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**PROINNOVATIVE POLICY AND THE NATIONAL INNOVATION SYSTEM
A CASE STUDY FROM POLAND**

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Abstract

The article explores the main elements of the creation a proinnovation policy in Poland as a new case of public policy. It analyses the current status of proinnovation policy in Poland and the relationships implicit in the Polish National Innovation System. The findings support the conclusion that Polish proinnovation policy and the system through which it is enacted are at an early stage of development which is characteristic of co-called ‘catching-up’ countries. The findings show that there is a need for the strategic and holistic management of this type of sub-functional system to enable it to support SMEs in the development of their capacity for innovation. This should include a wide range of public and private institutions in the context of multi-stage governance.

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Proinnovation Policy and the National Innovation System.

A Case Study of Poland.

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Introduction

Since the early 1990s, Poland has undergone significant political, economic and social changes related to its transition to a market-based economy and the EU accession process. Recent policy efforts, linked to Poland's entry into the EU in 2004, have been marked by a renewed interest in the development of an innovation policy that could help sustain future economic development and convergence with other EU countries (OECD 2007, p. 3).

A systemic approach toward the management of innovation processes and the concept of a national innovation system has moved to the centre of policymaking in the new EU member states. But often policy-makers have not understood that an innovation system concept could not be transplanted from one country to another without adapting it to local economic, social, cultural and other frameworks. In the case of the new EU member states there exists a common element of path-dependency—all those countries have passed through systemic change and should take into consideration the influences left over from the past command economy system. On the other hand, the new EU member states are latecomers in the sense of being able to benefit from using innovations worked out by the leading industrialised countries (Varblane, Dycker, Tamm 2007, p. 107).

The implementation of a well-functioning learning process among the organisations of catching-up economies such as Poland requires the detection of any major shortcoming at the level of national innovation systems and the use of appropriate instruments to eliminate those problems. The structure of the current article is designed according to this task. The first section begins to develop the concept of a national innovation system, its elements and function; it also outlines Polish and foreign literature on the subject. The second section is devoted to the applicability of the methodology of grounded theory to the national innovation

Central and Eastern European Review

system approach and to proinnovation policy in Poland. The next section will reveal the major path-dependency related problems in the building up of the national innovation systems in Poland. The concluding section summarises the findings and recommendations for appropriate policy measures.

National Innovation System and policy—outline of literature and concept

The issue of proinnovation policy and National Innovation Systems (NIS) in Polish political science and more broadly social science literature is poorly described and researched, and it can even be said that it is negligible. Taking into account all Polish literature, one can identify only one monograph on NIS: E. Okoń-Horodyńska, *The National Innovation System in Poland*, Wydawnictwo Uczelniane AE Katowice, 1998. There are also more than a dozen articles and papers published in periodicals or joint publications but they take into account the perspective and methodology of economic sciences (A.M. Weresa, A. Sosnowska, K. Poznańska, A. Jasiński, E. Stawasz, K.B. Matusiak, W. Janasz, S. Pangsy-Kania and others), technical or legal sciences, whereas there are no such publications in the scope of political sciences. There are a few reports which were developed about the commission of the Polish Agency for Enterprise Development (PAED) or the Ministry of Science and Higher Education (MSHE), however, they do not present that issue from the neo-institutional perspective of social sciences. In this context, one can propose a thesis that this is a new problem for political sciences which encompasses new forms of political representation which are different to already discussed traditional aggregative formulas and presents new models of the governance of the public sphere. Economics or organization and governance sciences focus mainly on the operationalization of the model used for the first time in 1995 by H. Etzkowitz and L. Leydesdorff known as the triple helix model. It defines the dynamics of the connections between scientific research entities (the research and development sector), industry (business), and administration (Etzkowitz, Leydesdorff 2000, pp. 109–23). That perspective is connected to the phenomenon of postmodern political discourse in public governance which in fact oversimplifies the analysis of complicated and multi-level public governance processes. That perspective corresponds to the popular opinion of J. Buchanan who claims that “disregard for political enforceability was considered a desirable feature; but the refusal to examine what is politically enforceable means incomplete science” (Buchanan 1997, p. 21). Taking the above into account, the structural aspects described here are an

Central and Eastern European Review

attempt to describe such an interdisciplinary matter as NISs through the application of a political science methodology. Instead of discursive deliberations I suggest using the methods of nomothetic, structural sciences, a strategic and relational approach and its operationalization by the application of the neo-institutional method.

On the other hand, foreign literature regarding NISs contains a vast majority of publications concerning economics, including those publications belonging to the already mentioned Aalborg school (B.-A. Lundvall, E. Edquist, R. Nelson, N. Rosenberg), works by Ch. Freeman who was the first to present that aspect of operations of the states and economies or works by P. Patel and K. Pavitt. Politological publications discussing innovation system focus on the description of the development and governance of new public policies both at national and supra-national levels. This group includes works by B. Jessop, F. Scharpf, G.B. Peters, M. Olson, D. March, G. Majone, G. Stoker. Their works demonstrate that a greater participation of the public sector in the economy contributes to the growth of the knowledge-based economy. That thesis is confirmed by where Scandinavian countries such as Sweden, Finland, Denmark rank in terms of economic competitiveness.

Based on this literature review of neo-institutional and structuralistic approaches to the description of functional sub-systems, it is possible to try to classify the scientific approach to NISs. From the point of view of processes, we can distinguish 6 paradigms of understanding NISs (Edquist 2004):

- a historical perspective of evolution—postmodern paradigm,
- a holistic and interdisciplinary approach—systemic paradigm,
- a focus on the role and significance of institutions—neo-institutional paradigm,
- a result approach, supply-demand approach to innovations—functional paradigm,
- a focus on interdependence and nonlinearity, processes of mutual learning—co-operation paradigm,
- centralisation versus regionalisation in the approach to innovation processes space and territory (decentralistic and pro-competition or centralistic and flattening paradigm).

