

SECURITY RESEARCH IN THE CZECH REPUBLIC

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Abstract

Sustainable development of society is not possible without advancement in research and development, and their functions in all internal and international contexts. Consequently it is necessary to progressively create actual system solutions of specific scientific-research support corresponding with the needs of the security system of the Czech Republic. Security research is regarded as a cross-sectional subsystem of Security System of the State and determining factor of its further development. In the global context, the emphasis must be also placed on the threat of terrorist attacks and related protection of critical infrastructure, energy security, and reduction of organized crime. It is also necessary to adapt the security system of the Czech Republic to the management of other crisis situations, such as natural disasters or accidents. At the same time, it is essential to accentuate the need of active cooperation with international organizations and structures.

Key words

Security, security research, security system, development, population protection.

INTRODUCTION

Science is entering to a new stage of its development, which has significantly blurred the boundaries between exploreric (basic) and applied research, which recognized the role of innovation. Science is accelerating from techniques and technologies and contrariwise techniques and technologies absorb scientific progress. This reality will increasingly involve direct links between science, engineering and theirs commercial use. There is no doubt that, in general, research and security research, will be the main parameter to guide the future population protection, the future security and defense of man, state, humanity while maintaining sustainable development.

In the specific environment of security, it is appropriate to drive the research process rationally. Management is mainly on the practice, about the actual activities of management personnel, who should benefit from the experience of the artists the tools available to control the managed objects in order to make the best there are functional unit mission. To address these challenges, it is necessary to perceive that there are bases for the theory of management security research. Background summarize a set of basic knowledge on the subjects and objects, and management methods and procedures used.

Current concept of human security is based on the theory of systems. Recently it has been possible to indicate a complex of measures against a broad spectrum of potential threats such as the protection of society. Thus conceived protection of society is within the professional public understood especially in relation to social issues and in particular in relation to the fundamental human rights, which also include human safety, protection of the ecosystem and the population protection. One of the possible responses to address the global protection of the company may be for example the theory of sustainable development. Human security is increasingly seen as the social security system, which is defined, and for which the safety management tools ensure sustainable development. The base of sustainable development of the human system is security of the system, and the basic pillars of its development are:

- lives, health and safety of people,
- environment,
- wealth and public welfare,
- technology and infrastructure [1].

THE SUSTAINABLE DEVELOPMENT AND SECURITY

The level of security that the state may guarantee depends on many factors: understanding the problem in the context of the specific conditions, and correct objectives within the management of activities; technical and cyber means; financial means; organizational structure, which is capable to perform implementation of the measures within a reasonable time; specific education and training of workers and citizens. Safety management is a tool to ensure sustainable development of society, territory and the State, and by itself it is a particularly strategic management, to which a risk analysis is very closely related. Nowadays a safety management tool is quite common in developed countries in the area of technology, and it can be concluded that it is being transmitted to the area of the fight against the effects of natural disasters, and recently also in the field of the fight against terrorist attacks. Its principles are the same as for the risk management, i.e. measures are taken to avert occurrence of disasters, or their unacceptable impact; or at least measures to mitigate these impacts are carried out. In addition, it considers a precautionary principle in cases of very low to negligible risks, but with a huge impact on the protected interests. The country and its population are currently exposed to many dangers. It is assumed that the development may increase the risks of accidental events, or vice versa can reduce them. The centre of interest of the regional development and the system of crisis management, through the diversity of focus, is so-called representative territory and population living on it. Sustainable development of the region means on one hand development of prosperity and quality of life, on the other hand, however, must be under the control of undesirable incidents and "maintain" acceptable extent of the effects of harmful impacts on the territory and the population. It is therefore necessary to align the concept of sustainable development with planning measures against incidents, i.e. crisis planning. Sustainable development addresses concerns about a kind of development rather than how mitigating measures will encourage the development of resistant to the probable effects of the emergency [2].

