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**DRAFT PAPER**

**Environmental Impacts of Foreign Direct Investment  
in the Mining Sector in the Newly Independent States<sup>1</sup>**

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## 1 Introduction

The Newly Independent States (NIS) of the former Soviet Union belong to the most important producers of mining products worldwide. For some of these countries the revenues they derive from mining activities represent an important part of their fiscal income and a substantial part of their foreign currency earnings.<sup>2</sup> At the same time the costs generated by the environmental and social impacts of mining can sometimes outweigh the benefits. Thus, it is of high interest, in how far Foreign Direct Investment (FDI) contributes to this effect. While in general FDI inflows to OECD member states have increased in recent years, Non-OECD member countries accounted about 15% of the total international investments.<sup>3</sup> Most of these inflows went to the emerging markets in South-East Asia and to a smaller extent to South America, whereas in the case of the NIS, there was a relatively low inflow of FDI.<sup>4</sup>

Towards this rationale, the OECD has requested adelphi research in October 2001 to analyze the role and importance of FDI in the NIS mining sector as well as its environmental implications for host countries. This paper is based on a literature review and interviews of selected experts as well as discussions with relevant stakeholders from respective countries, multinational, Russian and Kazakh enterprises and interest groups active in the mining sector. The interviews and discussions took place in November 2001.<sup>5</sup>

Extracting these information and data, the paper will focus on the environmental impacts of FDI in the non-ferrous mining industry in the NIS, particularly in the Russian Federation and Kazakhstan. Both countries are endowed exceptionally well with non-ferrous commodities. The Russian Federation and Kazakhstan own together, for instance, 91,2% of the copper reserves of the NIS and 11,2% of the world copper reserves.<sup>6</sup> Furthermore, as successor countries of the Former Soviet Union, they recently opened their markets for foreign investment. While there are of course differences in the speed and degree of the legal and business transition process, both countries are in general of special interest to foreign investment. In spite of these considerations, FDI inflows into the non-ferrous metals industry have been relatively low in the past years. The Russian Federation and Kazakhstan, for instance, have accumulated together only approx. 374 US\$ Mill. compared to over 1 US\$ Bill. in Chile and Peru.<sup>7</sup> It is therefore of interest to elaborate firstly specific conditions and particular reasons for this obvious difference of FDI inflows and secondly the possible environmental impact. It is central to this analysis in how far domestic investments have similar environmental impacts like FDI in this sector. Since FDI's impact on the environment is largely local,<sup>8</sup> a local perspective is of further interest to this paper.

The analytical framework is given by the nature of the subject: Implications of FDI are not monolithic and have multifold impacts in particular in economic, environmental, and social terms. Potential environmental implications refer mainly to scale and structural effects as well as to technological and regulatory impacts and vary by locations, sectors and investors.<sup>9</sup>

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<sup>2</sup> Cf. BGR 1998b.

<sup>3</sup> FDI inflow increased from 7% in 1991 up to 15% in 1997. Cf. OECD 1999b.

<sup>4</sup> Cf. WRI 1998.

<sup>5</sup> None of the enterprises active in the NIS mining sector interviewed by the authors wanted to co-operate or at least provide the authors with specific information regarding their investment or their environmental engagement. Thus, those interviews had a more general character and informed the authors primarily about the general background of the FDI situation in the NIS.

<sup>6</sup> Cf. WVB 2001b.

<sup>7</sup> Own calculations for 1999 based on UNCTAD 2001a; cf. also Borregaard/ Dufey 2001.

<sup>8</sup> Cf. OECD 1999b: 15.

<sup>9</sup> Cf. Borregaard/ Dufey and OECD 1999b.

An analysis of the effects of FDI impacts require two main prerequisites: Firstly, foreign investment should have a significant amount relatively to the total investment and secondly, implications, such as the above mentioned, shall be subject to empirical and scientifically proof. In the case of the successor countries of the Former Soviet Union, both prerequisites are not given or at least not verifiable on a regional or national level. It is therefore of interest, in how far those impacts can be analyzed on a local level. Therefore case studies will be depicted being integrated in the country focus chapter.

Out of the above said the two central questions of the paper are:

1. What are the reasons and specific conditions in order to explain the absence of a significant amount of FDI in the non-ferrous metals industry?
2. What are the impacts of this absence of FDI on the environmental situation on a regional, national and local level?

According to recent analyses, the most important factors influencing the destination of FDI are mainly political, economically and sectoral factors.<sup>10</sup> In detail, political considerations refer to: political stability, environmental regulatory framework, administrative capacities, its consistency and profit repatriation. Economical considerations refer mainly to the economical state measured by the key economical indicators such as GDP growth. Sectoral factors refer to the degree of segmentation and structure of the specific market, its size, its commodity reserves and the current as well as future potential of exploration. This threefold framework will be examined on a regional, national and local level. In addition, the environmental implications will also be analyzed on a national and local level since environmental impacts are hardly measurable on a regional level.

Chapter 2 provides information about the non-ferrous metals industry in the NIS in general and its role and importance for the different economies as well as for the world market. Special attention will be given to the single commodities, their productions rates and FDI inflows in this sector. Chapter 3 focuses on the Russian Federation and Kazakhstan as specific country studies. Hereby the most relevant investors have been identified and analyzed with respect to investment in environmental issues. These case studies, by trying to identify environmental issues of management concern, describe single projects of private enterprises in both countries endowed with different intense and amount of foreign investment. General reference will be made to the issues of implementation of cleaner technologies and environmental management systems, resp. the role of national environmental legislation in the mining sector. Finally, the Chapter 4 will provide the main conclusions of this paper.

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<sup>10</sup> Cf. Dalheimer/ Ellmies 2000 and OECD 1999b.

## 2 Regional Focus: The Non-Ferrous Metals Industry in the NIS

### 2.1 Economical Factors

Due to their size and diversity, a performance review of the economical state of the successor countries of the Former Soviet Union should differ in the geological sub-regions Western NIS (Ukraine, Belarus and Moldova), Central Asia (Kazakhstan, Kyrgyz Republic, Tajikistan, Turkmenistan and Uzbekistan), the Caucasus (Armenia, Azerbaijan and Georgia) and the Russian Federation itself. Besides those sub-regional and national differentiations, all NIS share the need to transform their economies in order to implement an international competitive market economy attracting foreign investment. However, the success and degree of this transition process differs tremendously among those countries. An indicator for the success of attracting foreign investment is the amount of FDI as it is shown in Table 1

