies to international partners just as well, where a central coordination point confirms the suitability of the information for a particular country.
A.III-2	The development and upgrading of standard operating protocols for the exchange of key data	The operating level of this process may remain in this part. The development section would be worth transferring in the context of step D. Definitely add security sectoral co-ordinators, managers and international partners among the participants.
A.III-3	Management of the system for the key data exchange	Definitely add representatives of the relevant state institutions among the participants, such as the Office for national security and other authorities responsible for the area of data protection and cyber security. Add among the mechanisms: <ul style="list-style-type: none"> - Identification of problem - Comparative analysis - Technical discussion
A.III-4	Management of information security for the key data exchange	Definitely add representatives of the relevant state institutions among the participants, such as the Office for national security and other authorities responsible for the area of data protection and cyber security. Add among the mechanisms: <ul style="list-style-type: none"> - Identification of problem - Comparative analysis - Technical discussion

Figure 8: SWOT analysis of enforcing step A.III.

<p>Strengths With the final establishment of the system of transmission of key data it is necessary to stem from the so far existing schemes of national security; When transferring key information it is necessary to take into consideration the good practices on the area of networking form previous projects in Republic of Croatia.</p>	<p>Opportunities To achieve raising of awareness of the importance of CI protection for security coordinators in the various sectors of CI and CI managers; To improve the speed of coordination of the necessary solutions and operation of CI system which will be based on an appropriate system of exchange of key data; This process can be used to strengthen public-private cooperation by taking into account all partners; Increasing the efficiency of coordination in the national and international environment; Croatia can become a mentor to other Member States in the region, which are at the stage of approaching the full membership in the EU.</p>
<p>Weaknesses Inappropriate awareness of the importance of security coordinators can strongly paralyse this process; The cost of introducing these systems can force certain administrators to the acceptance of non-systemic and seemingly cheaper measures; Misunderstanding of the importance of public-private partnership can deter the private sector from effective collaboration.</p>	<p>Threats Narrow departmental interests which might harm the national interest; Unawareness of the need for the secure exchange of key information would place this task in a very low place on a scale of priorities by decision makers due to the scale of the costs.</p>

B. CRITICAL INFRASTRUCTURE PROTECTION

I. Identification of critical infrastructure

In the context of this task all the necessary processes for the proper identification of critical infrastructure will be provide when the sectorial and intersectors criterias will be in place. Given the fact that this process in the Republic of Croatia is not yet fully implemented, it will represent one of the critical processes for the effectiveness of the establishment of a

comprehensive system of CI. This process has a special place mainly due to the fact that every decision has important financial implications. This step is also important from the standpoint that the proper definition of the criteria and the setting of national and European CI, the cooperation of all parties concerned is needed. Therefore the effective importance of coordination, cooperation and harmonization are given a particularly exposed position. In this regard, it is necessary to re-emphasise public-private partnership that is through these processes adequately strengthened.

Figure 9: Step B.I. Identification of critical infrastructure

Not feasible	Partially feasible	Entirely feasible
		X

Step and task	Process	Proposals of updates
B.I-1	Validation of the designed cross cutting criteria in the process of identifying national CI	It is essential to include public-private partnership into mechanisms; It is essential to include direct managers of CI;
B.I-2	Proposing European CI in the Republic of Croatia	It is essential to include public-private partnership into mechanisms; It is essential to include the direct managers of CI and international partners in the CI management of neighbouring countries among the participants.
B.I-3	Control over the introduction of interdepartmental criteria with all stakeholders of CI protection	To include methods of control (regular, irregular), counselling and evaluation and demonstrations of good practices among the mechanisms. It is essential to include the direct managers of CI among the participants;

Figure 10: SWOT analysis of enforcing step B.I.

<p>Strengths Implementation of the RECIPE project can serve as a good basis for the acquisition of experience in the preparation of the criteria for determining critical infrastructure installations; Appropriate coordination can further enhance the quality of the implemented system through NCCI;</p>	<p>Opportunities To achieve a definition of national through the proposals based on quality analysis; To reduce the amount of financial resources required for the establishment of CI protection with the rational introduction of criteria; This process can be used to strengthen public-private cooperation by taking into account all partners; Appropriate definition of that CI which has international character and will be defined as ECI; Croatia can become a mentor to other Member States in the region, which are at the stage of approaching the full membership in the EU.</p>
<p>Weaknesses Inadequate definition of the criteria could mean non-systemic approach and a significant increase in requests for financial and other resources for the protection of CI; Inadequate implementation of control can mean the inconsistent enforcement of norms in practice, resulting in a non-systemic determination of the scope of CI.</p>	<p>Threats Narrow departmental interests which might harm the national interest; Failure to adopt realistic standards for determining CI; Declarative acceptance of norms without implementation in practice.</p>

II. Assessment of risks

In the context of this task, two processes are anticipated to adequately assess the risks for the continuous operation of CI. This process is of utmost importance for the real execution and solid foundations of any system. The risk assessment for continuous operation of CI is the basis from which all the necessary systemic measures for the proper management of these risks subsequently derive. Two basic processes that are geared towards sectoral coordinators and direct managers of CI are planned for that. Because of that the systemacy of control, which must also be directed at advisory measures and assistance in the preparation of relevant

risk assessments, will have to be specifically highlighted. It should be understood that the two processes are very closely related, and it is impossible to run them separately.

Figure 11: Step B.II. Assessment of risks

Not feasible	Partially feasible	Entirely feasible
		X

Step and task	Process	Proposals of updates
B.II-1	Control and guidance of making sector risk assessments in NPRD	It is essential to include the transmission of guidelines and standards and good practices in the mechanisms; Consultancy and evaluation; Participation of representatives of relevant institutions and other experts.
B.II-2	Control and guidance of making security plans of owners / operators of CI in cooperation with competent government authorities and NPRD	It is essential to include public-private partnership in the mechanisms; Transmission of guidelines and standards and good practices; Consultancy and evaluation;

Figure 12: SWOT analysis of enforcing step B.II.

<p>Strengths The transfer of experience from other parts of the national security system in the field of risk assessment; Continued building of the system on the bases which have already been placed under NPRD.</p>	<p>Opportunities Through quality products of risk assessments we get a good basis for the continuation of the process of CI protection; To reduce the amount of financial resources needed to establish the protection of CI by rational implementation of risk assessments; NCCI representatives can ensure their visibility by their professional work; Croatia can become a mentor to other Member States in the region, which are at the stage of approaching the full membership in the EU.</p>
<p>Weaknesses Inadequate definition of criteria can greatly complicate the implementation of control and risk analysis; Inadequate implementation of control may later mean inconsistent implementation of risk management measures in practice, resulting in security gaps and inconsistencies.</p>	<p>Threats Narrow departmental interests which might harm the national interest; Failure to adopt real threat assessments results in inadequate implementation of measures for CI protection; Declarative preparation of threat assessments without any real basis.</p>

III. Monitoring and evaluation

In the context of this task all necessary processes for appropriate monitoring and evaluation of the implemented security plans of CI protection are provided for. The reality of programming represents also an appropriate response to the risks CI is exposed to. In the context of this task, four processes, which in individual work permit monitoring and evaluation of the adequacy of the measures implemented in the sectors and directly with the managers / owners of CI, are clearly defined. In a rough estimate, we could say that the process No. 1 and the process No. 4 may be combined in one process and thus make the matter even more transparent. However, the demarcation of these two processes does not significantly affect the possibility of the plan implementation.