National conditions also have key significance for the development and creation of the European Union's proinnovation policy, and, on the other hand, affect the effectiveness and efficiency of the adaptation of the solutions and means from the European to the national level

Central and Eastern European Review

and further to the regional one. I assume, then, that firstly it is not possible at the present stage of EU development to implement the Lisbon Strategy or the Europe 2020 Strategy in a specific *one best way*, and consequently, secondly, that the presence of the state as well as of the EU is necessary in the scope of creating competitiveness—also that nation states are necessary. That perspective also provides the possibility of searching for the answer to the question of what degree a given entity (international organization, industry, state, enterprise) is able to join the EU and anticipate the changes taking place as a result of both processes of globalization and Europeanization.

Proinnovation policy and the functional sub-systems which are developed for the specific governance of that aspect of public and private actions are one of the most complex and consequently not always efficiently identifiable structural actions. The contexts of space (European—national—regional) and processes (sectoral—public—private—behavioral) create a very complicated network of connections, implications, as well as models of behavior and actions. As a result of that complexity, the description of proinnovation policy only and mainly with quantitative variables trivializes the scope of conceptualization and generates false alternatives. One of them was the opinion that was present in world literature in the 1980s and early 1990s, and in Poland still at the beginning of the 21st century, that there is a close and linear relationship between the growth of expenditure on research and development, the number of patents, the number of researchers and the growth of GDP. If that thesis was actually confirmed, then many countries would redirect the streams of money to that area of public activity. Today it is well known that this is a multi-level process and that quantitative factors can only be the basis for further analyses.

This is exactly how the OECD formulates its recommendations regarding research into innovation processes occurring at the macro-, micro-, and mezzo-structural scales. In its third edition which was published in 2008, *The Oslo Manual. Proposed Guidelines for Collecting and Interpreting Technological Innovation Data* displays in several places the imperfections of the quantitative methodology. Firstly, it is noted that there exists relatively little knowledge of innovations which are not technological and made in the public sector. As the Manual's author put it: "There is still a lot do be done in respect of studies on innovations and the development of a system of measurement used in gathering and interpreting data on innovations in the public sector. Work in this area could be the basis of a separate manual" (Oslo Manual 2008, p. 18). Consequently—secondly—an obvious observation can be made

Central and Eastern European Review

which affected my motivation to develop a formula for qualitative research and to look at policy and the innovation system in Poland from a different, qualitative point of view. As noted by OECD experts: “It is essential to feed the debate on policy issues with information and analysis of many aspects of innovation. Ideally, a comprehensive information system should be construed that covers all types of factors within the innovation policy terrain. This would place governments in a strong position to deal appropriately with any particular policy issues that might arise. In practice, only parts of such a system can be covered by indicators, while other parts call for qualitative information. (...) (The qualitative) indicators will only occasionally relate to a single factor or issue, and more often than not will relate to a range of matters and partially to each. Any broad information or monitoring system will also need to be supplemented with case studies where specific in-depth analysis is required” (Oslo Manual 2008, p. 42).

Proinnovation Policy in Poland—aims and methodology of research

Inspired by that research perspective and at the same time maintaining proportionality in terms of access to data, financing, creating the scenarios of growth and research methodology, I proceeded to use the grant provided by the Ministry of Science and Higher Education (MSHE) entitled “National Innovation Systems as a Model of Governance of the Public Sphere (no. 9003/B/H03/2010/38)”. The execution of the project was the culmination of my research conducted so far and involved the collection of empirical material. In this context I used the methodology of grounded theory (one of mid-range theories) according to which a given theory develops during systematically conducted field research from empirical data which relate directly to the observed part of social reality. Consequently, the theoretical proposals were not developed only by logical deduction on the basis of assumed axioms or assumptions. They arose from the deductive analysis of phenomena and processes, but through empirical research and in the case of grounded theory this is qualitative research which modifies and verifies according to a given reality. At this point it should be emphasized that quantitative research would not provide the answer to fundamental questions regarding the system structure, variables affecting a given structure, the kind of dependencies and mechanisms that operate in it, the type of applied policy and the ultimate structure of NISs, all of which are required to answer the questions of why and how? [Silvermann 2009, Konecki 2000].

Central and Eastern European Review

Qualitative research involved conducting detailed individual (free) interviews. In order to identify the respondents for such interviews I used the technique of purposive sampling. This resulted in two groups of respondents. The first included managers and directors of public institutions (ministries, agencies, councils, committees) that were responsible for the development, implementation and monitoring of regulations regarding the area of innovation policy in Poland, i.e.: Krzysztof Gulda—Director of the Strategy Department, MSHE, Beata Lubos—Head of the Division of Innovation, Ministry of Economy (ME), Piotr Żuber, Ph.D.—Director of the Structural Policy Department, Ministry of Regional Development (MRD), Joanna Podgórska—Director of Innovation and Technology Unit, Polish Agency for Enterprise Development (PAED), Leszek Grabarczyk—Deputy Director of the National Centre for Research and Development (NCR&D), Prof. Tomasz Domański, Ph.D.—Chairperson of the Science Policy Committee, Prof. Jan Kazmierczak, Ph.D.—Deputy Chairperson of Parliamentary Committee on Innovation and New Technologies, Polish MP. The other group included experts, scientists, and entrepreneurs dealing with issues of the governance of public policies, including the innovation policy who held or still hold public positions connected with it i.e. Prof. Jerzy Hausner, Ph.D.—Cracow University of Economics, Prof. Hubert Izdebski, Ph.D. University of Warsaw, Prof. Witold Morawski, Ph.D. Kozminski University, Prof. Krystyna Poznańska, Ph.D.—Warsaw School of Economics, Prof. Barbara Kozuch, Ph.D.—Jagiellonian University in Krakow, Prof. Andrzej H. Jasiński, Ph.D.—University of Warsaw, Prof. Jacek Sroka, Ph.D.—University of Wrocław, Krzysztof Matusiak, Ph.D.—University of Lodz, Mieczysław Bąk, Ph.D.—Deputy Chairperson the Polish Chamber of Commerce, Jan Szomburg, Ph.D.—President of the Gdansk Institute for Market Economics, Marek Woron—Chancellor of Lower Silesia Business Centre Club Lodge. The purpose of the research and of this article was to draw attention to the institutional, political, and legal issues concerning innovation policy and systems Poland, and specifically to determine the following variables:

