**Scenario 1: Int. Org. Estimate, 2.5% annual growth**

| | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| gas export price | $ 45.0 | $ 47.0 | $ 48.2 | $ 49.4 | $ 50.6 | $ 51.9 | $ 53.2 | $ 54.5 | $ 55.9 | $ 57.3 | $ 58.7 | $ 60.2 | $ 61.7 | $ 63.2 | $ 64.8 | $ 66.4 | $ 68.1 | $ 69.8 | $ 71.5 | $ 73.3 | $ 75.1 | $ 77.0 | $ 78.9 |
| gas transit fare | $ 8.0 | $ 8.0 | $ 8.0 | $ 8.0 | $ 8.0 | $ 8.0 | $ 8.0 | $ 8.0 | $ 8.0 | $ 8.0 | $ 8.0 | $ 8.0 | $ 8.0 | $ 8.0 | $ 8.0 | $ 8.0 | $ 8.0 | $ 8.0 | $ 8.0 | $ 8.0 | $ 8.0 | $ 8.0 | $ 8.0 |
| border gas price | $ 53.0 | $ 55.0 | $ 56.2 | $ 57.4 | $ 58.6 | $ 59.9 | $ 61.2 | $ 62.5 | $ 63.9 | $ 65.3 | $ 66.7 | $ 68.2 | $ 69.7 | $ 71.2 | $ 72.8 | $ 74.4 | $ 76.1 | $ 77.8 | $ 79.5 | $ 81.3 | $ 83.1 | $ 85.0 | $ 86.9 |

**Scenario 2: West. Eur. Equivalent, 4.9% annual growth to 2010 and 0.2% growth to 2020**

| | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Russian export price for Western Europe | $ 80.0 | $ 80.0 | $ 80.2 | $ 80.3 | $ 80.5 | $ 80.6 | $ 80.8 | $ 81.0 | $ 81.1 | $ 81.3 | $ 81.5 | $ 81.6 | $ 81.8 | $ 81.9 | $ 82.1 | $ 82.3 | $ 82.4 | $ 82.6 | $ 82.8 | $ 82.9 | $ 83.1 | $ 83.3 | $ 83.4 |
| Border price | $ 53.0 | $ 55.0 | $ 57.8 | $ 60.6 | $ 63.7 | $ 66.9 | $ 70.2 | $ 73.7 | $ 77.4 | $ 81.3 | $ 81.5 | $ 81.6 | $ 81.8 | $ 81.9 | $ 82.1 | $ 82.3 | $ 82.4 | $ 82.6 | $ 82.8 | $ 82.9 | $ 83.1 | $ 83.3 | $ 83.4 |

**Scenario 3: Russian PPI, 1.4% annual growth**

| | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| gas export price | $ 45.0 | $ 47.0 | $ 47.7 | $ 48.3 | $ 49.0 | $ 49.7 | $ 50.4 | $ 51.1 | $ 51.8 | $ 52.5 | $ 53.3 | $ 54.0 | $ 54.8 | $ 55.5 | $ 56.3 | $ 57.1 | $ 57.9 | $ 58.7 | $ 59.5 | $ 60.4 | $ 61.2 | $ 62.1 | $ 62.9 |
| gas transit fare | $ 8.0 | $ 8.0 | $ 8.0 | $ 8.0 | $ 8.0 | $ 8.0 | $ 8.0 | $ 8.0 | $ 8.0 | $ 8.0 | $ 8.0 | $ 8.0 | $ 8.0 | $ 8.0 | $ 8.0 | $ 8.0 | $ 8.0 | $ 8.0 | $ 8.0 | $ 8.0 | $ 8.0 | $ 8.0 | $ 8.0 |
| border gas price | $ 53.0 | $ 55.0 | $ 55.7 | $ 56.3 | $ 57.0 | $ 57.7 | $ 58.4 | $ 59.1 | $ 59.8 | $ 60.5 | $ 61.3 | $ 62.0 | $ 62.8 | $ 63.5 | $ 64.3 | $ 65.1 | $ 65.9 | $ 66.7 | $ 67.5 | $ 68.4 | $ 69.2 | $ 70.1 | $ 70.9 |

