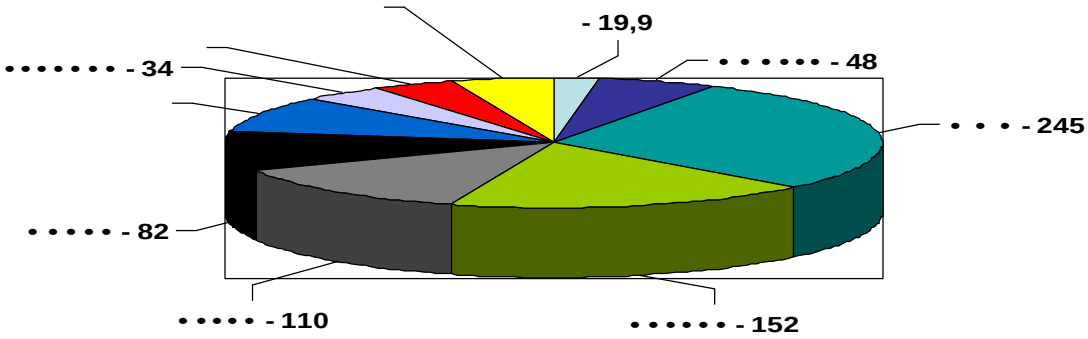
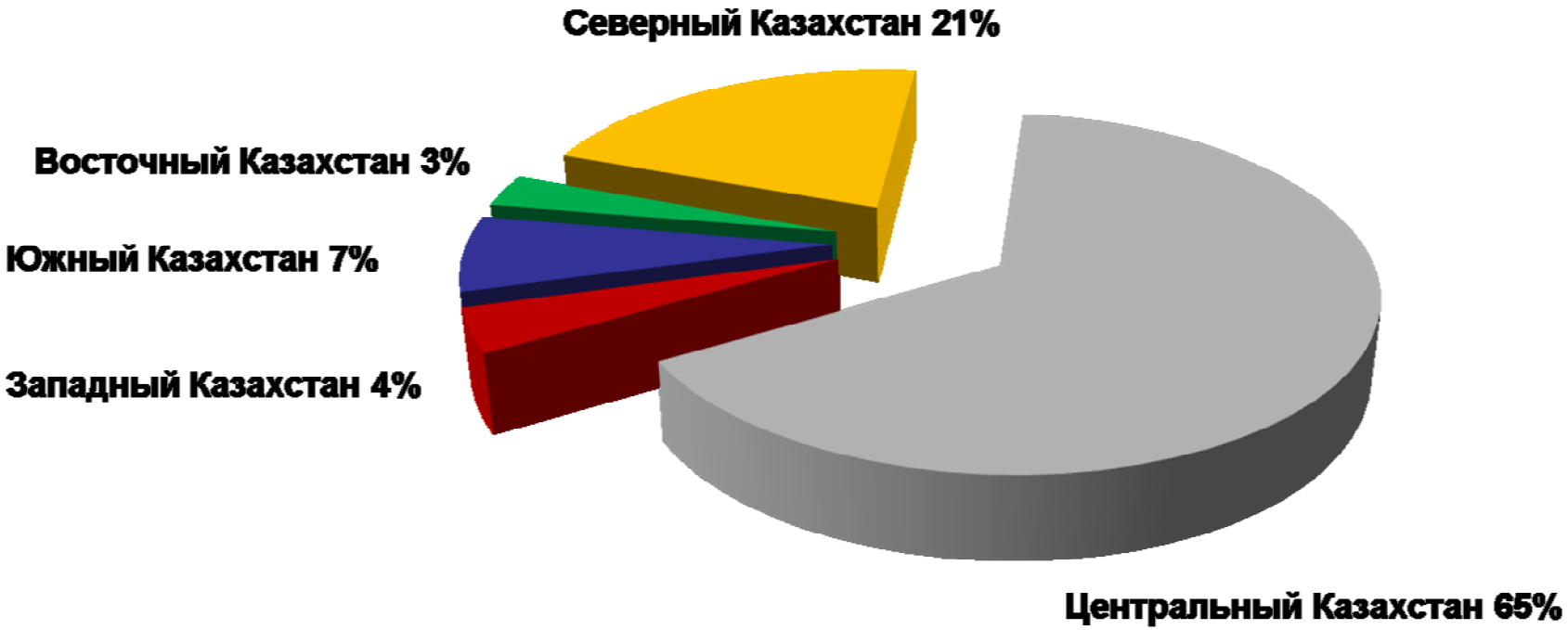
COAL INDUSTRY OF THE REPUBLIC OF KAZAKHSTAN