**Table 1. Annual average of FDI inflows to NIS (1993-2001) (Mill. US\$)**

Total FDI	1993	1994	1995	1996	1997	1998	1999	2000 (est.)	2001 (proj.)
<i>Western NIS</i>									
<b>Ukraine</b>	-	151	257	526	581	747	489	594	800
<b>Belarus</b>	17,6	10,5	14,7	72,6	197,9	146,9	443,2	90,0	169,0
<b>Moldova</b>	0,42	12	66	23	74	82	33	108	-
<i>Central Asia</i>									
<b>Kazakhstan</b>	1.271	660	964	1.137	1.321	1.152	1.632	-	-
<b>Kyrgyz Republic</b>	-	38,2	96,1	46,8	83,0	108,6	35,4	42,0	-
<b>Tajikistan</b>	9	12	20	25	30	24	21	30	20
<b>Turkmenistan</b>	79	103	233	108	108	62	89	100	150
<b>Uzbekistan</b>	48	73	-24	90	167	226	201	231	-
<i>Caucasus</i>									
<b>Armenia</b>	1	8	25	18	52	221	131	150	-
<b>Azerbaijan</b>	0	22	282	661	1.093	1.024	510	500	1.000
<b>Georgia</b>	0	8	6	54	236	221	96	126,4	124
<b>Russian Federation</b>	-	550	2.000	2.400	5.300	3.360	4.260	4.400	-

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In general, all NIS have made considerable efforts improving their economical situation and to attract FDI. These figures show in particular that the Russian Federation and Kazakhstan, both largest and in terms of natural reserves most endowed countries, received the highest amount of FDI in the past years. However, there are still major problems which vary among the countries and industry sectors. Besides those regional variations, FDI inflows to NIS is to a respectable amount lower than those to other developing or transition economies.<sup>11</sup> Other key indicators such as the GDP growth underline this back-lagging position of the NIS in economical terms.<sup>12</sup> The Asian financial crisis and worsening of trade for export commodities including non-ferrous metals contributed to the financial and economic shocks of 1998 and a decline of the economical performance. Nonetheless, the region as a whole has recorded its third successive year of positive growth in 2001 at 4.4 per cent after the crisis in 1998.<sup>13</sup> This economical growth will, however, affect the various parts of the region in different ways. Supported by this recovery, a number of NIS countries also achieved significant reform gains, in particular Russia but also Azerbaijan, and, from low levels, Belarus and Uzbekistan. Turkmenistan,

<sup>11</sup> Cf. Deutsche Bank Research 2001c.

<sup>12</sup> Cf. EBRD 2001a-j.

<sup>13</sup> Cf. ibid.

where the political commitment to economical and political reforms has been weak, was there backtracking in reform.<sup>14</sup> Thus, most of the NIS have made considerable efforts reforming their economies and have started implementing regulations attracting FDI. However, the overall economic situation is still lagging behind other comparable economies.

## 2.2 Political Factors

In addition to economical factors, further considerations influencing FDI's destination are political in nature such as political stability or the absence of corruptive behavior of administrative bodies. Although in general, the NIS could establish stable political administrations and enforcement bodies in the nineties, the stability lags behind other developing or transition countries. In particular concerning the consistency of the administration is a matter of ongoing claims by international investors. There are claims about corruptive behavior of local administrations and about the absence of a clear and well-consistent implementation and enforcement of the legal basis for foreign investment.<sup>15</sup> In particular in the case of the Russian Federation, the framework conditions for foreign investment are not suitable and hence are not attracting FDI. This is also the case for the non-ferrous mining industry, in which privatization processes lags behind and domestic investors are still dominating the market without co-operating to a significant amount with foreign investors (see Chapter 3.1).<sup>16</sup>

Against this overall situation of national policy reforms on the one hand and back-lagging local enforcement bodies on the other, the environmental regulatory framework have been taken into account as a factor influencing both domestic and foreign investment. Regarding the non-ferrous mining industry – as mentioned in Chapter 1 – main environmental concerns are at firstly waste management and its relevant legal background and secondly the implementation of horizontal, sector integrating management guidelines and systems.

The NIS have inherited a legacy of significant environmental problems at many of its mining and metallurgical combines. The standards and practices used in the former Soviet Union are not in conformity with international standards. However, there have been efforts to develop internationally competitive environmental legislation and regulations. But in regard to the above mentioned impact areas, environmental improvement was impeded by the overall slow pace of economic reform and financial crisis. Pollution levels and resource consumption have declined less than industrial outputs, some environmental problems have worsened during the transition period. While ministries and committees have been making efforts to reform environmental policies, environmental issues have generally received less interest on public and government agenda, and have to compete with numerous social problems.<sup>17</sup>

One of the main reasons might be the ongoing re-structuring of environmental responsibility on different national levels including the overall trend to transfer environmental competences from national to sub-national and local levels.<sup>18</sup> Against this background of slow down environmental reforms towards environmental standards and phases of restructuring, the approximation of environmental legislation lags behind. However, recent efforts to reform this sectors have shown considerable progress.<sup>19</sup>

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<sup>14</sup> Cf. *ibid.*

<sup>15</sup> Cf. *Mining Journal* 1999.

<sup>16</sup> Cf. Chapter 3.1.

<sup>17</sup> Cf. OECD 2000a.

<sup>18</sup> Cf. *ibid.*

<sup>19</sup> Cf. EBRD 2001b.

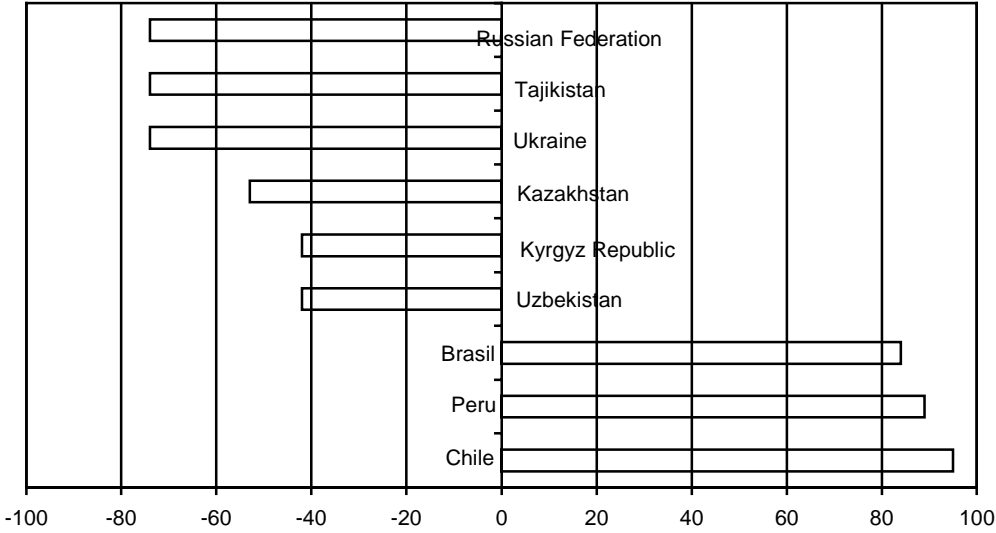
2.3 Sectoral Factors

Besides economical and political, sectoral factors are responsible for attracting foreign investment. Thus, in the case of the non-ferrous metals industry it is of importance to analyze the sector in terms of its degree of segmentation, its size, its structure and in respect to commodity reserves, their current and future degree of exploration. Non-ferrous commodity reserves are mainly to find in the Russian Federation and Central Asia. Other sub-regions such as the Caucasus or Western NIS are not enriched with non-ferrous metals to a significant amount.<sup>20</sup> A sharp decline of the production rates of the non-ferrous metals industry in the past years has contributed to the ongoing raising of the NIS share of the total world reserves since the non-ferrous metals industry of other regions could benefit from high FDI inflows.<sup>21</sup>

As mentioned above, all NIS started to privatize their former combines and opened their market in the early nineties. However, the extent of this privatization process differs tremendously among the countries and sectors. The legacy of the Former Soviet Union is still present in the structure of the non-ferrous metals industry in terms of the ongoing existence of former combines which are not completely privatized.<sup>22</sup>

Another effect occurred with the privatization process is the domination of domestic ownership in the non-ferrous metals industry. In particular in the Russian Federation and Kazakhstan, large domestic groups are owning most of the former combines impeding foreign investors entering the market. These circumstances influence highly the overall investment climate in this sector which show impressively the unattractiveness of the metals industry of the NIS for foreign investors compared to other countries producing large amounts of non-ferrous metals such as Peru and Chile.

