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# State support for innovation actions in public security management

## Introduction

Public governance concerns a variety of tiers: national, regional, and local. It can also reach beyond these levels and incorporate an international or even global scope, especially with regard to cooperation in specific fields. Its key areas are the various units of local and/or regional authorities and civil society (civic) organisations, educational centres and institutions of culture, colleges and universities, the health care system, and public safety organisations – such as e.g. those that protect people against attacks and those that safeguard transport security, sanitary and epidemiological security, fire security, the security of mass events, or the security of the natural environment and technology.<sup>1</sup>

A detailed survey of the terms related to public governance reveals that the concept encompasses processes, mechanisms and procedures that pertain to the implementation of a set of assumptions that underlie public policy, which, in turn, rests on the formulation of public strategies and schemes. Public governance hinges on a number of managerial activities that regard administration, the enforcement of ownership-related obligations, the allocation of the public means that the public authorities are in possession of, as well as a number of monitoring and assessment activities that pertain to the functioning of territorial units and/or entire organisations. From a purely scientific angle, public governance focuses on scrutinising the ways in which managerial activities can and ought to be harmonised in

<sup>1</sup> M. Lewandowski, A. Dudzik, M. Ingersleben, *Zarządzanie publiczne w sektorze kosmicznym*, Instytut Spraw Publicznych Uniwersytetu Jagiellońskiego, Kraków 2017, p. 39.

order to accurately set the goals of the organisations that shape the public domain. It also looks at the ways in which it is possible to benefit in a legitimate way from the possibilities that arise from human activities and that are geared towards creating public values and, eventually, strive to secure the public interest. From a practical standpoint, it refers to the implementation of public schemes. From an object-based perspective, it looks at public sector management; from a subject-based perspective, it centres around public affairs management.<sup>2</sup> The object of public governance concerns the public sector, as well as a variety of public matters and goods that are widely available, such as e.g. health care, education, transport, or public security.<sup>3</sup> The subject entities of public governance are the organisations that belong to the public sector, i.e. state budget units, earmarked funds, colleges and universities, cultural institutions and other state entities of the sector, as well as government agencies and the communal public sector. Therefore, it encompasses the central bodies that govern the economy – the Council of Ministers, central government departments and government agencies, the National Bank of Poland; the local supervisory bodies equipped with economic powers – such as the governors of Poland's sixteen provinces, and the local and regional authorities; as well as other organisations that act for the public good. The supreme authorities of the state and the various bodies of the local and regional authorities carry out a set of tasks that stem from a mission that addresses a number of issues, including law enforcement; the protection of citizens and the public order; health care; providing assistance in the event of catastrophes, failures, and/or natural disasters; education and culture; preventive measures aimed at counteracting unemployment, and social assistance; consumer protection; and consular assistance for the nationals living and/or staying abroad.<sup>4</sup>

Public governance pertains, among other things, to the mechanism of coordinating collective action, which can be applied to devise the key tenets of innovation policies. The 1960s and 1970s saw a clear shift within the policy that related to the impact on innovation processes – from the public authorities' support of scientific activity by promoting a science policy aimed at research units, through supporting the practical application of science in the economy by advocating a technology policy, to innovation policy. It centred around the impact it had on business enterprises, but with particular reference to the non-technological aspects of the policy related to technological growth. In the aftermath of the 2008–2009 financial crisis, a debate was launched on the coordination mechanisms of the innovation policy that had been used so far as part of the new approach to public governance and co-governance, turning more towards the increased role of public administration.<sup>5</sup>

<sup>2</sup> J. Przywojska, *Nowe zarządzanie i governance w pracy socjalnej*, Centrum Rozwoju Zasobów Ludzkich, Warszawa 2014, pp. 48–51.

<sup>3</sup> M. Marks-Krzyszowska, 'Zarządzanie publiczne – istota i wybrane koncepcje', *Acta Universitatis Lodzensis. Folia Sociologica*, 2016, No. 56, pp. 37–51.

<sup>4</sup> B. Kożuch, *Skuteczne współdziałanie organizacji publicznych i pozarządowych*, Instytut Spraw Publicznych Uniwersytetu Jagiellońskiego, Kraków 2011, p. 60.

<sup>5</sup> P. Kopyciński, 'Neoweberyzm (neo-Weberian state) jako sposób zarządzania w polityce innowacyjnej', *Zarządzanie Publiczne*, 2016, No. 3, pp. 26–36.

Within public security management, a major role can be played by business-like and innovation-oriented activities. Innovation is generated and materialised by both the state and the individual entities that function within security systems, along with – broadly speaking – the growing participation of non-profit organisations and businesses, mostly multinational corporations. The special role of the state with regard to its innovative actions, e.g. in defence, has been brought to light by Mariana Mazzucato.<sup>6</sup>

The hypothesis of this paper – i.e. the support offered by the state for innovative actions geared towards public security – refers to the formulation of specific ideas and the identification of needs, along with their implementation – i.e. satisfaction – with the use of a series of management actions and solutions applied in commercial organisations, and in the outputs and outcomes of social innovation.