Figure 13: Step B.III. Monitoring and evaluation

Not feasible	Partially feasible	Entirely feasible
		X

Step and task	Process	Proposals of updates
B.III-1	Control and guidance of making sector risk assessments in NPRD	It is essential to include the transmission of guidelines and standards and good practices in the mechanisms; Consultancy and evaluation; Participation of representatives of relevant institutions and other experts.
B.III-2	Control over the implementation of the annual audit of security plans in collaboration with departmental ministries	It is essential to include public-private partnership in the mechanisms; Transmission of guidelines and standards and good practices; Consultancy and evaluation; Participation of representatives of relevant institutions and other experts.
B.III-3	Control and guidance of implementation of sectoral plans to protect critical infrastructure	It is essential to include public-private partnership in the mechanisms; Transmission of guidelines and standards and good practices; Consultancy and evaluation;
B.III-4	Control and guidance of making security plans of owners / operators of	It is essential to include public-private partnership in the mechanisms;

	CI in collaboration with competent government authorities	Transmission of guidelines and standards and good practices; Consultancy and evaluation; Participation of representatives of relevant institutions and other experts.
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Figure 14: SWOT analysis of enforcing step B.III.

<p>Strengths</p> <p>Current bases of the so far carried out activities to establish a system of coordination in the field of CI protection provide a solid basis for a substantive and quality progress;</p> <p>Security coordinators are already determined by sectors CI;</p> <p>It is necessary to start from the frameworks of good practice, which is already present in specific sectors and transfer it to other sectors;</p> <p>Appropriate coordination through NCCI can further strengthen the quality of control over the adequacy of security plans;</p>	<p>Opportunities</p> <p>To achieve a definition of national and European CI through the proposals based on quality analysis;</p> <p>To achieve a higher quality of measures implemented to protect CI with the rational implementation of planning;</p> <p>This process can be used to strengthen public-private cooperation by taking into account all partners;</p> <p>Croatia can become a mentor to other Member States in the region, which are at the stage of approaching the full membership in the EU.</p>
<p>Weaknesses</p> <p>Inadequate planning of security can mean a non-systemic approach and an inadequate response in the necessary measures to respond to prevent threats;</p> <p>Inadequate implementation of control may mean inconsistent enforcement of risks for the continuous operation of CI.</p>	<p>Threats</p> <p>Narrow departmental interests which might harm the national interest;</p> <p>Making unrealistic plans of CI protection;</p> <p>Declarative preparation of plans without implementation in practice.</p>

IV. Monitoring and verification

In the context of this task all the necessary processes for the proper monitoring and checking the condition of the field of CI protection are provided for. Annual reporting and analyses on the state of the national and European CI are essential indicators for the upgrading of the integrity of the system and monitoring the situation. The legislative and executive branches of authority provides relevant data to enable control of the efficiency and functioning of the comprehensive system of CI protection.

Figure 15: Step B.IV. Monitoring and verification

Not feasible	Partially feasible	Entirely feasible
		X

Step and task	Process	Proposals of updates
B.IV-1	Making an annual report on the number, criticality and carried out dimensions of CI protection	No additional suggestions or comments.
B.IV-2	Making an annual report on the number of ECI by sectors and the number of interested countries that are dependent on certain CI	No additional suggestions or comments.

Figure 16: SWOT analysis of enforcing step B.IV.

<p>Strengths</p> <ul style="list-style-type: none"> - It is necessary to stem from the frameworks of good practice, which is already present in individual sectors and transfer it to other sectors; - Appropriate coordination can, through NCCI, further enhance the quality of reports for the legislative and executive branches of power; 	<p>Opportunities</p> <ul style="list-style-type: none"> - Highly qualified staff constitutes an appropriate basis for better quality reports; - With an adequate system of reporting and monitoring in the central point, represented by the NCCI, we can achieve substantively more qualitative reporting; - Croatia can become a mentor to other Member States in the region, which are at the stage of approaching the full membership in the EU.
<p>Weaknesses</p> <ul style="list-style-type: none"> - Inadequate implementation of control and reporting reduces the reality of the data necessary for reporting and monitoring in the field of CI protection; - Inadequately trained personnel are a negative factor impacting the quality of reports; 	<p>Threats</p> <ul style="list-style-type: none"> - Narrow departmental interests which might harm the national interest; - Making reports that do not reflect the real situation in the field of CI protection; - Deliberate adjustment of the data to achieve higher inputs of financial resources in the field of CI protection.

C. PUBLIC-PRIVATE PARTNERSHIP

I. Projects of public-private partnership

In the context of this task all the necessary processes for the proper monitoring and analysis of processes of public-private partnership are provided for. Establishing a proper system of public-private partnership in the area of critical infrastructure protection is a constantly ongoing process, which practically never ends. However, this component is one of the utmost importance for the effective establishment and in the later period the functioning of critical infrastructure protection. In making a strategic and legislative frameworks in the Republic of Croatia, it is necessary to ensure the widest possible participation of proposals. Hereinafter, it will be required, in addition to providing an appropriate level of awareness, to clearly define authorities and responsibilities. This is an important basis for the establishment of long-term trust among all partners in the process of critical infrastructure protection in the Republic of Croatia. In any case, it is necessary also in the case of voluntariness to clearly impose certain limits and arrangements of functioning of the national forum for critical infrastructure protection. The cultural dimension of the agreement on the important information exchange, which will not be aimed at the general public, will also have a major importance. This factor is of great importance and it is impossible to regulate it only by adopting certain legal frameworks under the Law on public-private partnership or the Law on the protection of classified information, or the protection of business secrets. The fact is that we, in this work, have at least two key categories of information, namely the information that is essentially important for ensuring national security and on the other hand, the information, which in the business environment represents important business data, which may reduce the competitive advantage of the company which manages critical infrastructure. In particular it will come to the fore in the cases when ownership passes into private hands and several companies will appear in a certain area that will be in competition in the logic of the market economy. At this time, in the Republic of Croatia this should not pose a major problem as most of the major infrastructure companies are currently in state ownership and in most cases monopolists. Exempt is only the area of banking, where competition is very fierce. In this part, the Central Bank of Croatia will also need to play its role besides the state.

Figure 17: Step C.I. Projects of public-private partnership

Not feasible	Partially feasible	Entirely feasible
		X

Step and task	Process	Proposals of updates
C.I-1	Preparation and audit of the model of public-private partnership	It is essential to include public-private partnership in the mechanisms; It is essential to include sectoral security coordinators among the participants;
C.I-2	Initiating projects of public-private partnership	It is essential to include public-private partnership in the mechanisms; It is essential to include sectoral security coordinators and academic and research community among the participants;
C.I-3	Monitoring and supervision of the project of public-private partnership in CI protection	It is essential to include sectoral security coordinators and academic and research community among the participants;

Figure 18: SWOT analysis of enforcing step C.I.

<p>Strengths</p> <ul style="list-style-type: none"> - NCCI could become a focal point for the strengthening of public-private partnership in the field of CI protection; - The bulk of CI in the Republic of Croatia is still in public ownership, which could in the initial phase of public-private operation somewhat facilitate cooperation; 	<p>Opportunities</p> <ul style="list-style-type: none"> - To strengthen cooperation in all sectors of CI through the examples of good practice; - Regulation of models of public-private partnership can facilitate the transition of CI in the management of private owners; - Croatia can become a mentor to other Member States in the region, which are at the stage of approaching the full membership in the EU.
<p>Weaknesses</p> <ul style="list-style-type: none"> - Failure to comply with the specificity of the private sector can have negative consequences on the quality of strengthening public-private partnership; - Inadequate security awareness on the importance of CI protection by private organisations can significantly inhibit the 	<p>Threats</p> <ul style="list-style-type: none"> - Narrow departmental or management interests which might harm the national interest; - Inadequate legislation on the management of CI may enable the avoidance of taking the necessary measures of CI protection;

preparedness for effective participation;	- Declarative adoption of models of public-private partnership without implementation in practice.
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II. Invitation to participate in the program of public-private partnership

In the context of this task all the necessary processes for an adequate increase of participation in the program of public-private partnership are provided for. Public-private partnership can be effective only if it includes all the stakeholders, and if everyone achieves at least a partial realisation of their goals and expectations through compromise solutions. It is necessary to add security coordinators across sectors and managers / owners of CI among the participants of both processes.

