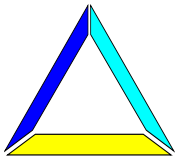
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V4

The Ukrainian-Russian gas agreement: An economic assessment

Executive summary

This paper assesses and discusses the background of the recent Ukrainian-Russian gas conflict and the January 4th agreement including the amendments and further contracts signed in early February.

The main conclusions are:

a) All over Europe, gas prices have increased sharply in 2005. To this end, the Ukrainian-Russian gas conflict is a natural consequence of changing economic conditions that have increased the opportunity costs of Russian gas deliveries to Ukraine at relatively low prices.

b) The agreement fails to address two key aspects:

- It does not provide the basis for stable gas supply for the next years. Effectively, economic losses from supplying gas to Ukraine at prices far below its opportunity value are transferred to Turkmenistan and other central Asian countries. It must, however, be doubted that those countries are willing to cooperate on the terms of the agreement for a long period.

- It fails to create transparent business relations in gas trading. In fact, the possibility to mix gas from different sources at very different prices, as foreseen in the agreement, will make it impossible to follow the value added chain in the gas industry. Moreover, the agreement generates significant possibilities for excess profits through arbitrage from selling cheaply imported gas at higher prices and therefore, simply appears to be tailor made for the interest of specific business groups.

With this assessment in mind we recommend policy makers to opt for a more market-oriented solution. Although this will lead to stronger increases in gas prices, the extremely low efficiency of energy use in Ukraine provides a sufficiently big potential for offsetting negative economic consequences by reducing the level of energy consumption.

Outline:

1. Introduction
2. Gas imports till 2005
3. What happened in 2005?
4. The Russian-Ukrainian gas agreement
5. Assessment
6. Summary and recommendations

1 Introduction

The recent Ukrainian-Russian gas conflict on import prices of Russian gas has reminded Ukraine on its dependency on imported gas deliveries for relatively low prices. Given that gas accounts for about 47% of primary energy supply[1] the implications of this conflict will be of significant importance for Ukraine's economy. The agreement reached on January 4 has attracted significant criticism, both from Ukrainian policy makers (including most of the current government) as well as from political and economic observers and the general public.

In this paper we will discuss the background of the recent gas crises including developments on EU gas markets, and analyze in how far the points as foreseen in the agreement can provide a stable and reliable basis for Ukraine's gas imports in the future. We will close the discussion with a short assessment of economic consequences of increased gas prices on Ukraine's economy and give recommendations as to how policy makers should proceed further.

2 Gas imports till 2005

In 2005, net gas imports to Ukraine accounted for 58bcm or about 70% of total domestic gas consumption. These imports stem from two different countries, Russia (34bcm) and Turkmenistan (24bcm), and have been executed by two different agreements:

Imports from Russia were largely payments in kind for transit of Russian gas to EU markets through the Ukrainian gas transit system (GTS). Since about 80% of Russian exports to the EU (115bcm) go through Ukraine's GTS, Ukraine had sufficient leverage to ask for a sufficient amount of gas in return for low transit fees. As a result, transit fees (USD 1.09 per tcm and 100km) and import price (USD 50 per tcm) were set only for accounting purposes such that the total transit costs (born to Russia) equal the total costs of gas imports (born to Ukraine).

Although this agreement has been generally perceived as fairly stable, it turned out to be difficult to perform in practice since the precise accounting of gas for transit and domestic consumption has proven to be quite difficult and has led to several allegations about unauthorized gas off-take. Moreover, the availability of gas at a price significantly below its export price to the EU has created significant arbitrage opportunities and has given rise for numerous shadow transactions where gas traders sold gas further on to the EU at very high margins.

Imports from Turkmenistan have been conducted under a separate, very different agreement. In 2005, Ukraine's gas supplier Naftogaz acquired a total of 37bcm in Turkmenistan for which it paid a price of USD 44 per tcm (thus, total expenditure accounted for USD 1628 m). Out of this amount, Naftogaz received about 24bcm for supply in Ukraine, while the remaining 13bcm (=37-24) had to be given to an intermediary company (RosUkrEnergo), which was appointed by the Russian side (Gazprom) to conduct the transaction through its pipeline system (there exists no gas pipeline connection between Turkmenistan and Ukraine that bypasses Russian Gazprom pipelines).

[1] The full energy balance is given in the appendix, Table A 1.