## Innovative nature of the public sector

Innovations in the public sector refer to the tendency for various units operating in the public domain to launch activities, actions and products that are both new and significantly improved. They also include all the necessary instruments related to the implementation of these innovative solutions. Emphasis is placed on the fact that the expenditure on research and development in this sector in the European Union is a lot lower than the one that can be seen in the sector of business enterprises. At the same time, it is indeed business enterprises that are the largest beneficiaries of the innovative nature of the public sector. Businesses across the EU, as well as those operating in other selected countries, have so far been availing themselves primarily of the services connected to health care, security, staff training and the efforts related to permits and licences concerning natural environment protection. However, numerous research findings have revealed several obstacles that hinder the cooperation of companies with the public research centres as part of innovation projects, and the limits posed to the innovative activity that stems from the current regulations and the fiscal system. Attention is also drawn to the difficulties related to getting financial support from the governments for innovative solutions in businesses.<sup>7</sup>

The literature on the subject offers a survey of innovative solutions adopted in the public sector. Careful consideration has been given primarily to the idea of innovation at the local level, but also at the central level. There are descriptions of antecedents that have had an impact on the innovative nature of the public sector, including the influence of the environment – e.g. the impact of the media, regulatory aspects, or the participation in networks formed with other organisations. The following types of innovations can be singled out: innovation processes (administrative and/or technological); innovation in the form of a product

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<sup>6</sup> M. Mazzucato, *Przedsiębiorcze państwo. Obalić mit o relacji sektora publicznego i prywatnego*, transl. by J. Bednarek, Wydawnictwo Ekonomiczne Heterodox, Poznań 2016.

<sup>7</sup> B. Mikołajczyk, 'Znaczenie innowacji w aliansach między sektorem publicznym a biznesem', *Zeszyty Naukowe Uniwersytetu Szczecińskiego. Ekonomiczne problemy usług*, 2013, No. 108, pp. 213–225.

or a service; governance innovation, e.g. one that is connected to cooperating with private partners; conceptual innovation, which pertains to new concepts, frameworks, references, or paradigms, such as e.g. people's possibility, capacity or potential to work.<sup>8</sup> Surveying the various typologies of innovation within the public sector, attention is also drawn to the role of bricolage. The idea is associated with incremental solutions, i.e. ones that bear the features of minor changes related to the bottom-up approach. The changes that stem from dealing with individual clients, in turn, are *ad hoc*.<sup>9</sup> One can assume that the incremental approach in this case, however, is far too narrow, as bricolage may be applied to the changes that are by their very nature a lot more radical.<sup>10</sup>

The literature on the subject offers numerous references to the areas and ways in which open innovation can be applied in the public sector. In this case, the experience of large companies serves as a key source. An important role in the implementation of innovations is performed by non-profit organisations. In the private sector, open innovation takes the following forms: from the outside to the inside, from the inside to the outside, and the combination of the two. Innovation in the public sector relies on negotiations and interactions between stakeholders, and these also go hand in hand with the new approach to public governance. Networked governance, in turn, rests on the following two solutions:

- 1) government-led, i.e. a top-down approach, where the government agent takes a dominant position and leads throughout innovation projects, and where open innovation implies gaining external partners;
- 2) community-led, which is a bottom-up approach, where the role of a leader entails using a variety of networked solutions and the government does not play a dominant role; interestingly, in the private sector, this approach is frequently labelled user-led innovation.

Several examples have been cited for community-led open innovation in the US:

- 1) a case where private landowners, as well as federal and state managers, representatives of the local government and corporate landowners decided to collaborate with a view to protecting wild nature in an area of a water divide (a basin);
- 2) the launching of a consortium for the management of the natural environment and crisis management in the event of disasters with the participation of governments (the authorities) – both state and federal, the private sector, colleges and universities, and non-profit organisations.<sup>11</sup>

<sup>8</sup> H. de Vries, V. Bekkers, L. Tummers, 'Innovation in the public sector: a systematic review and future research agenda', *Public Administration*, 2016, Vol. 94, Issue 1, pp. 146–166.

<sup>9</sup> M.M. Bugge, C.W. Bloch, 'Between bricolage and breakthroughs-framing the many faces of public sector innovation', *Public Money and Management*, 2016, Vol. 36, Issue 4, pp. 281–288.

<sup>10</sup> For more information about the role of crisis bricolage, see: A. Chodyński, 'Wykorzystanie dorobku nauk o zarządzaniu na rzecz podnoszenia bezpieczeństwa miast. Koncepcja smart', *Bezpieczeństwo. Teoria i Praktyka*, 2019, No. 4, pp. 56–57.

<sup>11</sup> S. M. Lee, Teawon Hwang, Donghyun Choi, 'Open innovation in the public sector of leading countries', *Management Decision*, 2012, Vol. 50, No. 1, pp. 147–162.

The literature on the subject offers a wide spectrum of conclusions that stem from open innovation and gamification for the cooperation of local and regional communities with the police and the authorities, benefitting from crowdstorming,<sup>12</sup> a concept that can be tied with the ability to absorb ideas originating from various sources. There is also a keen interest in looking at innovations in public organisations, which cover public administration, courts, and the prison service.<sup>13</sup>

The state supports several innovation initiatives by giving the green light to activities that take the form of social initiatives, social services, or those that consist in launching new solutions, systems, or products. It does this by creating growth visions on which specific enterprises or projects rest; its own agencies (e.g. the Polish Agency for Enterprise Development); by supporting the activities of research and development units established by the state – such as institutes, research and development centres; by supporting state companies and private businesses that perform tasks that may have a major social impact, including such strategic areas as defence. This kind of activity also regards the support offered to local actions aimed at boosting innovation (e.g. supporting clusters, the innovation actions taken by non-profit organisations (including social innovation), as well as innovation actions and the links that bind organisations in view of the general task to provide security. In the last case in point, this may pertain to businesses that are part of the critical infrastructure with a diverse ownership structure. The state also supports the growth of innovation of the organisations that are an inherent part of the state security system, not to mention the solutions that concern education or health care. It facilitates entities to acquire financial resources, e.g. those originating from the European Union funds.

