

ENERGY SAVING AND ENERGY EFFICIENCY IN FOOD INDUSTRY: REVIEW OF THE REGIONAL PROBLEMS AND SOLUTIONS

**Murmansk State Technical University (MSTU)
Institute of natural science and technology**

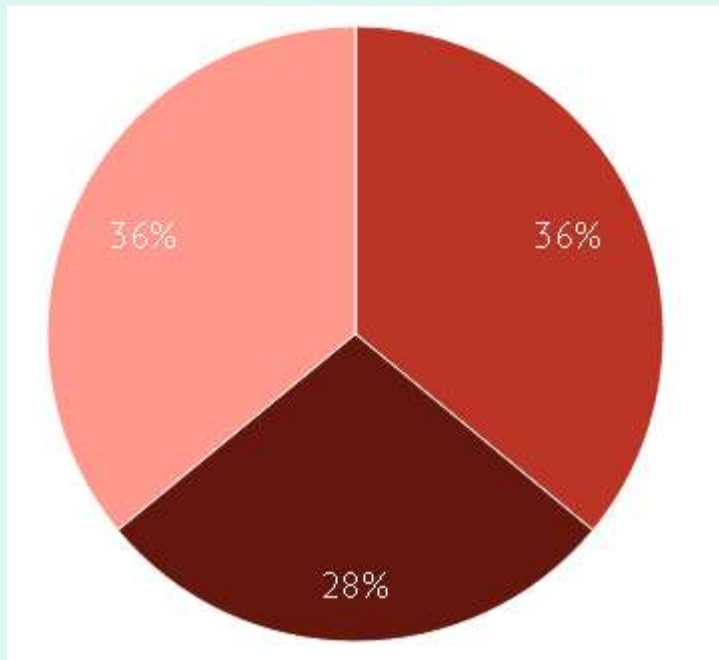
Shokina Yuliya

Doctor of Technical Sciences, professor

Topical

- **Energy saving and energy efficiency as a necessary condition and an actual goal of development of the Russian and regional economy**
- **Normative and legal acts regulating the issues of energy saving and energy efficiency in the economy of the Russian Federation**
- **Regional food and processing industry: issues of energy conservation, the solutions to the problems of energy saving and energy efficiency**
- **Prospects of cooperation in the field of energy saving and energy efficiency increasing in the Murmansk region food production**

Energy saving and energy efficiency as a necessary condition and an actual goal of development of the Russian and regional economy



Murmansk Region: major activities

36 % - mining;

28 % - production and distribution of electricity, gas and water;

36 % - other activities, including food processing industry and fishery of the region

Energy saving and energy efficiency as a necessary condition and an actual goal of development of the Russian and regional economy

Murmansk region: the major industries from the "other" category



military-industrial complex



non-ferrous metallurgy



fishery



transport and logistics

Energy saving and energy efficiency as a necessary condition and an actual goal of development of the Russian and regional economy

The share of industry in the gross regional product in 2014, percentage of total (Murmanskstat agency data)

10.1 % - fishery (24,609 bill. rubles);

12.2 % - mining;

12,5 % - manufacturing.

Energy saving and energy efficiency as a necessary condition and the actual goal of development of the Russian and regional economy

- The aggregated index for the main industries – "Mining and quarrying", "manufacturing", "Production and distribution of electricity, gas and water" was 106.8 % compared to 2014 (high growth + 6.8% the northwestern Federal district)
- The index of physical volume of investments into fixed capital in the industrial production in the region in 2015, up 102.5% to 2014 (reducing in other regions of the NWFD from 10 to 24 % compared to the previous year).

The share of costs on fuel and energy in the industrial products, %
(<http://www.energsovet.ru>) 2013

Segment	All countries	Advanced economies	Emerging economies	BRICs	Russia
Refining	61,6	59,4	70,6	68,4	54,7
Building materials	11,8	7,2	12,7	6,5	13,2
Metallurgy	7,3	5,8	8,3	9,9	11,7
Chemicals and petrochemicals	3,9	4,9	3,5	10,0	9,9
Paper	3,2	3,6	2,9	4,0	9,6
Rubber and plastics	5,3	3,4	6,8	7,8	4,1
Transport equipment	3,2	1,3	5,6	2,4	2,9
Machinery	2,0	1,4	2,7	4,0	3,7
Electronics	1,5	1,7	1,4	2,2	2,9
Textile	3,0	2,3	3,3	2,5	5,1
Food	2,3	1,7	2,5	1,9	3,1

Normatives and laws for regulating the issues of energy saving and energy efficiency of the Russian economy

Federal law of 23 November 2009

no. 261-FL

"On energy saving and energy efficiency enhancement and on amendments to certain legislative acts of the Russian Federation"

establishes the law, organizational and economic basis for stimulating energy efficiency, including mandatory energy audits for organizations

The regional food industry: issues of energy saving and energy efficiency, solutions

The state program of the Murmansk region "Energy efficiency and energy development" (app. 30.09.2013)

Goal: reliable supply of the region with fuel and energy resources and their effective use

Tasks:

