

Academic public-private partnership: a solution for sustainable development

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Abstract—A chance of reviving the Romanian industry sector is to realize a special type of public-private partnership (PPP), made by universities or university consortia and companies from the private sector. This kind of project, based on the concept of industrial ecology, represent a valid solution adequate to the environment. The most important role in the project is the role of universities that can find viable partners in sustainable development projects, attract financing funds and offer flexible solutions for stimulating an active management.

Keywords—public-private partnership (PPP), sustainable development, Academia, communication flow

I. INTRODUCTION IN PUBLIC-PRIVATE PARTNERSHIPS

The public-private partnership (PPP) represents an agreement between two parties, one public and one private, and the justification of this is to obtain more efficiency in providing services to population or more value for money than traditional public services. PPP initiative can also appears when the availability of funds of the public sector is limited and it looks for private sector in order to implement its projects. The philosophy of creation of the PPPs is to ensure that all parties will benefit through the alignment of their resources and objectives (Yescombe 2007). PPPs arrangements can have very tangible and immediate benefits, while the private sector will see the opportunity to access to new markets/ products. In this arrangement public sector acts as principal and the private sector acts as agent, but it is obvious that the creation of PPP can provide a net gain, that means that total benefits in terms of productive efficiency minus the total cost of delivery.

The general advantages of the creation of the PPP are: reduced costs, efficient allocation of risk, faster implementation, good quality of services, and other additional effects. The costs associated with PPPs are uncertain and related to the resources to establish the partnership (internal/ external advisors) and to monitor the agreement, (including performance audits).

Public private partnership (PPP) is not new, but it should be better understand and should be utilized with more courage and professionalism. It represents an appropriate solution capable to support a balanced financing of innovation especially after turbulent periods. PPPs are based

on the right to operate the business over a longer period on behalf of government delivering a public service. At the end of the concession period the assets of PPP reverts back to the public sector. PPPs are capable to deliver many types of products and services (transport, utilities and energy, social services). First is necessary to define the opportunity (scope for, and potential benefit of, private sector involvement) and the appropriateness for PPP (the interaction between government and private sector partners). It is also necessary to identify policies, programs and approaches that encourage and facilitate PPPs, but also to understand the barriers that prevent the private sector from sharing the risks and rewards of participating in the partnership.

For a better understanding of risk management in PPPs is necessary to analyze risk allocation, contract changes, and additional financing issues. The main stages of the lifecycle of investments with structural restrictions are: planning, building and operation. After the global crisis, emerging countries are interested to develop strategic investments in a framework with limited public funds. Public funds will continue to play an important role in the development but is necessary to analyze the stimulus for realizing a greater private sector involvement. The universities add innovation and a special partnership that include this mixing could be more efficient due to this synergy. In the planning stage, the uncertainty of cost-benefits is high and in the recovery periods the focus is on how to best take advantage of the creativity, flexibility and financial capacity of the private sector to help meet the needs for better efficiency. Planning stage, the time before the investment decision, is view as an option; both, investment cost and value are uncertain. Building stage resembles a commodity forward contract, where the price is fixed, but market price is uncertain. After the construction, the operation stage resembles a bond contract that is commonly valued with net present value method (NPV). Estimation inaccuracy of the variables is present in all stages of the lifecycle.

In modern PPPs the contractual relations take a form of a long-term agreement between public and private entities. The contractual relationship between principal and agent are based on the precise definition of the tasks assigned to the private sectors, seen as an agent, and the measurement of the agent's performances for the whole duration of the contracts.

The management should identify and provide a global assessment of the risks associated with the development and implementation of a project. The potential risks include external environmental risks, industry risks, business/initiative risks (Thobani 1998). A low risk rating does not mean that the project should be undertaken and vice-versa, a high risk rating does not mean to not be undertaken, rather it identifies a need to mitigate some of the risks before proceeding with the project. The degree of risk to be borne by the private sector partner will determine the required return. The more risk the private partner is asked to assume, the higher the expected return. In emerging countries private firms feel that government wishes to pass all the risk (Pistor *et al.* 2000). The private sector will not be interested in opportunities in which government is unable or unwilling to offer rewards that are commensurate with risks the private sector may be required to accept. Proposals for PPPs that do not balance risks and rewards between the prospective partners have limited prospects of proceeding. Government needs to understand why the private sector requires a reward for sharing project risk (Dailami, Klein 1997).

Project manager is interested to maximize the attractiveness of a PPP opportunity and to ensure that the business opportunity is defined appropriately; so it makes sense from a business partner's perspective. The core principle is based on the concept of risk sharing inside the PPPs, because this involve many types of risks and the way of this allocation must be clearly defined in the moment of establish the arrangement.

