# CIENCIA EN TIEMPOS DE CAMBIOS

Ö

Revista de Humanidades y Ciencias Sociales

Volumen 7 . Número Especial Julio / Septiembre 2020 ISSN 0719-4706

## REVISTA INCLUSIONES REVISTA DE HUMANIDADES VCIENCIAS SOCIALES

#### **CUERPO DIRECTIVO**

Directores Dr. Juan Guillermo Mansilla Sepúlveda Universidad Católica de Temuco, Chile Dr. Francisco Ganga Contreras Universidad de Tarapacá, Chile

Editor Drdo. Juan Guillermo Estay Sepúlveda Editorial Cuadernos de Sofía, Chile

Editor Científico Dr. Luiz Alberto David Araujo Pontificia Universidade Católica de Sao Paulo, Brasil

Editor Europa del Este Dr. Aleksandar Ivanov Katrandzhiev Universidad Suroeste "Neofit Rilski", Bulgaria

**Cuerpo Asistente** 

Traductora: Inglés Lic. Pauline Corthorn Escudero Editorial Cuadernos de Sofía, Chile

Portada Lic. Graciela Pantigoso de Los Santos Editorial Cuadernos de Sofía, Chile

#### **COMITÉ EDITORIAL**

**Dr. Jaime Bassa Mercado** Universidad de Valparaíso, Chile

**Dra. Heloísa Bellotto** Universidad de Sao Paulo, Brasil

**Dra. Nidia Burgos** Universidad Nacional del Sur, Argentina

Mg. María Eugenia Campos Universidad Nacional Autónoma de México, México

**Dr. Francisco José Francisco Carrera** *Universidad de Valladolid, España* 

**Dr. Pablo Guadarrama González** Universidad Central de Las Villas, Cuba

Mg. Amelia Herrera Lavanchy Universidad de La Serena, Chile

## CUADERNOS DE SOFÍA EDITORIAL

**Dr. Claudio Llanos Reyes** Pontificia Universidad Católica de Valparaíso, Chile

**Dr. Werner Mackenbach** Universidad de Potsdam, Alemania Universidad de Costa Rica, Costa Rica

Mg. Rocío del Pilar Martínez Marín Universidad de Santander, Colombia

**Ph. D. Natalia Milanesio** Universidad de Houston, Estados Unidos

**Ph. D. Maritza Montero** *Universidad Central de Venezuela, Venezuela* 

Dra. Eleonora Pencheva Universidad Suroeste Neofit Rilski, Bulgaria

Dra. Rosa María Regueiro Ferreira Universidad de La Coruña, España

**Dr. Andrés Saavedra Barahona** Universidad San Clemente de Ojrid de Sofía, Bulgaria

**Dr. Efraín Sánchez Cabra** Academia Colombiana de Historia, Colombia

**Dra. Mirka Seitz** Universidad del Salvador, Argentina

**Ph. D. Stefan Todorov Kapralov** South West University, Bulgaria

#### COMITÉ CIENTÍFICO INTERNACIONAL

Comité Científico Internacional de Honor

Dr. Adolfo A. Abadía Universidad ICESI, Colombia

**Dr. Carlos Antonio Aguirre Rojas** Universidad Nacional Autónoma de México, México

**Dr. Martino Contu** Universidad de Sassari, Italia

**Dr. Luiz Alberto David Araujo** Pontificia Universidad Católica de Sao Paulo, Brasil

Dra. Patricia Brogna Universidad Nacional Autónoma de México, México

## REVISTA INCLUSIONES REVISTA DE HUMANIDADES VCIENCIAS SOCIALES

**Dr. Horacio Capel Sáez** Universidad de Barcelona, España

**Dr. Javier Carreón Guillén** Universidad Nacional Autónoma de México, México

Dr. Lancelot Cowie Universidad West Indies, Trinidad y Tobago

**Dra. Isabel Cruz Ovalle de Amenabar** *Universidad de Los Andes, Chile* 

**Dr. Rodolfo Cruz Vadillo** Universidad Popular Autónoma del Estado de Puebla, México

**Dr. Adolfo Omar Cueto** Universidad Nacional de Cuyo, Argentina

**Dr. Miguel Ángel de Marco** Universidad de Buenos Aires, Argentina

Dra. Emma de Ramón Acevedo Universidad de Chile, Chile

**Dr. Gerardo Echeita Sarrionandia** Universidad Autónoma de Madrid, España

**Dr. Antonio Hermosa Andújar** *Universidad de Sevilla, España* 

**Dra. Patricia Galeana** Universidad Nacional Autónoma de México, México

Dra. Manuela Garau Centro Studi Sea, Italia

**Dr. Carlo Ginzburg Ginzburg** Scuola Normale Superiore de Pisa, Italia Universidad de California Los Ángeles, Estados Unidos

**Dr. Francisco Luis Girardo Gutiérrez** Instituto Tecnológico Metropolitano, Colombia

José Manuel González Freire Universidad de Colima, México

**Dra. Antonia Heredia Herrera** Universidad Internacional de Andalucía, España

**Dr. Eduardo Gomes Onofre** Universidade Estadual da Paraíba, Brasil

## CUADERNOS DE SOFÍA EDITORIAL

+ Dr. Miguel León-Portilla Universidad Nacional Autónoma de México, México

Dr. Miguel Ángel Mateo Saura Instituto de Estudios Albacetenses "Don Juan Manuel", España