- reduction of energy consumption in the region and increasing of efficiency in production, transmission and consumption;
- modernization of the fuel and energy complex in the region;
- providing of effective activity in the sphere of implementation of the state program

Regional food and processing industry: issues of energy efficiency

The state program of the Murmansk region
"Energy efficiency and energy development"

Includes 3 subprogrammes

- Promotion of energy conservation and energy efficiency in Murmansk region
 - The development of fuel-energy complex
 - The implementation of the state program

Regional food and processing industry: issues of energy efficiency

The state program of the Murmansk region
"Energy efficiency and energy development"

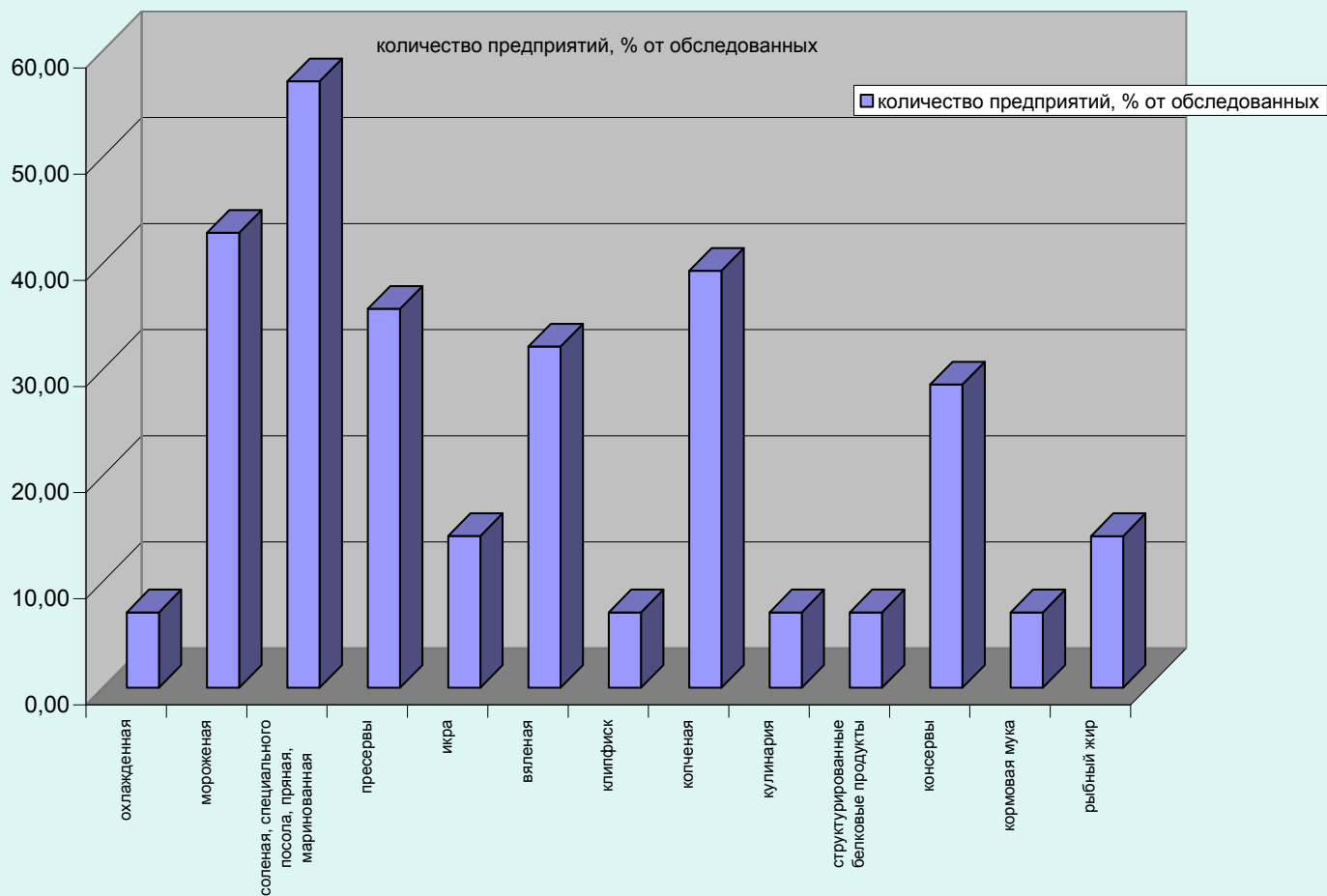
contains a selected group of targets:
for saving the individual energies;
energy saving in the budgetary;
energy saving in the housing;
energy efficiency in municipal infrastructure;
energy saving in the transport.

Regional food and processing industry: issues of energy efficiency

Regional issues:

1. High proportion of obsolete energy-intensive in the industry.
2. Low priority of measures for improving energy efficiency in the strategic development plans of enterprises.