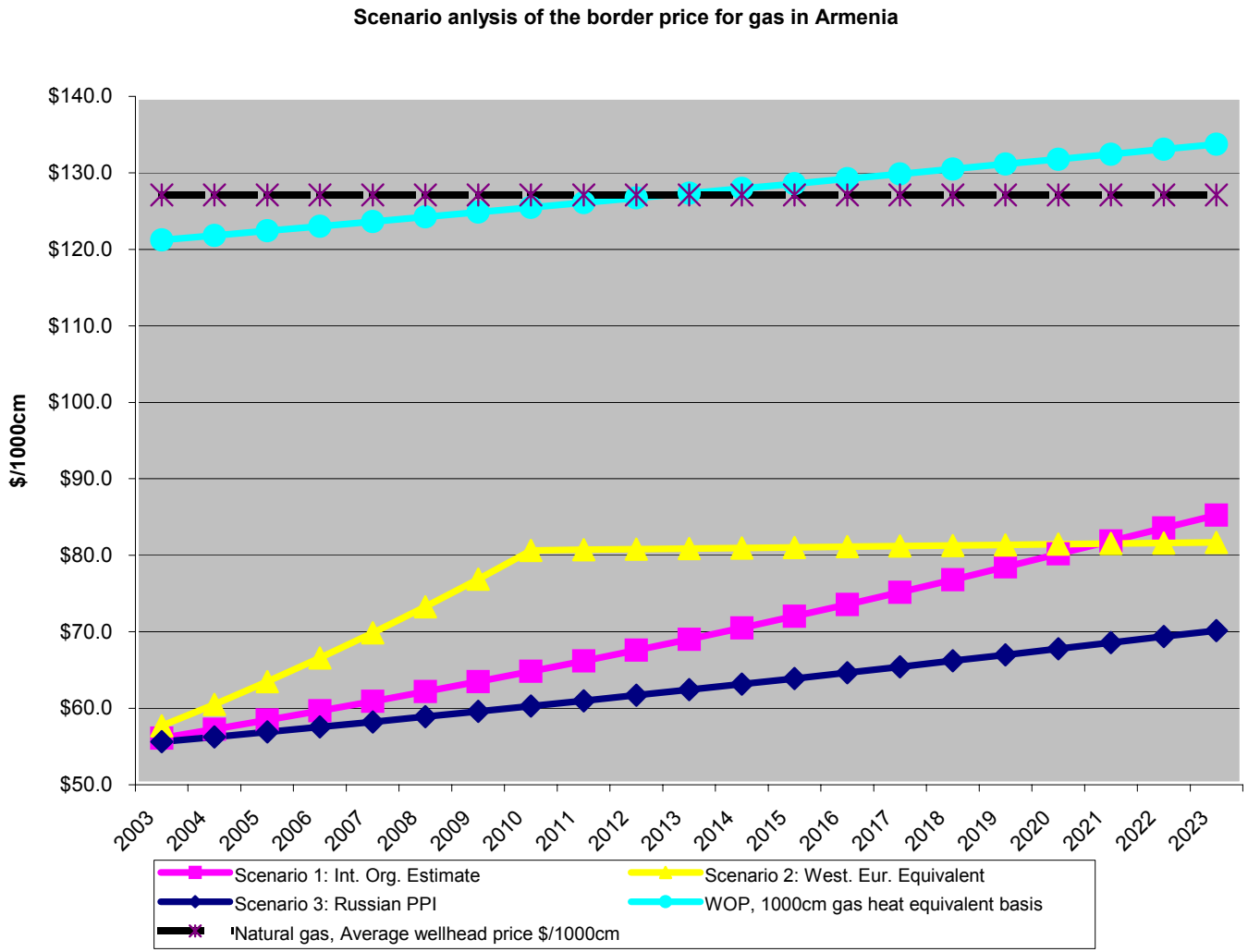
**Summary of scenario analysis**

| | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Scenario 1: Int. Org. Estimate | $ 53.0 | $ 55.0 | $ 56.1 | $ 57.3 | $ 58.5 | $ 59.7 | $ 60.9 | $ 62.2 | $ 63.5 | $ 64.8 | $ 66.2 | $ 67.6 | $ 69.0 | $ 70.5 | $ 72.0 | $ 73.6 | $ 75.2 | $ 76.8 | $ 78.5 | $ 80.2 | $ 81.9 | $ 83.6 | $ 85.3 |
| Scenario 2: West. Eur. Equivalent | $ 53.0 | $ 55.0 | $ 57.7 | $ 60.5 | $ 63.5 | $ 66.6 | $ 69.9 | $ 73.3 | $ 76.9 | $ 80.6 | $ 80.7 | $ 80.8 | $ 80.9 | $ 81.0 | $ 81.0 | $ 81.1 | $ 81.2 | $ 81.3 | $ 81.4 | $ 81.5 | $ 81.5 | $ 81.6 | $ 81.7 |
| Scenario 3: Russian PPI | $ 53.0 | $ 55.0 | $ 55.6 | $ 56.3 | $ 56.9 | $ 57.6 | $ 58.2 | $ 58.9 | $ 59.6 | $ 60.3 | $ 61.0 | $ 61.7 | $ 62.4 | $ 63.2 | $ 63.9 | $ 64.7 | $ 65.4 | $ 66.2 | $ 67.0 | $ 67.8 | $ 68.6 | $ 69.4 | $ 70.2 |

To arrive at a single estimate for the purpose of the LCP the scenario results have been equally weighted. The table below presents final forecasts for future border gas prices in Armenia.

| | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Scenario average** | $ 53.0 | $ 55.0 | $ 56.5 | $ 58.1 | $ 59.8 | $ 61.5 | $ 63.3 | $ 65.1 | $ 67.0 | $ 69.0 | $ 69.8 | $ 70.6 | $ 71.4 | $ 72.2 | $ 73.1 | $ 73.9 | $ 74.8 | $ 75.7 | $ 76.6 | $ 77.5 | $ 78.5 | $ 79.4 | $ 80.4 |

The graph below presents the scenarios in comparisons with the forecasts of the world gas prices and the World oil prices in the heat equivalent basis (See Appendices for the calculation of World gas prices in $/1000c.m. and World oil 1000c.m. gas heat equivalent prices.


Scenario anlysis of the border price for gas in Armenia
$/1000cm
$140.0
$130.0
$120.0
$110.0
$100.0
$90.0
$80.0
$70.0
$60.0
$50.0
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
2022
2023
Scenario 1: Int. Org. Estimate
Scenario 2: West. Eur. Equivalent
Scenario 3: Russian PPI
WOP, 1000cm gas heat equivalent basis
Natural gas, Average wellhead price $/1000cm

**2. Forecast of the price of gas at power stations, based on the forecast of the border gas price**

Using the border gas price forecasts, we can now calculate the gas prices, charged to power stations, on the basis of the current gas price structure in Armenia. Currently, there is a differentiation of gas prices for 'large consumers' and 'other consumers', as presented in the table below.

| | Current Gas Price Structure | | | |
|---|---|---|---|---|
| | large consumers, annual use>10,000cm | | other consumers consumers | |
| Price at border | $ 53.0 | 67% | $ 53.0 | 57% |
| Operating expenses | $ 8.6 | 11% | $ 20.0 | 22% |
| Technical losses | $ 3.0 | 4% | $ 3.0 | 3% |
| of which, transportation | $ 1.8 | 2% | $ 1.8 | 2% |
| of which, distribution | $ 1.3 | 2% | $ 1.3 | 1% |
| Armrosgasprom margin | $ 1.2 | 2% | $ 1.2 | 1% |
| Sales price, w/o VAT | $ 65.9 | 83% | $ 77.3 | 83% |
| VAT | $ 13.2 | 17% | $ 15.5 | 17% |
| Consumer sales price | $ 79.1 | 100% | $ 92.7 | 100% |

Further in the analysis it is assumed that the Operating expenses, Technical losses and ArmRosGasProm margin, as presented above, will remain constant and VAT will remain at current 20% rate. Also, the power sector is assumed to be a 'large consumer'.

The resulting scenarios are presented below in the tables.