**Dr. Carlos Tulio da Silva Medeiros** Diálogos em MERCOSUR, Brasil

+ Dr. Álvaro Márquez-Fernández Universidad del Zulia, Venezuela

**Dr. Oscar Ortega Arango** Universidad Autónoma de Yucatán, México

Dr. Antonio-Carlos Pereira Menaut Universidad Santiago de Compostela, España

**Dr. José Sergio Puig Espinosa** Dilemas Contemporáneos, México

Dra. Francesca Randazzo Universidad Nacional Autónoma de Honduras, Honduras

Dra. Yolando Ricardo Universidad de La Habana, Cuba

**Dr. Manuel Alves da Rocha** Universidade Católica de Angola Angola

Mg. Arnaldo Rodríguez Espinoza Universidad Estatal a Distancia, Costa Rica

**Dr. Miguel Rojas Mix** Coordinador la Cumbre de Rectores Universidades Estatales América Latina y el Caribe

**Dr. Luis Alberto Romero** CONICET / Universidad de Buenos Aires, Argentina

Dra. Maura de la Caridad Salabarría Roig Dilemas Contemporáneos, México

**Dr. Adalberto Santana Hernández** Universidad Nacional Autónoma de México, México

**Dr. Juan Antonio Seda** Universidad de Buenos Aires, Argentina

**Dr. Saulo Cesar Paulino e Silva** Universidad de Sao Paulo, Brasil



**Dr. Miguel Ángel Verdugo Alonso** Universidad de Salamanca, España

**Dr. Josep Vives Rego** Universidad de Barcelona, España

**Dr. Eugenio Raúl Zaffaroni** Universidad de Buenos Aires, Argentina

Dra. Blanca Estela Zardel Jacobo Universidad Nacional Autónoma de México, México

#### **Comité Científico Internacional**

**Dra. Elian Araujo** Universidad de Mackenzie, Brasil

Mg. Rumyana Atanasova Popova Universidad Suroeste Neofit Rilski, Bulgaria

**Dra. Ana Bénard da Costa** Instituto Universitario de Lisboa, Portugal Centro de Estudios Africanos, Portugal

**Dra. Noemí Brenta** Universidad de Buenos Aires, Argentina

Ph. D. Juan R. Coca Universidad de Valladolid, España

**Dr. Antonio Colomer Vialdel** Universidad Politécnica de Valencia, España

**Dr. Christian Daniel Cwik** Universidad de Colonia, Alemania

**Dr. Eric de Léséulec** INS HEA, Francia

## CUADERNOS DE SOFÍA EDITORIAL

Dr. Andrés Di Masso Tarditti Universidad de Barcelona, España

**Ph. D. Mauricio Dimant** Universidad Hebrea de Jerusalem, Israel

**Dr. Jorge Enrique Elías Caro** Universidad de Magdalena, Colombia

**Ph. D. Valentin Kitanov** Universidad Suroeste Neofit Rilski, Bulgaria

Mg. Luis Oporto Ordóñez Universidad Mayor San Andrés, Bolivia

**Dr. Gino Ríos Patio** Universidad de San Martín de Porres, Perú

Dra. María Laura Salinas Universidad Nacional del Nordeste, Argentina

Dra. Jaqueline Vassallo Universidad Nacional de Córdoba, Argentina

Dra. Maja Zawierzeniec Universidad Wszechnica Polska, Polonia

> Editorial Cuadernos de Sofía Santiago – Chile Representante Legal Juan Guillermo Estay Sepúlveda Editorial

> > REVISTA INCLUSIONES REVISTA DE HUMANIDADES VCIENCIAS SOCIALES

## Indización, Repositorios y Bases de Datos Académicas

Revista Inclusiones, se encuentra indizada en:





BIBLIOTECA UNIVERSIDAD DE CONCEPCIÓN



## CUADERNOS DE SOFÍA EDITORIAL

ISSN 0719-4706 - Volumen 7 / Número Especial / Julio - Septiembre 2020 pp. 850-864

## FEATURES AND PATTERNS OF MULTIFUNCTIONAL DEVELOPMENT OF AGRICULTURE

Ph. D. Olga V. Kosenchuk Omsk State Agrarian University (FSBEI HE Omsk SAU), Russia ORCID 0000-0003-1096-5722 oliakos55@vandex.ru Ph. D. Olga V. Scryabina Omsk State Agrarian University (FSBEI HE Omsk SAU), Russia ORCID 0000-0003-2700-6683 ov.bessonova@omgau.org Ph. D. Yuliya A. Diner Omsk State Agrarian University (FSBEI HE Omsk SAU) Russia ORCID 0000-0003-2787-7278 vua.gavrilova@omgau.org Ph. D. Dina S. Ryabkova Omsk State Agrarian University (FSBEI HE Omsk SAU), Russia ORCID 0000-0002-6605-3485 ds.ryabkova@omgau.org

Fecha de Recepción: 02 de abril de 2020 – Fecha Revisión: 22 de abril de 2020 Fecha de Aceptación: 15 de junio de 2020 – Fecha de Publicación: 01 de julio de 2020

## Abstract

This paper describes the features of the development of agricultural production and its functional ties with rural areas. They play an important role in providing food security of any country. The main purpose of this study is to identify the features and patterns of multifunctional development of agriculture on the example of Omsk region. It is a typical representative of Siberia. The paper makes a brief theoretical analysis of the development of agricultural production and rural areas by studying works of Russian and foreign authors. Most researchers connect the development of agriculture with the simultaneous development of villages. The others consider possible increase of efficiency in agriculture through the intensification of production and diversification of rural economy. The study identified positive and negative trends in the development of agricultural production and the functioning of rural areas.

### **Keywords**

Agriculture - Multifunctional development - Peculiarity - Regularity - Rural areas

## Para Citar este Artículo:

Kosenchuk, Olga V.; Scryabina, Olga V.; Diner, Yuliya A. y Ryabkova, Dina S. Features and patterns of multifunctional development of agriculture. Revista Inclusiones Vol: 7 num Especial (2020): 850-864.

Licencia Creative Commons Atributtion Nom-Comercial 3.0 Unported (CC BY-NC 3.0) Licencia Internacional

## Introduction

State support for agricultural production have specific forms and methods. The need to systematize them is due to the fact that at the moment, raising the economy of agriculture within the framework of the State program for the development of agriculture, the executive authorities began to use various methods of state intervention in the industry<sup>1</sup>.

The regularity of multifunctional development of agriculture and their state regulation are the subject of research of many Russian scientists<sup>2</sup>.

The works of Russian and foreign scientists<sup>3</sup> deal with the features of multifunctional development of agriculture and rural territories, their problems, resource potential and prospects. They reveal the possibilities of improving the quality of life of rural residents and increasing their incomes.

Program documents of agriculture in Russia and the world<sup>4</sup> are based on the paradigm of growth of agricultural production<sup>5</sup>. Aspects related to the sustainability of multifunctional agricultural development are the following: the state of agricultural science, agricultural education, environmental issues and some others. They should not fall out of the focus of the agricultural policy of the world powers with high agricultural potential. Scientific research deal with the long-term strategy of development of agriculture of Russia and the world<sup>6</sup>.