## Benefitting from the experience of business enterprises

The experience gained by business enterprises can regard aspects related to a number of factors, including cooperation with stakeholders, and project management. The original approach to stakeholders, which rests on the idea of prioritising business enterprises, can be extended to all organisations and, possibly, to processes too, as well as to a variety of links between businesses, such as e.g. networks, hubs, clusters, or neo-Marshallian nodes. Emphasis is also placed on the role of the state as a key stakeholder.<sup>14</sup> The concept of stakeholders can be applied more extensively in public governance, including urban management. From the point of view of security, a factor that can play a major role is the exchange of knowledge, which can help to promote business-like and innovative behaviour

<sup>12</sup> A.C. dos Santos, A.L. Zambalde, R.B. Veroneze, G.A. Botelho, P.H. de Souza Bermejo, 'Open innovation and social participation: A case study in public security in Brazil', in *Electronic Government and the Information Systems Perspective. 4<sup>th</sup> International Conference, EGOVIS 2015, Valencia, Spain, September 1–3, 2015, Proceedings*, A. Kő, E. Francesconi (eds.), Springer, Cham 2015, pp. 163–176.

<sup>13</sup> M. Odlanicka-Poczobutt, A.M. Horodecka, J. Semrau, 'Innowacje w organizacjach publicznych', *Zeszyty Naukowe Politechniki Śląskiej. Organizacja i Zarządzanie*, 2018, No. 129, pp. 363–377.

<sup>14</sup> A. Chodyński, 'Państwo jako interesariusz przedsiębiorstwa odpowiedzialnego społecznie', *Państwo i Społeczeństwo*, 2011, No. 2, pp. 59–82.

patterns. Contemporary theories of innovation management in businesses are rather focused on taking advantage of an opportunity or a chance, new technological solutions, creative use of resources, as well as on the implementation of the principle of social and ecological responsibility required to guarantee the success and growth of a business. It could be interesting to see an attempt to transfer these experiences to provide public security. By carrying out their goals pertaining to their internal processes and external contacts, business entities can contribute to security in a major way.

Ewa Sońta-Drączkowska stresses the fact that internal processes of a business enterprise that add value can be described as:

- 1) production and logistics processes;
- 2) customer management processes;
- 3) innovation processes aimed at the creation of new products and/or services: market survey, research, development, patents and licences, promotional activities;
- 4) processes that have been established legally and/or socially and that are geared towards external stakeholders and the environment (the natural environment, security, health, the state and society).<sup>15</sup>

Emphasis also has to be placed on the management of projects that can refer to economic or commercial activity, actions taken within public administration – including the local and regional authorities – sport, education, culture, and defence. Projects can be categorised according to their:

- 1) field, e.g. industrial projects, as well as those devised in such areas as construction, banking, the energy sector, insurance, IT, media, telecoms, education, culture, administration, local governance, sports, politics, or the military;
- 2) specific nature: scientific and research-oriented, developmental (aimed at launching new products, technologies, systems, action processes, as regards their elaboration and implementation), organisational, investment-related, marketing-related, or social;
- 2) significance: strategic, tactical, and operative;
- 4) scope: conceptual, executive, and comprehensive;
- 5) origins: external and internal (including R&D enterprises, implementation of new products and technologies);
- 6) range and size.

Project management relies heavily on the process approach, which harmonises both executive processes and supporting processes and does so with the use of management processes that pertain to planning, organising and steering, as well as to enterprise management methods.<sup>16</sup> The specific nature of some of these projects and their scale has required a significant involvement of public administration, including governments. This was particularly the case of weapons programmes, or landing on the Moon. Interestingly, these projects also refer to the implementation of innovation based on R&D.

<sup>15</sup> E. Sońta-Drączkowska, *Zarządzanie wieloma projektami*, PWE, Warszawa 2012, p. 46.

<sup>16</sup> M. Trocki (ed.), *Nowoczesne zarządzanie projektami*, PWE, Warszawa 2012, pp. 23–25 and 50–57.

## Public security management and innovation

In the literature on the subject, numerous references can be found to the factors that have a major impact on countries' innovation and innovation-oriented activity on the regional and cross-national level, taking account of the impact of culture, social capital, corruption, the level of education, governance, as well as political structure. There are also attempts to elucidate the influence of the specific nature of the civil service and the professional attitude and objectivity or impartiality of public administration entities on the results that innovation achieves on the national level.<sup>17</sup> Here, emphasis is placed on the role of interorganisational cooperation in public security management.<sup>18</sup>

Public security may be scrutinised at various levels: at the level of external security, internal security, which attaches great importance to the notion of order, and the level that aims to guarantee a stable and sustainable growth.<sup>19</sup> The goal of public security management is to reduce the potential threats, and at the same time to strive to maintain an undisturbed quality of social life and a satisfying level of protection of people's lives, health, possessions, and the environment, using a variety of specific resources. The network of public security management comprises autonomous entities: government units, local and regional authorities units, emergency and rescue units, non-governmental organisations, the media, and research and development centres. These networks share a number of common qualities, such as spontaneity, improvisation, and innovation.<sup>20</sup> Security management includes security policy, security measures and responsibility, as well as issues related to risk – its identification and limitation. A certain level of risk is always allowed.<sup>21</sup> A certain model of the functioning of public administration (a model of potential partners) is brought to the fore in the context of security management. In this model, the satisfaction with the realisation of needs and preferences regards citizens – recipients of the services provided, influential institutions, providers of external services and the administration staff.<sup>22</sup>

A major issue that needs in-depth consideration is the study of entrepreneurship and innovation as part of security systems. Here, attention is drawn to the importance of a variety of factors and antecedents for the cooperation launched by different entities, although it is also stressed that these factors do not include an

<sup>17</sup> K. Suzuki, M. A. Demircioglu, 'The association between administrative characteristics and national level innovative activity: findings from a cross-national study', *Public Performance & Management Review*, 2019, Vol. 42, No. 4, pp. 755–782.

<sup>18</sup> K. Sienkiewicz-Matyjurek, 'Model współpracy międzyorganizacyjnej. Studium teoretyczne na przykładzie zarządzania bezpieczeństwem publicznym', *Zeszyty Naukowe Politechniki Śląskiej. Organizacja i Zarządzanie*, 2015, No. 78, pp. 407–419.