II. THE IMPERATIVE OF FINDING INNOVATIVE SOLUTIONS AND THE USE OF PPPS FOR AN EFFICIENT SUPPORT OF THE RECOVERY AFTER MULTIPLE CRISIS

In the context in which the Romanian market economy – a young economy, undergoing a process of reconfiguration and re-construction – was subjected to structural reform regarding property, banking system, social protection policies, etc, the whole economical structure of the post-communist period started shaking due to the effects of the global economical crisis. The world economic crisis was thus experienced with a certain time delay, but with a higher amplitude and intensity in comparison to the rest of the regions, as a consequence of the internal amplifications generated by the incompleteness of the designed structural reforms and their implementation. As a consequence, the world economic crisis generated a system crisis in Romania, which is felt in all sectors, starting from the social one and ending with the political one.

The inefficient reaction to the crisis, especially the projective inefficiency, transfers credibility towards the private sector and the syndic organizations. On a background marked by lack of civic cohesion, the trade unions react spontaneously, and usually suggest reactive measures. But action efficiency and credibility from the point of view of the public opinion, still lie within the private sector, which need coordination coming from public organizations in structures and substructures where the structural reform is not completed yet. A pertinent solution is that of making PPPs,

which should be able to find innovative solutions for capital infusion in order to achieve the revival of the system.

The industry sector can be considered an adequate example for the present situation. Immediately after the fall of the state economy, a globally functional concept was implemented in this sector: the concept of industrial parks. Even if the origins of clustered industrial structure got somehow lost during the period of high industrialism, its implementation in Romania was performed out of the necessity of property transfer from the state towards the private sector, but also out of the need to reshape the landscape of the outskirts of the large industrial cities. Thus, mammoth buildings, large producers of waste and pollution, were gradually replaced by industrial parks, where the existing companies are observant of high environmental protection standards. In order to reshape the stark industrial landscape specific to the late modern era, central and local administrations offered fiscal support, like: subventions, tax facilities, contribution reductions, contribution deductions, tax absolutions for altering the usage purpose of land and buildings, reclaim of fiscal losses from profits made in following years, delaying the payment of VAT for materials and equipments up until the industrial park became operational and, especially attracting foreign investment and irredeemable funds. Although the program for the development of industrial parks attracted foreign capital, especially European funds, most of the projects were initiated by the public sector, especially by local administration authorities. In the context of the experienced crisis, most of the parks coordinated by local authorities displayed a certain lack of efficiency (Prelipcean, Boşcoianu 2008). This was also due to the fact that the process of “wild management buy-out”, characteristic for the beginning of the property reform in countries shifting towards market economy, including Romania, left deep marks into the Romanian economic sector.

The property redistribution was accompanied by a redistribution of power and by centers/areas of interests and stakes, while the outskirts of large industrial cities became areas of huge losses, seen on one hand as economic losses regarding state property, and on the other hand as losses of image related to the spoliation of state property. In the context of the effects of “wild management buy-out” on areas where private companies rented areas under the administration of public authorities, there was little room left for efficiency. Thus, the implementation of industrial parks proved to be a failure, the results being felt during the crisis. The old type of PPP, typical for the early period of property transfer towards the private sector in Romania and characterized by redistribution of power and state property spoliation, displayed its limits in the context of the profound structural crisis of the half-way reformed Romanian society which came in contact to the global economic crisis.

III. A SOLUTION OF LOCAL AND REGIONAL MARKET RECONFIGURATION: INVOLVING UNIVERSITIES IN MAKING PPPS IN THE AREA OF SUSTAINABLE DEVELOPMENT

Projects of reviving the economy on a general and the industry on a specific level should not relate to abandoning

the implementation of industrial parks. Industrial parks can become the foundation of the re-structuring process, if an appeal to projective measures is to be made. The type according to which the economic development does not only relate to measures producing short-term effects is the one related to sustainability or persistence.

Sustainable economic development is the type of development which targets the satisfaction of consumption needs, without causing any prejudice to projected needs of future generations. Although sustainability is perceived as being focused on the state of the environment, the aspects related to these, known as “the Brundtland principles” are the ones connected to the ambient, economic and social dimension. As long as the environment degradation is a collateral result of industrialization, the problem of designing sustainable industrial systems is highly stringent and is also according to the objectives set by environment policies, which state that environment policies should be integrated in sector policies. On the other hand, designing sustainable development should not look away from obtaining profit, so that different means should be found in order to reach environment, social and economic targets.

What does such a business development standard mean in the context of Romania’s structural crisis? It means the possibility of activating some of the public actors kept silent during the transfer of property from the state towards the private sector. The university milieu - the driving force of development and projective actions – was silent during the market reconfiguration in Romania. But the hopes for initiating technological projects and scientific research by attracting private sector partners are strongly connected to this milieu. One of the chances for revival is creating university consortia or independent involving the universities (Academia component) as managers of sustainable development projects in the industrial sector. Because sustainable development is consonant with the transformation of industrial parks into eco-industrial parks and because economic development also means quantitative and qualitative alterations both in the economic sector, in the sector of scientific research and development of production technologies, while the role of the Academia is a major one: re-designing a incentive and sustainable economic environment.