The study of trends, patterns and conditions of agricultural development allows identifying global trends, such as the process of agglomeration, migration outflow of the rural

<sup>&</sup>lt;sup>1</sup> N. G. Baryshnikova and D.Yu. Smarygin, "Strategic development of the agricultural sector: regional practices and forecasts", NivaPovolzh'ya, num 3 (40) (2016): 112-121.

<sup>&</sup>lt;sup>2</sup> N. M. Edrenkina, "Structuring of models of socio-economic development of rural areas by type", Ekonomikasel'skokhozyaystvennykhipererabatyvayushchikhpredpriyatiy, num 12 (2015): 28-31; I. A. Kolesnik, "State regulation of agriculture abroad", Vestnik Kras GAU, num 6 (2012): 306-309; A. L. Poltarykhin, Trends in the development of integration processes in the system of regional agroindustrial complex. 2016. 277-279 y I. V. Shchetinina, Innovative development of the agro-industrial complex of the regions of Siberia: problems and main directions, from: Innovatisionnoerazvitiye APK: mekhanizmyiprioritety: proceedings of Int. research and practice conf., 2015. 444-450.

<sup>&</sup>lt;sup>3</sup> R. Soldi, Evolution of the Budget Dedicated for Rural Development Policy. from: http://cor.europa.eu/en/documentation/studies/Documents/Evolution-Budget-Dedicated-Rural-

Development-Policy.pdf; F. Mantino, Rural development in Europe: politics, institutions and local actors from the 1970s to the present day, from: http://www.fao.org/ docrep/013/i2001 r/i2001 r.pdf y "Website of the 2019 Rural Development Report. Creating opportunities for rural youth". The International Journal for Rural Development. Rural num 21. 2019. from: https://www.ifad.org/ruraldevelopmentreport/

<sup>&</sup>lt;sup>4</sup> A. I. Drobunova, "European priorities in the management of rural development until 2020", NauchnyyzhurnalKubGAU, num 133 (09) (2016): 1-17; N. S. Morozova and E. V. Ivanova, "Rural development: foreign practices", Sotsial'no-ekonomicheskieyavleniyaiprotsessy, Vol: 10 num 6 (2015): 63-69 y N. N. Mukhametova, "Rural territories development basics: investment, strategy, practices", Rossiyskoepredprinimatel'stvo, Vol: 17 num 21 (2016): 2885-2894

<sup>&</sup>lt;sup>5</sup> M.- L. Augere-Granier, EU rural development policy. from: http://www.europarl.europa.eu/ RegData/etudes/BRIE/2015/568340/EPRS\_BRI (2015)568340 \_EN.pdf

<sup>&</sup>lt;sup>6</sup> N. A. Polushkin, "Problems and prospects of development Russian rural territories", Regional'nayaekonomikaiupravlenie: elektronnyynauchnyyzhurnal, num 1 (49) (2017); V. S. Potaev, "China's agriculture: reforms, status and prospects", VestnikBuryatskogogosudarstvennogouniversiteta. Ekonomik aimenedzhment, num 3 (2014): 59-64 y D. S. Khorunzhaya, M. A. and Nesterenko, "Strategic directions for the development of agriculture", Voprosynaukiiobrazovaniya, num 5 (50) (2019): 77-81.

population, the lack of social development in rural areas, the diversification of the rural economy, the introduction of digital technologies in agriculture.

The aim of research is to identify the features and patterns of multifunctional development of agriculture and determine its impact on the functioning of rural areas.

## Material and methods

The methodological basis of the study was formed by analysis and synthesis, comparison, generalization, contributing to the substantiation of the main conclusions and recommendations, as well as correlation analysis.

## Results

The diagnostics of development of rural territories for the studied period revealed positive development trends in agricultural production and functioning of rural territories. Theu include the increase in the number of workers in agriculture, the increased spending from the local budget on agriculture and others. At the same time, there are also negative trends in the rural development of the Omsk region, such as reduction in the number of rural residents due to migration outflow, reduced amount of state support for agricultural producers, and reduced capacity of energy resources. On the basis of the conducted research, along with positive and negative changes, there are indicators that have remained unchanged. They onclude provision of educational institutions and sports facilities, the number of doctors in rural areas, the proportion of workers with basic higher education, the ratio of wages of workers employed in agriculture to the average in the region, and mould content in arable land.

The study stated the objective laws of multifunctional development of agriculture, which are justified by the calculated correlation coefficients. The identified features and patterns indicate the relevance of issues of agricultural development and functioning of rural areas.

## Discussion

The basis of the currently developed strategy of long-term socio-economic development of the agro-industrial complex of the Russian Federation for the period up to 2020 is the concept of multifunctionality of the agrifood sector of the country. This concept has different aspects and allows achieving sustainable development of agricultural production with the balanced development of its subsystems. The multifunctionality of the agricultural sector creates conditions for the life support of the population, stable economy, preservation and development of rural areas, and for natural potential of the country<sup>7</sup>.

The features of multifunctional development of rural areas in different countries are based on different conceptual models of state support for the development of local spatial rural systems<sup>8</sup>. According to the theory of technological production methods in agriculture around the world, there are two trajectories of agricultural development.

ekonomicheskieyavleniyaiprotsessy, vol 10 num 6 (2015): 63-69.

 <sup>&</sup>lt;sup>7</sup> N. P. Sitnikov, Versatility of agriculture in the strategy of the development of Russian agro-industrial sector. Proceedings of: Nikonovskiyechteniya. Ekonomikaiekonomicheskiye nauki-2011, 49-51.
 <sup>8</sup> N. S. Morozova and E. V. Ivanova, "Rural development: foreign practices", Sotsial'no-

The first is the trajectory followed by countries of labor-saving technological mode of production (Europe, North America, Australia, Argentina, Russia, Kazakhstan). The second is the trajectory that was approved by the countries of the land-saving technological mode of production (Asia, North Africa)<sup>9</sup>.

Russia, India, and China are the countries where the export-oriented model of economic growth has been implemented since the beginning of the XXI century. Currently, these countries should choose a new development model, and the most important task of the state is to choose upon the strategic guidelines for economic growth. Universal strategic objectives in this area are innovations, use of resource-saving technologies, as well as special social tasks for rural development for each country.