Astana, 2010

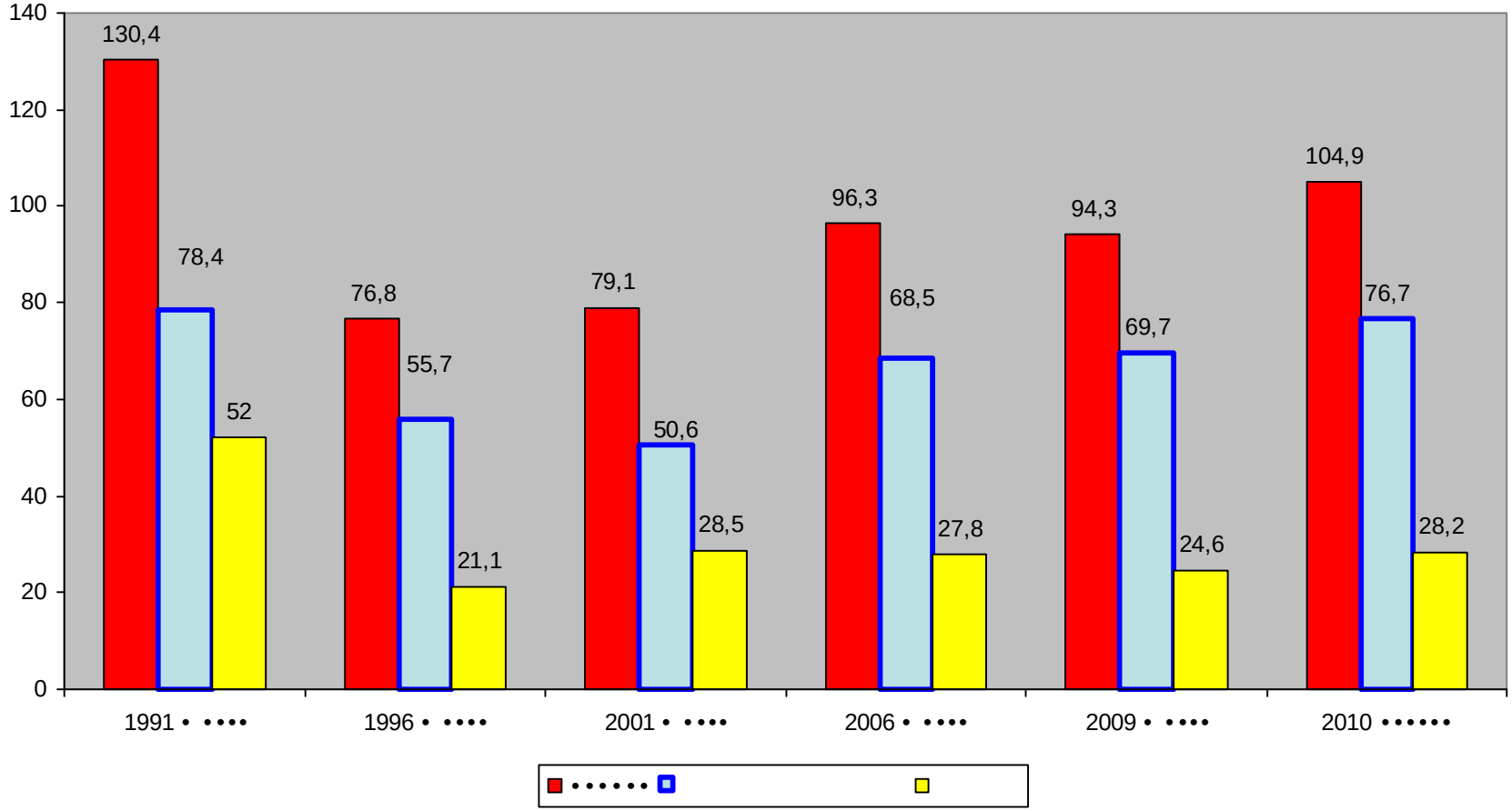
World Coal Reserves, billion tons



COAL DEPOSITS OF THE REPUBLIC OF KAZAKHSTAN



TRENDS OF COAL PRODUCTION, SUPPLIES TO DOMESTIC AND EXTERNAL MARKETS FOR THE 1991-2010 PERIOD, MILLION TONS



TASKS TO IMPLEMENT THE PROGRAM

To ensure the effective interaction between the state and businesses with a view of:

- creating conditions to further upgrade the current reserve stock of mines and open pits;
- enhancing the quality of coal deliveries and their competitiveness;