Figure 19: Step C.II. Invitation to participate in the program of public-private partnership

Not feasible	Partially feasible	Entirely feasible
		X

Step and task	Process	Proposals of updates
C.II-1	Preparation and audit of the model of incentives for owners / managers of CI who participate in the public-private partnership	It is essential to include public-private partnership in the mechanisms; It is essential to include sectoral security coordinators and managers / owners of CI;
C.II-2	Making certificates for owners / managers who participated through a program of public-private partnership	It is essential to include managers / owners of CI;

Figure 20: SWOT analysis of enforcing step C.II.

<p>Strengths</p> <ul style="list-style-type: none"> - NCCI could become a focal point for the strengthening of public-private partnership in the field of CI protection; 	<p>Opportunities</p> <ul style="list-style-type: none"> - To strengthen cooperation in all sectors of CI through the examples of good practice; - Regulation of models of public-private partnership can facilitate the transition of CI in the management of private owners; - Croatia can become a mentor to other Member States in the region, which are at the stage of approaching the full membership in the EU.
<p>Weaknesses</p> <ul style="list-style-type: none"> - Failure to comply with the specifics of the private sector can have negative consequences on the quality of strengthening public-private partnership; - Inadequate security awareness on the importance of CI protection by private organisations can significantly inhibit the preparedness for effective participation; 	<p>Threats</p> <ul style="list-style-type: none"> - Narrow departmental or management interests which might harm the national interest; - Inadequate legislation on the management of CI may enable the avoidance of taking the necessary measures of CI protection; - Declarative adoption of models of public-private partnership without implementation in practice.

D. DEVELOPMENT AND TRANSFER OF KNOWLEDGE

I. Development and improvement of methodology

In the context of this task all the necessary processes for the proper development and improvement of methodology are provided for. The development of new approaches and introducing them in operational use must be a continuous and ongoing process. The dynamic security environment is constantly changing, which raises challenging dilemmas for the planners and developers of CI. Four key processes that touch the methodology to identify CI, cross-sectoral and specific sectoral criteria, methodologies for risk assessment and methodology for risk management are defined in the foreseen task. The real and effective methodology can significantly contribute to the reality of planning and determining the measures required to determine those minimum standards and the CI scope and the measures

necessary for the implementation of CI protection. All this is very much linked to the planning and use of resources that need to be given to the operationalisation of plans and results.

Figure 21: Step D.I. Development and improvement of methodology for identification of CI

Not feasible	Partially feasible	Entirely feasible
		X

Step and task	Process	Proposals of updates
D.I-1	Development and improvement of methodology for identification of CI	It is essential to include sectoral security coordinators and individual managers / owners of CI;
D.I-2	Development and improvement of methodology for making cross-sectoral and specific sectoral criteria	It is essential to include sectoral security coordinators and individual managers / owners of CI;
D.I-3	Development and improvement of methodology for risk assessment	It is essential to include sectoral security coordinators and individual managers / owners of CI;
D.I-4	Development and improvement of methodology for risk management	It is essential to include sectoral security coordinators and individual managers / owners of CI;

Figure 22: SWOT analysis of enforcing step D.I.

<p>Strengths</p> <ul style="list-style-type: none"> - Experience of NPRD representatives must be considered in making supplements of methodology in the field of CI protection; - To take into account experience of sectoral coordinators in the development of methodologies; - To take into account comparable solutions in the development of methodologies in the international environment. 	<p>Opportunities</p> <ul style="list-style-type: none"> - To strengthen cooperation in all sectors of CI through the examples of good practice; - To include scientific-research institutions in the creation and development of methodologies; - To strengthen public-private partnership through updating of methodologies; - Croatia can become a mentor to other Member States in the region, which are at the stage of approaching the full membership in the EU.
<p>Weaknesses</p> <ul style="list-style-type: none"> - Failure to follow the opinions of the direct 	<p>Threats</p> <ul style="list-style-type: none"> - Narrow departmental or management

managers may have a negative impact on the quality of the methodological solutions; - Inadequate methodology results in flat-rate estimates which require an excess of resources which are non-systemically consumed;	interests which might harm the national interest; - Inadequate legislation prevents a quality preparation of efficient methodology; - Declarative and non-systemic upgrading of methodologies in practice causes serious problems.
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II. Training

In the context of this task all the necessary processes for the appropriate training system are provided for. Training is one of the key segments of each system. Staff potential is very important for the success of the implementation of processes. Hence there is an urgent need to implement training for all levels and groups of staff potential, which is involved in CI protection. For that it is necessary to integrate the various forms of training and use a variety of methods including e-learning. The changes in the dynamic security environment force us to constantly update the training content.

Figure 22: Step D.II. Training

Not feasible	Partially feasible	Entirely feasible
		X

Step and task	Process	Proposals of updates
D.II-1	Training of security coordinators and managers in sectors/competent government authorities	It is essential to include educational institutions among participants;
D.II-2	Training of managers / owners of CI	It is essential to include educational and scientific institutions among participants;

Figure 23: SWOT analysis of enforcing step D.II.

Strengths - Experience of NPRD representatives must be considered in making supplements of methodology in the field of CI; - To take into account experience of sectoral coordinators in the development of programs; - To take into account comparable solutions	Opportunities - To strengthen the training in all sectors through the examples of good practice; - To include scientific-research institutions in the training; - To strengthen public-private partnership through updating of programs; - Croatia can become a mentor to other
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in the development of programs in the international environment.	Member States in the region, which are at the stage of approaching the full membership in the EU.
Weaknesses <ul style="list-style-type: none"> - Low level of awareness among competent government authorities may limit the effects of training; - Lack of knowledge of providers of training; - Failure to follow the novelties in the preparation and implementation of training programs. 	Threats <ul style="list-style-type: none"> - Narrow departmental or management interests which might harm the national interest; - Non-systemic implementation of training in practice causes serious problems and reduces the level of CI protection.

III. Counselling

In the context of this task all the necessary processes for an adequate system of counselling are provided for. The process of counselling is an added value, which is introduced into the system of CI protection. It is used for certain specific processes, where special knowledge is needed which can be applied in a particular environment. Advice is also provided to assist the security coordinators in the sectors as well as the management structure.

Figure 24: Step D.III. Counselling

Not feasible	Partially feasible	Entirely feasible
		X

Step and task	Process	Proposals of updates
D.III-1	Counselling of security coordinators in sectors	It is essential to include external experts among participants;
D.III-2	Counselling of managers / owners of CI	It is essential to include external experts among participants;

Figure 25: SWOT analysis of enforcing step D.III.

Strengths <ul style="list-style-type: none"> - Experience of NPRD representatives must be considered in the implementation of counselling; - To take into account experience of sectoral coordinators in the implementation of counselling; - To take into account comparable solutions 	Opportunities <ul style="list-style-type: none"> - To strengthen the counselling in all sectors through the examples of good practice; - To include external experts in the counselling; - To strengthen public-private partnership through counselling activities; - Croatia can become a mentor to other
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in the planning of counselling in the international environment.	Member States in the region, which are at the stage of approaching the full membership in the EU.
Weaknesses <ul style="list-style-type: none"> - Low level of awareness may limit the effects of counselling; - Lack of knowledge of providers of counselling; - Failure to follow the novelties in the preparation and implementation of training programs. - Failure to comply with the specifics of each organisation in the implementation of counselling. 	Threats <ul style="list-style-type: none"> - Narrow departmental or management interests which might harm the national interest; - Non-systemic implementation of counselling in practice causes serious problems and reduces the level of CI protection.