Graph 1: Investment climate of selected countries for the mining sector<sup>23</sup>



<sup>20</sup> In general, there are no significant reserves of non-ferrous metals in these countries besides smaller reserves of gold. In the case of Belarus, for instance, the share of the metals industry on the total industrial outcome is only 2.4 per cent. Other countries such as Georgia show an even lower importance of the non-ferrous metals industry. Cf. BGR 1997; BGR 1998b and WRI 1998.

<sup>21</sup> The mostly continuous export rates could only resist the declining production rates in the non-ferrous metals industry in the NIS since domestic demand declined tremendously.

<sup>22</sup> Cf. Gunningham/ Sinclair 2001.

<sup>23</sup> Cf. Dellheimer/ Ellmies 2000. The Graph shows the result of a poll of leading western mining corporations. The scale ranges from -100 (not suitable investment climate) to +100 (very good investment climate).

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Although the current exploration is declining, future trends of exploration seem to be attractive for investors.<sup>24</sup> However, foreign investors are still obviously trying to avoid investing in NIS. Reasons for this effect may be found at the economical, political and sectoral level of the nation states which will be examined more in detail in the following chapter.

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<sup>24</sup> Cf. Table 4 in Chapter 3.1.

### 3 Country Focus: The Non-Ferrous Metals Industry in the Russian Federation and Kazakhstan

#### 3.1 Russian Federation

##### 3.1.1 Economical and Political Factors

The Russian Federation is in need to establish a political, legal and economic climate attracting foreign investors. At the edge of the new millennium, declining foreign investments in the mining sector belong to the major problems of the Russian mining sector. FDI figures show an uneven decline of FDI inflows after a peak in 1997. Since then, there are fluctuations on a relative low level. However, the share of FDI to the (non-)ferrous metals industry could rise relatively in spite of a decline of the absolute figures. Main reasons for this small amount might be the back-lagging privatization process and deficits in the administrative enforcement of regulatory reforms on a local level.

**Table 2: Foreign Direct Investment in Russia**

<b>Foreign Direct Investments</b>	<b>1997</b>	<b>1998</b>	<b>1999</b>	<b>2000</b>
Total [in Bill. US\$] (by UNCTAD)	6,6	2,8	3,3	2,7
Total [in Bill. US\$] (by Deutsche Bank Research)	3,6	1,2	0,7	1,2
Total [in Bill. US\$] (by OECD)	6,6	2,8	3,3	-
<i>Ferrous and Non-Ferrous-Metals Industry [in %] (by OECD)</i>	<i>4,4</i>	<i>4,5</i>	<i>9,7</i>	<i>9,5</i>

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However, there have been efforts to overcome this situation. According to recent OECD analysis, adequate, rules-based legal and regulatory environment for investment have been established.<sup>25</sup> For instance, a legal framework for trade and investment in Russia was implemented in 1994. It was later supplemented by other sector- or activity-specific laws. Nevertheless, there is still no unified economic space because of the multitude of administrative barriers and obstacles encountered by investors, particularly at regional level, often in contravention of federal legislation and regulation. Against this background, Western financiers would “‘rather eat nuclear waste’ than invest in Russia”.<sup>26</sup> Thus, the gap between the general attractiveness of Russian commodity reserves for foreign investors and the investment climate is tremendous.<sup>27</sup> However, Russia starts realizing that it is in a strong need of foreign investment.<sup>28</sup>

As the OECD stated, there are examples of unpredictable hurdles or sudden unavailability for feasibility calculations. At the regional level, examples occur in the form of unforeseen licensing or permission requirements, license fees in excess of what is legally required, tax payments that are negotiable rather than statutory, “voluntary” contributions to extra-budgetary funds.<sup>29</sup> Additionally, the general burden of licensing and other policy-induced start-up difficulties at regional level are so onerous that firms specializing in helping new businesses to manage this process are becoming a new growth industry. Hence, the OECD has examined a strong need for reform in the following sectors.<sup>30</sup>

<sup>25</sup> Cf. OECD 2001a.

<sup>26</sup> ‘Western financiers hold their noses when they do business in Russia’ 2001.

<sup>27</sup> Cf. also Graph 1 and A dangerous bear-dance.

<sup>28</sup> Cf. ‘Russia champs at the drill-bit’ 1997, ‘Hope gleams anew’ 2001.

<sup>29</sup> Cf. OECD 2001a.

<sup>30</sup> Cf. *ibid.*

Norilsk Nickel is Russia's largest producer of non-ferrous metals and the world's largest nickel producer. The company's exports represent about 4 per cent of Russia's total exports. It was privatized in 1997 and is now mainly owned by Interros Industrial Financial Group. Norilsk Nickel's main areas of activities are the Kola Peninsula in North-West Russia and on the Taimyr Peninsula in the North Russia. Foreign large-scale stakeholders are e.g. Credit Suisse First Boston (owns 7.9% of the shares), Citibank (5.6%) and Chase Manhattan Bank International (1.8%). (Norilsk Nickel 2001b). „There has been no significant investment in modernisation or renewal of equipment for the last ten years. (...) The company's metals production processes, especially those for nickel, seriously lag behind those used by the competitors. Norilsk Nickel's production is more costly in terms of energy and materials, requires greater labour input and has a significantly more serious environmental impact than that of analogous companies elsewhere in the world.“ (Norilsk Nickel 2001) Serious damages of the environment are also reported by NGOs. World Information Transfer (WIT) stated: „The Norilsk Nickel Factory is the biggest single source of sulphur emission in the world and results in acute acid rain problems, which have destroyed more than 4,000 square kilometers of larch forests in the Norilsk area.“ (WIT 2001) According to WIT, there is a total environmental deterioration covering 750 km<sup>2</sup> in the Norwegian and Russian border area caused by air pollution. In a second zone of 2000 km<sup>2</sup>, extensive damage to the vegetation may be found. (Cf. Finnland-Online 2001) In April 1999, the management has therefore approved a development plan for Norilsk Nickel's production unit. According to Interros, the estimated cost of this long-term programme up to 2010 is US\$ 3.5 billion. In 2000, Norilsk Nickel spent approx. 52.3 Mill. US\$ on nature protection, which is 2.5 times more than in 1999. (Norilsk Nickel 2001b). In addition to those expenditures, Norilsk Nickel will start modernizing its Pechenganickel Combine supported by grants from Norway and the Nordik Investment Bank. (Norilsk Nickel 2001a) „One of the principles of the Development Plan for the whole period up to 2010 is that all modernisation programmes will include the introduction of environmental protection technology.“ (Norilsk Nickel 2001) Norilsk Nickel is also taking part in a regional UNEP Programme and committed to „support the project and all initiatives that will encourage a balanced approach to biodiversity conservation of the peninsula, preservation of the unique nature and economic development.