<sup>19</sup> M. Kisilowski, *Zarządzanie kryzysowe w zarządzaniu publicznym*, Wydział Zarządzania – Politechnika Warszawska, Warszawa 2019, p. 124.

<sup>20</sup> K. Sienkiewicz-Matyjurek, 'Ryzyko relacyjne w sieciach zarządzania publicznego', *Przegląd Organizacji*, 2018, No. 11, pp. 43–49.

<sup>21</sup> A. Koźuch et al., *Obszary zarządzania publicznego*, Instytut Spraw Publicznych Uniwersytetu Jagiellońskiego, Kraków 2016, pp. 122–136.

<sup>22</sup> M. Wojakowska, 'Marketing relacji w administracji publicznej wobec wyzwań zarządzania bezpieczeństwem', *Zeszyty Naukowe SGSP*, 2018, No. 65, Vol. 1, pp. 111–125.

innovation-oriented approach.<sup>23</sup> Similar conclusions can be drawn by surveying the foreign literature of the subject.<sup>24</sup> These remarks can be referred to the fact that systemic thinking is connected to repeated behavioural patterns.<sup>25</sup> In order to enhance the level of security, it is necessary to give top priority to social innovation. The role of the state in this case could be that of a supporting and/or facilitating agent. Of the numerous examples of social innovation, one can mention Wikipedia, Open University, wind farms, or banks for the poor. There are also other cases in point, such as novel ideas – products, services, and models – that have been conceived with a view to satisfying social needs and foster cooperation. Social innovation is created with an active participation of the end user. One of its core features is the ability to transform social systems and networks, which can also effect a major reconfiguration of social elements, incorporating new units into the system, and, eventually, a growth of efficiency, which implies the capacity to meet social needs. Emphasis is put on the fact that a given operational system should improve its efficiency, frequently specified as the ability to coordinate action. The transfer of an idea into the practical domain occurs along with the use of change, and this rests, among others, on rules and principles, procedures, and beliefs. Several social innovation diffusion channels have been identified so far: some are of a market nature (e.g. new businesses, or service platforms), networks based on state-of-the-art technologies, or social networks. Social movements can also play a major role here. Scholars also point to the actions taken by governments and foundations, as well as to external and internal processes that occur within businesses. In this case, attention is drawn to social communication channels, but also to the impact of individuals, a case in point being the idea of ‘learning cities.’<sup>26</sup> One can assume that the growth of social innovation diffusion channels may serve to satisfy a variety of needs that arise in the field of security.

## The support of the state and the local and regional authorities for R&D activities and the implementation of innovation and security

The Research and Development (R&D) sector in Poland includes the Polish Academy of Sciences, research and development centres, colleges and universities that conduct an R&D activity, development units – business enterprises that have their own research facilities – and units that assist scientific centres and their activity. More

<sup>23</sup> K. Sienkiewicz-Małyjurek, ‘Antecedents of interorganisational collaboration in public safety management system’, *Journal of Contemporary Management*, 2017, Vol. 16, No. 3, pp. 259–273.

<sup>24</sup> M. Le Pennec, E. Raufflet, ‘Value creation in inter-organizational collaboration: an empirical study’, *Journal of Business Ethics*, 2018, Vol. 148, No. 4, pp. 817–834.

<sup>25</sup> A. Chodyński, ‘Podnoszenie poziomu bezpieczeństwa. Metody i narzędzia. Wprowadzenie’, *Bezpieczeństwo. Teoria i Praktyka*, 2019, No. 4, p. 14.

<sup>26</sup> E. Jędrych, M. Szczepańczyk, ‘O potrzebie innowacji społecznych w kształceniu ustawicznym Polaków (Lifelong learning)’, *Kwartalnik Naukowy Uczelni Vistula*, 2017, No. 1, pp. 69–81.



and more innovative businesses are being set up in technology parks.<sup>27</sup> On the list featured in the Research and Development Centres Act of 25 July 1985, which deals with state organisational units, one can also find scientific and research institutes, research and development centres and central laboratories, as well as other organisational units whose main goal is to conduct research and development tasks. Major transformations of R&D units in Poland took place following the adoption of the Amended Research and Development Units Act of 26 October 2000, and its relevant departmental regulations, whose overriding objective was, among others, to grant the status of state research institutes to the research and development units that were carrying out tasks typical for the public services. The above mentioned departmental regulations allowed to carry out a series of structural and ownership changes within the R&D centres. Prior to these changes, these units had also been regarded as state laboratories that were taking alternating labels – institutes, government units, and laboratories – with the assumption that they were public research organisations operating beyond the scope of colleges and/or universities. Their legal owner is the state, non-profit organisations, regional authorities and/or universities, and the majority of their budget resources come from government subsidies. They can be placed somewhere between the market, the universities, and the government. Government laboratories have played a significant part in fostering the technological and economic growth in South Korea, Taiwan, and Singapore. In the member states of the old European Union (EU-15), research laboratories had a diverse ownership status, and those that were public played a major role in the industry and in the sector of energy and natural resources, infrastructure, agriculture, defence, and public services, including health care. Poland abounded with industrial laboratories, and at the same time saw a shortage of such facilities in the area of public services.<sup>28</sup>

The Research Institutes Act of 30 April 2010 defines a research institute as a state organisational unit that carries out research and development activities, geared towards their prospective implementation and practical application. An institute may function within the health care system and perform its tasks in such fields as defence and state security. Institutes are supervised by competent ministers, including the Minister of Defence, and the minister competent for internal affairs. An institute may operate as part of the Łukasiewicz Research Network and may be granted the status of a state research institute. Its task can regard defence and public security, health care, the justice system, the protection of national heritage, the development of education and culture, physical education and sports, as well as the advancements within the quality of citizens' lives. An institute may work within the following areas: health care, social security and labour protection, environment protection, food economy, natural resources economy, technical security, energy security, and transport security. They also include surveillance and the prevention of the possible consequences of such events and occurrences that can pose a threat to public security, including those that can cause natural disasters

<sup>27</sup> Ł. Leśniewski (ed.), *Sektor badawczo-rozwojowy w Polsce*, Polska Agencja Informacji i Inwestycji Zagranicznych S.A., Warszawa 2010.