- improving coal mining techniques and technology.

TARGET INDICATORS

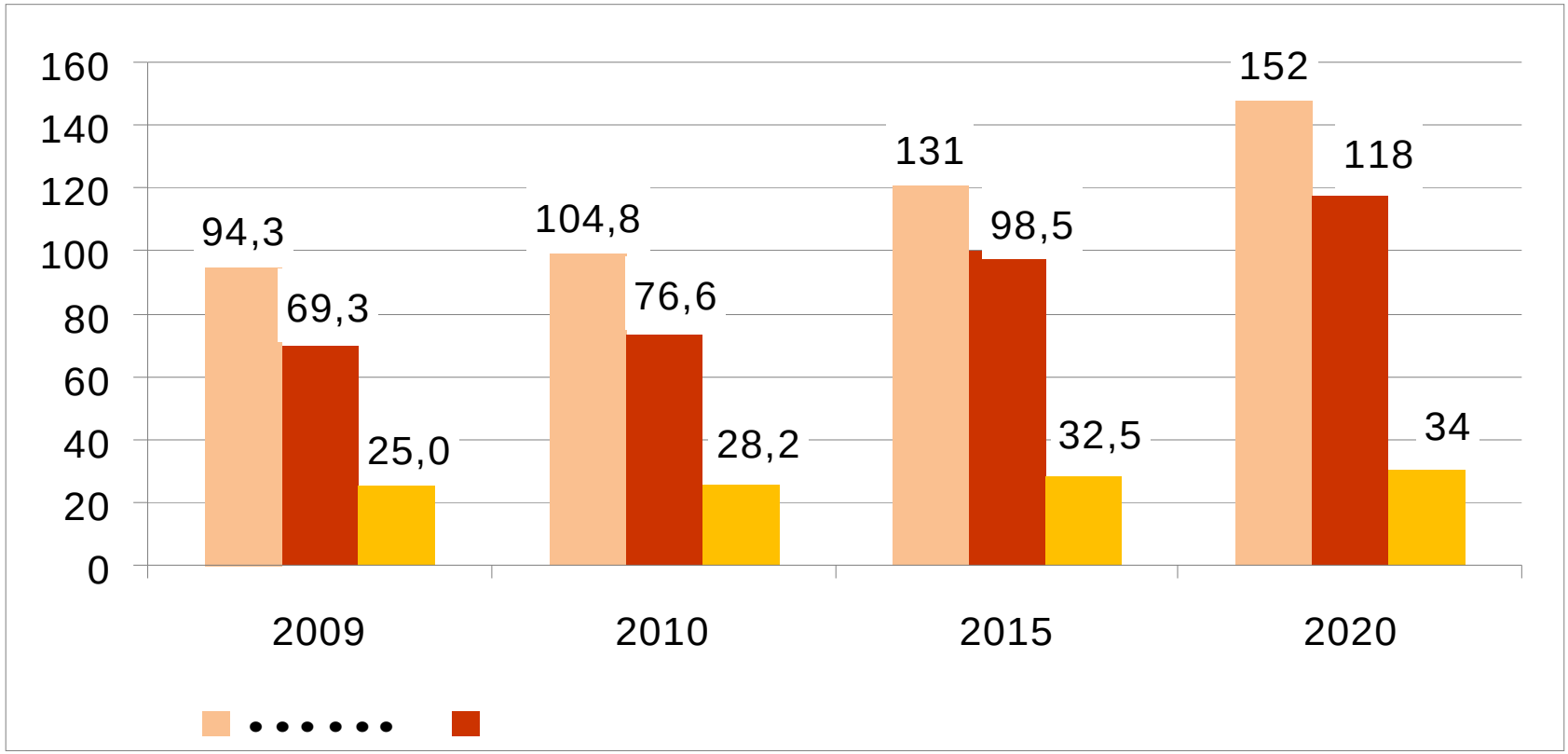
1. To increase coal production in 2015 to 131 million tons, in 2020 – to 152 million tons;
2. To bring coking coals production in 2015 to 13.0 million tons, by 2020 – up to 16.0 million tons;
3. To make coal provisions to fully load the generating facilities to be launched under the Program for Accelerated Industrial and Innovative Development for 2010-2014 :