- The system of licensing capital account operations should be made more transparent
- The rules for the present elaborate system for non-resident ruble accounts should be rendered clearer, more systematic and user-friendly.
- The exchange control system for both current and capital account operations should be amended to permit market participants to make freely those payments and transfers which are required under contracts that have been legally entered into and cover transactions not prohibited by laws or regulations.
- The 1992 Foreign Exchange Law and its implementing regulations should be revised to simplify the regime and bring it into line with international practice.

One of the most urgent problems remains the degree of privatization. A look at the non-ferrous-metals industry shows that while there was an increase of the total number of enterprises involved in this sector from 192 in 1990 to 1078 in 1997, there is still a lack in competitiveness and privatization as well as influence of foreign investors. In detail, the figures show that:<sup>31</sup>

- The largest group are mixed corporations with both private and state-owned shares and without foreign participation. This is in particular proved by the influence on the total production.
- As a consequence, strictly private – owned corporations are large in number but have smaller production shares. Corporations with foreign participation are still smaller in number, in production control, and in number of employees.

This kind of privatization in favor of domestic companies is a main reason for the small amount of foreign investment in general and in particular in the case of the non-ferrous metals industry.

<sup>31</sup> Cf. WVB 2001a.

**Table 3: Type of ownership in the NF-Metals-industry 1997 (1996)**

Type of ownership	Percentage of Enterprises (100 % = 1078)	Percentage of total production	Percentage of total employees
Percentage of State-owned and communal enterprises	1.8 (2,2)	4.2 (5,4)	6.3 (6,7)
Private enterprises	84.2 (83,7)	30.6 (23,1)	27.6 (15,1)
Mixed enterprises with state-owned participation; mainly stock corporations but without foreign participation	10.8 (10,0)	61.6 (70,1)	60.9 (76,4)
Mixed enterprises with state-owned participation; mainly stock corporations but with foreign participation	3.1 (3,9)	3.6 (1,4)	5.2 (1,8)

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### 3.1.2 Sectoral Factors

The mining industry including oil and gas, smelting, iron and steel and the non-ferrous metals sectors makes up for almost 50 % of Russia's industrial production and employs about 1,9 million people covering 13,4 % of the industrial labor force.<sup>32</sup> In the case of the non-ferrous metals industry, the following commodities are mined: aluminum, antimony, cobalt, copper, lead, nickel, zinc as well as magnesium, molybdenum, titanium and tungsten.

The structure of the NF-metals industry is still partly organized according to these commodities as it has been the case in the Former Soviet Union. In spite of the privatizations of the former state-owned companies, the structure still reflects the former combines and their organizational structure. However, the process of privatization had a large impact on the current structure of the non-ferrous-metals industry. In the early nineties, the Russian NF-metals industry was structured into different incorporations according to the above mentioned metals.

During the nineties, there was a strong process of concentrations mainly covered by mergers and acquisitions. Today, mainly two large groups are left: "Norilsk Nickel" and "Urals Mining and Metals".<sup>33</sup> From a geographical point of view, the major non-ferrous-metals enterprises are located in Krasnoyarsk region, Murmansk, Orenburg, Chelyabinsk, Sverdlovsk and Novosibirsk regions, Bashkortostan Republic and the Primorsk region.

**Table 4: The dynamics of the main indicators of the NF-Metals Industry (2000)**

Commodity	Growth rate in %
Aluminium	+3
Titanium (sponge)	+16
Refined copper	+12
Nickel	+7

<sup>32</sup> Cf. *ibid.*

<sup>33</sup> Cf. Lyaskovskaya/ Grishankov 2001.

Zinc	+4
Tin	+36
Lead	-7

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In general, the NF-Metals industry share show a declining performance compared to the total industrial output. A look at the growth rates of the different metals show a significant development.<sup>34</sup> According to Goscomstat, Russian output of non-ferrous metals went up 11.3% in 2000 (compared to 1999) and Russia could keep up being the second largest NF-metals country of exportation. However, there have been no significant investment in modernization or renewal of equipment for the last decade.<sup>35</sup> In addition to this technological issue, another problem is the overall trend that commodity prices have decreased. For instance, the price for non-ferrous metals went down for 40% compared to 1972. Thus, the Russian government developed a medium-term program to ensure the sustainable growth of the non-ferrous-metals industry as stated below.

The estimated amount of total investment have to be covered by the companies themselves while public subsidies remain rather negligible.<sup>36</sup> In detail, annual investments of a total amount of approx. 1 Bill. US\$ are needed from 2001 until 2004 in order to make the industry competitive.<sup>37</sup> A total average of approx.. 0,9 –1 Bill. US\$ have to be invested by private enterprises, while the amount of public subsidies will be between 0,7 and 7 Mill. US\$. Compared to the annual average of FDI inflows, it is obvious, that FDI can currently not contribute significantly to growth or innovation processes of the non-ferrous metals sector. However, the growth potential is still present in the non-ferrous metals sector. Optimistic forecasts predict that in four years domestic consumption will increase and thus overcome the current crisis. In the case of aluminum with rates of 35-37%, aluminum roll consumption by 50-60%, copper and zinc consumption by 32-35%, copper roll consumption by 35-40%, and lead consumption by 25-27%.<sup>38</sup> Even if the overall economic growth should slow down, the effective demand for non-ferrous metals will increase 20-25% up to the year 2005.<sup>39</sup>

**Table 5: Mine Production in 1998**

Commodity	Volume	Ranking	Percent of the World reserves
Gold	114 tonnes	7	4,7
Bauxite	3,5 million tones	9	2,8
Zinc	115 000 tonnes	13	1,5
Copper	515 000 tonnes	5	4,2
Lead	12 000 tonnes	26	0,4
Nickel	235 000 tonnes	1	21,1
Antimony	1400 tonnes	4	1

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<sup>34</sup> While there is an overall, positive growth rate, a closer look on the specific metals show tremendous differences. For instance, the tin industry could benefit from a growth rate of up to 36%, while there was a recession of the lead industry. Without going into depth, it can be stated that the figures show the great potential of the NF-metals industry.

<sup>35</sup> Cf. Norilsk Nickel 2001b.

<sup>36</sup> Cf. Metals-russia.com 2001

<sup>37</sup> Cf. *ibid.*

<sup>38</sup> This forecast assumes that positive tendencies in the economy persist.

<sup>39</sup> Cf. WVB 2001a.