**Scenario 1: Int. Org. Estimate**

| | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Price at border | $ 53.0 | $ 55.0 | $ 56.2 | $ 57.4 | $ 58.6 | $ 59.9 | $ 61.2 | $ 62.5 | $ 63.9 | $ 65.3 | $ 66.7 | $ 68.2 | $ 69.7 | $ 71.2 | $ 72.8 | $ 74.4 | $ 76.1 | $ 77.8 | $ 79.5 | $ 81.3 | $ 83.1 | $ 85.0 | $ 86.9 |
| Operating expenses | $ 8.6 | $ 8.6 | $ 8.6 | $ 8.6 | $ 8.6 | $ 8.6 | $ 8.6 | $ 8.6 | $ 8.6 | $ 8.6 | $ 8.6 | $ 8.6 | $ 8.6 | $ 8.6 | $ 8.6 | $ 8.6 | $ 8.6 | $ 8.6 | $ 8.6 | $ 8.6 | $ 8.6 | $ 8.6 | $ 8.6 |
| Technical losses | $ 3.0 | $ 3.0 | $ 3.0 | $ 3.0 | $ 3.0 | $ 3.0 | $ 3.0 | $ 3.0 | $ 3.0 | $ 3.0 | $ 3.0 | $ 3.0 | $ 3.0 | $ 3.0 | $ 3.0 | $ 3.0 | $ 3.0 | $ 3.0 | $ 3.0 | $ 3.0 | $ 3.0 | $ 3.0 | $ 3.0 |
| of which, transportation | $ 1.8 | $ 1.8 | $ 1.8 | $ 1.8 | $ 1.8 | $ 1.8 | $ 1.8 | $ 1.8 | $ 1.8 | $ 1.8 | $ 1.8 | $ 1.8 | $ 1.8 | $ 1.8 | $ 1.8 | $ 1.8 | $ 1.8 | $ 1.8 | $ 1.8 | $ 1.8 | $ 1.8 | $ 1.8 | $ 1.8 |
| of which, distribution | $ 1.3 | $ 1.3 | $ 1.3 | $ 1.3 | $ 1.3 | $ 1.3 | $ 1.3 | $ 1.3 | $ 1.3 | $ 1.3 | $ 1.3 | $ 1.3 | $ 1.3 | $ 1.3 | $ 1.3 | $ 1.3 | $ 1.3 | $ 1.3 | $ 1.3 | $ 1.3 | $ 1.3 | $ 1.3 | $ 1.3 |
| Armrosgasprom margin | $ 1.2 | $ 1.2 | $ 1.2 | $ 1.2 | $ 1.2 | $ 1.2 | $ 1.2 | $ 1.2 | $ 1.2 | $ 1.2 | $ 1.2 | $ 1.2 | $ 1.2 | $ 1.2 | $ 1.2 | $ 1.2 | $ 1.2 | $ 1.2 | $ 1.2 | $ 1.2 | $ 1.2 | $ 1.2 | $ 1.2 |
| Sales price, w/o VAT | $ 65.9 | $ 67.9 | $ 69.1 | $ 70.3 | $ 71.5 | $ 72.8 | $ 74.1 | $ 75.4 | $ 76.8 | $ 78.2 | $ 79.6 | $ 81.1 | $ 82.6 | $ 84.1 | $ 85.7 | $ 87.3 | $ 89.0 | $ 90.7 | $ 92.4 | $ 94.2 | $ 96.0 | $ 97.9 | $ 99.9 |
| VAT | $ 13.2 | $ 13.6 | $ 13.8 | $ 14.1 | $ 14.3 | $ 14.6 | $ 14.8 | $ 15.1 | $ 15.4 | $ 15.6 | $ 15.9 | $ 16.2 | $ 16.5 | $ 16.8 | $ 17.1 | $ 17.5 | $ 17.8 | $ 18.1 | $ 18.5 | $ 18.8 | $ 19.2 | $ 19.6 | $ 20.0 |
| Consumer sales price | $ 79.1 | $ 81.5 | $ 82.9 | $ 84.3 | $ 85.8 | $ 87.3 | $ 88.9 | $ 90.5 | $ 92.1 | $ 93.8 | $ 95.5 | $ 97.3 | $ 99.1 | $ 100.9 | $ 102.8 | $ 104.8 | $ 106.8 | $ 108.8 | $ 110.9 | $ 113.1 | $ 115.3 | $ 117.5 | $ 119.8 |

**Scenario 2: West. Eur. Equivalent**

| | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Price at border | $ 53.0 | $ 55.0 | $ 57.8 | $ 60.6 | $ 63.7 | $ 66.9 | $ 70.2 | $ 73.7 | $ 77.4 | $ 81.3 | $ 81.5 | $ 81.6 | $ 81.8 | $ 81.9 | $ 82.1 | $ 82.3 | $ 82.4 | $ 82.6 | $ 82.8 | $ 82.9 | $ 83.1 | $ 83.3 | $ 83.4 |
| Operating expenses | $ 8.6 | $ 8.6 | $ 8.6 | $ 8.6 | $ 8.6 | $ 8.6 | $ 8.6 | $ 8.6 | $ 8.6 | $ 8.6 | $ 8.6 | $ 8.6 | $ 8.6 | $ 8.6 | $ 8.6 | $ 8.6 | $ 8.6 | $ 8.6 | $ 8.6 | $ 8.6 | $ 8.6 | $ 8.6 | $ 8.6 |
| Technical losses | $ 3.0 | $ 3.0 | $ 3.0 | $ 3.0 | $ 3.0 | $ 3.0 | $ 3.0 | $ 3.0 | $ 3.0 | $ 3.0 | $ 3.0 | $ 3.0 | $ 3.0 | $ 3.0 | $ 3.0 | $ 3.0 | $ 3.0 | $ 3.0 | $ 3.0 | $ 3.0 | $ 3.0 | $ 3.0 | $ 3.0 |
| of which, transportation | $ 1.8 | $ 1.8 | $ 1.8 | $ 1.8 | $ 1.8 | $ 1.8 | $ 1.8 | $ 1.8 | $ 1.8 | $ 1.8 | $ 1.8 | $ 1.8 | $ 1.8 | $ 1.8 | $ 1.8 | $ 1.8 | $ 1.8 | $ 1.8 | $ 1.8 | $ 1.8 | $ 1.8 | $ 1.8 | $ 1.8 |
| of which, distribution | $ 1.3 | $ 1.3 | $ 1.3 | $ 1.3 | $ 1.3 | $ 1.3 | $ 1.3 | $ 1.3 | $ 1.3 | $ 1.3 | $ 1.3 | $ 1.3 | $ 1.3 | $ 1.3 | $ 1.3 | $ 1.3 | $ 1.3 | $ 1.3 | $ 1.3 | $ 1.3 | $ 1.3 | $ 1.3 | $ 1.3 |
| Armrosgasprom margin | $ 1.2 | $ 1.2 | $ 1.2 | $ 1.2 | $ 1.2 | $ 1.2 | $ 1.2 | $ 1.2 | $ 1.2 | $ 1.2 | $ 1.2 | $ 1.2 | $ 1.2 | $ 1.2 | $ 1.2 | $ 1.2 | $ 1.2 | $ 1.2 | $ 1.2 | $ 1.2 | $ 1.2 | $ 1.2 | $ 1.2 |
| Sales price, w/o VAT | $ 65.9 | $ 67.9 | $ 70.7 | $ 73.5 | $ 76.6 | $ 79.8 | $ 83.1 | $ 86.6 | $ 90.3 | $ 94.2 | $ 94.4 | $ 94.5 | $ 94.7 | $ 94.9 | $ 95.0 | $ 95.2 | $ 95.3 | $ 95.5 | $ 95.7 | $ 95.8 | $ 96.0 | $ 96.2 | $ 96.3 |
| VAT | $ 13.2 | $ 13.6 | $ 14.1 | $ 14.7 | $ 15.3 | $ 16.0 | $ 16.6 | $ 17.3 | $ 18.1 | $ 18.8 | $ 18.9 | $ 18.9 | $ 18.9 | $ 19.0 | $ 19.0 | $ 19.0 | $ 19.1 | $ 19.1 | $ 19.1 | $ 19.2 | $ 19.2 | $ 19.2 | $ 19.3 |
| Consumer sales price | $ 79.1 | $ 81.5 | $ 84.8 | $ 88.3 | $ 91.9 | $ 95.7 | $ 99.7 | $ 103.9 | $ 108.4 | $ 113.0 | $ 113.2 | $ 113.4 | $ 113.6 | $ 113.8 | $ 114.0 | $ 114.2 | $ 114.4 | $ 114.6 | $ 114.8 | $ 115.0 | $ 115.2 | $ 115.4 | $ 115.6 |