<sup>28</sup> J. Kozłowski, 'Jednostki badawczo-rozwojowe w Polsce – między zależnością od ścieżek rozwojowych a tworzeniem nowych', *Nauka i Szkolnictwo Wyższe*, 2007, No. 1, pp. 113–140.

or technical failures that bear the symptoms of natural disasters. The commencement of scientific and research cooperation between at least one research institute and a minimum of one unit of the economic sector gives rise to the establishment of a scientific and industrial centre. Such centres are focused on a variety of objectives, a majority hinging upon the idea of cooperating with a view to implementing scientific and technical efforts. The entities that constitute a centre may collaborate further in the form of clusters, or technological parks and platforms.<sup>29</sup>

The Łukasiewicz Research Network Act has given the green light to the foundation of the Łukasiewicz Centre, a public legal entity, as well as to a number of institutes that are primarily focused on conducting developmental tasks and application studies in order to implement the state's economic and innovation policy set out in the strategies of growth, including those that concern state defence mechanisms and security. Of a vast number of other detailed tasks, emphasis is put on developing technological road maps for public policies. The tasks that the Network has been assigned to perform relate to scientific research and developmental assignments, as well as to their commercialisation. The Act incorporates 37 institutes and one business company, transformed into an institute.<sup>30</sup>

The entity that supervises the support for the commercialisation of research for the economy is the Polish National Research and Development Centre (NRDC), established by the relevant Act of 30 April 2010. The NRDC supports projects at various levels of technological advancement and readiness – from preliminary industrial studies to those aimed at commercialising innovative solutions for the entire economy. The centre supervises strategic projects and schemes, as well as international and domestic European funds within such areas as state security and defence.<sup>31</sup> The financing of the basic research is managed by the Polish National Science Centre, as set out in the National Science Centre Act of 30 April 2010.<sup>32</sup>

In the reflections on security contained in the report of the Kościuszko Institute, emphasis is put on the role of the public and private partnership in the endeavours taken to guarantee secure cyberspace. There is a mention of the National Cybersecurity Policy Frameworks of the Republic of Poland for 2017–2022, a document that points to the role of the government, in particular as an entity that plays a key role in the supporting of start-ups and businesses, as well as scientific and research centres in their pursuit to safeguard cybersecurity. Admittedly, this can be seen as follow-up to the support and assistance offered thus far in the field of innovative solutions. The report illustrates examples that prove the involvement of academic

<sup>29</sup> The full text of the Act can be found in the Proclamation of the Speaker of the Sejm of the Republic of Poland of 28 June 2019 on the public announcement of the unified version of the Research Centres Acts, Journal of Laws of the Republic of Poland – Dziennik Ustaw Rzeczypospolitej Polskiej (Dz.U.) of 2019, item 1350.

<sup>30</sup> The Łukasiewicz Research Network Act of 21 February 2019, Journal of Laws of the Republic of Poland – Dz.U. of 2019, item 534.

<sup>31</sup> The full text of the Act can be found in the Proclamation of the Speaker of the Sejm of the Republic of Poland of 7 July 2017 on announcing the unified version of the National Research and Development Centre Act, Journal of Laws of the Republic of Poland – Dz.U. of 2017, item 1447.

<sup>32</sup> The full text of the Act can be found in the Proclamation of the Speaker of the Sejm of the Republic of Poland of 5 July 2019 on announcing the unified version of the National Science Centre Act, Journal of Laws of the Republic of Poland – Dz.U. of 2019, item 1384.

centres across a variety of countries in cybersecurity with different degrees of support provided by the state. Governmental support pertains to a number of aspects, such as e.g. ensuring access to grants for R&D activities, as well as making government resources available for the purposes related to them. Emphasis is placed on the fact that the success of innovation in cybersecurity depends to a large extent on governments' strategies and policies.<sup>33</sup> Going back to the idea of carrying out innovation in the public sector, it is worth noting, also in the context of security, the concept and action method of 'living lab.' It refers to the idea of managing innovation processes that originate from the models of open innovation ecosystems. It constitutes an effective quadrangle of cooperation based on the partnership of economic entities, science, society, and the authorities and administration. It goes back to the idea of the *Quadruple Helix* model, a fourfold cooperation spiral of these partners. According to this concept, local society becomes a co-producer of innovation. The 'living lab' is used to denote a method of conducting research and development activities in real-life conditions, innovative in their nature, and ones that can be done in urban areas. They act as evolutionary innovations, and their user is treated as a source of innovation. This concept falls within a number of initiatives, including the setting up of a local innovation centre, but it can also be treated as a method of managing innovation projects in the public sector. Further references on searching for innovative local solutions within the notion of the 'living lab', which may be adopted for the public administration sector, can be found in the article by Aleksandra Nowakowska.<sup>34</sup>

The level of entrepreneurship and innovation in a region is also influenced by the networks of the various regional entities, the innovation of the local and regional authorities and their elites, the organisational culture of the local and regional authorities, caring about the general social values and the adequate standards of living of the citizens, as well as the guarantee of a greater dynamics of the local economy by supporting local entrepreneurship and innovation.<sup>35</sup> Regional innovation is subjected to assessment.<sup>36</sup> Here, priority is given to the importance of absorptive capacity,<sup>37</sup> as well as the role of researchers, scholars, academics and engineers in developing solutions connected to disasters.<sup>38</sup>

<sup>33</sup> W. Goździewicz, C. Gutkowski, L. Tabansky, R. Siudak, *Bezpieczeństwo poprzez innowacje. Sektor cyberbezpieczeństwa jako siła napędowa wzrostu gospodarczego*, Instytut Kościuszki, Kraków 2017.

