Public-private partnership as an instrument ensuring food security of penal institutions

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Abstract. The article considers the results of a study of the problem of ensuring food security in the penal system. Economic and legal models for the implementation of public-private partnership (hereinafter - PPP) mechanisms in the field of food security of the penal system have been developed. The reasons of inefficient organization of the processes of production, storage and consumption of vegetables in the institutions of the penal system are analyzed. An algorithm has been worked out for implementing a partnership between the institution of the penitentiary system and a private producer in the provision of services for the organization of production of crops, livestock, poultry and ready-made food products. The distribution of the results of these joint economic activities has been examined. The process of forming the cost of production of crops, livestock, poultry and ready-made food products has been substantiated.

1. Introduction
Among the main goals set forth in the Concept of the development of the criminal justice system of the Russian Federation until 2020 (hereinafter referred to as the Concept) is the increase in the efficiency of institutions and bodies implementing sanctions imposed at the level of European standards for the treatment of prisoners. Among the priority tasks that determine the achievement of this goal, it is worth highlighting the improvement of the quality and food supply of the penitentiary system. Measures aimed at ensuring food security and improving the work of logistics services have a significant impact on the parameters of food security for people held in penitentiary institutions. The importance of this problem can be explained by the fact that food security parameters determine the general level of detention, health and quality of life of prisoners in the context of the application of prison measures.

One of the important trends in solving the problem of ensuring food security in the penal system is to achieve the highest possible level of self-sufficiency in food. This tactic is aimed at creating conditions conducive to the elimination of threats: from the unstable market conditions; unfair performance of contractual obligations by suppliers; complications of procedures for the operational implementation of public procurement of food and other related products. It should be noted separately that the intra-system food production is a significant reserve for creating new jobs for prisoners.

The problem of creating new jobs for people held in the penitentiary system is relevant for solving a number of tasks defined in the framework of the Concept. To a large extent, this involves the creation of new types of institutions that enforce decisions in the form of imprisonment, and the development of new forms of work for prisoners in the new conditions of serving sentences. The solution of these problems is significantly mediated by the problem of creating new production capacities that can be
used as the basis for new types of institutions of the penitentiary system, in which a new ideology could be introduced to use the basic means of correction of prisoners with increased psychological and pedagogical work with the individual and his preparation to live in society. The priority improvement in this case may be the determination of equal working conditions for persons detained in the institutions of the penal system.

The issues of ensuring food security in the penal system were identified as the subject of research by Mitrokhina [1], Mishnin & Tsukanova [2], Piskunov [3].

The problems of organizing public procurement, including food purchases by the institutions of the Federal Penitentiary Service of Russia were considered in the works of Kozin & Ibragimov [4], Sedykh & Rodionov [5].

The issues of using socially useful labor as the main means of correction of convicts, as well as some aspects of creating new types of institutions that carry out sentences and interact with the business community, were developed in the works of Ragulin, Bagreeva & Shamsunov [6], Dibrova et al. [7], Kozin, Radchenko & Pyrchenkova [8] and others.

There are foreign authors who researched into the problems of applying public-private partnerships to achieve sustainability in the national infrastructure projects, including the agricultural sector: Bergere [9], Bult-Spiering & Dewulf [10], Caiyun et al. [11], Floor, Potters & Klerkx [12], Hodge, Boardman & Greve [13], Ranking et al. [14], Demmou & Wörgötter [15], Pinz, Roudyani & Thaler [16], Stevens & Kanie [17], Yescombe [18] and others.

We draw attention to the fact that, despite the considerable attention that was paid by scientists to the problem of the institutions of the penal system in the field of food security, as well as to the organization of work with prisoners and prison production, there are still many unaccomplished tasks that determined the goals of the Concept.

2. Results

The self-sufficiency of the Russian institutions of the penitentiary system with vegetables is not efficient due to some objective reasons related to infrastructure restrictions. In particular, there is the lack of modern specialized storage facilities for long-term storage of vegetables. The inability to guarantee a long storage cycle (12 months cycle until the next harvest) determines the high cost of the current consumption of dried and canned vegetables in the summer months. The inefficiency chain that arises in this situation is as follows (figure 1).