The problem with this agreement is that the intermediary (RosUkrEnergo) receives a significant amount of gas for no obvious reason other than that Gazprom as the owner of transit infrastructure insists on its inclusion. In turn, 13 bcm of natural gas, if sold to the EU at average prices in 2004 and 2005 (about USD 140-200 per tcm), generate huge revenues of USD 1.8-2.6bn. With the uncertain ownership structure of RosUkrEnergo – controlled by Gazprom and separate private (most likely Russian) capital, this appears to be a rather obvious scheme for rent extraction at the expense of Ukraine and Turkmenistan (where the latter one receives only a fraction of the opportunity value of the gas).

3 What happened in 2005?

In early 2005 the new Ukrainian government expressed its intention to renegotiate existing gas import agreements in order to achieve:

- A more transparent agreement where gas transit is decoupled from imports and all payments are in cash rather than in kind;
- Stability of gas supplies; and
- A fair price for Russian gas imports.

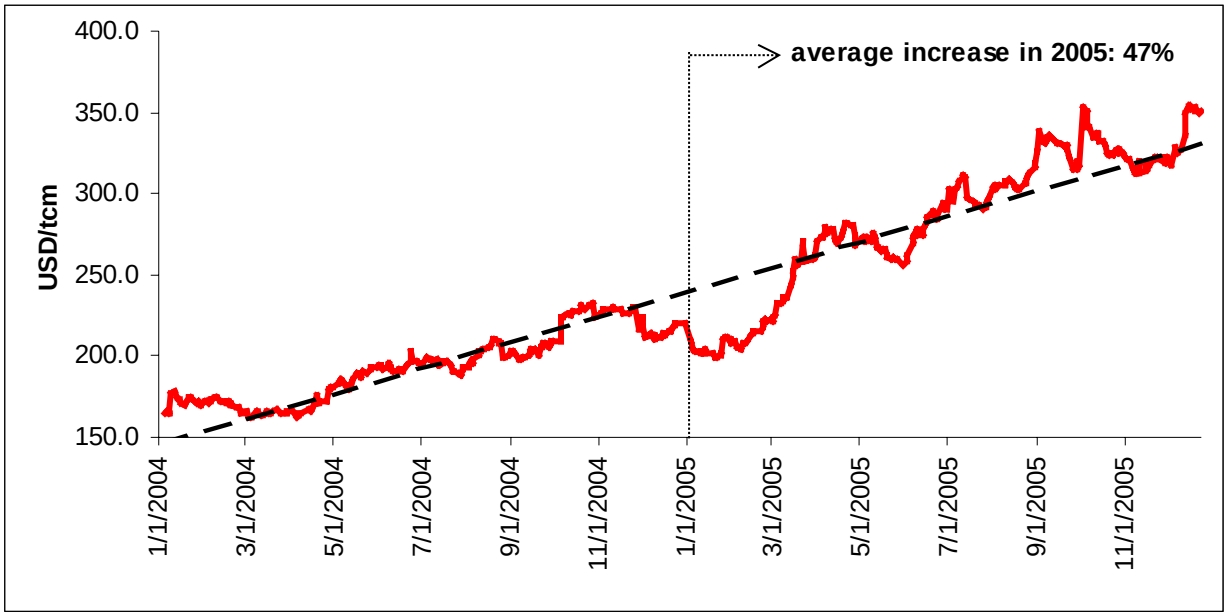
At the same time, gas prices have increased throughout Europe, a trend that started already in 2004 and further accelerated in 2005 (Figure 1). The main driving forces behind this general price increase are:

- The oil price indexation of most of the existing gas contracts, because of which gas prices develop largely in parallel to global oil prices;
- An increase in demand for natural gas in Europe, which has been the mostly favored fuel for investments in electricity generation capacity; and
- Infrastructure bottlenecks between several gas suppliers (Norway, UK, Algeria) and the European continent, which have temporarily limited supplies.

As a consequence of these factors, high gas prices are likely to remain at their high levels over a medium perspective. In line with this increase in European prices, also import prices for Russian gas to the EU, which remained on fairly stable levels of USD 110 per tcm in 2002 and USD 150 per tcm till end of 2004, have increased to more than USD 220 per tcm by the end of 2005 (Figure 2). Consequently, while the spread between this price and the average import price to FSU countries of USD 50 in 2002 could have been explained with additional transportation costs to the EU, the increasing difference between the two has substantially increased Russia's opportunity costs of gas deliveries to FSU countries at preferential prices. In fact, correcting for higher transportation costs to e.g. Germany of about USD 50 per tcm, a market-based import price at the Russian Ukrainian border in late 2005 would have been at a level of about USD 175 per tcm.