- Balkhash Heat & Power Station: in 2015 – 4 million tons, 2018 – 8 million tons;
- Ekibastuz Hydro Power Station-2: up to 5.1 million tons by 2015 and up to 6.0 million tons by 2020;
- Ekibastuz Hydro Power Station-1: up to 10 million tons by 2014 and up to 11.5 million tons by 2020;
- Aksu Hydro Power Station: up to 8.3 million tons by 2015 and by 9.1 million tons by 2020

4. To increase the share of the state standards meeting international requirements by 100%

ESTIMATED VOLUMES OF COAL PRODUCTION AND SUPPLIES TO DOMESTIC AND EXTERNAL MARKETS FOR THE 2010-2020 PERIOD

Million tons



BALANCE OF NEED IN COCKING COALS TO 2015 AND FORECAST UNTIL 2020

Million tons

Indicators	2010	2015	2018	2019	2020
Need in cocking coals, total	9.46	13.62	14.5	16	16.52
Technical capabilities	12.45	14.82	14.7	14.7	14.72
Available resources	2.99	1.2	0.2	-1.3	-1.8

BALANCE OF NEED IN POWER-GENERATING COALS TO 2015 AND FORECAST UNTIL 2020

Million tons

Indicators	2009	2010	2015	2020
Need, total	84.4	94.4	117.2	135.1
Including:				
For Kazakhstan's power generation	46.6	49.5	63.8	74.7
For industrial enterprises	3.4	3.6	4.8	9
For public utilities and the people	10.2	13.1	16.1	17.6
Export	24.2	28.2	32.5	33.8
Technical capabilities	94.9	99.4	131.1	148
Available resources	10.5	5.0	13.9	12.9