Regional food and processing industry: issues of energy efficiency

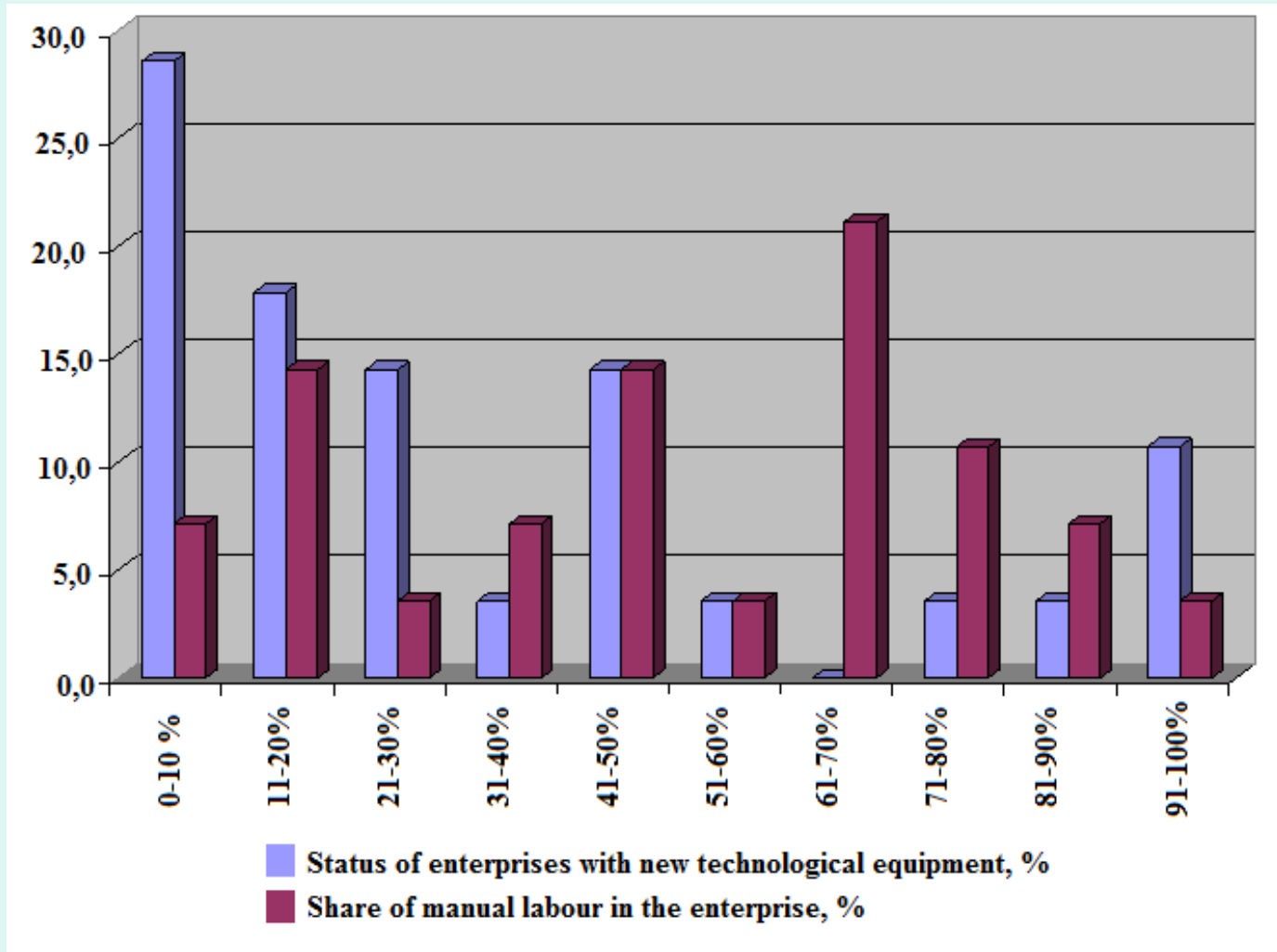


Regional food and processing industry: issues of energy efficiency

Peculiar properties of small and medium enterprises in the region

- the prevalence of the technology of cold smoke over hot smoke;
- the absolute dominance of the traditional cold smoking above the smokeless technologies;
- the predominant use of obsolete and physically worn-out equipment for fish smoking (smoking chambers & generators);
 - a high proportion of manual labour;
- a wide assortment of products (up to 20 items) with small (100 kg to 1 t per day) production volumes for each product range.

Regional food and processing industry: issues of energy efficiency



Regional food and processing industry: solutions

Specialists of Natural Science & Technological Department and Marine Institute are actively working for improvement of the most energy-consuming technological processes of food production:

- 1) pre-heat treatment of semi-finished food and sterilization in the production of canned food;
- 2) dewatering and heat drying,
- 3) smoking and drying.

Develop methods of energy audit of technological equipment;

Implement advanced developments in the educational process, preparing professional engineers for the solution of energy efficiency tasks.

Prospects of cooperation of science and development in the field of energy saving and energy efficiency

- Collaborative mutual program for the study of students, undergraduates and post-graduates of the best world experience in the field of energy saving and energy efficiency of food production.
- Collaborative research programmes in the field of energy saving and energy efficiency of food production.



THANKS FOR YOUR ATTENTION