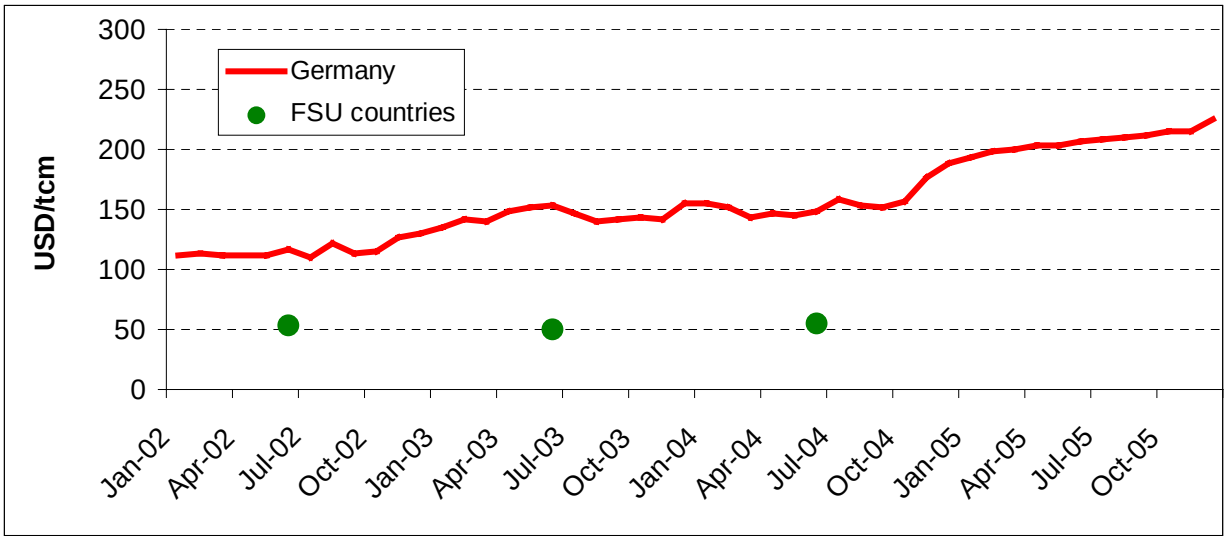
In total, the intention of Ukraine's government to renegotiate its existing import contracts together with the continuing price increase on EU markets has let to fairly different price expectations, where Ukraine's position of USD 50 per tcm was confronted with a Russian position of USD 250 per tcm.

Figure 1
Price of natural gas (wholesale market, one year forward contract) at Dutch-German border (Bunde Oude)



Source: www.platts.com

Figure 2
Import prices for Russian gas to Germany and FSU countries (average)



Source: IEA, Argus, Gazprom

4 The Russian-Ukrainian gas agreement

Following intense negotiations and a drastic reduction in gas deliveries to Ukraine by the turn of the year both parties signed an initial agreement on January 4, followed by additional contracts signed in early February 2006. The official agreement, as well as several secret amendments, has so far not been published so that all assessments must so far be based on unofficial publications and information revealed by the press. Nevertheless, the following main points of the agreement appear to be clear:

- RosUkrEnergo and Naftogaz set up a joint venture (UkrGazEnergo) with equal ownership shares. They will import gas to Ukraine (from 2007 the joint venture will be the sole importer) and sell it to industrial consumers.
- The transit fee for Russian gas through Ukraine will rise from currently USD 1.09 per tcm and 100km to USD 1.60 and remain at this level until 2010.
- Until 2030, Naftogaz will allow RosUkrEnergo to store up to 15bcm per year in its underground storage facilities for a charge of USD 2.25 per tcm.

The quantities that UkrGazEnergo will buy and sell are given in Table 1. Gas sales to Ukrainian consumers will amount to 34bcm in 2006 (which together with the 24bcm that Naftogaz will receive from Turkmenistan in 2006 will add up to total gas imports of 58bcm) and up to 58bcm from 2007 to 2010. The agreement also stipulates exports of 15bcm of gas without that export destinations are specified. In fact, the export clause appears to be one of the key benefits to the shareholders of RosUkrEnergo and UkrGazEnergo since they can sell cheaply acquired gas to e.g. EU markets at very high margins.

Table 1
Gas sales and purchases of UkrGazEnergo

	Quantity (bcm)	**Price** (USD/tcm)
Gas sales to:		
Ukrainian consumers		
- in 2006	34	**95**
- 2007 till 2010	up to 58	**95**
Exports	15	??
Gas purchases from:		
Russia	up to 17	**230**
Turkmenistan	up to 41	? (55)
Uzbekistan	up to 7	??
Kazakhstan	up to 8	??