In general position, focus of the security research in the coming period will be influenced by the following facts:

a) The environment:

The negative development of climate changes (global warming) and their impact on the economic and social situation of the country and population of the Czech Republic (enforceability of the sustainable development strategy). Index of quality and sustainability of life as one of the indicators of safety of the country.

b) Demographic development:

The ageing of the population, and its absolute decline in the Czech Republic (the negative effects on the social security system, ensuring of the critical infrastructure protection //recruiting of security system members), the need for controlled immigration to maintain dynamism of economic and social development (numbers, educational structure), the possible consequences of immigration in terms of the coexistence of different ethnic groups, the threat of "environmental" migrations (uncontrolled migration from regions affected by environmental degradation – sub-Saharan Africa) and of economic migration (from regions affected by economic stagnation – Middle East, North Africa).

c) Economic development:

The potential impacts of implemented reforms of the pension system, health care, education, science, security and defence in terms of increase (decrease) the level of safety of the country. The Role of the Czech Republic in profile agendas of the EU economic policies with immediate relationship to safety (including competitiveness in the field of high technology, investment in science and research, energy security).

d) Energy (raw-material and energy resources):

Ensuring of energy security of the Czech Republic as a strategic priority. The ways towards this priority. Application of the political and economic strategies to ensure quantitative strengthening of the nuclear energy role, preferential use of domestic resources (coal), aid for energy saving, strengthening of energy transmission system, keeping correct, mutually beneficial relations with producer countries, diversification of source areas for raw materials, which the Czech Republic doesn't dispose, i.e.. particularly in case of oil and natural gas, further diversification of sources and especially the source areas.

e) Science and technological development:

The influence of dynamic development in information technology, nanotechnology and biotechnology at a higher level of security of the country and improving the quality and sustainability of life. Impacts of possible negative trends in the abuse of new technologies on safety of the country. This concerns especially nanotechnology, where the use of so-called knowledge enabling mass destruction (knowledge-enabled mass destruction-KMD) is being reality.

f) Society and culture:

A complex socio-political development in Europe and in the world (the creation of the new model of a multi-polar world) will be accompanied by the growth of the influence of ideology, or conflicting ideological concepts, nationalism and religious intolerance. The extreme fundamentalist Islam will be one of the effects. Violent Jihad is its part, which produces terrorism, whose specific effects will be the immediate threat of the State, citizens and the critical infrastructure. A significant problem for the Czech Republic may be weakening of social cohesion, which could have negative effects on critical infrastructure (abuse of certain systems of critical infrastructure-the social, health and transport systems and their devastation-water resources, information systems).

g) Global governance:

The world is becoming increasingly more complicated and increasingly more dependent on each other. The challenges of globalization are mutually linked and require a coordinated response which the existing framework of global governance doesn't provide. Further spread of globalization will be more vulnerable. Strategic views and intentions of key States may diversify them. Their willingness and ability to take the multilateral commitments will be different. A series of weak or failing countries will, on the other hand, generate security problems. Against the background of insufficiency of global institutions can the role of alternative forms of governance grow, including international summits (G8, G20), regional organizations and transnational networks. This will lead to problems of legitimacy, inclusion or exclusion, and efficiency as well. Even if the national states retain the role of the main actors of global governance, the non-governmental actors will take more influence (including terrorist networks and the transnational organized crime).

SECURITY RESEARCH IN CZECH REPUBLIC

No European country can carry out research and development in any area in its full extend (including security research). It is therefore necessary to choose priorities and concentrate the financial, personnel and materially-technical resources on them. However, long-term objectives will not be achieved, unless the issue of security research is dealt with comprehensively. It should in the broadest possible scale effectively and efficiently support security interests and objectives of the Czech Republic.

Research and development is in developed countries classified as a pivotal indicator of an attained standard of society and determining factor of its further development. Available evidence indicates that these factors are significantly involved in the high level of security of such countries and their potentials.

This tendency is due to the attention that developed countries give on a long term basis to the area of security research – both through the established system of planning and management of its development by implementing and evaluating at the management level, and through active implementation of science policy. Sustainable development of society is not possible without advancement in research and development, and their functions in all internal and international contexts. Consequently it is necessary to progressively create actual system solutions of specific scientific-research support corresponding with the needs of the security system of the Czech Republic.

Complexity of threats, risks, and the resulting need for the adaptation of the security system of the Czech Republic is rising. Potential security threats to the Czech Republic can concatenate and their consequences mutually multiply. Dependence on technologies, remote-transported energy, and delivery of supplies, is deepening. Permanent instability in the periphery of the Euro-Atlantic territory, or possible concurrence of natural and man-made disasters (attacks or accidents) are some of the risk factors.

However, our society pays only small attention and dedicates only small resources to the reduction of its vulnerability. There is no comprehensive preparation for crisis situations, which would apply both to the security system and the public administration, as well as companies, entrepreneurs and citizens. Security policy has in the turbulence of budget cuts and political struggle become indistinct, and security authorities are trying to maintain only a basic functionality.