IV. Exercises

In the context of this task all the necessary processes for the implementation of an appropriate system of exercises are provided for. The process of exercising is the added value that is introduced into the system of CI protection. It is used for training where there is a need of special knowledge which can be applied in a particular environment. Through exercises the readiness and capacity of the various structures in the systems of CI protection is checked. Exercises induce a direct practical training of theoretical procedures and foreseen plans. The more the exercises get closer to real situations the more effective their results.

Figure 26: Step D.IV. Exercises

Not feasible	Partially feasible	Entirely feasible
		X

Step and task	Process	Proposals of updates
D.IV-1	Implementation of exercises for security coordinators in sectors	It is essential to include external experts, scientific research institutions, other stakeholders in the management system for CI protection among participants;
D.IV-2	Implementation of exercises for managers / owners of CI	It is essential to include external experts, scientific research institutions, other stakeholders in the management system for CI protection among participants on different scale of excersises (full-scale excersise);

Figure 27: SWOT analysis of enforcing step D.IV.

<p>Strengths</p> <ul style="list-style-type: none"> - Experience of NPRD representatives must be considered in the planning and implementation of exercises; - To take into account experience of sectoral coordinators in the implementation of exercises; - To take into account comparable solutions in the planning of exercises in the international environment. - The use of simulation models for the playing of individual situations. 	<p>Opportunities</p> <ul style="list-style-type: none"> - To strengthen the exercises in all sectors of CI through the examples of good practice; - To include external experts in the exercises; - To strengthen public-private partnership through exercises; - Croatia can become a mentor to other Member States in the region, which are at the stage of approaching the full membership in the EU.
<p>Weaknesses</p> <ul style="list-style-type: none"> - Low level of awareness of strategic management may limit the effects of exercises; - Lack of knowledge of providers of exercises; - Failure to comply with the specifics of each organisation in the implementation of exercises; - Lack of financial and other resources. 	<p>Threats</p> <ul style="list-style-type: none"> - Narrow departmental or management interests which might harm the national interest; - Non-systemic implementation of exercises in practice causes serious problems and reduces the level of CI protection.

4 ESTABLISHING A SYSTEM OF SENSITIVE DATA EXCHANGE IN CRITICAL INFRASTRUCTURE

The makers of the model of managing CI protection in the Republic of Croatia note that the functioning system of information exchange is one of the key preconditions for the smooth functioning of the system for CI protection. The protection of information has, in the information age, an extremely important role in the systemic approach of risk management for the operation of CI. The foreseen holistic approach in the field of information security linked to CI includes the necessary steps to ensure the establishment and functioning of an information system for the protection of critical/sensitive data.

The proposed model of information security is based on the strategic and normative documents, which were adopted in the Republic of Croatia. In the review of existing

legislation it can be seen that it contains all the necessary foundations which enable the practical establishment of the information system of transmission of key data in CI.

The organisational structure of the information system for management of CI protection is pyramid structured regarding the foreseen model, which was discussed in the initial analysis of the feasibility study. Given the necessary resources and the possibility of establishing NCCI the only realistic model is model No.1. Setting up the system and all the necessary resources for the functioning of NCCI would in model No. 3 wherein the NCCI is foreseen as an independent organisational unit within the offices of the Government of the Republic of Croatia, exceed the manageability and the rationality of the needs of invested resources. As a result of the foregoing, it is necessary to take into account in the analysis of the factors for the establishment of an information system the only real proposal for the establishment of the NCCI, to be organised as an internal organisational unit of NPRD. This will ensure the continuation of the already implemented measures for the establishment of an information system for the key data exchange and partly the use of already existing resources in the field of key data protection.

The proposed organisational structure that is organised from the highest point is appropriate and expected. The highest strategic place is organisationally represented by the Government of the Republic of Croatia, hereinafter managing the system through the National Council and NCCI, all the way to the CI managers as the lowest point of the system. With that related requirements for the establishment of an information system are common, but include the necessary basis, which would allow for the beginning of the establishment of the proposed information system. To the extent these initial requirements just one essential information is missing, namely on which basis the ensurance of financial resources for the establishment of this system will be carried out. It is not clear from the proposal whether the financial foundation of the construction of the system will be provided directly in the context of the Government of the Republic of Croatia, or the system will be planned and financed from the resources of NPRD as an additional range of resources in its budget. The obligation of direct managers is also not clear in relation to the establishment of this system or provision of software and hardware prerequisites for that part of the system which will need to be established for the transfer of key information between operators of CI and NCCI or sector security coordinators (departmental ministries).

There is a dilemma whether the use of the BYOND devices in the system of CI data exchange is authorised or appropriate. In any event, it is positive that these frameworks foresee that

already in the proposal of the model because thus this problem will be given enough attention for the systemic installation of the use of these devices.

The proposed technical solutions of establishing a two-way independent parallel communication system are an appropriate way for achieving security and business continuity in the event of failure of certain communication channels. The encrypted form via the VPN protocol provides a sufficient level of security of data transmission according to their value and importance. Of course, it will be hereinafter necessary to define the level of encrypted solutions, which will also pull behind the choice of the technological solution, which among other things will have to be compatible with the current system, which is in use in the State Administration.

Among these requirements, it is particularly necessary to highlight the competence of the personnel that will be needed for the establishment of this system. Below, the layout of the training system of all employees in the system of CI protection is missing. In part, this is defined below under the tasks of the NCCI.

In the context of the proposed tasks of the NCCI in the sensitive data exchange the things are foreseen in the appropriate format. In the analysis, we estimate that most problems, in addition to adequate financial resources, will be raised in the substantive defining the information which will be eligible for the transmission through this information system. We definitely suggest trying to be based on the definition of the information that is defined in the Law on the protection of classified information and other related documents. This issue will definitely appear in that part of the information that the strategic management will define as a business secret in the companies (operators). This part can also due to a competitive relationship, where there will be more operators on the market, which deal with the same or similar content, bring some problems. These problems are going to result in deterioration of an appropriate public-private partnership and to reflect on the quality of cooperation. Although the Republic of Croatia introduced a "top-down" approach of introducing a system of CI protection, it is precisely this factor of public-private partnership that is very important and will also influence the introduction of the systemic exchange of the sensitive data. For this reason, it is necessary to pay particular attention to these elements.

From the proposed model it is not clear on which part of the information communication means, which are already in use, the proposed model for the transmission of the sensitive data of the protection system will be upgraded to. In the continuation of the making of the model proposal it would be necessary to assess what resources already exist and to suggest the upgrade of that part of the information system necessary for the establishment of the target

state. In this context, it will be easier to realistically assess the financial aspect of the necessary funds for the necessary upgrading of the system.

Not feasible	Partially feasible	Entirely feasible
	X	

Positive indicators:

- NPRD already carries out a key part of tasks in the field of coordination and development of the CI system in the Republic of Croatia;
- The knowledge and experience acquired by the employees of NPRD in the field of the establishment and functioning of the system of CI will be the key generator of the skills necessary also for the future establishment and functioning of the NCCI and the related tasks in the field of the sensitive data exchange;
- NPRD has developed certain segments of the information system, which will be in this case possible to upgrade to the corresponding whole;
- The legal basis in the field of the classified information protection and management of cyber threats is in RC quite properly set. Because of that, we estimate a small supplement in the field of systemic Act on critical infrastructure protection;
- In the context of government administration institutions, a sufficient number of trained human resources operate in the field of information security, which will bear the focus on the completion of a secure information system for the transfer of critical information of CI protection;
- The applicable information security standards can be an important help to the system measures of the introduction of the system and the provision of minimum conditions for its safe and continuous operation;
- The proposed solution, where the NCCI represents a central co-ordination body, is also good in the light of the establishment of a secure information-communication system;
- The Republic of Croatia ranks among the small countries, so the rational use of resources is a very important factor in the adoption of such important decisions such as the setting-up and placement of the NCCI.