The state program for the development of agriculture involves the introduction of resource-saving technologies, therefore, the economic return on factors of production should increase. The concentration of capital per unit of acreage in 2014-2030 is to increase by 30%, and the productivity of land, which directly depends on the concentration of capital, – by 50%. This should be achieved through land reclamation (public funding in the framework of target program will equal to 850 billion rubles by 2020) and use of new crop varieties. Strategic planning and long-term forecasting of economic growth in agriculture in Russia, India, and China after the use of more mineral fertilizers (expected double growth by 2030). The result would probably be an increase in grain crops yield by 17%: from 23.5 dt/ha to 27.5 dt/ha<sup>10</sup>.

One of the points of the state program is to increase labor saving in the agricultural production of Russia, since a sharp decline in the number of employees in agriculture is planned. To implement the state plan, this trend should change the downward direction to the upward one. By 2030, the number of tractors should be 6 units per 1000 hectares of arable land. The capital-labor ratio of one employee would grow by 20% during 2014-2030, and labor productivity, which is the value that is a function of the capital-labor ratio, would increase by 40%.

The problem of Russian agriculture is a underutilized arable land (or cultivated area). This situation should partially change, and 68% of arable land is to be sown by 2030. The area sown with grain crops would also grow by 4% during this period (see table. 2). As a result of the increase in grain yield by 17% and the acreage under grain by 4%, the grain production is expected to increase by 21%. Thus, Russia will probably export 52 million tons of grain against 37 million tons in 2014. That is, Russia's position on the world grain market would significantly strengthen.

Generally, the long-term forecast for the development of agriculture in Russia until 2030 confirms that the strategic plans for the development of agriculture can be implemented. Despite the fact that the main producers of agricultural products are now family farms in the form of peasant and personal subsidiary farms, neither the state nor society consider them the main production force of the village. State support for agriculture

<sup>&</sup>lt;sup>9</sup> I. V. Deryugina, Agriculture of the world: past and future 1980–2010– 2050 (Moscow: Pero, 2015). <sup>10</sup> A. H. Potosyan, Geographical features and development regularities of rural areas and settlements distribution in mountain countries. Annals of Agrarian Science. 2017. from: https://www.researchgate.net/publication/313623484\_Geographical\_features\_and\_development\_re gularities of rural areas and settlements distribution in mountain countries y "Website of the 2019 Rural Development Report. Creating opportunities for rural youth". The International Journal for Rural Development. Rural num 21. 2019. from: https://www. ifad.org/ruraldevelopmentreport/

is mainly focused on collective farms and agricultural holdings. The peasant (farmer) and personal subsidiary farms practically do not use system of agricultural subsidies and compensations for agricultural production, the purchase of elite seeds, cattle breeding<sup>11</sup>.

Most of the rural areas of Russia face problems that arise mainly due to globalization processes, demographic changes and migration of rural youth with secondary vocational and higher education. Therefore, the policy of regional and municipal authorities is aimed at revealing and using the advantages and opportunities in rural áreas.<sup>12</sup>

Some changes in agriculture in India during 2000-2014 can be observed in the yield of grain crops, which increased from 18.8 dt/ha to 21.0 dt/ha, and by the end of the forecast period it is expected to be 27.5 dt/ha. Attention is drawn to increasing the concentration of capital per unit of cultivated area in the background of the complete stagnation of the employee's capital stock. Despite the continuing enclaves of poverty and hunger, India's agricultural growth has been relatively strong and would continue to be strong in the forecast period. In 2014, India provided national payment demand for grain from its own resources and was a net exporter of grain crops (wheat, rice, maize). India exported 10% of the produced grain. A similar situation is expected to continue in 2030<sup>13</sup>.

Since the beginning of XXI century, China has made not only quantitative but a qualitative leap in agricultural production. The rate of growth of agricultural share in Chinese GDP since the beginning of the XXI century consistently exceeded 4%. China's share of world agricultural production increased from 22% in 2000 to 33% in 2014, while the share of China's population in the total world population fell from 20% to 18% during this period. In 2014, China produced 28% of the world's rice, 19% of wheat, and 21% of maize. In 2000-2014, the livestock sector experienced fundamental changes. China has become the world's leading meat producer, it ranks first in the world pork production and the second for broilers breeding. The annual growth rate of meat production in China during this period was 5.7%.

The agrarian reform carried out across the country has proved to be successful. If the grain yield before the reform grew by 2.1% per year, after the reform it grew by 4.9%. According to the calculations of the American economist R. Mead, three-quarters of the growth of labor productivity in China's agriculture from 1978 to 1984 were caused by agrarian reform, and only a quarter was a result of land cultivation methods improvement<sup>14</sup>.

As a result of agricultural reforms, the economic situation has stabilized, prices have decreased, the discrepancy between supply and demand has also decreased. Now the main production unit is the peasant "farmyard" that unites all family members and other relatives.

<sup>&</sup>lt;sup>11</sup> I. V. Deryugina, "Agriculture of Russia, India, China: strategic plans and development forecasts", Innovatsii i investitsii, num 11 (2016): 64-69.

<sup>&</sup>lt;sup>12</sup> O. V. Kosenchuk, "Multifunctional development of rural territories", VestnikZabaykal'skogogosudarstvennogouniversiteta, Vol: 24 num 1 (2018): 108-114; A. L. Poltarykhin, Trends in the development of integration processes in the system of regional agroindustrial complex. 2016. 277-279 y P. M. Pershukevich; L. V. Tyu and M. V. Stenkina, "The main directions of socio-economic research in the agricultural sector of Siberia: the present and the future", Dostizheniyanaukiitekhniki, Vol: 30 num 4 (2016): 9-13.

<sup>&</sup>lt;sup>13</sup> I. V. Deryugina, "Agriculture of Russia, India, China: strategic plans and development forecasts", Innovatsiiiinvestitsii, num 11 (2016): 64-69 y I. A. Kolesnik, "State regulation of agriculture abroad", VestnikKrasGAU, num 6 (2012): 306-309.

<sup>&</sup>lt;sup>14</sup> N. S. Morozova and E. V. Ivanova, "Rural development: foreign practices", Sotsial'noekonomicheskieyavleniyaiprotsessy, Vol: 10 num 6 (2015): 63-69.

They run joint farms, cultivate the land leased from the state, grow crops, and sell finished products by themselves<sup>15</sup>.