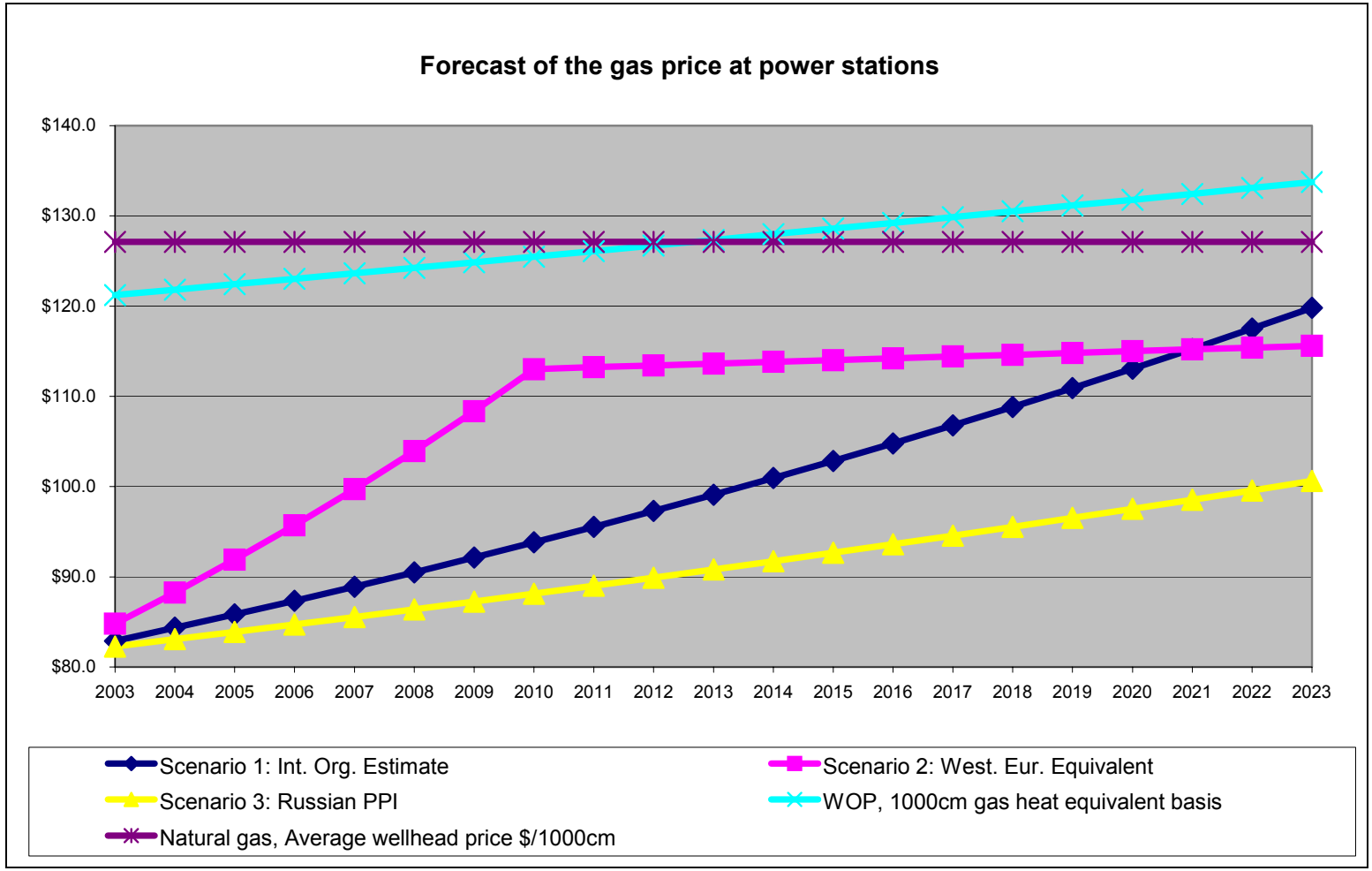
**Scenario 3: Russian PPI**

| | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Price at border | $ 53.0 | $ 55.0 | $ 55.7 | $ 56.3 | $ 57.0 | $ 57.7 | $ 58.4 | $ 59.1 | $ 59.8 | $ 60.5 | $ 61.3 | $ 62.0 | $ 62.8 | $ 63.5 | $ 64.3 | $ 65.1 | $ 65.9 | $ 66.7 | $ 67.5 | $ 68.4 | $ 69.2 | $ 70.1 | $ 70.9 |
| Operating expenses | $ 8.6 | $ 8.6 | $ 8.6 | $ 8.6 | $ 8.6 | $ 8.6 | $ 8.6 | $ 8.6 | $ 8.6 | $ 8.6 | $ 8.6 | $ 8.6 | $ 8.6 | $ 8.6 | $ 8.6 | $ 8.6 | $ 8.6 | $ 8.6 | $ 8.6 | $ 8.6 | $ 8.6 | $ 8.6 | $ 8.6 |
| Technical losses | $ 3.0 | $ 3.0 | $ 3.0 | $ 3.0 | $ 3.0 | $ 3.0 | $ 3.0 | $ 3.0 | $ 3.0 | $ 3.0 | $ 3.0 | $ 3.0 | $ 3.0 | $ 3.0 | $ 3.0 | $ 3.0 | $ 3.0 | $ 3.0 | $ 3.0 | $ 3.0 | $ 3.0 | $ 3.0 | $ 3.0 |
| of which, transportation | $ 1.8 | $ 1.8 | $ 1.8 | $ 1.8 | $ 1.8 | $ 1.8 | $ 1.8 | $ 1.8 | $ 1.8 | $ 1.8 | $ 1.8 | $ 1.8 | $ 1.8 | $ 1.8 | $ 1.8 | $ 1.8 | $ 1.8 | $ 1.8 | $ 1.8 | $ 1.8 | $ 1.8 | $ 1.8 | $ 1.8 |
| of which, distribution | $ 1.3 | $ 1.3 | $ 1.3 | $ 1.3 | $ 1.3 | $ 1.3 | $ 1.3 | $ 1.3 | $ 1.3 | $ 1.3 | $ 1.3 | $ 1.3 | $ 1.3 | $ 1.3 | $ 1.3 | $ 1.3 | $ 1.3 | $ 1.3 | $ 1.3 | $ 1.3 | $ 1.3 | $ 1.3 | $ 1.3 |
| Armrosgasprom margin | $ 1.2 | $ 1.2 | $ 1.2 | $ 1.2 | $ 1.2 | $ 1.2 | $ 1.2 | $ 1.2 | $ 1.2 | $ 1.2 | $ 1.2 | $ 1.2 | $ 1.2 | $ 1.2 | $ 1.2 | $ 1.2 | $ 1.2 | $ 1.2 | $ 1.2 | $ 1.2 | $ 1.2 | $ 1.2 | $ 1.2 |
| Sales price, w/o VAT | $ 65.9 | $ 67.9 | $ 68.6 | $ 69.2 | $ 69.9 | $ 70.6 | $ 71.3 | $ 72.0 | $ 72.7 | $ 73.4 | $ 74.2 | $ 74.9 | $ 75.7 | $ 76.4 | $ 77.2 | $ 78.0 | $ 78.8 | $ 79.6 | $ 80.4 | $ 81.3 | $ 82.1 | $ 83.0 | $ 83.8 |
| VAT | $ 13.2 | $ 13.6 | $ 13.7 | $ 13.8 | $ 14.0 | $ 14.1 | $ 14.3 | $ 14.4 | $ 14.5 | $ 14.7 | $ 14.8 | $ 15.0 | $ 15.1 | $ 15.3 | $ 15.4 | $ 15.6 | $ 15.8 | $ 15.9 | $ 16.1 | $ 16.3 | $ 16.4 | $ 16.6 | $ 16.8 |