![Diagram of inefficiency in the processes of production, storage, and consumption of vegetables in the institutions of the Federal Penitentiary Service of Russia.](image)

The results of the analysis of the processes of agricultural production and food self-sufficiency in the Federal Penitentiary Service of Russia make it possible to formulate the following conclusions:
1. Non-current assets do not allow the efficient production and storage of agricultural products. There is no complete technical cycle for the entire chain of basic food products. Existing production chains show low efficiency. Updating fixed assets from the state budget is practically unrealistic, since according to our estimates one of the proposed 50-70 thousand jobs is estimated at 80 thousand rubles. This level of capital investment cannot provide for the re-equipment of production and agricultural machinery. It should also be noted that the speed of re-equipment will not contribute to an independent solution to this problem.

2. There is a deficit of working capital, to compensate for this process is possible only by dramatically reducing losses at all stages of the cycle from production to final consumption and increasing the turnover of working capital.

3. According to the existing staffing table for agricultural production, one can note the fact that it is not able to provide high productivity in livestock and crop production. There is a need to attract highly qualified personnel (agronomists, engineers, veterinarians, technologists, engineers, etc.) who have knowledge of modern and proven advanced high-performance technologies.

4. A significant part of people in places of deprivation of liberty are not occupied. At the same time, the use of labor of convicts as part of food self-sufficiency processes in the punishment system is a legally established requirement. The restraining factor is that convicts often have low qualifications. It should also be noted that many prisoners have low potential for recognizing a modern highly efficient production culture. Compensation for this factor is due to the new organization of labor, as well as the introduction of labor adaptation methods with the help of private contractors - issues that are strategic in nature and cannot be quickly resolved. It should be noted that at present, even in conditions of using outdated technologies, the participation of convicts in work in agricultural production is limited. Therefore, the study of ways to attract convicts to work in the penal system in agriculture and food production remains open.

5. In modern conditions, it is necessary to talk about the need to create new agricultural and food industries in a number of regional bodies of the national correctional system. Adequate budget financing of capital investments, lack of working capital and the presence of a highly professional team of specialists, the development of technological processes and reaching the design capacity of products may take 2-3 years. This is due to the important operating cycle in crop production and the complexity of working with livestock production.

Thus, in the current situation it is necessary to talk about the existence of a complex of financial, infrastructural and personnel restrictions that determine the impossibility of solving the issues of ensuring food security in the penal system within the framework of the existing model of production organization. In consultations with large agricultural producers, the following circumstances were identified that required consideration:

1. The average yield of vegetables in the open ground when you use your own material for planting (a number of enterprises do the job of choosing the right one or have their own material for planting) on land plots with a similar soil composition (compared to the arable land of agricultural units of the national penal system) 260-400 c / ha.

2. The cost of growing open ground vegetables in 2014-2016 was 6-7 r. / kg.; the estimated wholesale price during the collection period, taking into account the long-term storage services, is 9-11 p. / kg.

3. The regions today face problems of low utilization of modern long-term opportunities for storing vegetables. At the same time, large manufacturers experience problems with the sale of plant products.

4. The production of raw milk, organized at the enterprises, is a high-tech type of economic activity, indicating the new possibilities of working with living systems. This is the most important and technologically advanced link in the production chain for the production of drinking milk and dairy products, etc.

5. The technology for keeping dairy cattle at the most efficient enterprises has been tested for more than 3 years and continues to improve [5].

6. Purchase of raw milk at the studied enterprises and other farms of the region is theoretically possible in the warm season (probably in summer) and almost impossible in the cold season, when this
product becomes scarce. The average price of raw milk is 35 rubles / liter. The minimum wholesale price of sterilized packaged milk with a fat content of 2.5 % is 45-47 rubles / liter. The average annual cost of such a product on a significant scale of production is at least 42-45 rubles / liter [5].