Negative indicators:

- In the case of a legal incompleteness of the authorities and duties, difficulties in the coordination of other ministries may arise in the field of their tasks related to the establishment of a comprehensive information system, as the proposed model now provides for;
- The responsibility to provide financial resources for the financing of the establishment of the proposed information system is not evident from the proposed model;
- Hereinafter this problem also appears in a rough estimate of the necessary financial resources that will be necessary to establish a functioning system;
- It will be necessary to foresee in more detail the relationships in the context of public-private partnership and in particular in the extent of resources that each side will have to invest in the construction of such a system;
- For the effective functioning of the safe information system it will be necessary to provide additional human, material and financial resources in the NCCI. At the moment, when the countries face with the rationalisation of expenditure for their operation it will be very difficult to convince the ruling policy to give additional funds to the mentioned field. The risk of imposing the establishment and the provision of the functioning of the NCCI only by an administrative act to NPRD, and ensuring the funds from the scope of the current resources for the operation of NPRD. Without additional resources, the NCCI, despite the establishment, would not be able to carry out all the tasks foreseen in the field of ensuring the operation of the security system by the transfer of key data;
- A great dependence for the establishment and realisation of the proposed model on the awareness of policy regimes on the importance of the regulation of this field of CI protection.

Indicators for assessing progress:

- Understanding of the ruling policy and the validation of model No. 1 and consequently the establishment of a secure information-communication system;
- Amendments to the existing legislation;
- Allocation of additional financial resources for NPRD and other national institutions;
- Providing additional human resources for the operation of the NCCI and secure information and communication system;
- Number of participating organisations and representatives;
- Percentage of carried out set tasks;
- Number of events organised by NCCI (training, checking links, audits, counselling).

Figure 28: SWOT analysis of establishing a system of data exchange in critical infrastructure

<p>Strengths</p> <ul style="list-style-type: none"> - Continuation of the current processes in the NPRD as the central organisation for the coordination of the establishment of CI system; - Established inner circle of experts in the field of CI protection; - In the national system and with operators NPRD is already recognised as the central body of the previous coordination; - The strengthening of the national network of experts; - Given the current organisation, the best and the most rational approach to achieve the objective; - To establish an appropriate situation lesser corrections of existing legislation are required; 	<p>Opportunities</p> <ul style="list-style-type: none"> - Raising awareness of the importance of CI protection; - Better possibility of coordination and the safe exchange of sensitive data; - The cutback of cost of establishing a system for the safe transfer of data; - The designation of the state institution which will in the future carry the weight of the co-ordination and development of information system of CI; - The central body for exchanging experience and good practice; - Strengthening the public-private cooperation; - Appropriate arrangement of the systemic exchange of information with the EU and other international partners in the field;
<p>Weaknesses</p> <ul style="list-style-type: none"> - Harder achievement of consensus due to the incompleteness of competence and the necessary financial resources; - Regulation of the relationships of the authorities and responsibilities; - Harder achievement of the objective group among the economic part of CI operators. 	<p>Threats</p> <ul style="list-style-type: none"> - Narrow departmental interests which might harm the national interest; - Failure to provide additional resources for the establishment of an information and communication system in NCCI and the realisation of the intended model No. 1; - Low awareness of the ruling policy about the need for the implementation of the proposed model of setting up a secure information-communication system.

5 A MODEL OF PUBLIC-PRIVATE PARTNERSHIP IN CRITICAL INFRASTRUCTURE PROTECTION

It should be remembered that an effective model of public-private partnership is a key factor that will considerably improve the quality and speed of building an effective system of critical infrastructure protection in the Republic of Croatia. The drafters are well aware of this fact,

and they in particular highlight that fact in their proposal. Unfortunately, the situation in transition countries, including the Republic of Croatia, especially when it comes to companies that are in majority owned by the state, is primarily focused on satisfying narrow political and economic goals, which are often not based on good governance and care for continuous operation of critical infrastructure. Most often we conclude that the country with its governance structures is a bad master. Unfortunately, the transition of these companies into the hands of private owners in the field of the management of critical infrastructure is not significantly improved. Private owners in transition countries follow the main objective, which is reflected in the profit and investment in the maintenance and safe operation of critical infrastructure is not one of their important strategic objectives. In particular, in the case of certain multinational companies, whose financial and other power pressure on the governments of the countries in transition, thereby achieve adoption of a milder and more lax legislation, which they later can avoid. Unfortunately, the Republic of Croatia is no exception in this process, which has very negative effects on the state of critical infrastructure protection in the country. Therefore, the key factor for ensuring an adequate protection of critical infrastructure is the country with its strategic management itself. It is necessary to emphasise that the Republic of Croatia, unlike other transition countries in the region, has quite a well defined legislation on public-private partnership. This model is identified as a key also in the strategic documents in the field of ensuring national security, critical infrastructure protection and measures to prevent terrorist threats. The newly emerging National Security Strategy should in the first draft also contain a part connected with critical infrastructure protection and the importance of public-private partnership. This is definitely one of the key mechanisms for a more effective implementation of the system, given the limited resources that are available in both the public as well as in the private sphere. The practice is unfortunately different, so in a real environment, this model of partnership is not yet fully operational.

In the area of raising awareness of strategic management in enterprises it is necessary to form the information on the importance of continuous operation of critical infrastructure into the business framework of competitive advantages and business success of the sound operation of infrastructure. The financial aspect for continuous operation of critical infrastructure should be the message factor that will be better understood by the strategic management of business organisations, which will thus position critical infrastructure protection as one of the major priorities for the successful performance of their companies. Financial investments in critical infrastructure protection should become investments in continuity and efficiency of their organisations and not mere costs.

Establishing a proper system of public-private partnership in the area of critical infrastructure protection is a constantly ongoing process, which practically never ends. However, this component is one of the utmost importance for the effective establishment and in the later period the functioning of critical infrastructure protection. In making strategic documents and amendments of legislative frameworks in the field of public-private partnership in the Republic of Croatia, it is necessary to ensure the widest possible participation of proposals. Hereinafter, it will be required, in addition to providing an appropriate level of awareness, to clearly define authorities and responsibilities also at the level of critical infrastructure operators themselves. This is an important basis for the establishment of long-term trust among all partners in the process of critical infrastructure protection in the Republic of Croatia. Each participating entity needs to meet the agreed things that will be adopted in the forum. The cultural dimension of the agreement on the exchange of important information will also have a major importance, which will not be aimed at the general public.

Through a concrete analysis of the proposed model it can be stated that the legal basis needs minor adjustments, which will further define the basis for a public-private partnership in CI protection. We are pleased by the fact that it was the desire of preparers to derive from examples of good practice offered by the example of Great Britain and Australia. Although these are two countries with vastly greater volumes of resources, the primary solution is the NCCI, which is as a central institution, among other things, responsible for the appropriate platform in which a public-private partnership is developed, adequately designed.

The model of public-private partnership in the Republic of Croatia foresees in the direction of a joint long-term relationship, where public and private environments recognise their advantages and benefits. Of course, thus it is on the other hand willing to accept the responsibilities arising from this relationship and agreement. Given the scarcity of resources on both sides, this lever is the only appropriate one if we want to talk about a comprehensive approach to risk management for the smooth functioning of CI. Although the drafters for the most part assume that the public sector is the one that will transmit knowledge to the private sector, we believe that there should be a two-way process. The public sector has problems understanding the dynamics and needs of a complex business environment, therefore, it sometimes by their own actions and the preparation of legal solutions, without the presence of the private sector, carries them out unsystematically and in particular anachronistically. However, it is necessary to look at knowledge transfer in both directions, mainly with the aim of reducing costs and increasing efficiency. As well as in the national interest, it must also be

in the interest of private operators of CI to run continuously, thereby not only ensuring the smooth functioning of the community, but also generating profits from business operations.