Source: http://www.tymoshenko.com.ua/ukr/exclusive/documents/2440/

In turn, UkrGazEnergo will buy up to 17bcm from Gazprom (Russia) and the remaining quantities from Turkmenistan, Uzbekistan and Kazakhstan as stated in Table 1. As far as prices are concerned, the agreement only states that the import price to Ukraine will be USD 95 per tcm while Russian gas will be purchased at USD 230. Hence, the agreement foresees mixing Russian and Central Asian gas such that the average price equals USD 95.

Consequently, since the price for Russian gas will be 2.5 times above the average price, prices granted to Turkmenistan, Uzbekistan and Kazakhstan will have to be substantially below the USD 95 level, while the vague specification of quantities leaves sufficient 'degrees of freedom' to realize this average.

5 Assessment

5.1 The January 4th agreement

In how far have Ukrainian negotiators achieved their objectives?

As far as prices are concerned, USD 95 per tcm is said to be one of the lowest import prices across FSU countries (although it can be doubted whether or not such a 'low' price is a blessing rather than a burden, as it will be discussed in the next section).

The **decoupling** of gas transit from imports and the switch from in-kind to cash payment for transit services is clearly positive.

With respect to **transparency**[2] the agreement foresees no in-kind payments any more so that financial flows are more accountable. But despite this positive achievement, the agreement still fails to make gas transactions easier to follow or the value added process easier to assess. Rather, the mix of different supply sources at very different prices will make such judgments impossible. Moreover, the significant possibilities for excess profits through arbitrage (from selling 'cheap' UkrGazEnergo gas at high prices to e.g. EU markets) that the agreement generates can even become a significant obstacle for further reform and development of competition in Ukraine's gas sector.

Most importantly, the agreement clearly fails to secure **stable gas imports** for Ukraine: the combination of a high price granted for Russian gas and a low average price for Ukraine can only be realized if gas from other sources is priced at significantly lower levels. It is however very unclear why Turkmenistan, Uzbekistan and Kazakhstan should be willing to accept a long term agreement on such unfavorable conditions. In other words, Ukraine's gas import relations will remain uncertain.

Finally, several other clauses of the agreement appear unclear although their full impact is rather difficult to assess at this point. For example, it is not evident why the transit fee had to be fixed until 2010, and the charges for using underground storage facilities even until 2030. It is also unclear which impact the appearance of RosUkrEnergo on Ukraine's domestic gas market will have on the level of competition and development of the market.

Hence, the agreement – although specifying an apparently low gas price for Ukraine – can not be seen as an improvement compared to previous agreements. While it also does not strengthen the Russian position as gas importer (Gazprom can charge a higher price, but the volumes will be lower), the apparent beneficiary are RosUkrEnergo and its stakeholders who are likely to receive huge rents from arbitrage.

5.2 Economic impact

What economic impact will the January 4th agreement have on Ukraine's economy? In January 2006 Ukraine imported gas from Russia and Turkmenistan for an average price of about USD 67 per tcm.[3] At the same time, domestic prices have been at fairly low levels, ranging from less than USD 30 for private households to about USD 83 per tcm for industries (Table 2). Following the significant increase of import prices as established by the January 4 agreement Ukraine's average import price will rise to USD 95. Given our expectations that this agreement is unlikely to remain unchanged, this price is likely to increase even further (as established in section 3 above, a market-based import price at the Russian Ukrainian border in late 2005 would have been at a level of about USD 175 per tcm). Hence, also domestic gas prices will have to increase significantly.

[2] We understand by 'transparency' the degree to which trade-related administrative processes are easy to follow and are open to public scrutiny and subject to clear methods of challenge or amendment.

[3] This is the weighted average of 30bcm of in-kind payment from Gazprom for a price of USD 50 per tcm, 4bcm from Gazprom for USD 80 and 24bcm from Turkmenistan for an effective price of USD 85 (net of transit payments to RosUkrEnergo).