| Consumer sales price | $ 79.1 | $ 81.5 | $ 82.3 | $ 83.1 | $ 83.9 | $ 84.7 | $ 85.6 | $ 86.4 | $ 87.3 | $ 88.1 | $ 89.0 | $ 89.9 | $ 90.8 | $ 91.7 | $ 92.7 | $ 93.6 | $ 94.6 | $ 95.5 | $ 96.5 | $ 97.5 | $ 98.5 | $ 99.6 | $ 100.6 |

The scenario prices are summarized in the table below.

| | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Scenario 1: Int. Org. Estimate | $ 79.1 | $ 81.5 | $ 82.9 | $ 84.3 | $ 85.8 | $ 87.3 | $ 88.9 | $ 90.5 | $ 92.1 | $ 93.8 | $ 95.5 | $ 97.3 | $ 99.1 | $ 100.9 | $ 102.8 | $ 104.8 | $ 106.8 | $ 108.8 | $ 110.9 | $ 113.1 | $ 115.3 | $ 117.5 | $ 119.8 |
| Scenario 2: West. Eur. Equivalent | $ 79.1 | $ 81.5 | $ 84.8 | $ 88.3 | $ 91.9 | $ 95.7 | $ 99.7 | $ 103.9 | $ 108.4 | $ 113.0 | $ 113.2 | $ 113.4 | $ 113.6 | $ 113.8 | $ 114.0 | $ 114.2 | $ 114.4 | $ 114.6 | $ 114.8 | $ 115.0 | $ 115.2 | $ 115.4 | $ 115.6 |
| Scenario 3: Russian PPI | $ 79.1 | $ 81.5 | $ 82.3 | $ 83.1 | $ 83.9 | $ 84.7 | $ 85.6 | $ 86.4 | $ 87.3 | $ 88.1 | $ 89.0 | $ 89.9 | $ 90.8 | $ 91.7 | $ 92.7 | $ 93.6 | $ 94.6 | $ 95.5 | $ 96.5 | $ 97.5 | $ 98.5 | $ 99.6 | $ 100.6 |
| | | | | | | | | | | | | | | | | | | | | | | | |
| **Scenario average** | $ 79.1 | $ 81.5 | $ 83.3 | $ 85.2 | $ 87.2 | $ 89.3 | $ 91.4 | $ 93.6 | $ 95.9 | $ 98.3 | $ 99.3 | $ 100.2 | $ 101.2 | $ 102.2 | $ 103.2 | $ 104.2 | $ 105.3 | $ 106.3 | $ 107.4 | $ 108.5 | $ 109.7 | $ 110.8 | $ 112.0 |

The chart below presents the scenario prices in comparison with the forecasts of the world gas prices and the World oil prices in the heat equivalent basis (See Appendices for the calculation of World gas prices in $/1000c.m. and World oil 1000c.m. gas heat equivalent prices).


Forecast of the gas price at power stations
$140.0
$130.0
$120.0
$110.0
$100.0
$90.0
$80.0
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
2022
2023
Scenario 1: Int. Org. Estimate
Scenario 2: West. Eur. Equivalent
Scenario 3: Russian PPI
WOP, 1000cm gas heat equivalent basis
Natural gas, Average wellhead price $/1000cm