CAPITAL INVESTMENTS FOR THE DEVELOPMENT OF KAZAKHSTAN'S COAL-MINING ENTERPRISES FOR 2010-2020

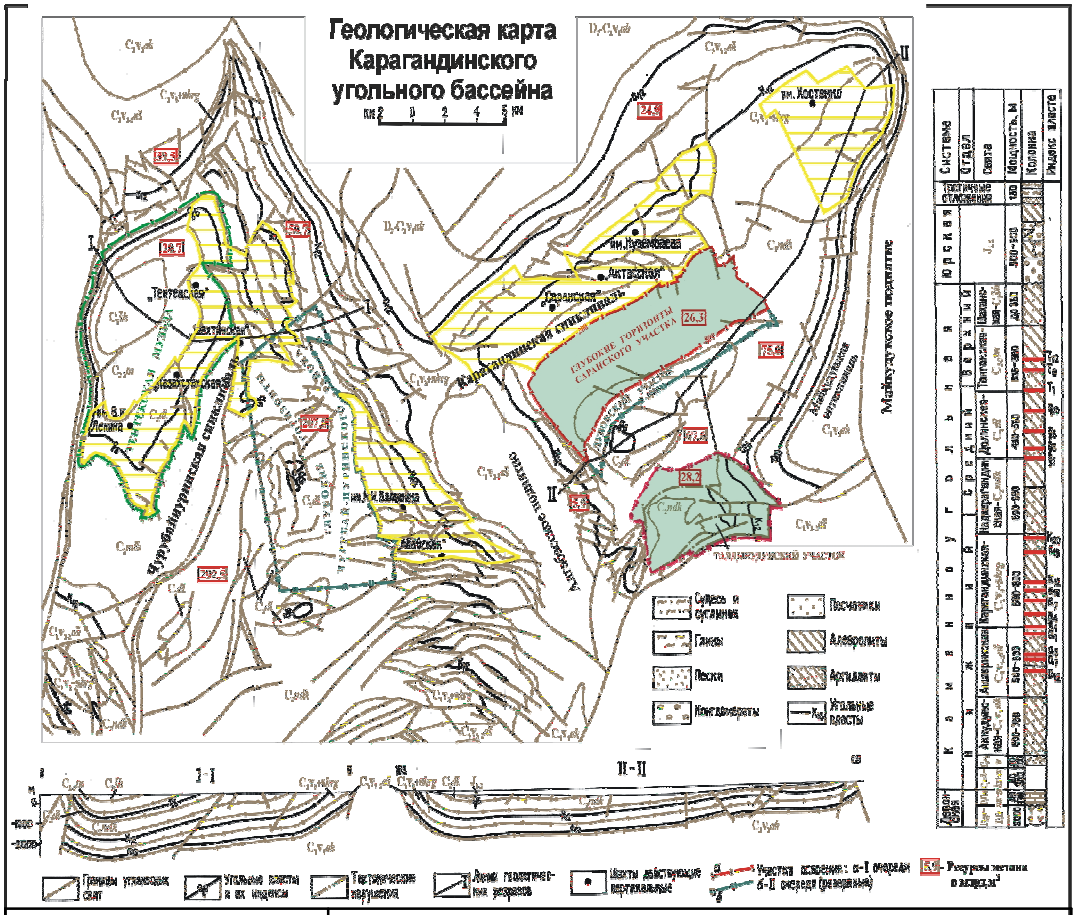
	Total for 2010-2020		including, million Tenge	
	million $	Million Tenge	2010-2015	2016-2020
Karaganda Basin	1,532.3	229,854.3	118,604.3	111,250
including:				
Operating mines	522.3	78,354.3	78,354.3	-
New construction	1,010	151,500	40,250	111,250
Ekibastuz Basin	1,026.7	154,006.97	109,174.8	44,832.17
Shubarkol Deposit	402.5	60,375	25,095	35,280
Maikuben Basin	273.9	41,084	13,579	27,505
Borlinsk and Kuu-Chekinsk Deposits	94.5	14,176.4	14,176.4	-
Yubeleinoye Deposit (Karazhira)	35.5	5,321.5	1,764.9	3,556.6
Small Deposits	2	299.7	213.2	86.5
Total for the industry	3,367.41	505,117.83	282,607.6	222,510.2
including:				
Underground mining	1,532.3	229,854.3	118,604.3	111,250
Open-pit mining	1,835.11	275,263.53	164,002.7	111,260.2

EXPECTED RESULTS

1. By 2010, the increase in coal production from underground mining will be ensured by 7 million tons, from open-pit mining – by 41 million tons.
2. Coal provisions for the projects envisioned by the Program for Accelerated Industrial and Innovative Development for 2010-2014 will be fully achieved.
3. The coal industry enterprises will complete their transition to international standards, which will allow increasing the competitiveness of coal produce in external markets.
4. The transfer of the world biggest open-pit mine Bogatyr from the railroad transport scheme to the automobile-conveyer technology with the averaging of coal in the open-pit will be completed.
5. Technical projects to expand the capacity of coal-mining facilities will be implemented at the following open-pit mines: Severny (North) from 10 to 18 million tons a year, Vostochny (East) from 20 to 22 million tons a year, Ekibastuz from 4 to 8 million tons a year, Maikeben from 5.3 to 8.5 million tons a year, Karazhyra from 5 to 7 million tons a year, and at the Shybarkol coal deposit – up to 20 million tons a year.
6. Some sections of the Karaganda Coal Basin will be explored with a pilot production of methane gas for possible extraction of methane on an industrial scale.
7. The state investments will be returned to the budget at a higher level in the form of subscription bonuses, minerals production tax payable by the subsoil users.