1. the structure of NIS, namely:
 - its idea,
 - its system institutions,
 - the and significance of non-majoritarian / structured institutions,
 - the role and significance of specific segments of NIS,

Central and Eastern European Review

- the possible specialization of the system as a whole and its individual segments,
 - the problem of co-ordination and concentration of actions and means—the issue of an Innovation Council and
 - relations with other functional sub-systems.
2. Innovation policy in the Republic of Poland
- decision-making process—course and weak links,
 - objectives and means of innovation policy,
 - participation and legitimization and
 - national and regional policy.
3. European context
- legal solutions—own or imitative, coercive vs. mimetic and functional isomorphism,
 - financial possibilities—European trends and Polish perspective; and
 - role and tasks of Polish Presidency in the EU Council.

The issues listed above were subsequently operationalized by 25 detailed questions. This made it possible to formulate conclusions regarding the policy, structure, system and processes taking place as well as the consequences for the social system.

The last stage of research was the development of a mental map for the neo-institutional understanding of NIS and innovation policy, which subsequently made it possible to formulate a comprehensive analysis of cases described in the NIS literature in selected member states and in the Polish system. As a result of applying the comparative method and the assumptions of the comparatistic model and gap aspects (also known as the method of concomitant variables and the method of difference), I identified the similarities and differences between individual NISs as well as the conditions and paths of evolution of the Polish NIS. That last process is described in grounded theory as the constant comparative method and it verifies the theory and model with the pragmatics of actions taken in a given area. As K. Konecki or D. Silvermann put it, the methodology of grounded theory has modifiability and discursiveness, which means its construction is never complete. As a result, that theory can be subject to permanent transformations caused by the provision of new data, new processes, issues, and so forth. Furthermore, such a method only discusses the

Central and Eastern European Review

possibilities of accepting claims about a specific and separate area of social reality (NIS as a politically functional system), and as such it demonstrates the features of a mid-range theory. Such a perspective of ‘openness’ can be related to a thesis which is popular in the social and economic science methodology of R. Lipsey who wrote that during spontaneous transformations a given theory can never be ultimately invalidated nor confirmed and that the only thing that can be counted on is the discovery that one hypothesis is more likely based on a finite amount of imperfect knowledge (Lipsey 1989, pp. 131–63). This in turn relates to the opinion of M. Blaug who makes use of K. Popper’s falsificationism claims that in an empirical sense methodology is supposed to demonstrate not so much if specific models are true or false but whether they can be applied in a given situation, and so whether they are a form of pragmatic falsificationism and an antithesis of naive or sophisticated falsificationism (Blaug 1995, pp. 334–41).

At the beginning of my research I put forward seven research hypotheses which were subjected to falsification. I assumed that:

- A. The Polish innovation system is at a stage of development with no clearly defined scope of activities for individual actors within it (low, poor institutionalization).
- B. The existing non-majoritarian (structured) institutions are structurally and financially weak with no clearly defined mutual relations.
- C. The Polish NIS has no co-ordinator at the level of both sub-systems and individual segments.
- D. There is no clearly defined specialization of the Polish NIS, and consequently it is hard to focus actions and means on selected scientific and economic specializations.
- E. The objectives of the innovation policy are highly general and they do not match the social, economic, and institutional conditions of the country.
- F. The private sector is not prepared for responsible institutional and capital involvement within the existing NIS solutions.
- G. The Europeanization of the Polish NIS relates to coercive isomorphism at the expense of the mimetic and normative isomorphism.

Research findings together with conclusions and recommendations were divided into two basic parts: the structure of the system (the system and its environment) and innovation

Central and Eastern European Review

policy within the decision-making process. The first part includes the structure of the system, co-ordination within it, the role of the research and development sector, and of business environment institutions and enterprises; the other part includes policy objectives and tools, the decision-making process, participation and legitimization, the connections between national policy and regional policy as well as the European context.

I. The system and its environment

I A. The structure of NIS—the institutions of the system

Four types of institutions can be distinguished in the institutional structure. They are so-called primary institutions (developing and implementing that policy) and the secondary or auxiliary institutions (where innovation is not the core area but they are include in informal teams and they also have their own research budgets). The third segment includes executive agencies, established by and in order to assist in the performance of operations of primary institutions. The Industrial Development Agency (IDA) is an exception and a problem in terms of structurization. The fourth level includes institutions which demonstrate two characteristic features. On the one hand, they are holistically developed institutions of strategic management the operations of which involve the whole area of the state but naturally they also encompass the sphere of innovation policy. On the other hand, they are established specifically for that policy but their shallow (short) institutionalization and the search for their own identity prevent their straightforward classification as one of the three types of institutions presented above.

Analysis should begin with the Ministry of Economy (ME) which is identified as the initiator and entity sending out an initial impulse for action, and thus it is the leading institution. That role also arises from the *Act on the Division of Competences in Government Administration* and the directive of the ME as well as such plans and strategic documents as the Economy Innovation and Effectiveness Strategy. What is evidently unclear in this respect are the provisions of the National Reform Program (NRP) relating to the Europe 2020 Strategy as it provides that the ME shall be responsible for energy efficiency and the Ministry of Science and Higher Education (MSHE) shall be responsible for research and development policy.

The Ministry of Science and Higher Education is viewed by the ME as the main auxiliary institution involved in the area affected by innovation policy. It views itself also as a

Central and Eastern European Review

creator of that policy. Informal competition for dominance in that functional area is visible. The ME treats innovation rather broadly and sometimes that innovation disappears among other, equally crucial tasks, such as power generation, environmental protection, industrial policy and policy toward MSMSE (it is confirmed in NRP). The ME considers itself too large and functionally broad. On the other hand, MSHE treats innovation narrowly but as a new field and as an issue which is still a challenge, a kind of grassroots work (the provision of new acts and questions about the possibility and legitimization of their implementation).