Table 2
Prices of natural gas set by Naftogaz Ukraine (since January 2006)

		Price (USD/tcm, excl. VAT)
1	**Prices including distribution cost**	
1.1.	**Population**	
	Wholesale price	30.53
	Retail prices:	
	- with gas meters	28.88
	- without gas meters	31.35
1.2.	Bugdet organizations (schools, hospitals, etc.)	47.52
1.3.	Public utilities	50.28
1.3. 1.	Public utilities, electricity generation using gas from main pipelines	51.20
2	**Prices witout distribution costs**	
2.1.	Industrial enterprises	83.58
2.2.	Gas distribution companies	54.70
2.3.	Gas distribution companies normative losses	24.27
2.4.	Gas distribution companies for own needs	83.58
2.5.	Gas Ukraine for own needs	83.58

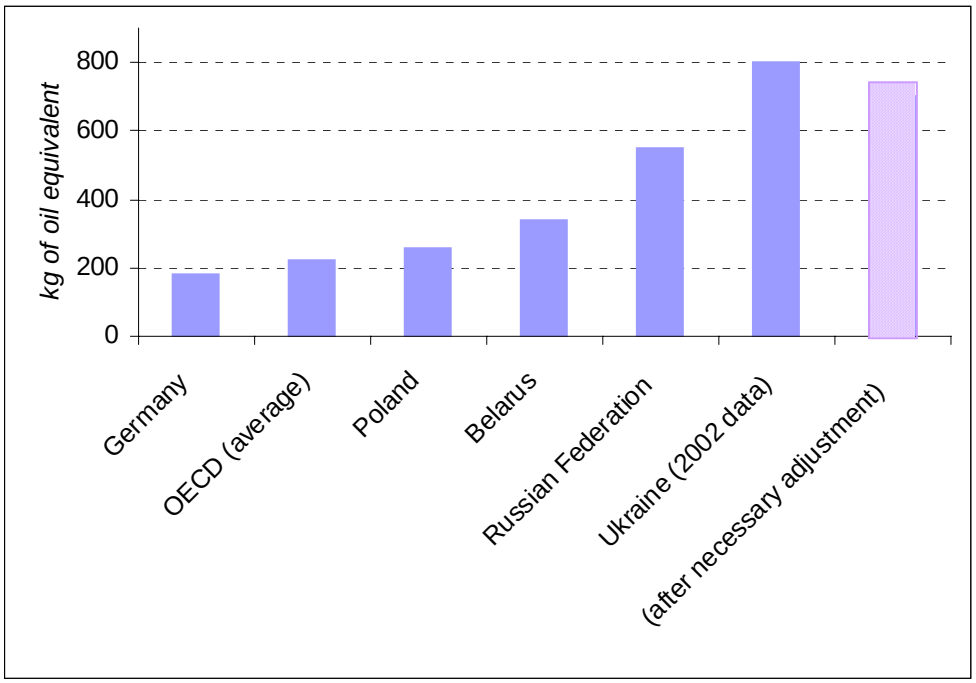
Source: www.gasukraine.com.ua

According to IER estimates,[4] a 60% increase in the price for gas imports from Russia (which is about the level that average import prices will change from in 2006) will increase domestic gas prices by 57% and cause a decline in GDP by more than 5%. However, increased domestic prices will give strong incentives for a more rational use of energy. This is possible through a broad range of measures from simply avoiding losses through leakages etc. up to using more energy-efficient technologies. Altogether, the IER estimates that a reduction in energy use per unit op output of about 30% for all industries and service providers is already sufficient to offset the drop in GDP. Given the generally very low efficiency of energy use in Ukraine, this appears to be a rather modest adjustment as the following calculation demonstrates:

Gas consumption of industrial users, heat and electricity generators and commercial and public service providers accounts for about 37% of Ukraine's total primary energy supply (Table A 1). Hence, if those users reduce their gas consumption by 33% this reduces Ukraine's total primary energy supply by about 12%. Comparing the efficiency of Ukraine's current energy use with that of other countries it appears that for producing the same level of income, Ukraine's economy burns significantly more energy than even other former Soviet Union countries (Figure 3). Hence, the necessary reduction of energy use pattern by 12% appears to be rather modest, and even more so if we recall that countries such as Belarus have an even higher share of gas in their total primary energy supply.

[4] Advisory Paper V5 ("Macroeconomic impact of gas price shock"; February 2006).

Figure 3
Energy efficiency (total primary energy supply per USD 1000 of GDP) for selected countries



Source: IEA (2002): Key world energy statistics.