# Attachments to Appendix B

**State Staistic Committee of RF (GosKomStat)**
Indexes of the prices of the manufacturers of an industrial output
End of the period, in percents

| | *In total* | | *Including* | | | | | |
|---|---|---|---|---|---|---|---|---|
| | *to the previous period* | *To December of the previous year* | *Electric power* | | *Oil producing Industry* | | *Gas Industry* | |
| | | | *to the previous period* | *to December of the previous year* | *to the previous period* | *to December of the previous year* | *to the previous period* | *to December of the previous year* |
| **2001** | | | | | | | | |
| January | 101.8 | 101.8 | 101.8 | 101.8 | 101.1 | 101.1 | 100.8 | 100.8 |
| February | 101.7 | 103.6 | 105.6 | 107.5 | 98.6 | 99.7 | 96.7 | 97.5 |
| March | 101.1 | 104.7 | 104.6 | 112.5 | 98.1 | 97.8 | 100.3 | 97.7 |
| April | 100.9 | 105.7 | 101.7 | 114.3 | 101.6 | 99.3 | 95.8 | 93.7 |
| May | 100.9 | 106.6 | 101.2 | 115.7 | 101.1 | 100.4 | 100.7 | 94.3 |
| June | 102 | 108.8 | 102.1 | 118.2 | 103.3 | 103.7 | 141.1 | 133.1 |
| July | 100.9 | 109.8 | 104.5 | 123.5 | 101.2 | 105 | 107.2 | 142.7 |
| August | 100 | 109.8 | 101.9 | 125.8 | 98.8 | 103.6 | 100.3 | 143.2 |
| September | 99.9 | 109.6 | 101.3 | 127.4 | 96.2 | 99.7 | 99.3 | 142.1 |
| October | 100.4 | 110.1 | 100.5 | 128.1 | 99.7 | 99.5 | 101 | 143.5 |
| November | 100.3 | 110.4 | 100.4 | 128.6 | 100.1 | 99.6 | 102.6 | 147.2 |
| December | 100.2 | 110.7 | 101.2 | 130.2 | 97.5 | 97.1 | 96.1 | 141.5 |
| **2002** | | | | | | | | |
| January | 100.4 | 100.4 | 101.3 | 101.3 | 94.8 | 94.8 | 115.1 | 115.1 |
| February | 99.7 | 100 | 102.2 | 103.5 | 85.7 | 81.2 | 109.8 | 126.4 |
| March | 99.9 | 99.9 | 102.2 | 105.7 | 97.2 | 79 | 98.7 | 124.7 |
| April | 102.2 | 102 | 105.9 | 112 | 101.9 | 80.4 | 102.3 | 127.5 |
| May | 102.5 | 104.5 | 104.2 | 116.7 | 108.1 | 86.9 | 101.4 | 129.3 |
| June | 103.1 | 107.7 | 100.5 | 117.3 | 115 | 100 | 102.7 | 132.8 |
| July | 102.6 | 110.5 | 100.2 | 117.6 | 114.6 | 114.6 | 101 | 134.2 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| *Quarter I* | *104.7* | *104.7* | *112.5* | *112.5* | *97.8* | *97.8* | *97.7* | *97.7* |
| *Quarter II* | *104* | *108.8* | *105.1* | *118.2* | *106.1* | *103.7* | *136.2* | *133.1* |
| *Quarter III* | *100.8* | *109.6* | *107.8* | *127.4* | *96.1* | *99.7* | *106.8* | *142.1* |
| *Quarter IV* | *101* | *110.7* | *102.1* | *130.2* | *97.4* | *97.1* | *99.6* | *141.5* |
| *Quarter I* | *99.9* | *99.9* | *105.7* | *105.7* | *79* | *79* | *124.7* | *124.7* |
| *Quarter II* | *107.9* | *107.7* | *111* | *117.3* | *126.6* | *100* | *106.5* | *132.8* |

**Analytical rouble exchange rate indicators**

**January-August 2002**

The Central Bank of the Russian Federation

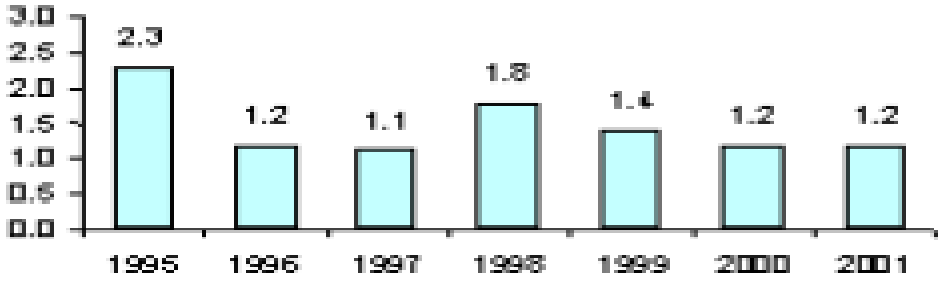
| | Jan. | Feb. | Mar. | Q1 | Apr. | May | June | Q2 | 1st half year | July | Aug. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Nominal exchange rate of US dollar against rouble, end of period | 30.69 | 30.93 | 31.12 | 31.12 | 31.2 | 31.31 | 31.45 | 31.45 | 31.45 | 31.44 | 31.57 |
| Monthly average volatility of exchange rate of US dollar against rouble (%) | 0.6 | 0.2 | 0.2 | 0.4 | 0.1 | 0.1 | 0.2 | 0.1 | 0.2 | 0.1 | 0.1 |
| Nominal exchange rate of US dollar against rouble, period averages | 30.44 | 30.8 | 31.06 | 30.77 | 31.17 | 31.25 | 31.4 | 31.27 | 31.02 | 31.51 | 31.56 |
| Percentage change over December 2001 | | | | | | | | | | | |
| Nominal exchange rate of rouble against US dollar* | -1.2 | -2.3 | -3.1 | -2.2 | -3.5 | -3.7 | -4.2 | -3.8 | -3 | -4.5 | -4.7 |
| Nominal effective exchange rate of rouble* | -0.6 | -0.5 | -1.7 | -0.9 | -2.7 | -4.6 | -6.6 | -4.6 | -2.8 | -8.5 | -7.8 |
| Purchasing power of US dollar against rouble** | -1.9 | -1.9 | -2.1 | -1.9 | -2.8 | -4.2 | -4.2 | -3.8 | -2.9 | -4.5 | -4.5 |
| Real exchange rate of rouble against US dollar* | 1.7 | 1.3 | 0.9 | 1.3 | 1.1 | 2.6 | 2.5 | 2.1 | 1.7 | 2.8 | 2.6 |
| Real effective exchange rate of rouble* | 1.4 | 2.1 | 1.5 | 1.7 | 0.9 | 0.3 | -1.3 | -0.1 | 0.8 | -2.7 | -2.4 |
| Percentage change over previous period | | | | | | | | | | | |
| Nominal exchange rate of rouble against US dollar* | -1.2 | -1.2 | -0.8 | -3.1 | -0.4 | -0.2 | -0.5 | -1.6 | -4.7 | -0.4 | -0.1 |
| Nominal effective exchange rate of rouble* | -0.6 | 0.1 | -1.1 | -1.5 | -1.1 | -2 | -2.1 | -3.8 | -3.9 | -2.2 | 0.8 |
| Purchasing power of US dollar against rouble** | -1.9 | 0 | -0.2 | -2.5 | -0.8 | -1.4 | 0 | -1.9 | -4 | -0.3 | 0 |
| Real exchange rate of rouble against US dollar* | 1.7 | -0.4 | -0.3 | 2.2 | 0.2 | 1.5 | 0 | 0.8 | 3.4 | 0.2 | -0.2 |
| **Real effective exchange rate of rouble*** | 1.4 | 0.8 | -0.6 | 1.9 | -0.7 | -0.7 | -1.6 | -1.7 | 1.2 | -1.5 | 0.4 |
| Percentage change over corresponding period of 2001 | | | | | | | | | | | |
| Nominal exchange rate of rouble against US dollar* | -6.9 | -7.2 | -7.7 | -7.2 | -7.5 | -7.2 | -7.3 | -7.3 | -7.3 | -7.3 | -7 |
| Nominal effective exchange rate of rouble* | 0.7 | 0.4 | -2.2 | -0.4 | -4.8 | -6.8 | -9.9 | -7.2 | -3.8 | -11.6 | -9 |
| Purchasing power of US dollar against rouble** | -9.7 | -8.5 | -7.2 | -8.5 | -6.8 | -7.1 | -5.9 | -6.6 | -7.5 | -6.2 | -6.5 |
| Real exchange rate of rouble against US dollar* | 9.5 | 8 | 6.2 | 7.9 | 5.6 | 6.4 | 5.2 | 5.7 | 6.8 | 5 | 5.3 |
| Real effective exchange rate of rouble* | 11 | 9.8 | 6.6 | 9.1 | 3.5 | 1.7 | -2.2 | 1 | 5 | -4 | -1.4 |