The Ministry of Regional Development (MRD) is viewed by the two ministries mentioned above as a major player as well as a co-ordinator of the distribution of European funds. It is not, however, clear whether the growing relevance of that ministerial body arises from the strategic position which it wants or plans to take in the system or rather from the fact that it is the main distributor of European funds, which are a main tool of that, and not only that, policy. The MRD views itself as the main strategist of public policies. The document entitled the Assumptions of the System of Governance in the Development of Poland from 2009 which was developed by the MRD is supposed to serve that purpose.

The secondary institutions include: the Ministry of Environment, the Ministry of National Defense, the Ministry of Health, the Ministry of Internal Affairs, the Ministry of Administration and Digitalization, the Ministry of National Education. The operations of these ministries are characterized only by the initiatives connected with innovation (e.g. Green Technology Accelerator, e-learning programs, medicine technologies, government orders in respect of armament), so it is more executive than strategic or systemic.

In respect of executive agencies, the leading role is attributed to the Polish Agency for Enterprise Development (PAED), and that results from the following facts: the distribution of European funds, the development of analyses, systemic solutions, the supervision of the dissemination of information (Innovation Portal) and the delivery of such network pilot projects as: the National Service Network (NSN), the National Innovation Network (NIN), the Innovation Voucher (the only Polish project supporting innovation), the Academic Champion of Innovation and the Innovative Enterprise Club.

The National Center for Research and Development (NCR&D) is viewed as an agency of applied research which is supposed to react to the needs of companies and not only deliver special-purpose projects, but the Center's Board is defective because it lacks representatives of the Ministry of Finance (MF) which in turn views itself as a guardian of the finances and

Central and Eastern European Review

not as a creator and an entity co-responsible for developing public policy. In the joint opinion of the respondents, this does not help the achievement of innovation policy's objectives. Another disadvantage is the participation of representatives of the business community. This is important as the NCR&D is the only institution of the "system" whose members can include business representatives. This issue will be explored in more detail when presenting the participation of the enterprise sector in developing and implementing innovation policy.

The National Science Centre (NSC) is, on the other hand, an agency of basic research connected with the logic of the way the financing of higher education institutions and research units is shifting from subjective to objective—from statutory to purpose-oriented. It is viewed rather as an instrument of scientific or research policy and not of innovation policy.

The main problem connected with the IDA is the location of that institution since it deals mainly with issues connected with the restructuring of industry and Special Economic Zones (SEZ) as well as cluster policy in the future. It is governed by the Treasury Ministry which, however, does not consider innovation policy an area of its operations. Potentially, the IDA is capable of conducting proinnovation activities but as a result of the paradigm of operations of the Treasury Ministry, it assumes a different logic.

The fourth level institutions the activities of which are holistic by nature include the Board of Strategic Advisors to the Prime Minister, the Standing Committee of the Council of Ministers and the Economic Council to the Prime Minister. Due to their informal consulting and co-ordination character, the activities of the Board and the Committee, despite being conducted at a high level, are too general, barely co-ordinating and connecting with development or discussions about visions of the state. In the case of the Committee, there is no time for or culture of co-operation or discussion and rather there are rivalries, including discrepancies of group or ministerial interests. This situation does not favour building co-ordination. The Economic Council to the Prime Minister has a general character and not that of management or decision-making. It deals with consulting the general, holistic visions of the development of the state, and it is a barely effective attempt at communication between sectors.

The other kind of fourth level institutions are young institutions such as: the Science Policy Committee (SPC) as the auxiliary body to the MSHE and the Innovation and New Technologies Committee (INTC) as a new parliamentary committee. The SPC is looking for its role in the system and for the time being its operations include providing its opinion on

Central and Eastern European Review

drafts of laws and reporting on spending funds organized by the NSC, but its ambition is to set strategic directions, and in the future maybe even to serve as a co-ordinator. Its advantages are supposed to include its interdisciplinary and rotary nature, which provides the possibility of going beyond a sectoral approach.

The Parliamentary Innovation and New Technologies Committee is also looking for its own space and the idea for operations. Certainly it does not want to be and it does not view itself as a co-ordinator. It is rather an attempt to support the Government as often the dominant party policy erases governmental initiatives at the parliamentary committee stage. Another reason is the intention to focus on one committee of politicians interested in that subject and this results in an element of education for MPs about innovation. The Committee is supposed to be a place for meetings and discussions for other organizations in the system. It should be emphasized that most of the system's players believe the Committee is a very immature player; it is a common opinion that the Committee has highly (exclusively) political intentions. Its members' competences are very doubtful in this area of operations. The schedule of work and its "effects" so far have demonstrated that it is an element providing the Members of Parliament with information about issues connected with innovation rather than developing constructive solutions. Naturally, to a large extent, this can result from a short period of operation of that Committee.

As for the dynamic assessment of these institutions' operations connected with neo-institutional perspectives, it is primarily indicated that organizations are islands that do not develop a system, there is no culture of co-operation, there is no will or conviction about the necessity of co-ordination.

Furthermore, in the structure of ministries there are no separately defined substantial and managerial functions; there is no distinction between administrative and political levels. Too often instead of remaining at the level of strategic decisions, the ministers enter into the executive sphere in which they are no experts. This causes the dominance of *politics* over *policy* and corporate-departmental loops to operate (iron shackles, bonding capital). It is also emphasized that another pathology exists; namely the ministers are in charge of professional corporations which they head, whereas for the sake of efficiency and transparency of public policy they should be separated from them. Consequently, a conclusion can be drawn that as regards the innovation policy in Poland what we have is administration of the state and not governance.

I B. The issue of co-ordination—reasonability or failure to appoint the Innovation Policy Council to the Prime Minister of the Republic of Poland

As indicated above, there are no evident leaders of the system. The lack of leadership and co-ordination is evident, and informal, individual, and insular contacts are common. There is no political will to co-ordinate that sphere.