In the global context, the emphasis must be also placed on the threat of terrorist attacks and related protection of critical infrastructure, energy security, and reduction of organized crime. It is also necessary to adapt the security system of the Czech Republic to the management of other crisis situations, such as natural disasters or accidents. At the same time, it is essential to accentuate the need of active cooperation with international organizations and structures.

A problem-priority area "The increasing complexity of threats, risks, and the adaptation of the security system of the Czech Republic" was defined in 2011 within the project of the Government of the Czech Republic „Priorities 2030“ concerning identification of national priorities, development and innovation of the CR. This area of research, development and innovation has been structured in more details into the sectional challenges, threats and opportunities. Desired conditions for those challenges, threats and opportunities have also been identified in the horizon to 2030 (the so-called pivotal objectives). Prioritization of security research is linked to the concept of inter-departmental conception of security research and development of the Czech Republic by the year 2015 and it defines three basic areas of further security research routing within the conditions of the Czech Republic:

- Safety of citizens including terrorism, organized crime, other forms of serious crime threatening security of the state and their prevention, protection of the population, safety of the cities and municipalities in the case of environmental disasters and operational accidents including safety of underground facilities, protection of citizens against crime, antisocial behaviour and socio-pathogenic phenomena, cyber-crime and on-line investigations, the non-proliferation of weapons of mass destruction and small firearms, technologies and methods for detection of chemical, biological and radiological substances, nuclear materials and explosives, socio-economic and ethical area of security, detection of anomalies in transportation and passenger flows, and environmental safety.
- Safety of critical infrastructure, including energy, water industry, food and agriculture industry, health care, transport, communication and information systems, banking and financial sector, emergency services, public administration, research organisations, chemical, nuclear and mining industry, specific industrial matters and links between the various infrastructures.
- Crisis management involving formation and implementation of security policy, development of security system, early warning, communication with the public, preparedness, prevention, response and recovery, civil military cooperation and civil-emergency planning, modern methods of rapid response training and external crisis management of the EU [3].

SECURITY RESEARCH IN EU

The focus of security research in the CR is in accordance with the guidelines in this area within the context of the EU. The European security strategy and targeted studies prove that the citizens of the EU countries fear terrorism, organised crime and natural disasters the most. Current security threats reflect conflicts of increasingly globalizing world, and deteriorating environmental situation. A characteristic feature of new security threats is the dynamism of their inception and their inter-connectedness. These factors directly affect the external and internal security of countries and regions. While ten years ago, national security derived mainly from military power, nowadays a multi-criterion approach dominates and military power has become only one of the elements. Most of the current threats do not require a traditional military response, but investment into institutions of crisis management and rescue services, emergency, medical, social, and other services. In the longer term, the security research activities focus primarily on technical systems (for example nuclear safety) and military problem.

Economic globalization, environmental changes and changes in political settings, have in general created a situation which demonstrates the need for an effective, efficient and coordinated security research. Citizens are increasingly affected by many forms of uncertainty, whether in terms of crime, violence, terrorism, cyber-attacks, invasions of privacy and other types of social and economic difficulties. According to the estimates, the crime in Europe may have annually up to 75 million direct victims. The direct cost of crime, terrorism, illegal activities, violence and disasters in Europe in 2010 is estimated at 650 billion euros (approximately 5% of the GDP of the Union). A clear example of the consequences of terrorism is an attack on the Twin Towers in Manhattan, 11. September 2001. Thousands of human lives were lost, and it is estimated that this event caused in the following quarter loss in productivity of the United States reaching up to \$35 billion, \$47 billion in total production, and an increase in unemployment of nearly 1%. Citizens, businesses and institutions are being increasingly involved in digital communications and transactions in social, financial and commercial areas

of life. But development of the Internet has also led to cyber-crime, which costs €1 billion per year, and to distortion of privacy, which affect individuals and companies throughout the continent. Growth of uncertainty in everyday life due to unexpected situations is likely to affect the citizens' trust not only in institutions, but also in each other.