6 Summary and conclusions

In summary, Ukraine has until 2005 received its gas imports at relatively low prices. This seemingly favorable position has come under increasing pressure both because of the intention of the new Ukrainian government to renegotiate existing supply contracts in order to increase market transparency, as well as because of a drastic increase of gas prices on EU markets during 2005. As a result, negotiations between Russian and Ukrainian sides soon got stuck in very different expectations on import prices. Eventually, Ukrainian energy consumers were forced to realize that gas prices are likely to increase significantly. The January 4 agreement, which was established to balance those different expectations, appears to be a weak compromise. Although it offers a comparably low import price for Ukraine, it also gives rise to the continuation of intransparent, highly profitable shadow activities. Most importantly, it fails to provide a stable basis for future gas imports as main suppliers such as Turkmenistan are unlikely to accept the extremely low prices that the agreement establishes for their gas supplies.

Against this background, policy makers face the need to rethink Ukraine's current strategy of gas imports in general and the future perspectives of the January 4 agreement in particular. In this context, we give the following recommendations:

1. Given the fundamental changes on gas markets across Europe Ukraine should not opt for populistic deals and low import prices which effectively isolate Ukraine's markets from external developments. Otherwise, the country will remain in the political and economic dependency of Russia.
2. Ukraine needs to find a sustainable solution for its energy supply, and in particular its gas import relations. This could be realized on the bases of a market-oriented and understandable formula where the import price at the Russian Ukrainian border equals the sales price for Russian gas at the EU border minus the respective transportation costs. It will also be necessary to challenge the current practice of establishing a single, flat price for all import volumes during the whole year. In any case, given the very low levels of energy efficiency, dealing with higher energy prices does not appear to be an unresolvable economic challenge.

3. The first steps towards a more rational use of energy requires Ukraine's energy sector to be reformed. This in particular includes:[5]
    - Restructuring the energy sector, including full corporatization of state-controlled enterprises such as Naftogaz.
    - Stimulate competition on energy markets (e.g. through unbundling of network operations from energy production and retail distribution, granting third party access to networks, regulating access fees etc.).
    - Stimulate investments in new, less energy intensive technologies through establishing cost-covering tariffs, abolishing all cross-subsidies in the energy sector, enforcing hard budget constraints etc.
    - Reform the regulation and operation of communal enterprises such as water and district heating suppliers.
    - Do not miss the real opportunities: for example, Ukraine has a unique perspective to benefit from the mechanisms set forth by the Kyoto protocol to stimulate cross-border investments in energy saving technology and installations. However, until today the government has not managed to implement even the lowest institutional requirements and to provide a legal background for such investment financing.

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[5] The German Advisory Group and the IER have repeatedly provided recommendations on reforming Ukraine's energy sector such as Advisory Paper U3 ("Ukraine's gas sector: Time for reforms"; May 2005) or Advisory Paper U12 ("Regulatory scheme for utilities: proposal for Ukraine"; November 2005), or the books "Development of Domestic Markets in Ukraine. Welfare through Competition" (2004) and "Towards Higher Standards for Living An Economic Agenda for Ukraine" (February 2005). All publications are available at www.ier.kiev.ua.

Table A 1
Energy balance of Ukraine (2002, in percent of total primary energy supply)

SUPPLY and CONSUMPTION	Coal	Crude Oil	Petroleum products	Gas	Nuclear	Electricity	Heat	Total
Production	23	3	0	12	16	0	0	55
Imports	3	15	1	36	0	0	0	55
Exports	-1	0	-6	-1	0	-1	0	-10
Total Primary Energy Supply	**25**	**17**	**-5**	**47**	**16**	**0**	**0**	**100**
Statistical Difference	0	0	0	0	0	0	0	0
Electricity Plants	-2	0	-1	-11	-16	10	0	-20
CHP Plants	-8	0	0	0	0	1	4	-2
Heat Plants	-2	0	0	-9	0	0	9	-1
Petroleum Refineries	0	-17	16	0	0	0	0	-1
Coal Transformation	-7	0	0	0	0	0	0	-7
Own Use	0	0	0	-1	0	-2	0	-3
Distribution Losses	0	0	0	-1	0	-2	-3	-6
Total Final Consumption	**6**	**0**	**10**	**25**	**0**	**7**	**10**	**58**
Industry sector	5	0	1	9	0	4	5	24
Transportation sector	0	0	5	0	0	1	0	6
Other sectors	1	0	2	16	0	3	5	27
Agriculture	0	0	2	0	0	0	0	2
Commercial and Public Services	0	0	0	6	0	1	0	7
Residential	1	0	0	10	0	1	5	18
Non-Specified	0	0	0	0	0	0	0	0
Non-Energy Use	0	0	1	0	0	0	0	1

Source: IEA (2002), own calculation.