### 3.1.3 Environmental implications

In the Russian Federation, FDI inflows to the non-ferrous metals sector do not contribute significantly to any economical, political or environmental effects at a regional or national level. Even on a local level, effects are hardly verifiable and remain subject to analysis on a case study level. However, it is of interest in how far domestic investments can substitute foreign investments in this sector. As mentioned above, in spite of large local investments, major problems remain. Effects as described in the introductory chapter such as implementation of innovative technologies and industry structures pushing forward policy reforms can not be identified in the Russian Federation. As shown below, the non-ferrous metals industry is the second largest polluter with respect to hazardous waste.<sup>40</sup> Furthermore, the accumulations of hazardous waste are still growing.<sup>41</sup> Compared to this relatively high amount of generation, the degree of usage and detoxification is relatively low.<sup>42</sup> In addition to the generation of hazardous waste, the interlinked soil contamination has to be regarded as a severe environmental problem. Soil contamination has an estimated impact on 2,3 million hectares. 730 000 hectares of these are in particular dangerously contaminated as a result of the (petro-) chemical, oil and ferrous as well as non-ferrous metals industry.<sup>43</sup> Furthermore, the Russian Federation is also in need of an effective environment management. Currently, there are no unified criteria and/ or regulations comparable to standards implemented in other, industrialized countries. For instance, an internationally competitive waste management system is missing mainly due to financial constraints.<sup>44</sup> However, the National Environmental Action Plan (NEAP) demands charging enterprises for environmental related side costs. Due to the NEAP, future environmental policies have to seek a close co-operation with large enterprises which start to invest in cleaner technologies, trying to meet criteria for ISO 9001, ISO

#### Box 3.2: Medium-Scale FDI

The Kubaka Mine in eastern Siberia, Russia's largest gold mine is a joint venture of Omolon Gold Mining company and the Canadian Kinross Gold Co., which holds 54.7 per cent. The Kubaka Mine accounts for 500,000 ounces per year, 15 per cent of the country's gold production. (EBRD 2001)

According to Kinross, the Company incorporated a highly developed environmental protection program when they took over the Kubaka mine in 1998. Kinross obliged itself to "take positive action to protect the safety of its workers, conserve natural resources, and minimize the impact of its activities on the environment through diligent application of appropriate technology and responsible conduct at all stages of exploration, mine development, mining, mineral processing, decommissioning and reclamation." (EBRD 2001) Kinross states that they frequently use systems, skills and technology that are new to the area. In 1998, Omolon spent US\$ 9,94 million on measures to ensure that facilities will perform well throughout the life of the mine and not adversely affect the natural resources of the area after the mine closes. Eleven regulatory inspections had taken place at Kubaka in 1998, resulting in only one minor comment, Kinross reports. As an overall indicator of the effectiveness of Kubaka's environmental management program, no impacts to the cold-water fisheries in the Kubaka River or Malaya Avlandya River had been detected since the mine began operations. In addition, an independent engineering analysis had given Kubaka a clean bill of health in June, 1998.(EBRD 2001)

Furthermore, Kubaka has introduced a number of environmental management products previously not available in Russia. It applies monitoring equipment and reliable techniques for waste treatment of water, soil and air quality reducing environmental damage.

<sup>40</sup> These figures refer to the whole metallurgical industry including processing work in addition to the mining processes. However, in the case of hazardous waste, the mining industry itself belong to the main generators.

<sup>41</sup> Cf. OECD 1999a.

<sup>42</sup> Cf. Centre of Environmental-Economic Research and Information 2001.

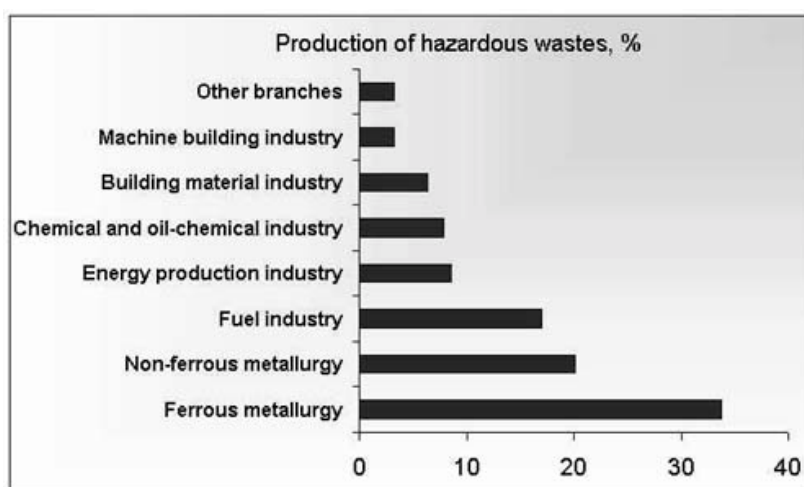
<sup>43</sup> Cf. OECD 1999a.

<sup>44</sup> Cf. Ibid.

14000 as well as for EMAS.<sup>45</sup> Although the responsible Russian Ministry of Natural Resources has begun preparing standards based on ISO 14000, these regulations are not yet obligatory.<sup>46</sup> In the case of an effective waste management, the administrative structure and the regulatory framework was established, its implementation, however, is hampered by public sector budget constraints. Also in the case of the enforcement of environmental management system, local administration remain a strong impeding factor.

In sum, none possible effects of FDI, as described in Chapter 1, could be substituted by domestic investments. A look on the total investment in environmental protection in Russia shows a relative stable development on a level of approx. 0,28% to 0,39% of the GDP.<sup>47</sup> The share of foreign direct investment plays only a small role.<sup>48</sup> This is also the case for the NF-Metals industry where there is a strong need for modernization and implementation of modern technologies.<sup>49</sup> The environmental state remains in spite of high domestic investments on an international low level.

Graph x: Production of hazardous waste in the Russian Federation<sup>50</sup>



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## 3.2 Kazakhstan

### 3.2.1 Economical and Political Factors

Kazakhstan is fortunate to be well endowed with petroleum and mineral resources. But, since independence, the vast majority of new investment in the sector has been devoted to petroleum. New investment in the mining and metallurgical sector has not been commensurate with the country's geological potential or the importance of a sector which accounts for over 30% of total export earnings, 16% of GDP, and 19% of total industrial employment in 2000<sup>51</sup>. Kazakhstan has a long tradition as a mining country. Some oblasts are dominated by the sector and certain municipalities depend on the combines for vital social and infrastructure services. The government has adopted the

<sup>45</sup> Cf. NEAP 1999-2001.

<sup>46</sup> Cf. OECD 1999a

<sup>47</sup> Cf. Ibid.

<sup>48</sup> Cf. Ibid.

<sup>49</sup> Cf. Norilsk Nickel 2001b.

<sup>50</sup> The figures are related to the whole NF-metallurgy industry including mining as well as further processing of the metals.