The strategic goal of China's food policy is full self-sufficiency in food, particularly in grain, meat and fish. This goal is to be achieved in the long term. Today to cover the national demand, China imports 4% of the necessary grain; in 2030 China will export the same share of the produced grain<sup>16</sup>.

The strategic goals of agricultural development of food security in Russia and China would be successfully implemented, agriculture in these countries would potentially be able to fully meet the domestic demand for basic food products (grain, meat, fish) and expand export opportunities.

In the United States, agricultural development has moved beyond recolving the life sustenance and socio-economic problems. Now they deal with introduction of renewable energy sources and the creation of viable and sustainable rural communities. Their vision for further development is to improve the whole range of conditions of the rural community, including such indicators of life as environmental quality, health, infrastructure, housing. This vision is based on the belief that rural residents deserve the same level and volume of services as urban residents, while maintaining the benefits of living in small settlements<sup>17</sup>.

One of the priorities of the EU economic policy is the state regulation of agriculture. In this regard, the approved common agricultural policy of the EU (CAP EU) provides for a system of guaranteed prices, regulation of the agricultural market, and customs protectionism in international trade. The introduction of a single agricultural policy and a unified policy for the development of rural areas is primarily due to the fact that not all EU membering states can afford the policy they need<sup>18</sup>.

The concept of agricultural development in European countries is based on the following approaches: sectoral, redistributive and territorial. The sectoral approach, implies that the main efforts of the state are aimed at supporting agricultural production, while it is believed that with the development of agricultural production, rural areas would also be developed. But when achieving sustainable development of agricultural business, rural areas have not received proper development, which caused the second redistributive approach. It is not only to support the agricultural business, but also to support other related industries. This approach did not bring the desired effect, and it was costly. With the reduction of the share of agriculture in the rural economy, EU state policy has been

<sup>&</sup>lt;sup>15</sup> V. S. Potaev, "China's agriculture: reforms, status and prospects", VestnikBuryatskogogosudarstvennogouniversiteta. Ekonomikaimenedzhment, num 3 (2014): 59-64.
<sup>16</sup> I. V. Deryugina, "Agriculture of Russia, India, China: strategic plans and development forecasts", Innovat sii i nvestitsii, num 11 (2016): 64-69; I. V. Deryugina, Agriculture of the world: past and future 1980–2010–2050 (Moscow: Pero, 2015) y N. I. Shagayda, "Long-term strategy for the development of agriculture in Russia and the world", Krest'yanovedenie, num 1 T(2) (2017) :161-165.

<sup>&</sup>lt;sup>17</sup> N. N. Mukhametova, "Rural territories development basics: investment, strategy, practices", Rossiyskoepredprinimatel'stvo, Vol: 17 num 21 (2016): 2885-2894; M.- L. Augere-Granier, EU rural development policy. from: http://www.europarl.europa.eu/ RegData/etudes/BRIE/2015/568340/EPRS\_BRI(2015)568340 \_EN.pdf y Agriculture and rural development. from: https://ec.europa.eu/agriculture/rural-development-2014-2020\_en

<sup>&</sup>lt;sup>18</sup> Agriculture and rural development... y F. Mantino, Rural development in Europe: politics, institutions and local actors from the 1970s to the present day, from: http://www.fao.org/ docrep/013/i2001 r/i2001 r.pdf

reoriented towards a territorial approach. Thus, only a systematic understanding of the problems of rural areas, coordinated actions and targeted spending of funds will create an environment that is convenient and attractive for rural residents. At the same time, the EU membering states independently develop programs for the development of rural areas (DRA), but they are based on the priorities established by the EU<sup>19</sup>.

Historically,the agricultural sector of the Southeast Asian countries had two types of economy: a large export-oriented plantation economy, and small peasant economy focused primarily on domestic consumption. Malaysia has almost completely abandoned the traditional image of agriculture, which provides, first of all, the food needs of the population. In this country, agriculture has become part of the production chain of the world economy, supplying agricultural products for further industrial processing. Almost all cultivated areas (87%) are occupied by perennial plantation crops (oil palm, hevea). Only 13% of the land is left for the cultivation of grain crops. As a result, 75% of the population's grain demand is met by imports, with 100% of wheat and corn and 35% of rice. Malaysia and Japan are the only countries in Asia where there is no agricultural overpopulation, but Japan is focused on self-sufficiency in food, and Malaysia - on its imports. As a result, Japanese agriculture can maintain its efficiency only with high government subsidies, and Malaysia - through the free market.

Currently, Indonesia is one of the most dynamically developing countries in agriculture. Since the beginning of the century, this country has expanded its cultivated area by almost 9.5 million hectares, including 7 million hectares under plantation crops and 2.5 million hectares under edible crops. There are good prospects for further expansion of the cultivated area. According to FAO estimates, the country has 50 million hectares of free potentially available for agriculture land. Agriculture in Indonesia, as in most Southeast Asian countries, has a two-sector structure, about half of the cultivated area is occupied by perennial crops (plantation economy). The share of agriculture in the GDP of Indonesia is 14.4%, and in the structure of employment (economically active population) - 39,4%<sup>20</sup>.

Vietnam's agriculture is one of the fastest growing sectors of the economy. Currently, agriculture produces 18.5% of GDP and employs 62% of the able-bodied population. The country has just started to form the diversified agricultural sector. Vietnam's agriculture is characterized by high rates of fixed assets accumulated during the period of development in the years of socialist orientation and concentrated in reclamation facilities, tractors, combines and other equipment. If consider the investment per unit of cultivated area, this figure in Vietnam is one and a half times higher than in China, and almost three times more than in any other Southeast Asian country. The agricultural sector of Vietnam is described by low capital productivity per unit of invested capital, which is a legacy of the socialist orientation, since fixed assets were mainly accumulated during this period<sup>21</sup>.

<sup>&</sup>lt;sup>19</sup> A. I. Drobunova, "European priorities in the management of rural development until 2020", NauchnyyzhurnalKubGAU, num 133 (09) (2016): 1-17 y F. Mantino, Rural development in Europe: politics, institutions and local actors from the 1970s to the present day, from: http://www.fao.org/ docrep/013/i2001 r/i2001 r.pdf.

<sup>&</sup>lt;sup>20</sup> I. V. Deryugina, Agriculture of the world: past and future 1980–2010– 2050 (Moscow: Pero, 2015) y P. Conforti, Looking ahead in world food and agriculture: Perspectives to 2050 (Rome: FAO. Rome, 2011).