The levers of public-private partnership in the area of CI protection, which the model envisaged, are wide enough to provide the necessary basis for the concretisation of activities in this area. It is important to highlight the implementation of joint projects, which reinforce the trust and mutual cooperation.

Good practices already exist in the Republic of Croatia, which have their basis also in the strategic documents, namely the National strategy for cybersecurity and the National strategy for the prevention of terrorism. In both public-private partnership is highlighted as one of the remarkably important models for achieving strategic goals. An important finding binds on the fact that the drafters correctly understood the width of the importance of public-private partnership and they included a very wide range of subjects in it that may via their operation add an added quality in the field of public-private partnerships and in the entire field of critical infrastructure protection. Here they are not confined to the institutions of national security, but entities of private security, interest links from the area of corporate and private security at the national as well as international arena are also correctly included.

In the concrete proposal of the conditions for the realisation of those requirements to establish an effective system of public-private partnership, the drafters suggested 6 basic processes. All proposed processes No. 2-6 are appropriate and consistent with realistic expectations that their realisation is necessary to increase the efficiency of work in this area. In this context, the importance of education module needs to be especially highlighted, which will in long term allow for sufficient experts. The current dynamics of development and the environment urgently need them to properly understand and improve the state of the public-private partnership with their new knowledge and quality. It is important to also focus on project fundraising through various tenders within the EU and beyond. Total integration and preparation of project activities will be an excellent opportunity for even closer cooperation between the public and private sectors.

Regarding the proposal for the establishment of a permanent national body which would, according to the proposal, be named the NCCI caution would be advised. The risk of duplication and an excessive number of bodies in the field of critical infrastructure can become counterproductive. In this context, we would propose a consideration whether the mechanisms that are already in place can serve as the exchange of key interests in the field of critical infrastructure protection. NCCI should definitely become the central body, which will have the task of supporting only these forums, whose task will not only be to support the

mentioned forums, but will in a certain stage of development take more concrete tasks to define and coordinate the common interests of all stakeholders of public-private environment. The currently foreseen tasks of the Forum on critical infrastructure (NVCI) are rather widely defined. The question is if the Republic of Croatia can, due to the scarcity of their resources, afford the creation of a further body, which would in this complex structure work in this specific area.

In any event, the proposed model of establishing public-private partnership can be assessed as correct and feasible. Some additional analyses and elaborateness of specific solutions that will ultimately ensure an effectively functioning system of public-private partnership will be submitted in its direct execution.

Not feasible	Partially feasible	Entirely feasible
		X

Positive indicators:

- NPRD now performs an essential part of the tasks in the field of coordination and development of the system of CI in the Republic of Croatia. In this context the activities of communication and coordination are already under way in order to integrate the private environment in the processes of CI protection. This can serve as a basis for the continuation of processes;
- Knowledge and experience acquired by the employees in the NPRD in the field of establishment and functioning of the CI system will be a key generator of the necessary skills for the future establishment and functioning of the NCCI and thus also the work in the field of strengthening the levers of public-private partnership;
- NPRD has already developed certain segments of public-private partnership in the areas associated with the system of protection and rescue and civil protection, which in this case will be upgraded to the appropriate whole;
- The legal basis for public-private partnership represents a solid foundation for the integration of the protection of CI. Because of that, we estimate the need for amendments in the field of strategic and legal documents (Act of Critical Infrastructure and Act of Public-private partnership) in which the leverage of public-private partnership will be further embedded;

- Certain educational institutions, among which we highlight the University of Applied Sciences Velika Gorica, introduce into their curricula the contents related to critical infrastructure and the importance of public-private partnership in this area;
- The Republic of Croatia is one of the smaller countries, therefore, the rational use of resources is an important factor in taking such important decisions related to the protection of CI. From this perspective, the quality of the system of public-private partnership is even more important and vulnerable;
- Given the fact that the processes of privatisation are still very active in the Republic of Croatia, this is also an opportunity to start setting at this stage relevant foundations of subsequent effective public-private partnership in CI protection.

Negative indicators:

- Failure to understand the importance of the integration of the private environment in certain processes of harmonisation of interests in the field of CI may result in lower response of CI managers coming from the private environment;
- According to the proposed model it is not possible to figure out the financial implications so it is impossible at this stage to analyse and assess them;
- The proposed new mechanisms for coordination and harmonisation such as the Forum on critical infrastructure should be very sensitively accomplished. It is necessary to consider the current relationships and competences of the already established mechanisms or forums and to avoid duplication or the excessiveness of the bodies in the field of management. Any incomplete solution can have a very large impact on the entire system. In particular, it is necessary to avoid an excessive number of authorities or bodies. For this reason we suggest the incorporate tasks of strategic coordination in to National security Council;
- It will be necessary to foresee more in detail the relationships in the context of public-private partnership and in particular in the extent of the resources each of the parties will need to invest in the construction of such a system;
- The risk that NPRD or NCCI will not become the central point of support on which the system of public-private partnership in the field of CI protection will be based;
- Great dependence for the establishment and implementation of the proposed model on awareness of the policy and company management about the importance of organisation in the field of CI protection.

Indicators for assessing progress:

- Understanding of the ruling policy and confirmation of model No. 1 and thus the establishment of effective bases for the development of public-private partnership;
- Amendments to the existing legislation;
- Identification of additional financial resources for NPRD (NCCI) and other state institutions on projects in the field of public-private partnership;
- Providing additional human resources for the operation of NCCI and projects of public-private partnership;
- Number of participating organisations and representatives;
- Number of registered projects under the acquisition of financial assets;
- Number of approved projects;
- Percentage of carried out set tasks;
- Number of events organised by NCCI.

Figure 29: SWOT analysis of establishing a system of public-private partnership

<p>Strengths</p> <ul style="list-style-type: none"> - Continuation of the current processes in the NPRD as the central organisation for the coordination of the establishment of CI system; - Established inner circle of experts in the field of CI protection; - In the national system and with operators NPRD is already recognised as the central body of the previous coordination; - Strengthening the national network of experts; - Good practices from some other areas that are indirectly related to CI protection; - To establish an appropriate situation lesser corrections of existing legislation are required; 	<p>Opportunities</p> <ul style="list-style-type: none"> - Raising awareness of the importance of CI protection; - The cutback of cost of establishing a system of public-private partnership; - The designation of the state institution, which will in the future carry the weight of the co-ordination and development of public-private partnership; - NCCI as the central body for exchanging experience and good practice; - Strengthening the public-private cooperation in the field of international projects; - Appropriate arrangement of the system of public-private partnership in the international arena;
<p>Weaknesses</p> <ul style="list-style-type: none"> - Harder achievement of consensus due to the incompleteness of competence and the necessary financial resources; - Regulation of the relationships of the authorities and responsibilities; - Harder achievement of the objective group among the economic part of CI operators. 	<p>Threats</p> <ul style="list-style-type: none"> - Narrow departmental interests which might harm the national interest; - Lack of interest of the private sector to participate; - Low awareness of the ruling policy about the need for the implementation of the proposed model of setting up an effective partnership in the field of public-private partnership; - Low level of knowledge of human

	resources potential, which will be determined for the development of this mechanism.
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6 ANALYSIS OF PROPOSED RESOURCES NECESSARY FOR IMPLEMENTING PROPOSED SOLUTIONS IN THE PROJECT AND FINANCIAL ANALYSIS