In 2001, the «Science and Society» Action Plan was launched to set out a common strategy to make a better connection between science and European citizens. In 2007, under the 7th Framework Programme for Research and Technological Development (FP7), “Science and Society» became «Science in Society (SiS)” with the main objective to foster public engagement and a sustained two-way dialogue between science and civil society. This effort is pursued under Part V 'Science with and for Society' of Horizon 2020. A specific EU response to these challenges represents the (European Security Research Programme) for the years 2004 to 2006, implemented with the aim of strengthening security of the EU, revive European competitiveness and create a bridge between civil and defence research. The eighth EU research framework programme "Horizon 2020" is similarly focused. The intention is to encourage the EU politicians to promote the Union's internal and external security and ensure cyber security, trust and privacy in the context of a single digital market and at the same time improve competitiveness of the EU in the security industry. This will be achieved through development of innovative technologies and solutions that focus on safety deficiencies, and lead to the prevention of security threats. These purposeful actions shall incorporate requirements of various end users (citizens, enterprises, municipal Governments, state administration, and international authorities, civil protection, law enforcement authorities, border guards, etc.) so that development of security threats, protection of privacy, and necessary social aspects are all taken into consideration. Horizon 2020 is the biggest EU Research and Innovation programme ever with nearly €80 billion of funding available over 7 years (2014 to 2020) in addition to the private investment that this money will attract. It promises more breakthroughs, discoveries and world-firsts by taking great ideas from the lab to the market. The Policy and research in security programme's primary goal is to protect Europe's citizens and society from harm, while enabling its economy to recover from man-made or natural disasters. Security Research also has a clear economic dimension. The programme's research projects are complemented by industrial policy measures, ranging from the support of technical standards to efforts to overcome fragmentation in Europe's security market. The main goal here is to strengthen the sector and Europe's competitive position in the global marketplace for security products and services. All these activities are based on regular stakeholders' consultations with government, civil society and industry via workshops, conferences and advisory groups. This ensures not only that EU Security Research and Industry policy is based on proper governance but that Europe's supply side corresponds properly with demand. EU-funded security research projects are developing a wide swath of public-sector capabilities. For example, there are projects to integrate area-wide situational awareness and alert capabilities so that civil security end-users and first responders can work together interoperably within and across Europe's regions. Other projects are helping consolidate the EU's external frontiers, while still others are developing techniques to protect Europe's critical energy, transport and telecommunications networks from harm [4].

The 'Science with and for Society' programme is instrumental in addressing the European societal challenges tackled by Horizon 2020, building capacities and developing innovative ways of connecting science to society. It makes science more attractive (notably to young people), raises the appetite of society for innovation, and opens up further research and innovation activities.

The specific objective of this area is to foster secure European societies in a context of unprecedented transformations and growing global interdependencies and threats, while strengthening the European culture of freedom and justice. The threat of large-scale military aggressions has decreased and security concerns are focused on new multifaceted, interrelated

and transnational threats. Aspects such as human rights, environmental degradation, political stability and democracy, social issues, cultural and religious identity or migration need to be taken into account. In this context the internal and external aspects of security are inextricably linked.

In order to protect freedom and security, the Union requires effective responses using a comprehensive and innovative suite of security instruments. Research and innovation can play a clear supporting role although it cannot alone guarantee security. Research and innovation activities should aim at understanding, detecting, preventing, deterring, preparing and protecting against security threats. Furthermore, security presents fundamental challenges that cannot be resolved by independent and sector-specific treatment but rather need more ambitious, coordinated and holistic approaches. Many forms of insecurity, whether from crime, violence, terrorism, natural or man-made disasters, cyber attacks or privacy abuses, and other forms of social and economic disorders increasingly affect citizens. Mission-oriented actions will integrate the demands of different end-users (citizens, businesses, civil society organisations and administrations, including national and international authorities, civil protection, law enforcement, border guards, etc.) in order to take into account the evolution of security threats and privacy protection, and the necessary societal aspects. The focus of activities is to:

- fight crime, illegal trafficking and terrorism, including understanding and tackling terrorist ideas and beliefs;
- protect and improve the resilience of critical infrastructures, supply chains and transport modes;
- strengthen security through border management;
- improve cyber security;
- increase Europe's resilience to crises and disasters;
- ensure privacy and freedom, including in the Internet, and enhance the societal legal and ethical understanding of all areas of security, risk and management;
- enhance standardisation and interoperability of systems, including for emergency purposes;
- support the Union's external security policies, including conflict prevention and peace building [4].

CONCLUSION

A high level of defence and security of the Czech Republic and its citizens will largely depend on the ability of the State to achieve such cognitive, technical and technological level, which will allow to acquire, absorb and develop the necessary specific abilities. A co-ordinated approach to the implementation of these priorities requires efficient, effective and prompt acquisition, transfer and practical use of the new knowledge and modern technologies. The required condition for the above would be the system integrated management of specific science and research support executed in a form of problem-oriented "Security Research" as a relatively independent area of science and research in the Czech Republic.

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