<sup>51</sup> Cf. World Bank 2001b.

policy of fostering private sector development for mining and metallurgy and has privatized the existing combines.<sup>52</sup>

A closer look at the overall FDI figures underlines that Kazakhstan has received significant interest from investors since 1994. However, estimated net FDI in 2000 was US\$ 1.3 Billion, down from US\$ 1.5 Billion in 1999, but the figure is projected to increase to US\$ 1.7 Billion in 2001 due to an expected increase in investments in the oil and gas sector.<sup>53</sup>

**Table 6: Foreign Direct Investment in Kazakhstan**

Foreign Direct Investments	1997	1998	1999	2000
Total [in Bill. US\$] (by UNCTAD)	1.3	1.2	1.5	1.3
Total [in Bill. US\$] (by Deutsche Bank Research)	1.3	1.1	1.5	1,2
Total [in Bill. US\$] (by Word Bank)	1.3	1.2	1.6	1.2

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The biggest investor in the Kazakh oil and gas sector are US American companies such as Chevron. Privatization efforts, apart from the oil and the gas sector, in the telecoms, energy, and mining sectors have brought and are also expected to bring in more FDI. There are more than 130 US companies operating in Kazakhstan. Twenty of about 300 registered US joint venture companies are involved in large-scale projects in the oil and gas, mining and energy sectors. Japan, South Korea, the UK, Germany, Turkey, Switzerland and China are other large investors in the country.<sup>54</sup>

**Table 7: Breakdown of FDI by country, 1993-1999 (per cent of total, and all above 1% in '99)**

Country	1993-1996	1997	1998	1999
US	28.44	9.88	32.38	50.17
UK	14.54	14.78	7.01	9.03
China	4.85	14.86	7.03	2.76
Turkey	5.29	3.09	7.20	1.89
South Korea	21.41	34.17	2.58	1.60
Switzerland	1.19	1.48	3.79	1.32

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**Table 8: Breakdown of FDI by industry, 1993-1999 (per cent of total, all above 0.5 % in '99)**

Sector	1993-1996	1997	1998	1999
Oil and Gas	48.42	34.08	66.86	83.51
Non-Ferrous Metals	23.29	36.13	6.27	2.77
Ferrous Metals	4.90	5.25	1.01	0.82
Energy	2.75	6.09	6.99	1.27
Food	3.63	3.35	3.48	4.24
Banking	0.75	1.23	6.89	2.33

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Immediately following the breakup of the Soviet Union the traditional markets for Kazakhstan mining and metallurgical combines disappeared or became insolvent with the result that mineral output fell and the combines came under severe financial pressures. The Asian and Russian financial crises further depressed the markets for Kazakhstan mineral products. In 1994-96, in an attempt to redress

<sup>52</sup> Cf. Levine 1998.

<sup>53</sup> Cf. EBRD 2001a.

<sup>54</sup> Cf. *ibid.*

the situation and maintain production, employment, and social services, the government either privatized or awarded “management contracts” for many of the combines to consortia of local and foreign investors.<sup>55</sup>

The results of the privatization program and management contracts system have been mixed. On the one hand, production has stabilized and the combines have continued to provide employment and social services to the communities where they operate. This has been the case, for instance, of the Ispat International (United Kingdom-India) take over of the Karmet iron and steel works, the Samsung arrangements with Dzhezkazgan and Balkash copper combines, and Glencore Trading (Switzerland) commercial arrangements through Kazzinc. On the other hand, some investors allegedly did not honor their commitments and their management contracts were later cancelled by the government. Disputes related to these cancellations have led to litigation and/or arbitration in local and foreign courts.<sup>56</sup>

Indeed, due in part to the damage to the country’s reputation caused by these previous bad experiences, Kazakhstan is viewed by the international mining investment community as something of a “no-go” country.<sup>57</sup> The country attracted only US\$ 9 - 10 million in new exploration in 1999, an amount vastly insufficient to replace reserves currently being exploited. Part of the reason for this failure to attract sustained investment in exploration is the reduced availability of funding in the international capital markets and low commodity prices. But other countries, with less geological potential than Kazakhstan, continue to attract new investment.

As one can see from the actual FDI figures of the years 1999 to 2000, all in all Kazakhstan has made little progress towards improving the investment climate to stimulate new investments and improve considerably the state of the environment in the Non Ferrous Mining Sector.<sup>58</sup>

The World Bank 2001 study on “Strategic Review of the Mineral and Mining Sector” concludes that the principal reasons are:<sup>59</sup> a) the lack of a clear government strategy and policy for the sector; b) deficiencies in the legal, taxation, and institutional arrangements; c) a tendering system for mineral properties which is not in accordance with international practice; d) a reserve classification system which is incompatible with international standards; and e) the stigma, rightly or wrongly deserved, of unfair and arbitrary dealings between the government and the private sector, mostly due to questionable governance practices. However reasons for not applying environmental standards in the mining industry have not been the focus of the discussion in the above mentioned report. The identification of environmental impacts of investments on the national level remain non-significant, if not nebulous.

### 3.2.2 Sectoral Factors

As being stated above the main policy objective in the mining sector has been the development of favourable conditions to spur greater foreign investment. Kazakhstan's Foreign Investment Law was adopted in 1994 and revised in 1997. Since then, Kazakhstan has started a programme to restructure the management of its mining industry enterprises that combined Government ownership, privatization and foreign management. This programme involved the transfer of the bulk of Kazakhstan’s major

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<sup>55</sup> Cf. Levine 1998

<sup>56</sup> Cf. World Bank 2001b.

<sup>57</sup> Cf. BGR 1998b.

<sup>58</sup> Cf. World Bank 2001b.

<sup>59</sup> Cf. *ibid.*

mining and metallurgical industries to the trust management of foreign companies. In 1996, the Government began privatizing selected enterprises under trust management.

Sector background analysis highlights that some 233 mining and metallurgical combines produce a wide variety of mineral products, the volumes and values of which are summarized in table 9. Kazakhstan is a producer of chromite ores, ferroalloys and ferrochrome, alumina, and uranium. It is a major producer of refined copper, lead and zinc, iron ores and pellets, steel, coal, manganese, alumina, titanium, barites, and rhenium. Over 90% of the mineral production is exported since local consumption of metals is relatively low.<sup>60</sup>

Kazakhstan's mining industry lost some of its traditional markets with the break-up of the Soviet Union, and is a relative novice in the international marketplace. At the same time, the mining and metallurgical sectors have to face problems related with high energy-consuming technologies, old equipment, the deteriorating quality of extracted ores and the lack of mining development. The dependence on the Russian Federation for transport links to international markets also plays an important role in the country's economy.

**Table 9: Kazakhstan Selected Minerals Production: 1999**

Commodity	Volume	Value (million Tenge)	Value (million US\$)
Bauxite	3.6 million tonnes	2,349	19.6
Refined Gold	9,655 kilograms	7,740	64.7
Alumina	1,157,692 tonnes	13,074	109.3
Lead Metal	158,890 tonnes	6,714	56.1
Zinc Metal	248,754 tonnes	23,833	199.1
Refined Copper	361,890 tonnes	62,931	526.0

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The following commodities and their mining and producing enterprises are internationally recognised for their involvement in international engagement and have been further subject to discussion of possible environmental impacts. For instance, Copper production in Kazakhstan steadily declined from 1991 to the middle of 1995, falling by about 50 per cent. The situation, however, began to be reversed when foreign companies acquired management rights to the country's copper-producing firms. The largest copper-ore producer and processor in Kazakhstan is Kazakhmys (Samsung Deutschland), which incorporated Zhezkazgantsvetmet, Balkhashmys, the Eastern Kazakhstan Copper and Chemical Plant, and the Zhezkent Mining and Processing Plant.<sup>61</sup>

<sup>60</sup> Cf. Levine 1998.