Through the feasibility analysis of the proposed model to establish a system of CI protection in the Republic of Croatia, we included among factors a concrete analysis of the resources needed to carry out each of the main goals set by the RECIPE project through the establishment of NCCI, the establishment of an effective system for the key information exchange, and the system of public private partnership in the field of CI protection. In the strategic assessment of the necessary financial resources mainly the first two are very dependent on the provision of sufficient financial, human and other resources for their final implementation. Of course, in the context of the entry into force of the first objective, the decision of the Government of the Republic of Croatia on one of the four proposed models of the establishment of NCCI will play a key role. In the analysis and evaluation, we anticipated that model No. 1, which foresees the establishment of NCCI within NPRD, will deliver the most optimal effects and will represent a significant streamlining of the necessary funds. Here we emphasise the complexity of the second set goal. The establishment of a system for the exchange of key information will represent primarily from the financial, but partly also from the technological and human resources point of view, a major challenge. Its rationality and feasibility will strongly depend on the chosen technological solutions and understanding of all concerned stakeholders about the need for this project. This model will be the first serious test and answer to the question whether the bases for the operation of public-private partnership are appropriate. Namely in the realisation of the objective of establishing an effective system of secure communication all partners of public and private environment of CI management will have a very important role. The Republic of Croatia will have the largest part of setting up the first two goals through budgetary resources, which are in the current situation very limited. For this reason it will be necessary to resort to those solutions that will be at any given time the most optimal depending on the funds invested and the results obtained. Another important factor will be represented by the CI managers themselves, who will, with their financial and other participation, need to ensure the continuity of functioning of CI which they manage. An important source of funds must be presented by the European projects

in the field of CI protection. There, all parts of the system will be given once again a very important role. The RECIPE project represents an excellent display of this, as an example of good practice in the area of obtaining funds from international mechanisms to resolve certain objectives in the area of building an effective system of CI protection.

In conclusion, the need and the importance of adequate human resources should be mentioned. It can be confidently concluded that through the educational structure of the state administration of the Republic of Croatia the whole system hasn't a sufficient number of highly qualified experts in the fields covered by the model of CI protection. Especially if we take in consideration proposed model of development CI protection. We hope that the prioritisation of key processes in the country will place CI and its system of protection on a high position. In this case, when making the necessary decisions it will be possible to redistribute that part of the experts in the NCCI that will be essential to raise the volume and quality of previous processes in the field of the CI protection system. An important part of ensuring key personnel must be taken by the educational system, which will through its programs give relevant and applicable knowledge for future experts in the field of CI protection. Finally, in the private sector in terms of better material and financial conditions, especially in organisations that manage CI, we can talk about very high-quality personnel, which came from the field of public administration in search of better financial conditions some time ago. The advantage of these experts is to know the functioning of the two areas, which is crucial for effective work with the system of CI protection.

Below, let's take a look at some factors in the area of the necessary resources that will have an impact on the realisation of the proposed model:

- The decision on the amount of budgetary funds for the realisation of the model;
- The share of invested funds of CI managers;
- The percentage of the gained projects and the amount of the related assets;
- The amount of private resources provided through the public-private partnership;
- The appropriate scope of human resources;
- Proper training of human resources.

Figure 30: SWOT analysis of the resources required for establishing a model of systemic CI protection

<p>Strengths</p> <ul style="list-style-type: none"> - NPRD as the national coordinator for CI actively introduce systemic solutions in the field of CI protection; - Some examples of good practice of public-private cooperation in the field of financing joint projects; - Specific experience in acquiring European and other assets; - Partly set up curricula in the field of CI protection; - Specific scope of experts in the field of CI protection in public and private organisations; - Examples of good practices in integrating the profession into interest groups. 	<p>Opportunities</p> <ul style="list-style-type: none"> - Raising awareness of the importance of CI protection; - Reducing the burden on the public budget with a good public-private partnership; - NCCI as the central body for exchanging experience and good practice; - Strengthening the public-private cooperation in the field of international projects;
<p>Weaknesses</p> <ul style="list-style-type: none"> - Harder achievement of consensus due to the incompleteness of competence and the necessary financial resources; - Regulation of the relationships of the authorities and responsibilities; - Harder achievement of the objective group among the economic part of CI operators. - Necessary amendments to existing legislation. 	<p>Threats</p> <ul style="list-style-type: none"> - Narrow departmental interests which might harm the national interest; - Lack of interest of the private sector to participate in financing; - Low awareness of the ruling policy about the need for the implementation of the proposed model of setting up an effective partnership in the field of public-private partnership; - Failure to provide the necessary budgetary resources.

7 RESULTS AND CONCLUSION

The feasibility study of the foreseen model of critical infrastructure protection in the Republic of Croatia points to the fact that it can be implemented in all steps. Structurally, the study needs to be in some parts concretised in more detail. This will of course be affected by the

decision of the competent decision-makers for which of the suggested solutions they will decide. Below, the mentioned solutions will be concretised and further analysed in detail from all angles. The biggest shortcoming of the proposed model is represented by the estimate of the needed financial resources that will be necessary to provide for the realisation of the proposed. This is partly understandable because at this stage the model identifies a variety of solutions that will be with the appropriate choice of one of the proposed options later concretised, including the foreseen resources.

NCCI will in any case constitute a turning point, which will by taking the correct decisions and measures represent an important step forward to the appropriate systemic regulation of the CI protection field. Proper operation of the NCCI will provide an adequate platform for guidance, help, exchange of good practice, advice and ultimately control over the measures taken at different levels of functioning of the CI protection system. This support, which will be given on the one hand by the NCCI to the strategic management (the Government of the Republic of Croatia and Sabor/Parliament with its commissions) in the public sector, as well as to the operators of CI in the private sector, will represent an added value, which will be reflected in the quality of decisions, better understanding of the situation and the problems, a higher level of awareness and ultimately higher financial resources to ensure the effective functioning of the CI protection system.

In the information age, with the need of rapid and secure transfer of data, the awareness of the strategic structures in the public and private environment will play an important role in establishing a system of sensitive information exchange in the field of CI. All three main objectives which have been placed in the RECIPE project, are closely intertwined and are in their implementation in a strong relationship of interdependence. This means that the system of key information transfer will be successfully implemented only in case of effective realisation of the model, which will be chosen by the Republic of Croatia for the establishment of NCCI. Given the fact that the ownership of CI is in public and private property, however, it is impossible to expect the implementation of any project in this area without a solid and effective public-private cooperation. Especially not in the direction that could be evaluated as a systemic approach that represents optimal solutions according to the height of the financial inputs and the results obtained. In smaller countries, including the Republic of Croatia, this is crucial. Solutions that are essentially offered by the drafters of the model are in the field of the safe transfer of key data in the field of CI protection, appropriate and comparable in all standard lines of international practice. The volume, efficiency and the amount of resources will be strongly influenced by the selected model of the establishment of

NCCI. It is necessary to strive to the greatest use of existing information facilities available to the state administration in the field of classified information protection, and to systemic upgrading of a specific part of the software and hardware to the existing IT backbone. In any case, relevant foundations have already been conducted in the Republic of Croatia, which are clearly outlined through a normative legal aspect in the field of the protection of classified information, coping with cyber threats and ultimately the protection of business secrets, when talking about the private sector.

It is difficult to assess whether a well-functioning model of public-private partnership is the need or the result of a properly functioning system of CI protection. Recognising that an increasing proportion of CI passes into private ownership, the good cooperation between the public and private environment will in the future have an even more important role. Appropriate awareness of strategic leadership in both systems must result in the pursuit of common goals in the direction of positive factors which are brought about by such cooperation. The public sector with the State at the forefront must clearly support this cooperation due to the dependance of the society on the continuous operation of CI, on the other hand, the continuity of the functioning of the private sector, which is, in certain cases, the operator of CI, brings better business and an adequate income. In an era of limited resources, however, cooperation on major projects is the only possible one. Participation in joint projects, including in the framework of the EU, will further strengthen the cooperation and put it on stronger foundations of good practices and experiences gained in the process.