<sup>34</sup> A. Nowakowska, 'Living lab – budowanie innowacyjnych partnerstw w działaniach samorządu terytorialnego. Polskie doświadczenia', *Przedsiębiorczość i Zarządzanie*, 2016, Vol. 17, No. 4, Part 2, pp. 91–101.

<sup>35</sup> Z. Makieła, 'Przedsiębiorczość i innowacyjność – koncepcja i uwarunkowania rozwoju regionu', *Przegląd Organizacji*, 2013, No. 2, pp. 30–36.

<sup>36</sup> T. Grzeszczyk, 'Metodologia oceny poziomu innowacyjności regionu', *Przegląd Organizacji*, 2003, No. 11, pp. 16–20.

<sup>37</sup> K.V. Bhupendra, S. Sangle, 'What drives successful implementation of product stewardship strategy? The role of absorptive capability', *Corporate Social Responsibility and Environmental Management*, 2017, Vol. 24, Issue 3, pp. 186–198.

<sup>38</sup> R. Sylves, *Disaster Policy & Politics. Emergency Management and Homeland Security*, 3<sup>rd</sup> ed., Sage-CQ Press, Los Angeles 2019, pp. 183–216.

## Examples of state action taken with regard to selected sectors

A brief survey of the literature on the subject points to the significance of the research stream within management studies, which is carried out as part of technological entrepreneurship. This type of entrepreneurship refers to technological innovation, as well as to innovative modes of production and providing services, and novel products, services and systems or organising activity-related processes. It also concerns those types of action that use knowledge and/or function as part of cooperation schemes with colleges and universities, or scientific and research centres. Technological entrepreneurship constitutes a major development strategy that rests on the idea of creating, developing and using technological opportunities. Admittedly, technological entrepreneurship is connected to technological progress, as well as to the transfer of the scientific output, knowledge and discoveries into the world of business. Within the sector of technological entrepreneurship, it is clear to see intensive R&D action. The business entities that have this kind of entrepreneurship quality typically represent areas of advanced technologies, such as HT, pharmaceuticals, space industry, aviation, and electronics. They are business enterprises of the key enabling technologies (KET), i.e. those operating in nanotechnology, industrial biotechnology, nanoelectronics, photonics, advanced materials and technologies, and ICT software. The conditions that lie behind successful implementation of technological entrepreneurship may be external – and thus pertain to external relations, anticipation of change, and knowledge sharing – or internal – and concern internal relations, flexibility, benefitting from an opportunity, reaction to changes in the environment. Very typically, technological entrepreneurship is taken into account in technical and social sciences.<sup>39</sup> A factor that can play a major role is also the contribution of the state in the successful implementation of the idea of technological entrepreneurship, which can result in innovative behaviour patterns occurring to the benefit of public security. Recently, given the coronavirus pandemic, numerous cases have been reported of carrying out *ad hoc* activities at the junction of state research units and the state, a case in point being the financial support of 15 million Polish zlotys offered by the Polish Ministry of Science and Higher Education to the production of coronavirus tests for the Institute of Bioorganic Chemistry of the Polish Academy of Sciences in Poznań.<sup>40</sup>

Agnieszka Grzybowska and Agnieszka Ertman point out that the literature on the subject differentiates between industrial sectors and creative sectors. The latter constitute those sectors of the economy that rely on an individual sense of creativity of the creators, and their effects are connected to intellectual property. As far as the creative sectors are concerned, one of the typical things is hidden innovation, a concept that hinges on the premise that it cannot be measured with commonly used indices or rates. This category of innovations can concern solutions

<sup>39</sup> I. Staniec, K.M. Klimczak, W. Machowiak, Y. Shachmurove, 'Przedsiębiorczość technologiczna: istota, znaczenie, wybrane kierunki badań', *Studia i Prace Kolegium Zarządzania i Finansów*, 2018, No. 168, pp. 101–112.

<sup>40</sup> Ministry of Science and Higher Education, <https://www.gov.pl/web/nauka> [accessed: 10.04.2020].

that are not based on a technological base – as they regard e.g. business models, or are organisational by their nature – or avant-garde combinations of the technologies and processes applied thus far. They frequently occur at a small scale and can thus be almost imperceptible. The description of a hidden innovation diamond for creative sectors features six dimensions: product of culture (e.g. a film), profile of a user (product), cultural concept (seen as information contribution of a product, e.g. narrations, ideas), delivery of product, as well the process of production and technology. Innovation in creative industries refers primarily to new forms of conveying a message and aesthetic values not seen before. Innovation may pertain to goods with a major artistic load.<sup>41</sup> It seems that the role of the state in creating such innovations can only be indirect, i.e. one connected to the laying of propitious foundations for their creation. This role will be even bigger in the implementation of innovative solutions in the case of regulated sectors, which include the energy sector, the railway sector, and the telecom sector, along with the market regulations in force.<sup>42</sup> Looking through the various legal regulations that concern such fields as e.g. the fuel and energy market, it is clear to see a number of tariff-based rationing measures and concessions and licences used as the basic regulatory tools. Electricity is regarded as a common good, and earth gas as a basic necessity.<sup>43</sup> Admittedly, the above regulated sectors are of primary importance in security management.