The few attempted informal co-ordinating activities include the Group for Innovation, with representatives of the ME, MSHE, MRD and the National Contact Point (NCP). The objective of that institution is to determine a “working” definition of the areas of support for the years 2014–20 in the allocation of European funds within innovation policy. There are also interpersonal contacts in the area of individual ministerial units; they are characterized as informal and demonstrate weak bonds, but they are unable to make any decisions or plans, and they can only provide consultation, information or opinions.

In the opinion of politicians, innovation does not need to be co-ordinated, and it should be implemented at the level of operations. The lack of co-ordination causes a lack of monitoring. Monitoring is present at the level of projects and actions, but not at the level of public policy. What we have here, then, is a program policy and not a strategic policy. There is no co-ordination between public and private entities, nor between central and local levels either.

In the opinion of the representatives of the ME and the MSHE, the Innovation Policy Council to the Prime Minister which was recommended to Poland in the ex-ante evaluations of innovation policy made by OECD should exist. The present co-ordination gap makes every initiative a sectoral undertaking.

On the other hand, a significant number of respondents emphasize that establishing another body does not guarantee the relevance of that area, its greater significance or better implementation because the insufficiencies in the area of innovation policy do not reflect a lack of structures, but a lack of trust, an inability to communicate, no patterns of co-operation and rivalry.

It is also clear that in the future the Council can be a bargaining platform for narrow interest groups which will distort the idea of co-ordination and subordinate it to the idea of bargaining and a narrow exchange of resources.

Central and Eastern European Review

I C. The NIS structure—the R&D sector

The sector's challenges include co-operation, research personnel mobility, internationalisation and interdisciplinarity.

There is no pressure for innovation in this sector, but there are bureaucratic and didactic pressures. These result from government policy toward the R&D sector as it was applied at the beginning of systemic transformation, because the streams financing science moved the center of gravity from research to education and, interestingly, in this context education was not qualitative but quantitative and conglomerate.

The future system trend will shift financing from statutory to contested funds and the concentration of funds around the best research and development entities.

I D. The NIS structure—the sector of Business Environment Institutions (BEI)

Most of over 770 BEIs in Poland are typical examples of *path-dependency*; they were bureaucratized and commercialized quickly and became targets themselves. They are not durable and they cannot operate without funds from the European Union. In fact it was the accessibility of these funds that spoiled the BEIs; they specialized too quickly and too superficially, and from application to application their names could be changed from a technology park to a cluster.

At present, there are too many of such institutions; they are too weak in terms of staff and capital, there is no specialization between them and they are not adjusted to the needs of the regions. In the scope of building a bridge between science and the economy, hard infrastructure is no longer a problem, but how exactly it can be used in partnership remains problematic.

The existing two networks of these funds (the National Innovation Network and the National Service Network) are examples of organizations which are static, superficial, and barely recognizable. The services offered by them are largely of low quality and for the most part they include auditing and technical assistance. The indicators of those institutions are not satisfactory for the entities which co-finance them e.g. PAED which pays PLN 3,500 per audit.

In order to increase their significance and efficiency it must be possible to charge the services as the value of operations performed free of charge for the benefit of an entrepreneur is considered low.

I E. The NIS structure—enterprise sector

The activity of the firms in the area of innovation policy understood as public policy is poor. This is connected with two main groups of reasons: awareness and legality.

Awareness (soft) aspects include external perceptions and expectations as well as internal mobilization, trust, cohesion and the rules of co-operation.

Externally, entrepreneurs are still viewed as profiteers, informal interest groups, and bonding capital.

It is emphasized frequently that the community is deeply divided, it does not have representatives or authorities, and a lack of co-operation is evident. The slogan that “mistrust is the core” comes from the community itself. Organizations often evolve through division and rebuilding, and division impairs growth.

The Polish Chamber of Commerce (PCC), which is not universally accepted, wants to become a representative and co-ordinator of the firms. The Congress of Entrepreneurship is the idea of the PCC to facilitate the co-ordination of innovation policy but there is no participation or acceptance of the PCC. Another platform of community integration is the Innovative Economy Congress, a new institution which started to operate in 2010.

Still, however, the area of public policy is identified by part of the business community as the area of lobbying for individual and not common benefits. It is a forum for policy directed against one another. This results from the fact that Polish business has not reached the level of saturation and it is still growing and is not ready yet to operate *pro publico bono*.

Consequently, autonomous dialog does not develop because there are no co-operation resources, and that in turn is the reason why only a simple allocation of resources can be done without a fundamental change in culture.

In the sense of legal regulations entrepreneurs, or rather their representatives, are a subject only in terms of the collective development of labour law and, additionally, the Trilateral Commission is not very efficient and so in effect the government makes decisions. The other legal condition is the fact that it is impossible for legal persons to set up associations, which impairs the representation of entrepreneurs in public policy areas.

The third aspect of the potential activity of firms in respect of innovation policy is the statutory presence in the Board of NCR&D. It is, however, a front as it is not the voice of

entrepreneurs because business communities actually designated different persons who are not connected with business. The result is the decreased representation of that community.

Business communities do not get involved in the Regulation Effects Evaluation (REE) process which deals with evaluation matters affecting them both directly and indirectly. However, REE itself has a lot of disadvantages (which will be presented later in the research), which can be an argument justifying the lack of involvement of that sector in the process. Another explanation of the lack of the activity of firms is also the fact that its representatives point out that the process amounts to a superficial/secondary legitimization of decisions which have already been made or else is a quest for a sponsor for public actions e.g. indicating firms which would like to be sponsors of the Polish Presidency in the EU Council.

For the time being, the idea of PAED to develop the Innovative Enterprises Club is not resulting in the expected growth in the activity and involvement of firms in the creation of proinnovation policy. There are no innovative firms in that institution; it is dominated by advisory and consulting firms whose priority is not the growth in innovativeness but the possibility to 'get' to PAED and in effect increase the chances of using European funds. The Innovative Enterprises Club has no clear definition of innovative firms. A clear definition of such criteria would result in a natural exclusion of previous stakeholders, and innovative firms would not get involved in that initiative. The attractiveness of that formula (which was used mainly for training purposes) was also a problem for so-called real innovators.