<sup>&</sup>lt;sup>21</sup> I. V. Deryugina, "Agriculture of Russia, India, China: strategic plans and development forecasts", Innovatsiiiinvestitsii, num 11 (2016): 64-69 y N. I. Shagayda, "Long-term strategy for the development of agriculture in Russia and the world", Krest'yanovedenie, num 1T(2) (2017) :161-165.

A feature of the multifunctional development of developed countries is that agroindustrial integration is at the initial levels of development. While in developing countries more than 2/3 of the employed population works in agriculture, and in some of them it is 3/4, in economically developed countries this indicator is less than 1/10, and in the US only 2.4% of the economically active population. In fact many more workers are employed in the agricultural sector. For example, in STPA and Europe, one employed in agriculture accounts for more than 4-5 employed in other sectors of agriculture. Consequently, even in economically developed countries, about 1/5 or more economically active population are employed in agriculture. In economically developed countries, most of the land stock and the main productive capacities of agricultural production are concentrated in farms. The basis of the production is a family farm with minimal hired labor. Part of the land belongs to the state (1/4-1/3 of the area), large monopolies of agribusiness and the church. The picture is more mixed in developing countries. Averagely, more than 1/2 of the land is in communal ownership.

The most important aspect of creating a structure of employment of the working population that meets the needs of economic practice is improving the use of labor resources in agricultural production. The seasonality of labor in agricultural production is accompanied by high labor intensity of production processes in this industry, a significant proportion of low-skilled and unskilled labor in the total mass of labor costs. Excessive migration of agricultural workers to cities causes serious difficulties in improving employment relations and has a negative impact on the efficiency of agricultural production.

The main factor that creates opportunities for mitigation and gradual elimination of these negative phenomena is the currently unfolding process of development of agro-industrial integration. In this regard, there is a need for an in-depth study of the impact of agro-industrial integration on the development and improvement of employment relations in agriculture. The realization requires, in turn, a comprehensive analysis of the mechanism of action and use of the socialist law of population.

A modern feature of the development of agriculture is the introduction of digital technologies. Intensive introduction of digitization and the Internet of things in agriculture promises to turn the industry less susceptible to the influence of IT into a high-tech business due to explosive growth performance and reduction of unproductive expenditures, which are attributes of Agriculture 4.0. Currently there is an industry-sponsored project the goal of which is the transformation of the agro-industrial complex and a technological breakthrough that is to provide a twofold increase in the productivity in the 'digital' farms by 2024.

In solving socio-economic problems and territorial development, agglomerations occupy a significant place as a form of territorial space. Rural settlements, which have similar socio-economic patterns, trends and prospects for development, include land resources, agricultural production, resource provision, living conditions, customs, areas of specialization and cooperation determine the increasing role of rural agglomeration.

Being the form of a union of rural settlements, the agglomeration is a territorialeconomic system with intensive ties and interactions. Reproduction in the agro-industrial complex of the country as a whole and the regions takes place against the background of negative conditions caused by a reduction in production, migration, an increase in the number of loss-making farms, and the lack of equivalent inter-industry exchange. Excessive migration of agricultural workers to cities causes serious difficulties in improving employment relations and has a negative impact on the efficiency of agricultural production.

The problems of diversification in its various aspects are currently receiving increased attention. This is due to a number of reasons, such as conservation of raw materials for the development of the Russian economy, the search for effective means and mechanisms that are possible to overcome its monostructure, the need to form a national innovation system that would allow the country to become a more competitive participant in the global economic space, ensuring economic growth through new factors and sources, which are mainly investment innovative and knowledge-intensive. Among the multitude of diversification, the one of economic relations between the state and business is particularly important in modern conditions. The need to diversify the economic relations between these economic entities is due to the increasing scale and complexity of the problems in the socio-economic sphere, within the national economy, by increasing competition in domestic and foreign markets, increasing globalization of the economy, international and interstate alliances with their own economic interests in relation to national states and their economic entities. Diversification provides a wide range of opportunities for further development and improvement of these relations that are typical of varying degrees of complexity, efficiency, reversibility, and prospects<sup>22</sup>.

The analysis of the research results on the features and patterns of multifunctional development of rural areas (Table 1) found that one of the main positive trends is the increase in the number of workers employed in agriculture by 2.3%. The level of economic activity of villagers increases: in 2017, there were won the grants for the development of peasant farms and family livestock farms in the amount of 211.7 thousand rubles, which is 91% higher than in 2015.

Indicator	2015	2016	2017
The share of the average number of employees in the average number of employees of all organizations, %	15	15.2	17.3
The length of public local roads with hard surface owned by municipalities, km	11296	11419	11480
Single length of street water supply network, m	5359300	5571218	5592110
Single length of street gas supply network, m	5125832	5329040	5564497
Gross output of crop production per 1 ha, thousand rubles	11.6	12.1	12.2
Gross livestock production per 1 ha of arable land, thousand rubles.	8.0	8.6	10.8
GRP per 1000 population, thousand rubles.	168812	181210	191953
Grants won for 1000 people of the population, thousand rubles.	110.9	114	211.7
Income of the local budget (including non-repayable receipts and income from income-generating activities) per capita, thousand rubles.	20.7	21.5	22.6
Local budget expenditures on the national economy of the total per capita expenditure, rub.	825	905	1844
Expenses of the local budget for agriculture on 1 hectare of arable land, rub.	79	76	319

## Table 1 Indicators with positive dynamics

During the studied period, there was an increase in spending from the local budget on agriculture from 79 to 319 rubles per 1 hectare of the arable land. It allowed increasing the

<sup>&</sup>lt;sup>22</sup> N. N. Mukhametova, "Rural territories development basics: investment, strategy, practices", Rossiyskoepredprinimatel'stvo, vol 17 num 21 (2016): 2885-2894.

PH. D. OLGA V. KOSENCHUK / PH. OLGA V. SCRYABINA / PH. D. YULIYA A. DINER / PH. D. DINA S. RYABKOVA

volume of agricultural production in livestock husbandry by 35% and by 5.2% in crop production.

The sale of a bigger amount of agricultural products, as well as from non-repayable receipts, increased revenues of the local budget. Thus, this number per capita increased from 20.7 to 22.6 thousand rubles, or 9.2%.