The main factor certainly remains the political will and determination to establish and systemically regulate this important area of critical infrastructure in the Republic of Croatia. Although it is necessary to define clearly at the end that the Republic of Croatia has set up a solid foundation of the system of CI protection. The legal framework and the role that in this context was brought about by NPRD with the national coordinator for CI, deliver positive results. The RECIPE project is a good opportunity and gives the right bases to upgrade the system for CI protection. Thus the Republic of Croatia will become an example of good practice, which will be applied to other countries in the region, especially candidates for accession to the EU.

At the strategic level, however, it will be necessary to touch a few open issues that will, as a logical consequence of the implementation of the conclusions of the RECIPE project, have to follow in practice. Clearly it will be necessary to define the relationship and responsibilities between national, regional and local responsibility in the management of CI. It is true that the Republic of Croatia is a small country and these ratios do not play such a critical role,

however, they will need a proper attention. And for the end, it is necessary to stress the crucial moment, namely the appropriate criteria for defining CI in each sector and thus later also a realistic and rational definition of national and European CI. In this section we estimate the key role which the NCCI will bring.

REFERENCES

- Act on State Administration System, Official Gazette no. 150/11 and 12/13.
- Boyer, E. et al. (2014) *Public-Private Partnerships and Infrastructure Resilience, How PPPs Can Influence More Durable Approaches to U.S. Infrastructure*, <http://www.uschamberfoundation.org/sites/default/files/article/foundation/PPPs%20and%20Infrastructure%20-%20NCF.pdf>, (accessed on 24 June 2015).
- COM (2010) 673 final. The EU Internal Security Strategy in Action: Five steps toward a more secure Europe. Objective 2: Prevent terrorism and address radicalization and recruitment. Objective 5: Increase Europe's resilience to crisis and disasters.
- COMMISSION STAFF WORKING DOCUMENT on a new approach to the European Programme for Critical Infrastructure Protection Making European Critical Infrastructures more secure, Brussels, 28.8.2013 SWD (2013) 318 final. p. 2-11.
- Communication from the Commission, n. COM (2006) 786 final, Brussels 12.12.2006., p. 3.
- Conclusions of the European Council of 10/11 December 2009 on ‘The Stockholm Programme — An open and secure Europe serving and protecting citizens (2010-2014)’; 17024/09. (accessed, 07. jan. 2016)
- Council Directive 2008/114/EC of December 8.2008, on the identification and designation of European critical infrastructures and the assessment of the need to improve their protection (SL L 345/75, 23.12.2008.).
- Croatia Workshop Evaluation Report, 2015.
- Croatian Parliament (2002) *National Security Strategy of the Republic of Croatia*, available at: https://www.soa.hr/UserFiles/File/Strategija_nacionalne_sigurnosti_RH.pdf, (accessed on 20 December 2015).
- Croatian Parliament (2007) *Data Confidentiality Act*, available at: <http://www.zakon.hr/z/217/Zakon-o-tajnosti-podataka>, (accessed on 20 December 2015).

- Croatian Parliament (2007) *Information Security Act*, available at: <http://www.zakon.hr/z/218/Zakon-o-informacijskoj-sigurnosti>, (accessed on 20 December 2015).
- Croatian Parliament (2013) *Critical Infrastructures Act*, available at: <http://www.zakon.hr/z/591/Zakon-o-kriti%C4%8Dnim-infrastrukturama>, (accessed on 20 December 2015).
- Croatian Parliament (2014) *Public Private Partnership Act*, available at: <http://www.zakon.hr/z/198/Zakon-o-javno-privatnom-partnerstvu>, (accessed on 20 June 2015).
- Croatian Standards Institute (2012) *HRN ISO 31000:2012 standard (risk management)*
- Croatian Standards Institute (2014) *HRN EN ISO 22301:2014 standard (Societal security – Business continuity management systems)*
- Croatian Standards Institute (2014) *HRN ISO/IEC 27001:2014 standard (information security)*
- European Commission (2009) *Mobilising private and public investment for recovery and long term structural change: developing Public Private Partnerships*, available at: <http://www.ajpp.hr/media/5197/priop.pdf>, (accessed on 20 June 2015).
- European Council (2008) *Council Directive 2008/114/EC of 8 December 2008 on the identification and designation of European critical infrastructures and the assessment of the need to improve their protection*, available at: <http://eur-lex.europa.eu/legal-content/HR/TXT/PDF/?uri=CELEX:32008L0114&from=EN>, (accessed on 15 December 2015).
- European Parliament and Council (2013) *Regulation No 1303/2013 of the European Parliament and of the Council of 17 December 2013 laying down common provisions on the European Regional Development Fund, the European Social Fund, the Cohesion Fund, the European Agricultural Fund for Rural Development and the European Maritime and Fisheries Fund and laying down general provisions on the European Regional Development Fund, the European Social Fund, the Cohesion Fund and the European Maritime and Fisheries Fund and repealing Council Regulation (EC) No 1083/2006*, available at: http://www.mingo.hr/public/documents/Uredba_EU_parlamentna-i-Vijeca_1303-2013.pdf, (accessed on 2 December 2015).
- Feasibility Study, Comparative Overview and Analysis, Part 1, October, 2015.

- Good practices manual for CIP policies, For policy makers in Europe, RECIPE project manual.
- Government of the Republic of Croatia (2008) *National Strategy for Prevention of and Combating Terrorism*, available at: <http://www.propisi.hr/print.php?id=8677>, (accessed on 29 December 2015).
- Government of the Republic of Croatia (2013) *Decision on determination of sectors from which central government administration bodies identify national critical infrastructures and critical infrastructure sector ranking lists*, available at: http://narodne-novine.nn.hr/clanci/sluzbeni/2013_08_108_2411.html, (accessed on 20 June 2015).
- Hammerli, B. & Renda, A. (2010) *Protecting Critical Infrastructure in the EU*, Brussels: Centre for European Policy Studies, <http://www.ceps.eu/ceps/dld/4061/pdf>, (accessed on 5 January 2016).
- Keković, Z., Savić, S., Komazec, N., Milošević, M., Jovanović, D. (2010) *Procena rizika u zaštiti lica, imovine i poslovanja*, Centar za analizu rizika i upravljanje krizama, Beograd.
- Klaver, M. on behalf all RECIPE team (2011). Good practices manual for CIP policies, p.40-43.
- Marenjak, S. et al. (2007) *Javno-privatno partnerstvo i njegova primjena u Hrvatskoj (Public private partnership and its application in Croatia)*, available at: <http://hrcak.srce.hr/file/24932>, (accessed on 20 December 2015).
- National standpoints, August, 2015.
- National Strategy of Cyber Security and Action Plan for Development National Strategy of Cyber Security, Official Gazette No. 108/2015.
- National Protection and Rescue Directorate (2013) *Ordinance on methodology for critical infrastructure operation risk analysis*, available at: http://narodne-novine.nn.hr/clanci/sluzbeni/2013_10_128_2792.html, (accessed on 15 December 2015).
- Decision on the determination of sectors from which the central government bodies identify national critical infrastructure and lists the order of the critical infrastructure sectors, Official Gazette No. 108/2013.
- Regulations of methodology for development of risk analysis of operations critical infrastructure, Official Gazette No. 128/2013.

- RECIPE project (2015) *Panel discussions "Analysis of situation and needs in the national critical infrastructure protection system" – report to the European Commission, Zagreb, June 2015.*
- Serbia Workshop Evaluation Report, 2015.

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ABBREVIATIONS / ACRONYMS

CI	Critical infrastructure
EU	European Union
EC	European Commission
NCCI	National Centre for Critical Infrastructure
NVCI	National Council for Critical Infrastructure
RECIPE	Resilience of Critical Infrastructure Protection in Europe
NPRD	National Protection and Rescue Directorate