The business community also defines the tools, the introduction of which would increase involvement in research and development processes, so inducing innovation. The most popular of them have included tax credits, subsidies for co-operation and funding for the employment of R&D personnel (Dutch mechanism). Failure to meet these demands will result in firms not getting involved in innovations for a long time. Today many entrepreneurs do not purchase products or services from the domestic R&D sector because what it offers is too expensive, bureaucratized, poor in respect of marketing and implementation, and (most importantly) it is easier to source externally (imitation, import of solutions).

II. Innovation Policy

II A. The objectives and tools of policy

When defining the objectives of innovation policy, two kinds of activities can be distinguished:

Central and Eastern European Review

1. Fighting delays—all activities which are soft, organizational, and those concerning co-operation.
2. Building a future competitive edge—the identification and focus on leading industries, network co-operation, and developed forms of partnership.

Translating these points into how innovation policy is exercised, we can distinguish 3 models:

1. Imitative (unit, insular) innovation—development based on external (foreign) resources connected with a relatively high entrepreneurship factor and adaptability as well as poor building and durability of partnerships (e.g. PPP, P2P).
2. Creative innovation—new R&D resources on the side of the firms, simple forms of partnerships along the lines of science-business-administration.
3. Radical (systemic) innovation—very strong R&D centres, strong supply-oriented industry, complex partnership structures.

Poland makes use of the first model and finds it difficult to get to the second one. At present it is at the stage of structural (innovation) drift. Insular innovation is visible without the diffusion effect which is not acquiring the features of a systemic change.

In connection with the above, we can distinguish 3 possibilities of moving between individual models:

1. Organic recreation of specialization, retraining, adjusting to the changes in the environment but based on own resources—evolution/incremental activities.
2. Structural collapse—degenerative growth through crisis, collapse, rebuilding specialization.
3. Indirect (hybrid) form—major role of public authorities that recreate the process of transforming resources, strong support for building partnerships.

Structural (innovation) drift is connected with the phenomenon of a vicious circle of innovation policy in Poland which is characterized by the lack of feedback between individual actors involved in the innovation process which consequently results, on the one hand, in a

Central and Eastern European Review

low level of R&D expenditure and, on the other hand, in the low innovation indicators of research entities and firms. That phenomenon involves firms investing poorly in R&D and innovation, and additionally they do not build lasting relations with R&D entities, while the R&D sector does not generate innovation because it has not been statutorily obliged or financially motivated to do so (dominance of conglomerate education), and besides there is no likely recipient among the available enterprises. In this situation, the authorities (Government) do not see the necessity of increasing R&D financing because the volume of supply and demand is insufficient. This situation evidently demonstrates that we can talk about a single-case and short-term rationality as opposed to a systemic and strategic one.

The main reasons for (barriers causing) structural drift and the vicious circle of the innovation policy are:

- An evident lack of cultural configuration for the development of institutional and strategic governance. Innovation policy is not, in the operational sense, a priority for the state. It becomes one only in the discursive sense required by the European appeal (narrative). What we have, then, is some centrally defined (European) rules and old interests (standby debaters). Innovation is advertising for politicians and at the same time an empty slogan.
- The lack of cultural configuration activates the bonding of capital—iron shackles preventing changes, taming power, and preferring discretionary measures.
- The factors described above cause the distortion of institutional issues and the recovery or consolidation of departmental-corporate connections. The emerging development loops get pro-growth activities in a rut. Consequently innovation policy is insufficiently open and structured, and so it cannot absorb the public sphere's potential. Innovation public policy comes to mean political rationality and not public rationality (departmental-corporate politics).
- The dominance of a policy of strategy (Poland 2030, Intellectual Capital, Strategy of Innovation and Efficiency of Economy, Youth) which reflects global trends and problems which are immediately applied to programs and tools but without co-ordination or a vision of their compatibility with state governance.

Central and Eastern European Review

- No evaluation of innovation policy, only the reporting and evaluation of projects and actions under individual operational programs financed by EU structural funds. The situation is called a policy of programs.
- No division of objectives into strategic (long-term) and medium-term ones. Evident high variability of objectives (four-year-long political cycle) and susceptibility to external influence (coercive isomorphism). It has been stressed on many occasions that as long as structural funds are available, the Ministry of Finance will not increase financial flows for innovation policy at the expense of other structural activities, invoking the objective principles of budget discipline and a sustainable budget. Consequently, the only changes to which the decision-makers consent are organizational changes which do not generate the need for expenditure from budgetary funds e.g. changes in the system of higher education (!).

A large number of respondents emphasize that at present it is impossible to define the objectives and priorities for innovation policy.

It should be stressed that there are objective difficulties in effectively estimating the volume of expenditure on R&D which would cause the effect of scale and scope and consequently trigger systemic changes as well as competitiveness of firms based on innovation and creativity. In 2009, MSHE requested the World Bank to estimate such a volume of expenditure but that institution did not undertake that task.

II B. Innovation policy—the decision-making process

This is a policy of governance by sectors which results from the *Act on the Division of Competences in Government Administration* which assigns the area to the Ministry of the Economy as well as the *Act on the Principles of Conducting Policy Development* which talks about sectoral strategies (i.e. the Strategy on Innovation and Efficiency in the Economy), though they are supposed to be horizontal strategies. That confusion of notions does not favour the promotion of horizontality of policy.

When analyzing the decision-making process *sensu stricto*, the following three weak links can be distinguished:

1. that Regulation Effects Evaluation (REE) is a front and not a law-making norm,

Central and Eastern European Review

2. the structural weakness of the Government Legislation Center (GLC) and the Parliamentary Legislation Center (PLC),
3. the dominance of legal formalism in the legislative process.