* "+" denotes appreciation of rouble against foreign currencies; "-" denotes depreciation of rouble against foreign currencies.

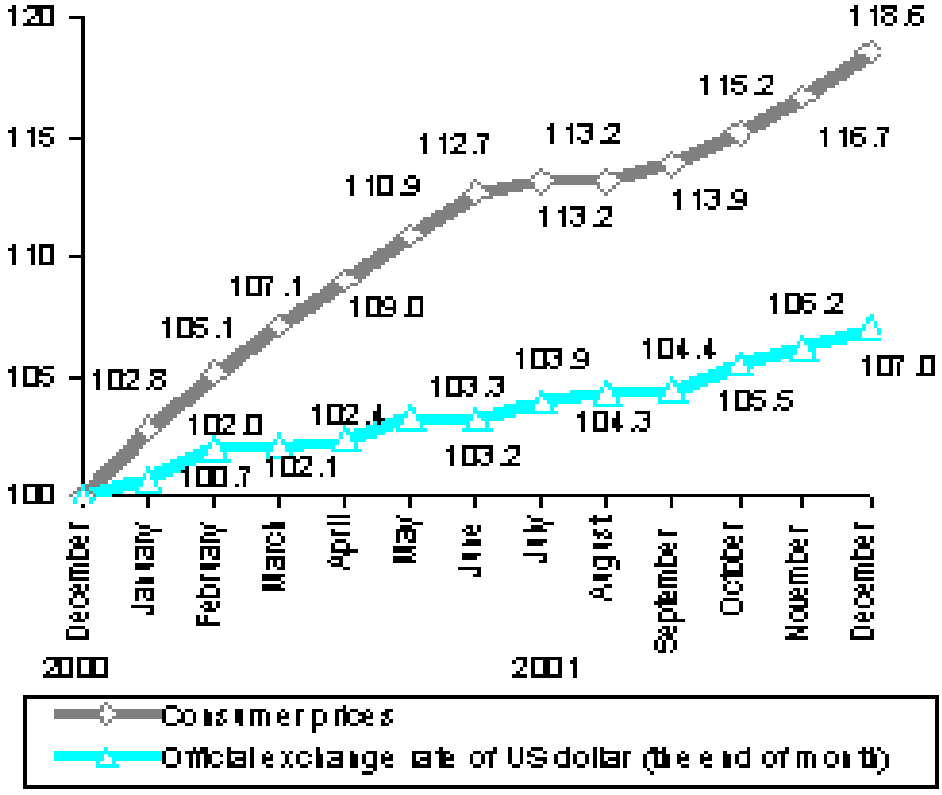
** "+" denotes purchasing power increase of US dollar against rouble; "+" denotes purchasing power decrease of US dollar against rouble.

Estimated data are underlined.

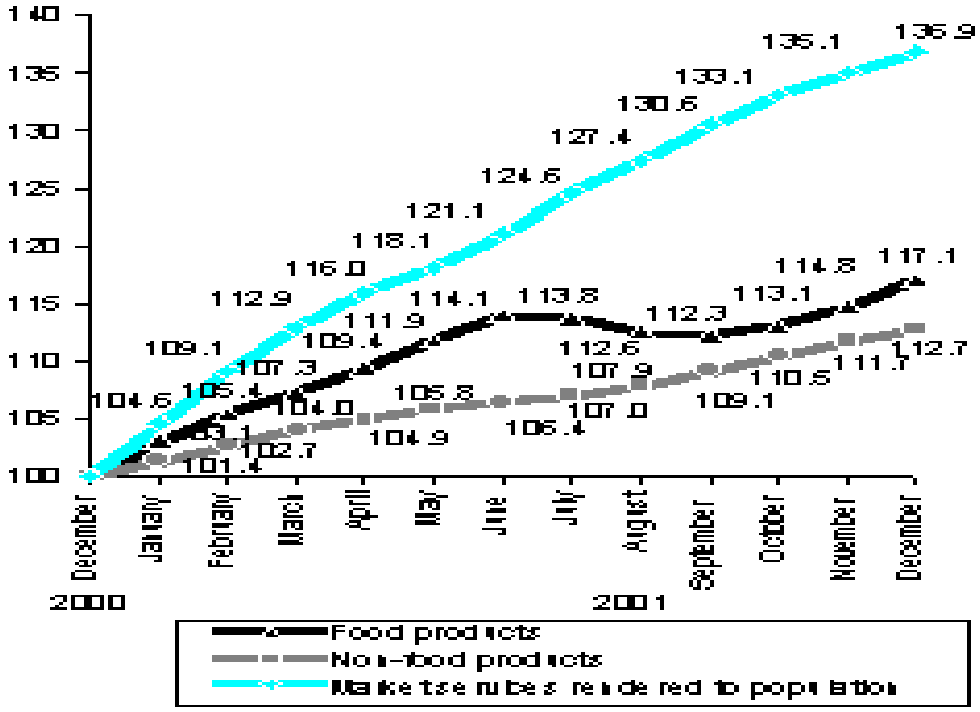
**Consumer Price Index**
(December related to December of the previous year; times)