The space sector is a niche in the area of advanced technologies and is epitomised by a high level of innovation. The major source of financial resources allocated to public research and development activities in this sector are the governments. The commercial revenues of the space industry concern three major areas: services for consumers (e.g. satellite television), the supply chain of space production (the production of a variety of items, e.g. satellites, launchers, space shuttles, and ground segments), as well as the services provided by satellite operators. The role of public administration rests chiefly on its setting strategic directions and devising schemes. Attention is drawn to the role and share of the state in business enterprises operating in the space sector. Here, a major role goes to satellite systems made for the armed forces, including early warning systems, communication systems, meteorological systems, and signal observation and detection systems. Of key significance is the fact that these solutions are very frequently transferred into the sphere of civilian needs. Satellite technologies are applied in various domains: e.g. in defence. So far, the greatest international venture with all the characteristics of a scientific and technological project has been the International

<sup>41</sup> A. Grzybowska, A. Ertman, 'Innowacje w sektorach kreatywnych i sektorze przemysłowym,' *Ekonomia i Organizacja Przedsiębiorstwa*, 2017, No. 9, pp. 92–105.

<sup>42</sup> P. Wiśniewski, 'Poza głównym nurtem –wpływ krytyki kapitalizmu na teorie zarządzania', in K. Klinciewicz (ed.), *Zarządzanie, organizacje i organizowanie – przegląd perspektyw teoretycznych*, Wydawnictwo Naukowe Wydziału Zarządzania Uniwersytetu Warszawskiego, Warszawa 2016, pp. 404–417.

<sup>43</sup> Z. Muras, 'Regulator sektorowy paliw i energii-między reglamentacją a promocją rynku. Rozważania na tle orzecznictwa dotyczącego taryf', in M. Pawełczyk (ed.), *Współczesne problemy bezpieczeństwa energetycznego. Sektor gazowy i energetyczny*, Wydawnictwo Ius Publicum, Warszawa 2018, p. 352.

Space Station (ISS). The Polish space sector is based on an interplay of public institutions – primarily the bodies and units of public administration, universities, and research centres – and businesses and non-governmental organisations.<sup>44</sup>

## Conclusions

Admittedly, the literature on the subject offers a wide spectrum of considerations on public security and the possible threats posed to it. This paper focuses primarily on the support provided by the state for public security management issues by supporting activities geared towards promoting innovation. The definitions of public security are quite strongly tied with three major trends: one that refers the concept to public institutions, one that looks at its connection with the civic sphere, and one that combines the two.<sup>45</sup> Interestingly, Mirosław Kwieciński points to the fact that the very notion of public security has not been defined in law yet.<sup>46</sup>

Bolesław Kuc and Zbigniew Ścibiorek stress the fact that the threats posed to internal security comprise the following types of internal security: 1) public security – i.e. one related to the condition of the state that allows it to function in an effective and efficient manner; 2) social security – i.e. one that constitutes the entire set of resources and means used to fulfil the interests of society in this sphere, frequently regarded as the prevention of economic and social want, and the protection of the rule of law; 3) common security – understood as civic security, in particular aimed at safeguarding the basic vital interests, a lack of threat posed to the existence of citizens and communities, their vital interests, commonly treated as the protection of citizens' life and the national treasure against the consequences of natural disasters and technological failures; and 4) constitutional (political system) security. There seems to be a direct link between the threats posed to public security and the crime rate – including criminal offences, economic crime, or corruption – the organisation of mass events, cybersecurity threats, or information wars. The threats posed to common security are related to the impact of nature and/or technological infrastructure, and they can pertain to workplaces and people. They may have a number of underlying causes, such as the influence of the forces of nature or technical failures, and their effects focalise around social conflict.<sup>47</sup> The individual areas of internal security require specific solutions that can guarantee the execution of the goals and objectives set. To attain them, it is necessary to support innovation-like solutions – not just those that are launched in the technical and technological field, but also those that concern organisational, managerial and social matters.

<sup>44</sup> M. Lewandowski, A. Dudzik, M. Ingersleben, *op. cit.*, pp. 43–67.

<sup>45</sup> J. Mazur, 'Marginalizacja jako potencjalne źródło zagrożenia bezpieczeństwa publicznego. Refleksja socjologiczna', *Przedsiębiorczość i Zarządzanie*, 2018, Vol. 19, No. 8, Part 2, pp. 29–42.

<sup>46</sup> M. Kwieciński, 'Niektóre niedoceniane rodzaje zagrożeń bezpieczeństwa publicznego w Polsce – wyzwania dla procesów zarządzania', *Przedsiębiorczość i Zarządzanie*, 2018, Vol. 19, No. 8, Part 2, pp. 21–28.

<sup>47</sup> B. Kuc, Z. Ścibiorek, *Zarys metodologii nauk o bezpieczeństwie*, Wydawnictwo Adam Marszałek, Toruń 2018, pp. 24–30, 58–61, and 76–77.

The impact of the state takes place, above all, by creating adequate conditions with special regard to legal action, organisation action, and financial action. The state may initiate projects that concern public security and play a major role in disseminating innovative solutions. These solutions, in turn, will have an impact on the social behaviour of citizens and organisations. Therefore, one can look at the issue of innovation for security through the lens of its social impact, which is exerted by, among others, public administration. At present, this theme is gaining momentum, also from the point of view of the social impact of such organisations as R&D units, or colleges and universities. The social impact that arises on the part of this administration can be tied with several factors, including the use of the media, and – undoubtedly, the social media – to promote behaviour patterns that enhance public security and rest on the application of innovative solutions. This impact could be further supported by the partnership-like relations of administration and economic and business entities, as well as the various units of the science sector, and society at large.

In the light of the hypothesis of this paper that has been put forward, pertaining to the role of the state in the field of innovation activities geared towards public security, it seems that the social impact can, in particular, refer to launching specific ideas and creating appropriate conditions for their execution with appropriate managerial actions taken at the same time aimed at supporting specific projects and anticipating their social reception, and the economic consequences of the projects put into effect.