<sup>61</sup> Cf. OECD 1998.

About one-eighth of Kazakhstan's industrial output comes from non-ferrous metals. Zinc contributes a significant amount to these outputs. Kazzink, Kazakhstan's main zinc producer, is controlled by Glencore (Switzerland). The Kazzink company was formed in 1997 through a merger of three major mining and metallurgical enterprises, the Ust-Kamenogorsk lead and zinc enterprise, the Leninogorsk polymetal enterprise and the Zhyranovskiy lead enterprise.

The production facilities of the Company are located in East Kazakhstan region of the Republic of Kazakhstan. The Company is producing several dozens of product names. The company is the main producer of lead, zinc, gold and silver in Kazakhstan and one of the largest producers in CIS countries.

Glencore has invested about US\$ 65 million in the opening of a new mine at Maleyevskiy, which is expected to produce up to 2.2 million tonnes of zinc annually. Furthermore, through its subsidiary Kazastur Zinc AG, Glencore will provide financing for a new production-expanding investment programme for 2000-05 with a volume of about US\$ 190 million. The Zinc production of Kazzink is targeted towards 156,000 tonnes in 2001. Recently Kazzink has invested in batch concentrators to recover Fine Gold from the process stream and from zinc plant tailings.

The Company includes five mines, three mills, two zinc plants with total capacity of about 260 thousand tons of metal, zinc plant with total capacity 160 thousand tons, sulfuric acid production shops, refining, rare metal production, service plant and other types of production. Total number on staff is about 26 thousand people.

In 1995, after chromium production fell by 55 per cent of Soviet Union levels, KazChrome, the country's largest chromium company, was taken over by Japan Chrome, which hold 55.2 per cent of the company. KazChrome is located in Aktubinsk and possesses two ferro-chromium alloys plants, Ermak and Asku. Presently ownership and management is now vested in Eurasia Bank Group.<sup>62</sup>

Kazakhstan has also developed important mining industrial branches, most of them with direct foreign investments, such as the lead-zinc industry (KazZinc company and Shymkent Lead Plant), the bauxite and aluminium industry (Aluminum Kazakhstan, which possesses two bauxite mines and the Pavlodar Alumina Plant), and the manganese

and manganese-titanium industries (Kazakmanganese and Urst-Kamenogorsk Metallurgical Plant).<sup>63</sup>

The most relevant stakes being taken by private foreign and domestic investors have been summarized in the following table and have been selected for further investigation of environmental impacts of their investment, if information has been made available.

**Table 10: Selected Investors of the NF Mining Sector in Kazakhstan: 2000<sup>64</sup>**

Mineral	Entreprise <sup>65</sup>	State Shareholding in percent	Private strategic shareholder
Alumina	Aluminium of Kazakhstan	31.68	Eurasian Bank <sup>66</sup>
Copper	Kazakhmys	35	Samsung Dtschld.
Chromite, Ferroalloys	Kazchrome	32.37	Eurasian Bank <sup>51</sup>
Lead/ Zinc	Kazzink	27.64	Glencore
Titanium/ Magnesium	UKS-Kamenogorsk TMK	15	Specialty Metals Co.

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<sup>62</sup> Cf. World Bank 2001b.

<sup>63</sup> Cf. WVB 2001b.

<sup>64</sup> These figures have been provided by the Business Information Service for the Newly Independent States (BISNIS)

<sup>65</sup> All companies have been subject of the Blue Chip privatisation programme of the Government of Kazakhstan and represents from the NF sector the largest companies.

<sup>66</sup> Property rights were not yet final after repossession of Trans World Group in 2000. Eurasian Bank has been appointed as the exclusive agent for financial brokering of the shares of the seized companies.

Apart from the TransWorldGroup involvement and subsequent dispute in Kazakhstan, which has been discussed in few sources,<sup>67</sup> the “Samsung and Kazzink cases” have been subject to further investigation due to their role and importance of the privatization efforts in the NF Mining Sector in Kazakhstan. Both enterprises have been contacted and requested to provide information about their environmental corporate behavior. The results have been rather neutral. Both companies stressed that their operations refer to best practices in the mining industry with the required investment in issues such as modernization and up-gradation of outdated technologies. Several sources do also describe their efforts in investing in environmental issues in a very general manner. For instance, a press notice by a producer of extracting machines does provide information about the investment in latest extracting technology being used for recovering gold from zinc tailings (see also Box. 3.3).<sup>68</sup>

The largest copper producer with the involvement of Samsung started its engagement in Kazakhmys with making large investments in the industry, including equipping the Zhezkazgan mine with state-of-the-art technology at a cost of over US\$ 120 million to turn it from a start-up mine into a producer. The company is constantly changing the equipment, and making major overhaul and reconstruction. It plans mastering the newest resources saving and ecologically clean technologies as well as an implementation of measures on environment protection.<sup>69</sup>

There is no doubt, that resource efficiency activities such as investing in resource recovery technologies can be regarded as measures with environmentally sound side effects. If these measures are the result of foreign involvement or the pure economic calculation of increasing productivity without stronger environmental intentions, can only be the subject of further research.

### 3.2.3 Environmental implications

The main objectives of the mineral sector’s current policy have led to the harmonization of Kazakhstan’s interests with those of foreign investors. Increasing investment in the mining industry has obviously pushed the transfer of advanced technology and management in the last decade. However recent FDI inflows to the non-ferrous metals sector do not contribute significantly to any economical, political or environmental effects on a national level. On a local level, effects are partly identifiable and remain subject to clustered appearances undermined by the implementation of innovative technologies and resource efficiency activities as being stated in the previous chapter.

However, mining remains inherently problematic from an environmental point of view. Although its direct environmental impacts on the whole seem well understood, the relevant authorities may not always rise to the occasion by formulating environmental regulations and then enforcing them. The environmental issues facing the Kazakh mining industry are the result of many years of weak implementation and enforcement of environmental legislation, with other priorities more pressing than the long-term environmental management of mines. At independence Kazakhstan inherited a mining industry that was typical of the former Soviet Union. Historically, attention was paid to the provision of social services but little to environmental management. Since independence, as economic pressures have mounted on some combines, less resources have been available for pollution prevention. Thus, the potential site contamination could be substantial and ambient environmental baseline data for mining sites is mostly not publicly available.<sup>70</sup>

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<sup>67</sup> Cf. Dalheimer/ Ellmies 2000, Mining Journal 1999.

<sup>68</sup> Cf. Falcon Concentrators 2000.

<sup>69</sup> Cf. EBRD 2001a.

<sup>70</sup> Cf. Levine 1998.