Preliminary estimated resources of methane in the beds of the Republic of Kazakhstan's coal deposits amount to 1100-1700 billion m^3

(Karaganda, Ekibastuz and a number of other basins and deposits)



Coal-bearing regions	Resource Categories			
Karaganda Basin	•$_1$ Billion m3	•$_2$ Billion m3	•$_3$ Billion m3	•$_1$+•$_2$+•$_3$ billion m3
1.Karaganda 2. Sherubai-Nurinsky 3.Tenteksky	57.504 25.345 20.879	19.240 18.941 11.138	101.783 114.513 121.125	178.527 158.799 153.142
Total for the basin	103.728	49.319	317.421	490.468

GEOLOGY

Karaganda Coal Basin is the most gas-bearing basin among the explored coal basins.

Gases from the basin's coal-beds contain methane and in lesser quantities – carbon dioxide, nitrogen, hydrogen sulphide, hydrogen and heavy hydrocarbons.

Within the zone of methane gases the content of carbon dioxide drops to 1% and lower, of nitrogen – down to 0.1-0.2%. Methane gases occur at the depth of 400–1,500 m. Hydrogen is occasionally observed at the depth of 600-1,000 m in the amount of 5-10%, which increases the explosion hazard of the mixture. In addition, in some instances there are heavy hydrocarbon gases (up to 5%) and hydrogen sulphide.

Pilot Projects

Saransk Section

Zhumys-Stroiservis LLP (Contract • 2755 dated 07.08.08).

Resource potential is 26.3 billion m^3. The average methane content in the beds from the upper limit of 700 m to the lower limit of 1,300 m does not exceed 30 m^3/t. Forecasted cumulative production of methane for one well (21.4 million m^3) is two times higher than at the average well of the largest *San Juan* basin (9.4 million m^3).

Taldykuduk Section

TaldyKuduk-Gas LLP (Contract • 2969 dated 22.01.09)

Dubovsky Section

Project "Methane of Karaganda" – *Parasat* National Research-Technical Holding JSC

Activities to organize production and utilization of methane include:

1. Conducting geological exploration surveys for follow-up detailed appraisal and assessment of the reserves of coal-bed methane.
2. Developing and implementing pilot projects to extract methane from coal beds.
3. Creating new innovative and safe technologies for extracting coal-bed methane from Kazakhstan's deposits.
4. Developing technological schemes for preliminary preparation of coal deposits to liberate gas for safe and effective extraction.
5. Creating technologies to reprocess coal methane for the purpose of using it as a non-conventional environmentally clean energy source, feedstock for chemical industry, motor fuel and household gas.
6. Drafting laws and regulations aimed at giving incentives to the extraction of methane from coal beds for its commercial use in various industries of the economy and safe operations in coal mines.

Implementation of the activities on extraction and utilization of methane will allow to resolve the following:

First, increased safety at coal-mining enterprises, reduced risk of sudden outbursts of gas-air mixtures;

Second, methane is a greenhouse gas which radiation disturbing influence, if calculated for a unit of mass, exceeds the corresponding indicator for carbon dioxide (• • 2) approximately by 23 times. That is why commercialization of the methane utilization projects would allow making a significant contribution to the reduction of emissions of this greenhouse gas to the ambient air and to the improvement of the environment in the coal-mining regions.

Third, expansion of the programs for extracting methane that used to be emitted to the ambient air, its utilization for household needs in the coal-mining and nearby regions by the people and industrial enterprises at a lower price vis-à-vis imported liquefied gas and other types of fuel.