7. The production of pasteurized milk with a fat content of 2.5 % within price limits is possible only with the use of modern food production technologies tested at private enterprises. The production of finished products within the framework of departmental price restrictions has little to do with the pure maintenance of the dairy herd. In this case, it is worth talking more about the industrial organization of the manufacturing the product with fat content and quality established within the framework of objective price restrictions.

8. The production of poultry meat can be carried out with sufficient net cost, but from the point of view of the food product, it is estimated by the average values of possible indicators of cost. Variable factors that determine the cost of production under the condition of a sufficient technological level of production are the quality of the hatching eggs used, the "purity" of the feed used, premixes and medicinal additives. Change in variable parameters determines the price and quality of products as inversely proportional indicators.

9. The restraining factor is the time that must be taken into account as the time taken to process the selected feeding technology and the maintenance of the poultry with the given qualitative parameters of the hatching eggs used. The development of a finished production technology can take up to 2 years.

Prospective directions for solving the problem of ensuring food security of the national correctional system.

Increasing the level of self-sufficiency in qualitative food products, as well as ensuring its stability, require substantial investment. The main sources of these investments can be the following:

1. Updating the production base of food production and the creation of appropriate jobs.
2. Accumulation of income from income-generating activities of production units of the national penal system to priority areas in the field of increasing the capital-labor ratio of agricultural and food production.
3. Attracting private investment through the public-private partnership projects. The food market in the penitentiary system of Russia is rather narrow and not interesting for large producers. However, it is necessary to take into account the interest and enthusiasm of small and medium-sized real producers in working under government contracts. The priority of this source of resources depends on its nature and on the fact that there are no objective restrictions on its quantity.

From the point of view of attracting external resources and potential for solving production problems in domestic penal production, it is important to solve the problems under study by creating public-private partnership institutions in the manufacturing sector of the penal system. In this case, we are talking about combining private funds, technologies, experience and human resources with the existing competitive advantages of the production sector of the penitentiary system. These advantages include:

1. Guaranteed implementation of constant volumes of products by state order.
2. Presence of a bank of agricultural land comparable to the corresponding areas of the largest Russian agricultural producers.
3. Preferences when participating in the auction under state contracts as compared to the institutions subordinate to other federal executive bodies.

In addition to issues of food self-sufficiency, we should also determine the need to create new jobs for convicts and to expand the network of existing correctional centers.

In this case, we should talk about the scientific prospects and practical directions of research related to the development and motivation of new (replacing) organizational and legal forms of management, involving the interaction of the production activities of the penitentiary system and private enterprises.

Partnerships between penal institutions and private producers can take various forms depending on the type of product being produced. Presumably there may be two forms of partnership:

1. Partnerships in the implementation of contracts for the purchase of services by private enterprises.
2. Establishment of partnerships and the creation and functioning of correctional centers with the simultaneous purchase of services.
3. Discussion
The development of model forms will be appropriate in the future if the proposed PPP programs are identified as effective ways to quickly solve the strategic tasks of ensuring food security [14] in the national penal system. It will be expedient to develop standard forms:

1. State contract for the purchase of production management services.
2. An agreement on the gratuitous transfer of fixed assets and / or property complexes of private owners for urgent use to the territorial bodies of the domestic correctional system [13].

However, you may encounter some problems. There is a need for timely repayment of accounts payable in a correctional center. It should be noted that, taking into account the peculiarities of production technology and organized business processes of some private enterprises, the implemented turnover parameters will make it possible to avoid the problem of accumulation of accounts payable [16].

We can also state that the national penal system may have to spend money on creating housing conditions where new correctional centers are being created. We assume that in operating conditions, modular pre-fabricated buildings with a capacity of 20-40 people are used. For the purposes of relocation of convicts, the costs of creating new buildings will be incomparably low compared with investments in the creation of new industrial property complexes.