The first point includes the presentation of ready-made legislative drafts rather than the assumptions of the drafts. This is because politicians are evaluated on the basis of the quantity and not quality of legal acts. There is no thinking about objectives but of regulations. Consequently, there is no increase in expenditure, delivery discipline or monitoring, and new laws are passed because they attract more media attention.

The Standard Model of Costs (SMC), which is an element of REE, is pure fiction; the calculations are unrealistic and inaccurate. There is no possibility of getting reliable financial data so GLC, originally responsible for the SMC, referred that to the applicants (i.e. the ministries), which have no interest in presenting reliable data because often it affects the assumptions and the enforceability of a drafted law.

The superficiality of consultations is clear as well as the dislike of a public hearing which is only used rarely. The stakeholders demand that the political center resolves disputes, usually in their favor, which in turn results from the lack of transparency of regulations. That is why it is best if it is always left to the center to interpret unclear provisions.

Regarding points 2 and 3, the HLC has no merit-related layer and the legal formalism dominates. That is why legal acts are well structured in respect of legislation but they include erroneous or absurd provisions regarding essential issues which they are supposed to regulate. What is emphasized in that context is a very limited role for experts; the way in which they are appointed raises reservations e.g. standing INTC expert.

The GLC is viewed as a critic and competitor for the legal departments of the ministries (silent conflict of competences). According to the executive, legislative, and bureaucratic theories of power, it is desperately looking for defects to justify its existence.

The role of the PLC is limited by politics and the pressure of politicians who pursue their political, not public, ambitions and interests through laws.

II C. Innovation policy—participation and legitimization

The public sphere is exclusive, closed, and unstructured. Politicians do not display a need to develop a policy for knowledge; the lack or weakness of party and public think-tanks is evident.

Delegating tasks, which under Polish conditions does not mean delegating the execution of tasks, is just the starting point. In effect, we are dealing with the creation of principal-agent type institutions and not trust agencies, which means that the agencies and committees have a low degree of independence and they are the extension or function of politics. They do not affect the efficiency of public policy.

II D. National and regional policy

There is no co-ordination or even channels of communication between the center and the regions. It is not exercised by the Joint Central and Local Government Committee or the Council of Marshals.

The IDA tried to initiate some co-ordination through the Regional Development Agency (RDA) but it failed as there was no coherent supervision. The Treasury Ministry did not deal with the co-ordination of regional policy.

II E. Innovation policy—the European context

What dominates is coercive isomorphism, a technological gap and imitative development. National activities (programs) are absolutely governed by the European Union's allocation logic and the "Innovation Voucher" is the only Polish program supporting innovation.

It is emphasized that there is no other concept of Polish European policy in that area apart from that of Operational Priority entitled the *Full Use of the Community's Intellectual Capital*, which is evaluated very differently. It was supposed to break the rich/poor pattern (convergence indicator) and to use resources which currently tend to be ignored, namely investment in human capital—i.e. soft and not hard (technological, infrastructural) resources. It was supposed to create a new opening for adding value. It was an attempt to resolve the problems/consequences of the past and at the same time to generate mechanisms and platforms for future development.

Central and Eastern European Review

That perspective was addressed by two closed-ended questions concerning the functional aspects of how support systems operated and about the key issue of building the NIS as a functional system.

Q. 1. Which of the functional aspects of support system operations is most significant (where 1 means low significance and 6 means high significance):

1. Motivation and improvement of business competences among enterprises—64 points
2. Transfer of technology and assistance in the execution of innovative undertakings—58 points
3. Development and extension of institutions dealing with the governance of innovation policy—58 points
4. Motivation and improvement of scientists' business competences—57 points
5. Reduction of the costs for starting economic and innovation activities—57 points
6. Direct assistance—34 points.

It was evident that the businesses for which this policy was designed need to be much more active. It was also clear that there is a need for direct involvement of that community in the execution of innovation processes. Furthermore, it was demonstrated that activity is also required on the part of business environment institutions and innovation policy governance. It was somewhat surprising that there was only a slight difference between positions 2 and 3 and position 4 (the latter concerning the business competences of scientists). Greater activity is expected from research and development workers. The elements connected with the necessary reduction of costs of starting economic activity were graded relatively poorly, which might suggest that the organizational aspects in Polish conditions are not, in the opinion of experts, significant obstacles to boosting entrepreneurship and the development of innovative activities. That point of view differs from many opinions formed by business communities. On the other hand, according to most analyses, direct assistance for entrepreneurs is the least significant aspect of the system. Summing up, it should be stressed that the general conclusion is a requirement for greater involvement in the implementation of innovation policy on the part of such key players as enterprises, business environment institutions, and research units,

Central and Eastern European Review

while existing organizational conditions are regarded as more or less sufficient for the job at hand.

Q. 2. Which of the following areas are crucial for building the NIS (where 1 means low significance and 4 means high significance):

1. Development of network relations, building partnerships and trust—55 points
2. Economic activation—the development of active social and economic attitudes—43 points
3. Stimulation of structural transformations (privatization, deregulation)—33 points
4. Alleviation of existing social tensions (unemployment, healthcare, social exclusion)—18 points

The first question addressed the subjective activity of individual actors involved with the NIS, whereas the second focused on objective factors (processes). In the case of that question, the differences are more evident. According to analyses, definitely the most crucial process required when initiating innovation processes understood as a system is the development of network relations and partnerships, and therefore the improvement of qualitative indicators of how social capital functions. It appears, therefore, that behavioral activity defined as economic activation should complement more general collective behaviours. Furthermore, there are indications of a need for structural transformations such as privatization and deregulation to assist innovation policy. Experts definitely regarded the alleviation of existing social tensions, such as unemployment, healthcare or social exclusion as least significant.

Synthesising the replies to these two questions highlights the need to activate collective behaviours on the part of business and public entities with a special emphasis on trust, partnership, and personal involvement. By contrast, structural changes are regarded, in relative terms, as of less significance.