**Consumer Price Index and Change of Official Exchange Rate of US Dollar in Relation to Russian Rouble in 2001**
(as percentage of December 2000)



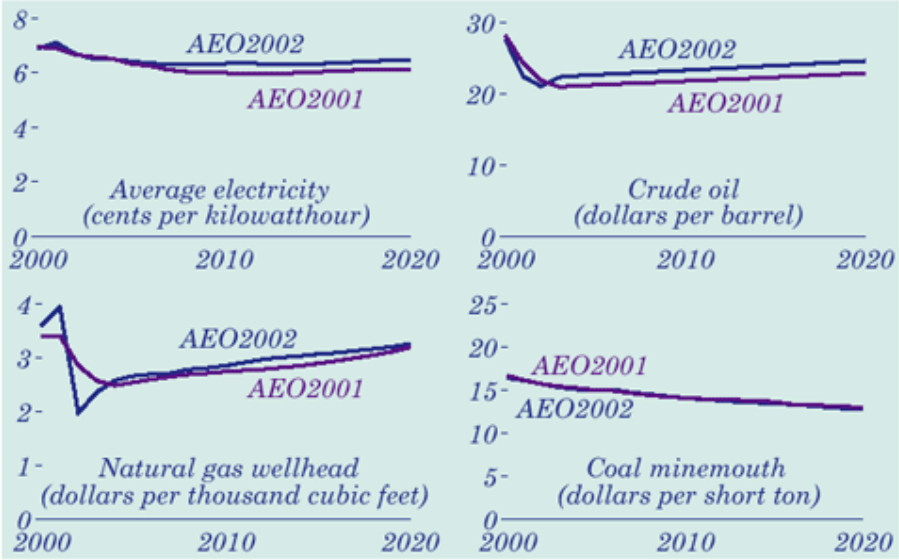
**Consumer Price Indices (Tariffs) For Food And Non-Food Products And Market Services Rendered To Population In 2001**
(as percentage of December 2000)




**Calculation of PPI in $ Terms (Own Calculation, End of Period)**

| | Russian gas industry PPI change, % | RuR/$ exchange rate change % | Russian gas industry PPI change in $ terms, % |
|---|---|---|---|
| **2001** | | | |
| January | 0.80 | 0.7 | 0.79 |
| February | -3.30 | 1.3 | (3.26) |
| March | 0.30 | 0.1 | 0.30 |
| April | -4.20 | 0 | (4.20) |
| May | 0.70 | 1.1 | 0.69 |
| June | 41.10 | 0.1 | 41.06 |
| July | 7.20 | 0.6 | 7.16 |
| August | 0.30 | 0.4 | 0.30 |
| September | -0.70 | 0.1 | (0.70) |
| October | 1.00 | 1.1 | 0.99 |
| November | 2.60 | -0.3 | 2.61 |
| December | -3.90 | 1.8 | (3.83) |
| **2002** | | | |
| January | 15.10 | 1.20% | 14.92 |
| February | 9.80 | 0.8% | 9.72 |
| March | -1.30 | 0.6% | (1.29) |
| April | 2.30 | 0.3% | 2.29 |
| May | 1.40 | 0.4% | 1.40 |
| June | 2.70 | 0.4% | 2.69 |
| July | 1.00 | 0.0% | 1.00 |

***Figure 1. Energy price projections, 2000-2020: AEO2001 and AEO2002 compared (2000 dollars)***




AEO2001 **projections:** Energy Information Administration, *Annual Energy Outlook 2001*, DOE/EIA-0383(2001) (Washington, DC, December 2000). ***AEO2002* projections:** Table A1.

## Calculation of WOP on 1000c.m. gas heat equivalent basis

| | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021** | 2022** | 2023** |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| WOP, $/bbl* | 27.72 | 22.48 | 22.590 74 | 22.702 03 | 22.813 86 | 22.926 24381 | 23.039 18 | 23.152 68 | 23.266 73 | 23.381 35 | 23.496 53 | 23.612 27 | 23.728 59 | 23.845 48 | 23.962 95 | 24.080 99 | 24.199 62 | 24.318 83 | 24.438 63 | 24.559 02 | 24.68 | $ 24.80 | $ 24.92 | $ 25.05 |
| conversion coefficient: 5.34*** | | | | | | | | | | | | | | | | | | | | | | | | |
| **WOP, 1000c.m. gas heat equivalent basis** | $148.02 | $120.04 | $120.63 | $121.23 | $121.83 | $122.43 | $123.03 | $123.64 | $124.24 | $124.86 | $125.47 | $126.09 | $126.71 | $127.33 | $127.96 | $128.59 | $129.23 | $129.86 | $130.50 | $131.15 | $131.79 | $132.44 | $133.09 | $133.75 |

## Calculation of Natural gas, Average wellhead price in $/1000c.m.

| | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021** | 2022** | 2023** |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Natural gas, Average wellhead price $/cubic feet* | 3.60 | 3.94 | 1.98 | 2.37 | 2.58 | 2.66 | 2.70 | 2.71 | 2.79 | 2.81 | 2.85 | 2.91 | 2.97 | 3.01 | 3.03 | 3.07 | 3.09 | 3.13 | 3.17 | 3.20 | 3.26 | 3.32 | 3.38 | 3.45 |
| cubic feet/1000c.m. conversion coefficient: | 0.02831685 | | | | | | | | | | | | | | | | | | | | | | | |
| **Natural gas, Average wellhead price $/1000c.m.** | 127.13 | 139.14 | 69.92 | 83.70 | 91.11 | 93.94 | 95.35 | 95.70 | 98.53 | 99.23 | 100.65 | 102.77 | 104.88 | 106.30 | 107.00 | 108.42 | 109.12 | 110.53 | 111.95 | 113.01 | 115.13 | 117.28 | 119.48 | 121.72 |

Notes:

* Source: EIA

**Own estimation, assuming the annual growth rate of 2020 continues to 2003

*** Calculated as follows:

| | |
|---|---|
| *Calorific value of 1000c.m. gas, imported to Armenia =7,980KCal (Source: ERC)* | *7,980* |
| *Calorific value of 1 barrel of crude oil =10.9GCal/7.3* | *1,493* |
| *conversion coefficient* | *5.34* |

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