The increase in spending from the local budget on national economy in rural areas by 1019 rubles (or 123.5%) per capita led to an improvement in the development of rural infrastructure. The length of water supply and gas networks increased by 4.3% and 8.6% respectively, as well as the length of local roads increased by 1.6%, including hard surface roads by 1.4%.

However, there are negative changes in the development of the villages of Omsk region (Table 2). There was a decrease in the population by 349 people or 8.7% due to migration, and the population density in the region decreased from 3.9 to 3.8 people per square kilometer. As a rule, economically active people of working age leave in search of work in other regions, so the number of the population employed in the territory decreased by 3112 people, or 2.5%. The employment of the rural population decreased by 0.6 percentage points and amounted to 15.5% in 2017. These processes affected the growth of the total demographic burden from 801 to 878 people per 1000 people of working age.

Indicator		2016	2017
Migration increase (decrease) of the population, people.		-5050	-4361
Rural population density, people per km <sup>2</sup>		3.9	3.8
Share of employed population, %	16.1	15.7	15.5
Number of economically active population employed in rural 125955		121617	122843
Total demographic burden on 1000 people of working age			
beople.		843	878
Number of municipal employees, people.	9020	8970	8815
Share of profitable organizations in the total number of agricultural organizations, %		78.7	77.2
Share of gross agricultural output in total agricultural output, %	28.4	28.4	26.5
Amount of state support per 1 ha, rub.		519	458
Cost recovery in agriculture, rub./rub.	1.5	1.1	1.1
Power availability of 1 average annual worker, HP	93.9	99.3	78

### Table 2

## Indicators with negative dynamics

The volume of state support for agricultural producers decreased by 24% in the region: in 2015 it amounted to 602 rubles per 1 hectare of the arable land, and in 2017 it was 458 rubles. The reduction of state support has affected, in turn, the reduction of the cost recovery in agriculture from 1.5 to 1.1 rubles (or 26.7%). As a result, the number of profitable agricultural organizations decreased by 1.8 percentage points. In 2017, their share in the total number of agricultural enterprises was 77.2%.

The volume of production by peasant farms remained at the same level, but against the background of an increase in the gross regional product of the agricultural sector, their share decreased from 28.4 to 26.5%.

During the studied period, there was a decrease in the capacity of energy resources per one average annual worker by 17%, as well as a decrease in the number of municipal employees in regional municipal districts by 2.3% or 205 people, Table 3.

Indicator	2015	2016	2017
Number of sports facilities and institutions of culture and leisure per 1000 people, units.		6	6
Number of educational institutions per 1000 people, units.	1	1	1
Number of doctors per 10 000 people, people.	20	20	20
Average age of employees in the DCS, years	45	45	44
Share of employees with basic higher education in the total number of employees with higher education in the DCS, %	27.2	27.3	27.2
Ratio of accrued wages of agricultural workers to the average wage in the region	0.8	0.8	0.8
Captured and neutralized pollutants as a percentage of the total amount of pollutants from stationary sources, %		25.2	28.8
Humus content in arable land, %	4.9	4.9	4.9

Table 3 Indicators unchanged in their dynamics

Thus, there is one secondary school and six sports facilities and cultural institutions per 1000 rural residents. The number of general practitioners in the village is 20 doctors per 10 000 people of the local population.

Along with the positive and negative trends in the agricultural sector, there is no progressive aging of employees of organizations. Their average age is 44-45 years. The share of workers with basic higher education, which is 27.2% of the total number of all agricultural workers, has remained almost the same. The ratio of accrued wages of agricultural workers to the average wage in the region has not changed and remained at the level of 0.8.

There were no significant changes in humus content in arable land (4.9%), as well as in the amount of captured and neutralized pollutants (28%).

The analysis of the development of rural areas of Omsk region allowed to determine the feature of their development depending on the density of the local population. There are areas with high population density (in suburban Omsk region it is up to 28 people per km<sup>2</sup>) and low density (in the Northern part of the region it is less than 1 person per km<sup>2</sup>).

There is a trend of increasing level of socio-economic development in areas with high population density and vice versa, the deterioration of the situation with a decrease in the number of inhabitants per unit area, figure 1<sup>23</sup>.

<sup>&</sup>lt;sup>23</sup>Federal state statistics service. from: http://omsk.gks.ru/.



## Figure 1

Dynamics of indicators in rural areas of Omsk region with different population density (author's development)

It is discovered that the areas with high population density are located near the regional center of Omsk, and they are home to a greater number of economically active population of working age. Densely populated areas have large agricultural and processing enterprises, most of which are profitable. It should be noted that the agricultural organizations located in areas with high population density employs more specialists with basic higher education and of a younger age than in areas far from the regional center of rural settlements. High qualification of specialists, closely located market (Omsk), and developed transport and logistics infrastructure helps attracting investment to the development of production. In its turn, its ensures the growth of labor productivity and increase of production. Thus, in LLC "Luzinskoemoloko" (Omsk region), the milk yield per cow amounted to more than 9000 kg per year, while in organizations in the North of the region (Bolsheukovsky district with a population density of less than 1 person per km<sup>2</sup>), the milk yield was 1500 kg per year.

In order to establish cause-effect relationships and patterns of rural development, the study carried out the pair correlation between the studied characteristics. It allows to identify the factors that most significantly affect the development of rural areas.

The previous studies identified the trends that are justified by a high positive correlation between the individual characteristics, Table 4.

Indicator	Number of economically active population employed in rural areas	Density of rural population	Amount of state support per 1 ha of arable land
Number of economically active population	1	0.7	0.6
Number of agricultural organizations	0.7	0.8	0.4
Gross output of livestock husbandry	0.8	0.8	0.8
Gross output of crop production	0.7	0.8	0.3

Table 4

Matrix of coefficients of pair correlation (fragment)

Thus, the population density indicator is closely correlated with the indicators of the number of economically active population employed in rural areas (the coefficient of pair correlation was 0.7); the number of agricultural organizations (0.8); the gross output of livestock husbandry (0.8) and crop production (0.8). The number of agricultural organizations directly affects the number of economically active population employed in rural areas (correlation coefficient 0.7). The volume of gross production of crop production (0.7) and livestock husbandry (0.8) depends on the number of workers. It should be noted that the livestock husbandry is the most labor-intensive with a long production cycle, so it needs additional funding. This fact is justified by the strong direct dependence of gross livestock production on the level of state support for agriculture (0.8). Also, there is a link between spending and receiving money from the local budget. It is known that the more income, the more finance the municipality is ready to spend on supporting agriculture: the correlation coefficient is 0.8. However, there is a negative relationship of these indicators with the rest of the studied features.