The economic impact of the state will refer to the transformations of the research and development sector in Poland, and the possibilities to carry out a variety of tasks whose overriding goal is to facilitate public security management. The social impact that stems from these activities is clearly connected to the chances of bringing down the current and/or potential threats posed to public security.

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## *Wsparcie przez państwo działań innowacyjnych dla zarządzania bezpieczeństwem publicznym* *Streszczenie*

Państwo oddziałuje na procesy innowacyjne, wykorzystując możliwości związane ze wspieraniem działalności naukowej oraz realizację polityki technologicznej i polityki innowacyjnej. W sektorze publicznym realizuje się innowacje: obejmujące procesy innowacyjne (o charakterze administracyjnym lub technologicznym); w postaci produktu lub usługi; w zakresie zarządzania (*governance innovation*) czy innowacje konceptualne (*conceptual innovation*). Państwo wspierając działalność innowacyjną podejmuje określone przedsięwzięcia (projekty). Wykorzystuje w tym celu m.in. własne agencje, tworzone przez siebie jednostki badawczo-rozwojowe, włączając w to przedsiębiorstwa państwowe i prywatne, oraz wspiera działania lokalne w zakresie działalności innowacyjnej. Wspomaga także działalność innowacyjną organizacji non profit czy organizacji wchodzących w skład systemu bezpieczeństwa państwa. W artykule omówiono przeobrażenia sektora badawczo-rozwojowego w Polsce i możliwości realizacji prac na rzecz zarządzania bezpieczeństwem publicznym. Ma ono na celu obniżenie (potencjalnych) zagrożeń, w tym tych w ramach publicznego zarządzania kryzysowego. Zwrócono uwagę na rolę wsparcia państwa na rzecz sektorów wysokich technologii.

**Słowa kluczowe:** zarządzanie bezpieczeństwem publicznym, innowacje, sektor B+R, wpływ społeczny

## *State support for innovation actions in public security management* *Abstract*

The state affects innovation processes, using a variety of possibilities related to supporting scientific activity, performance of the technological and innovative policy. In the public sector, various investments are carried out that encompass innovative processes of administrative or technological nature, innovations in the form of products or services, governance innovations, or conceptual innovations. By supporting innovative activities, the state takes on specific enterprises, also known as projects. It uses, among others, its own agencies, research and development units created by the State, including state-owned, but also private companies. It supports local actions in the scope of innovative activity. It also supports the innovative activity of non-profit organisations, or those included in the national security system. Transformations of the research and development sector in Poland are currently discussed, along with the possibilities of conducting works for public safety. This is intended to reduce the potential threats, including those that are part of public emergency management. The paper also puts emphasis on the role of state support for high-technology sectors.

**Key words:** public safety management, innovations, R&D sector, social impact

## ***Staatliche Unterstützung der innovativen Maßnahmen für das Management der öffentlichen Sicherheit Zusammenfassung***

Ein Staat beeinflusst die innovativen Maßnahmen, indem er die mit der Förderung der wissenschaftlichen Tätigkeit und die Umsetzung der technologischen und innovativen Politik verbundenen Möglichkeiten nutzt. Im öffentlichen Sektor werden folgende Innovationen umgesetzt: die die Innovationsprozesse (administrative oder technologische) einschliessenden Innovationen in Form eines Produkts oder einer Dienstleistung, im Bereich des Managements (*governance innovation*) oder konzeptionelle Innovationen (*conceptual innovation*). Durch die Förderung der innovativen Aktivitäten nimmt der Staat bestimmte Vorhaben (Projekte) vor. Zu diesem Zweck werden u.a. eigene Agenturen, die von ihm selbst gegründeten Forschungs- und Entwicklungseinrichtungen, einschliesslich der staatlichen und privaten Unternehmen genutzt als auch unterstützt die lokalen Aktivitäten auf dem Gebiet der innovativen Tätigkeit. Er unterstützt auch die Tätigkeit der gemeinnützigen Organisationen, welche Teil des Sicherheitssystems des Staates sind. Im Artikel wurden die Umwandlungen des Forschungs- und Entwicklungssektors in Polen besprochen, als auch die Möglichkeiten der Umsetzung der Arbeiten für das Managements der öffentlichen Sicherheit. Das dient der Reduzierung der (potenziellen) Gefahren, darin der im Rahmen des öffentlichen Krisenmanagements. Man hat die Rolle der staatlichen Unterstützung für die Sektoren der hochentwickelten Technologien betont.

**Schlüsselwörter:** Management der öffentlichen Sicherheit, Innovationen, F+E, sozialer Einfluss

## ***Поддержка государством инновационной деятельности в сфере управления общественной безопасностью Резюме***

Государство влияет на инновационные процессы, используя возможности, связанные с поддержкой научной деятельности и реализацией политики технологических инноваций. В государственном секторе инновации реализуются в области инновационных процессов (административного или технологического характера); продуктов и услуг; управления (*governance innovation*), концептуальных инноваций (*conceptual innovation*). Поддерживая инновационную деятельность, государство внедряет определенные проекты, привлекая для этого собственные агентства, научно-исследовательские учреждения, государственные и частные предприятия, а также поддерживает местные инициативы в области инновационной деятельности. Государство также способствует развитию инновационной деятельности некоммерческих организаций и организаций занятых в системе государственной безопасности. В статье обсуждены вопросы трансформации научно-исследовательского сектора в Польше и возможности проведения работ, связанных с управлением общественной безопасностью. Указаны решения снижающие (потенциальные) риски, в том числе в рамках государственного антикризисного управления. Подчеркнута роль государственной поддержки высокотехнологических секторов.

**Ключевые слова:** управление общественной безопасностью, инновации, сектор НИОКР, социальное влияние