Involving the universities to re-design the industrial parks and transform these into ecological parks by creating PPPs with the local business milieu or by attracting investors eager to implement high standard ideas regarding the environment means meeting some of the requirements which are basic for a thorough design of environment-friendly business:

- Academia becomes the warrantor of a sustainable development, its constancy grants the chance to a long-term existence of the project;
- Academia insures a favorable milieu for environmental education and business development by protecting nature and not by exploiting it;
- Academia, as a major economic actor having a specific role in the reconfiguration of local and

regional markets, insures a judicious design of the long-term life standard.

In addition to this, making local or regional PPPs with the goal of achieving sustainable development, by using the university milieu as a major actor leads to eco-efficiency, to ecologic re-designing of industrial systems, to creating energy and material inset in order to make a more efficient production and to investments in natural capital (Mirata, 2005:32), all this in the context of researching for new environment-friendly technologies. Academia can play a very important role as a catalyst of different projection trends of worrying for future generations, including in the economic sector, by promoting industrial ecology, as a new science department dedicated to the implementation of sustainability in the industrial sector (the most pollutant of all economic sectors). Obtaining cyclic resources and facilitating the fundamental exchange between industrial systems leads to industrial symbiosis, one of the subfields of industrial ecology. This means achieving synergy relations between the activities of different economic agents and gaining profit by efficiently using resources. Irreplaceable resources and ecosystemic services including the human resource, mean types of natural capital, which can easily be depreciated. From this point of view, the university milieu contributes not only by setting the direction towards eco-efficiency, but also by involving and educating the human resource by considering the necessities of re-adapting to the environment.

IV. INSTITUTIONAL COMMUNICATION OF ACADEMIA IN ORDER TO ACHIEVE INDUSTRIAL SYMBIOSIS

The natural development of the industrial milieu can only be achieved by the gradual shift from the polluting mammoth industry, through the intermediary phases of industrial parks with a high level of energy loss, of by-products and waist, of eco-industrial parks, which re-use waste water, energy and waste, of industrial ecosystems including companies situated in the same habitat or in different habitats, up to industrial symbiosis, seen as a highly dependent relationship between companies which exchange matter and energy in a mutually profitable way, working for each other and contributing to each other’s wellbeing. Industrial symbiosis requires partner entities which should work together in a clearly bounded area, but also the possibility of crossing over the layout area, by contracting *over the fence* partners.

Activating the industrial symbiosis is not the mere result of partnerships having strictly economic targets, but it is first and foremost the achievement of an adequate coordination of all the components of the system, through the means offered by a multifunctional communicational network. The existence and the efficiency of such a network contributes to the coordination of the other levels of interoperability: the technical, economical and organizational level. The presence of one or more public actors also insures the implementation of adequate policies in order to achieve a highly friendly environment. Furthermore, public actors are asked to display a high degree of credibility, as mutual credibility leads to mutual agreements and mutual implication for the wellbeing

of the other. Or, as long as the institutional actors in Romania enjoying the highest degree of credibility are the Church and the Army, and not of these being fit for such partnerships, this fundamental role goes to the academic institution, which should be able to direct the efforts of local and regional authorities and representative economic actors towards the implementation of sustainable PPPs, implying an industrial symbiosis.

Academia is only able to create such a projective design if the policies and plans of institutional communication are adapted to the needs, meaning if the management of the Academia informational system shows a high level of performance. Thus, both dimensions are joined together in creating functional and flexible formal communication flows, based on complex collecting, storing up, processing and consulting information and on the necessary connections in order to activate these flows, both internally and externally.

Communicational flows are the neuronal network necessary for the implementation of the symbiosis concept within PPPs, while the process of creating ideas, models, methods, products and technologies is related to the central nervous system of the entire complex, represented by Academia. From this point of view the university must *open itself* to partners coming from the university milieu, from the regional or national public administration, from the business milieu, from NGOs, etc, through the means offered by the already mentioned peripheral nervous system. It should *innovate* on an educational level, on the level of research, on the level of implementing models, products and technologies through the means offered by the central nervous system (mostly represented by research centers, chairs and laboratories).