## Conclusion

Summarizing the above, it should be noted that the more rapidly the rural area develops and the more prosperous is its socio-economic condition, the less financial support is provided to the agricultural sector and the less is per capita income from the local budget due to the increased number of living and working population. The study of multifunctional development of agriculture with the account of the global features and patterns revealed positive trends associated with the increase in agricultural workers, increasing subsidies from the budget for agriculture, as well as the overall level of economic activity of rural residents. At the same time, the study highlights the indicators that can be referred to negative trends. First of all, these are the decrease in the population due to migration processes, negative dynamics in the volume of state support for agricultural producers, and a reduction in the capacity of energy resources. As a contrast to positive and negative trends, indicators that have remained unchanged are clearly seen. One of them is the ratio of the accrued wages of agricultural workers to the average for the region.

The research results and the established cause-and-effect relations between the features and patterns of multifunctional agricultural development are possibly useful to public authorities in making management decisions on efficient regulation of rural development.

## References

Agriculture and rural development. from: https://ec.europa.eu/agriculture/rural-development-2014-2020\_en

Augere-Granier, M.-L. EU rural development policy. from: http://www.europarl.europa.eu/ RegData/etudes/BRIE/2015/568340/EPRS\_BRI (2015)568340 \_EN.pdf

Baryshnikova, N. G. and Smarygin, D. Yu. "Strategic development of the agricultural sector: regional practices and forecasts". NivaPovolzh'ya, num 3 (40) (2016): 112-121.

Conforti, P. Looking ahead in world food and agriculture: Perspectives to 2050. FAO. Rome, 2011.

Deryugina, I. V. "Agriculture of Russia, India, China: strategic plans and development forecasts". Innovatsiiiinvestitsii, num 11 (2016): 64-69.

Deryugina, I. V. Agriculture of the world: past and future 1980–2010– 2050. Moscow: Pero, 2015. 128.

Drobunova, A.I. "European priorities in the management of rural development until 2020". NauchnyyzhurnalKubGAU, num 133 (09) (2016): 1-17.

Edrenkina, N. M. "Structuring of models of socio-economic development of rural areas by type". Ekonomikasel'skokhozyaystvennykhipererabatyvayushchikhpredpriyatiy, num 12 (2015): 28-31.

Federal state statistics service. from: http://omsk.gks.ru/.

Khorunzhaya, D. S. and Nesterenko, M. A. "Strategic directions for the development of agriculture". Voprosynaukiiobrazovaniya, num 5 (50) (2019): 77-81.

Kolesnik, I. A. "State regulation of agriculture abroad". VestnikKrasGAU, num 6 (2012): 306-309.

Kosenchuk, O. V. "Multifunctional development of rural territories". VestnikZabaykal'skogogosudarstvennogouniversiteta, vol 24 num 1 (2018), 108-114.

Mantino, F. Rural development in Europe: politics, institutions and local actors from the 1970s to the present day. from: http://www.fao.org/ docrep/013/i2001 r/i2001 r.pdf.

Morozova, N. S. and Ivanova E. V. "Rural development: foreign practices". Sotsial'noekonomicheskieyavleniyaiprotsessy, Vol: 10 num 6 (2015): 63-69.

Mukhametova, N. N. "Rural territories development basics: investment, strategy, practices". Rossiyskoepredprinimatel'stvo, Vol: 17 num 21 (2016): 2885-2894.

Pershukevich, P. M.; Tyu, L. V. and Stenkina, M. V. "The main directions of socio-economic research in the agricultural sector of Siberia: the present and the future". Dostizheniyanaukiitekhniki, Vol: 30 num 4 (2016): 9-13.

Poltarykhin, A. L. Trends in the development of integration processes in the system of regional agro-industrial complex. 2016. 277-279.

Polushkin, N. A. "Problems and prospects of development Russian rural territories". Regional'nayaekonomikaiupravlenie: elektronnyynauchnyyzhurnal, num 1 (49) (2017).

Potaev, V. S. "China's agriculture: reforms, status and prospects". VestnikBuryatskogogosudarstvennogouniversiteta. Ekonomikaimenedzhment, num 3 (2014): 59-64.

Potosyan, A. H. Geographical features and development regularities of rural areas and settlements distribution in mountain countries. Annals of Agrarian Science. 2017. from: https://www.researchgate.net/publication/313623484\_Geographical\_features\_and\_development\_regularities\_of\_rural\_areas\_and\_settlements\_distribution\_in\_mountain\_countries

Shagayda, N. I. "Long-term strategy for the development of agriculture in Russia and the world". Krest'yanovedenie, num 1T(2) (2017) :161-165.

Shchetinina, I. V. Innovative development of the agro-industrial complex of the regions of Siberia: problems and main directions, from: Innovatsionnoerazvitiye APK: mekhanizmyiprioritety: proceedings of Int. research and practice conf., 2015. 444-450.

Sitnikov, N. P. Versatility of agriculture in the strategy of the development of Russian agroindustrial sector. Proceedings of: Nikonovskiyechteniya. Ekonomikaiekonomicheskiye nauki-2011, 49-51.

Soldi, R. Evolution of the Budget Dedicated for Rural Development Policy. from: http://cor.europa.eu/en/documentation/studies/Documents/Evolution-Budget-Dedicated-Rural-Development-Policy.pdf

United States Department of Agriculture Economic Research Service. from: http://www.ers.usda.gov

"Website of the 2019 Rural Development Report. Creating opportunities for rural youth". The International Journal for Rural Development. Rural num 21. 2019. from: https://www.ifad.org/ruraldevelopmentreport/

# CUADERNOS DE SOFÍA EDITORIAL

Las opiniones, análisis y conclusiones del autor son de su responsabilidad y no necesariamente reflejan el pensamiento de **Revista Inclusiones**.

La reproducción parcial y/o total de este artículo Puede hacerse sin permiso de **Revista Inclusiones, citando la fuente.**