4. Conclusions
The article presents the results of the analysis of the processes of ensuring food security of the national penal system. Directions for improving existing food supply systems have been identified. Means for improving activities on the creation of new modern industries and highly productive jobs for prisoners have been proposed. Some economic parameters of public-private partnerships in the field of organizing production and creating jobs for convicts in prison have been substantiated. Economic and legal models have been developed to ensure the effective operation of public-private partnerships in the process of ensuring food security in the penal system. The principles of transformation of the criminal executive policy in the direction of implementing the provisions of the Concept are determined. Promising areas of further scientific and practical work are formulated within the framework of the problems under investigation.

Federation with an emphasis on ensuring food independence and security of state bodies.

References
[1] Mitrokhina E 2016 Importance of managing food stocks in ensuring food security of the Federal Penitentiary Service International scientific-practical conference. Economic security: legal, economic, environmental aspects (Kursk Press) 179 - 80
[2] Mishnin M and Tsukanova T 2015 Problems of providing food security in the Russian penitentiary system Scientific Review Series: Economics and Law 2 49-54
[3] Piskunov A 2016 Investment resources in the agricultural production of the penal system as a factor in the food supply of the special contingent Russia's agri-food policy 12(60) 15-8
[4] Kozin M and Ibragimov O 2016 Multicriteria analysis of the target efficiency of labor adaptation of convicts as a tool to improve economic security Izvestiya Saratov University: Economics, management, law 2(16) 172-9
[5] Sedykh V A and Rodionov A V 2017 Ensuring food security in the process of formation and implementation of modern criminal Executive policy News of the criminal Executive system 11(186) 35-41
[6] Ragulin A, Bagreeva E and Shamsunov S 2019 Crimes in the sphere of business activity Trends of impact on business in the Russian Federation Journal of Environmental Treatment Techniques 7(3) 531-6
[7] Dibrova Zh,Nosov V, Ovchenkova G, Karpenko E, Pilyugina A and Erkovich E 2018 The main directions of the solution of the problem of food security in Russia International Journal of Mechanical Engineering and Technology 9(13) 387-94
[8] Kozin M, Pyrchenkova G and Radchenko E 2019 The role of public-private partnership in ensuring the economic security of the state Innovative Technologies in Environmental Science and Education ITESE-2019 E3S Web of Conferences 135(01101)

[9] Bergere F 2016 Ten years of PPP: an initial assessment. OECD Journal on Budgeting

[10] Bult-Spiering M and Dewulf G 2016 Strategic issues in public-private partnerships: an international perspective (UK: Blackwell Publishing Ltd) 16-8

[11] Caiyun C, Yong L, Hope A and Wang J 2018 Review of studies on the public–private partnerships (PPP) for infrastructure projects International Journal of Project Management 36(5) 773-94

[12] Floor G E, Potters J and Klerkx L 2019 Public-private partnerships as systemic agricultural innovation policy instruments – Assessing their contribution to innovation system function dynamics NJAS - Wageningen Journal of Life Sciences 88 76–95

[13] G Hodge, A E Boardman and C Greve 2017 Public-Private Partnerships: The Way They Were and What They Can Become: Public-Private Partnerships in Infrastructure Australian Journal of Public Administration 76(3) 273-82

[14] Rankin M, Nogales E, Santacoloma P, N Mhlanga and C Rizzo 2016 Public–private partnerships for agribusiness development – A review of international experiences (Rome: Food and Agriculture Organizatin of the United nations) pp 186

[15] Demmou L and Wörgötter A 2015 Boosting productivity in Russia: skills, education and innovation. OECD Economics Department Working Papers 1189

[16] Pinz A, Roudyani N and Thaler J 2017 Public–private partnerships as instruments to achieve sustainability-related objectives The state of the art and a research agenda (Public Manag. Rev) 20 1–22

[17] Stevens C and Kanie N 2016 The transformative potential of the sustainable development goals (SDGs) International Environment Agreements 16 393–6

[18] Yescombe E R 2011 Public–private partnerships: principles of policy and finance (Oxford: Linacre House) pp 368