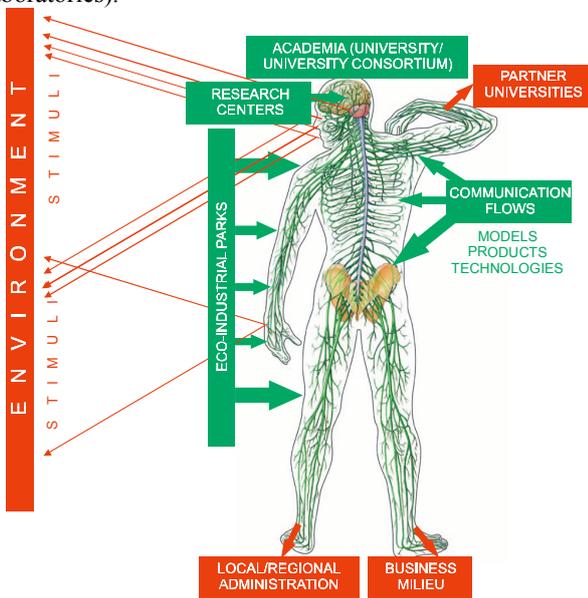


Figure 1. Communicational Flows of Academia

A viable Academia is a university which communicated, which receives and processes information from the environment, the one which transfers the innovational

process from its inner active circuits towards the outer environment, through the means offered by the peripheral neuronal network. This transfer of new information offers on one hand the opportunity of immediate implementation of the innovation with the purpose of creating benefits and, on the other hand, offers the possibility of making necessary adjustments. By opening itself (by communicating), the university achieves the institutional adaptation to the environment and sets a necessary academic milieu adequate to the environment for its own students.

V. VALUATION METHODS AND GLOBAL INDICATORS FOR THE EFFICIENCY OF PPPS

The project manager, representing Academia, should consider a set of criteria to assess whether the project is a good candidate for a PPP strategy: financial, operational, the acceptability (if there are public concerns that may reject the project or the involvement of a private partner); implementation barriers toward the private sector; technical reliability through a PPP); timing aspects. The project which appropriately addresses the above six criteria could be pursued as a suitable candidate for PPP. If a project fails on more than one of the general criteria, this does not necessarily mean that the project could never be appropriate for PPP, but rather, that one or more elements of the project may require further thought and potentially some scope adjustment to increase the likelihood of establishing a successful PPP. If the project fails to meet several of the criteria, it may be worth considering alternate approaches to undertake the project, including for example, a partnership of public sector agencies.

Project finance is essential in financing innovative Academic public-private partnership (A-PPP) investments. The strategy of financing may have a strong effect on the global profitability of a project. In innovative projects the leverage is higher and may dramatically change during the lifecycle of the investment with effects on the discount rate and the risk. The project manager should consider a range of financing issues in planning a PPP, including: the capability of the private sector financing to compete with public sector financing; the effective cost of borrowing (considering the exchange rate risk); the capability of private sector companies to respond to the problems of liquidity, specific in this type of projects; the availability/ eligibility for partnerships/ grants; the capability of government to provide financial support (recourse financing, subsidies, supplies, equipment) in an equitable and appropriate rate-setting framework. The way and the speed of resolution of these issues is essential in the formation of A-PPP.

In the strategy to attract private sector partners, the manager should consider different alternatives in detail. If in doubt about the appeal or structuring of a project, the manager should consider seeking input from potential private partners (Dixit, Pindyck 1994). Input for the private sector can be sought: informally before beginning the formal procurement process; by inviting formal comment from potential bidders on drafts; as part of the procurement process. One of the biggest challenges is the response of Academia as an innovational partner capable to fluidize the

process of A-PPP building. The private sector is concerned about intellectual property and the efficiency of technological transfer, but also on the commercial confidentiality in the participation. Involving the private sector in the approvals process enhances the opportunity for innovation, but can transfer risk to the private sector that many potential partners do not want to assume. To maximize value through A-PPP, the project should be structure so that each element is provided effectively and efficiently. One of the main advantage of A-PPP is related to the capacity of determining which party is in the best position to provide each element of the project, the project manager should objectively assess the core competencies of government and of the private sector. The project manager should consider the following aspects: the innovation stimulation, the technological transfer, the project design, procurement and construction, competitive financing, ownership of the facilities/ services, operations and maintenance, marketing. Many of the components of service delivery are logically bundled together, such as design-construction, ownership-financing, and operations-maintenance. It is important to consider bundling to determine whether combining various components leads to greater value for money than providing individual components. However, the project manager should investigate each component of service delivery on its own merits.

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Innovation should be better understanding and utilized correctly. Also it is important to design *special synergic ingredients* capable to respond to the main problems of the emerging markets related to the multiple crises consequences: the private loan failure, the global nature of liquidity crunch, the destructive power of the feedback loop, in which

weakening economic and financial conditions become mutually reinforced. Innovative solutions should *consider irreversibility /uncertainty*, the *managerial flexibility* component (the value of waiting, the possibility to postpone irreversible strategies) and profitability measures (Pindyck 1991).

Academia is the most important actor in our innovative model of partnerships: the A-PPP, that means promoting organizational communication, finding partners, attracting financing funds and building flexible and efficient solutions in order to stimulate an active management.

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