Conclusions and recommendations

I. The innovation system and its environment

1. There is an evident need for the formal co-ordination of the operations of the so-called innovation policy primary institutions (ME, MSHE, MRD) and their executive

Central and Eastern European Review

agencies (PAED, NCR&D, NSC). The issue of the legal form for that co-ordination is open. Both the Innovation Council to the Prime Minister, as a completely new body, and the improvement and re-positioning of current consulting procedures between ministries have their strengths and weaknesses. In both cases the most significant issues concern the composition of these institutions, the scope of delegation of competences, including law-making as well as monitoring and financial competences, as well as the methods and quality of representatives of the system.

2. It is difficult to say which one of the existing organizations could assume that role and execute it effectively. Perhaps the Science Policy Committee could extend its activities in this respect—including the involvement of representatives drawn from the business community.
3. In the field of co-ordination activities, central and regional initiatives should be connected relatively quickly. The Joint Central and Local Government Committee or the Council of Marshals could be used in this respect. In the case of that first organization, the necessary, but not sufficient, condition could be the addition of the innovation policy team and, in the case of the Council, the representatives of the institution co-ordinating that policy centrally could be added after the Council has first been appointed. Furthermore, it seems that the formula of the recently appointed Development Policy Co-ordination Committee is too broad and adding another task would trivialize or blur that aspect of structural activities.
4. The lack of a co-ordinating institution generates the problem of the lack of effective monitoring. There is no comprehensive monitoring system but only the appraisal/evaluation of separate programs, actions and projects. An appointed co-ordinating institution should perform such an evaluation and monitoring as well as consolidate the previous random analyses into meta-analyses.
5. In the political and governing structures of ministries the essential (political) function should be separated from the governing (official) one. Otherwise, we are going to be dealing with politics and not public policy.
6. Institutionally, the strengthening of non-majoritarian institutions and their evolution from a principal-agent agency model to a trust agency model is necessary. Furthermore, their political independence from principals should be increased, especially in respect of personal and financial independence, particularly in respect of

Central and Eastern European Review

guaranteeing the possibility of obtaining funds for these institutions as an alternative to budgetary financing. Such activities would be desirable in respect of the PAED, the IDA, and the NCR&D.

7. In reference to operations of the non-majoritarian institutions, an evident flaw in the construction of the NCR&D includes its Board which evidently lacks representatives drawn from the Ministry of Finance, and in addition the representation of business communities is superficial—which substantially weakens the functionality and relevance of that institution.
8. In reference to BEIs, it is necessary to monitor effectively and reduce their number and specialization. It is also necessary to connect more closely the criteria of the appointment and durability of BEIs with the real needs of regional and local environments.
9. It is necessary to support the R&D sector financially in respect of building partnerships for interdisciplinary research as well as the creation and management of research networks and programs.
10. The business environment institutions created by higher education institutions should obtain separate (dedicated) financial and organizational support. In this respect the support of management personnel and the operations of young academic firms is most significant.

II. State innovation policy—the decision-making process

1. A clear definition of objectives and tasks for innovation policy. Today this is a medley of strategies, programs and plans with no clear division into strategic and operational objectives. The document entitled the *Assumptions of the System of Governance for the Development of Poland* (2009) did not change that situation in the area of innovation policy.
2. Unclear objectives are the result of the nature of the innovation policy sector. In order to make the policy holistic/horizontal it must be co-ordinated and the *Act on the Division of Competences in Government Administration* as well as the *Act on the Principles for Conducting Development Policy* must be amended.
3. In the case of innovation policy (the area which deals mainly with supply issues), the lack of economic self-government is becoming increasingly evident. This results in

Central and Eastern European Review

more and more common practices such as the pursuit of annuities, regulation control and bonding capital.

4. Lack of economic self-government is the reason why one of the key efficiency instruments of that policy should be initiating or 'enforcing' partnerships between employers' organisations.
5. A similar practice of 'enforcing' partnerships concerns the operations of business environment institutions as well as of the research and development sector.
6. Innovation policy cannot exist without dedicated mechanisms stimulating proinnovation activity by firms, including primarily the following: tax credits, subsidies for co-operation, and funds for the employment of R&D personnel (Dutch mechanism).
7. Organisational changes are also necessary in respect of the operation of the Government Legislation Center which cannot be viewed as a critic of Ministries' activities but as an institution which complements the operations of Ministries' legal departments.
8. Furthermore, merit-related initiatives must be included in the GLC's work.
9. Compliance with the REE's rules will be a challenge for the quality of statutory law. This is mainly about submitting bills and not ready-made laws, making social consulting more realistic, the more frequent use of public hearings and the need to make the mechanism of the Standard Model of Costs (SMC) more realistic.
10. The lack of mature and internalised European policy is also evident. Despite having interesting assumptions and being essentially sound as well as opening potential new possibilities for the support and development of one's own vision of European competitiveness, the initiative entitled the *Full Use of Intellectual Capital for the Community* during the Polish Presidency in the EU Council has actually no tangible effects or operational matrixes.
11. The lack of cohesion between the innovation policy and central as well as regional levels is clearly evident. Because of the coercive isomorphism the Regional Innovation Strategies are to a large extent a reply to the possibilities of financial support from the European level, which, due to the lack of a pre-emptive (anticipatory) European proinnovation policy, necessitates the use of a relatively automatic distribution of funds, only barely taking into account the real needs of the region.

Central and Eastern European Review

It can be concluded from the results of my research that innovation policy in Poland can be explained in a variety of ways. It is, however, unlikely at the moment for anyone to grasp all the issues involved in innovation policy because of its complexity, permanent development and the multi-level nature of processes. This is, however, why the area needs even deeper research in order to mobilize the right resources, build real development scenarios as well as to implement successfully and at the same time to shape the emerging development processes. Otherwise the scenario of constantly having to catch up, of having to adapt and of running out of simple resources and comparative advantages will become real. It is, however, important for all changes to be placed (embedded) within the context of the evolutionary reconfiguration of reality, in the process making use of the processes of co-operation, learning, and diffusion.

Central and Eastern European Review

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Central and Eastern European Review

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