Presently the non-ferrous mining and metallurgical industry accounts for 26 per cent of total industrial wastes accumulated in Kazakhstan. 5.1 billion tonnes of tailings from the mining and enrichment of non-ferrous metals have accumulated on 14,000 ha, while 105 million tonnes of metallurgical processing tailings are deposited on 500 ha. The difference between these tailing volumes is due to the low level of ore recovery, which generates larger amounts of wastes during mining and enrichment than during metallurgical processing. As a result of inefficient mining operations and tailing management, large areas are currently environmentally damaged.

Although the responsible authorities were requested to provide more detailed information on current

#### **Box 3.4: Largest Copper FDI from Korea**

Kazakhstan's major copper producer is Kazakhmys, located in Zhezkazgan, central Kazakhstan. Samsung (South Korea) has a 40 per cent stake. Kazakhmys unites all the country's copper industry companies, the Karaganda open coal mines, three power stations and six refining plants. In 1999, the company produced 362,000 tonnes of refined copper, 96,000 tonnes of zinc concentrate, 410 tonnes of silver and 2.3 tonnes of gold. According to Kazakhstan stock exchange (KASE), Kazakhmys has 12 mines of underground and open extraction. Explored and approved reserves of solid mineral are sufficient for 17 years on average.

Since Samsung started its engagement in Kazakhmys, it „has made large investments in the industry, including equipping the Zhezkazgan mine with state-of-the-art technology at a cost of over US\$ 120 million to turn it from a start-up mine into a producer,“ states the EBRD Kazakhstan Investment Profile 2001.

In comparison, KASE reports total industrial investments of Kazakhmys during the last five years at 300 million US\$. Included in this, Kazakhmys had started an environmental program at 15 million \$ for the protection of the production regions concerning overall mining activity. The program contains e.g. the installation of dust catchers in all enterprises of the company and a system of circulating water supply and use of shaft water, economizing over 20 million cubic meter of fresh water.

„The company is constantly changing the equipment, and making major overhaul and reconstruction.“ It plans „mastering the newest resources saving and ecologically clean technologies“ as well as an implementation of „measures on environment protection“.

environmental issues and problems at mining combines, they did not provide this data. In general, such information is not publicly available and where it is known (through audits or assessments) it is mostly confidential to the combines or new investors. One exception is Ispat Karmet<sup>71</sup>, a Non-NF Investor, which when privatized was subjected to a full Environmental Audit which was publicly disclosed.<sup>72</sup> From several sources<sup>73</sup> it is clear that for new investors, the government will allow considerable flexibility in negotiating environmental requirements. For example, the agreement between the Kazakhstan Government and Ispat Karmet, a Non NF investor, allowed the new company a period of ten years during which time any new environmental law cannot be applied or be enforced against the Purchasers. There is also a cap on the cost of compliance with existing legislation (per year) which Ispat-Karmet is liable for. Ispat is also not responsible for any historic contamination that may have occurred prior to take over.

So current mining regulations need to be updated on the basis of international environmental management practices and standards to keep pace with the country's industrial development. In addition, the lack of adequate enforcement mechanisms

hampers the implementation process. This can be illustrated by the contract system, which foresees an environmental liquidation fund without providing the mechanisms to implement it. Another important point that requires special attention in the country's mineral legislation is the liability of the parties in

<sup>71</sup> Cf. OECD 2000b, Dalheimer/ Ellmies 2000.

<sup>72</sup> Cf. World Bank 2001b.

<sup>73</sup> Cf. OECD 2000b, World Bank 2001b.

cases of environmental damage by mineral exploration and exploitation operations, and its evaluation procedure.

Broad environmental strategies for the whole mining and mineral sector are laid out in the National Environmental Action Plan (NEAP), the Caspian Environmental Programme and the Strategic Plan Up To 2030 “The Environment and Natural Resources”. Most of the envisaged projects for the sustainable management and protection of mineral resources are included in these three programmes. Implementation has not been scheduled yet, since almost none of them have undergone feasibility studies. General policy directions are given in the Strategic Plan. Among its priorities are improving the monitoring system in oil/gas-producing regions, developing a new concept of underground resources protection control, and introducing measures to reduce air pollution from non-ferrous metallurgy industry. It also aims to introduce cleaner technologies in the mining industry and develop more sustainable techniques for mineral exploitation.<sup>74</sup>

No special measures seem to have been taken to use privatisation as a way of promoting the introduction of cleaner technologies. Cleaner production requirements are not normally written into the privatisation contract has been stated in the OECD 2000a Environmental Performance Review on Kazakhstan. Even though the same literature source describes the role of national environmental legislation as being responsible for introducing the principle of cleaner technologies. The use of industrial objects should take place in consideration of established ecological requirements and with the use of environmentally friendly technologies and in operating these objects, low-waste and non-waste technologies and processes should be introduced. The core legislative arrangement governing the application of these articles is the system of ecological expertise, based on the Law on Ecological Expertise and related regulations. According to this system, all new enterprises or activities should introduce efficient materials and energy-saving technologies and production processes, use natural resources rationally, process and use production waste, treat all sewage waters effectively and give priority to their reuse rather than their discharge, and guarantee the implementation of efficient measures to combat air pollution.

A further indicator for successfully conducting environmental activities and possible implications of FDI on the environment are Environmental Management Systems complying with ISO 14001 or similar international standards. The OECD Environmental Performance Review<sup>75</sup> states that overall these have not been implemented in Kazakh industry. Even where foreign investors own the enterprises, environmental management is normally not prioritised, since there is no focus on this Issue either by the authorities or the customers.

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<sup>74</sup> Cf. OECD 2000b.

<sup>75</sup> Cf. *ibid.*

## 4 Conclusions

The general aim of this paper was the examination of environmental impacts of FDI in the mining sector in NIS. Restrictions of an in-depth analysis were mainly caused by the small amount of FDI inflows to the NIS, especially to the Russian Federation and to Kazakhstan. Further restrictions were the insufficient flow of information by involved enterprises as the first hand information provider on a local level.

Thus, the first specific goal, has been to identify reasons and conditions that could provide an explanation for the relative absence of FDI and its environmental impacts. Main reason were found by taking a closer look at economical, political and sectoral circumstances. This threefold analytic framework endowed with specific indicators was used to identify particular reasons on a regional, national as well as local level.

The second specific goal referred to the environmental implications of these elaborations. However, especially this task of linking FDI to the role of environmentally sound behavior of investors does lead on a critical path, where no clear picture can be drawn unless and until scientifically and empirically data has been established to identify linkages. The task of analyzing the environmental impacts of FDI on the mining sectors requires a close look at many stakeholders involved such as host country governments, source country governments, citizens at large, international financial institutions, and investors themselves.

Coming from a regional focus as being discussed in Chapter 2 manifold reasons could be found on the different level of analysis in order to explain the small inflow of FDI to the NIS:

- On an economic level, there was a significant increase of FDI inflow from 1993 until the financial crisis in the Russian Federation in 1998 which had an impact for all NIS. Most of these countries received also in 2001 less FDI than in 1997 which underlies a general back-lagging position of the NIS relative to other emerging or transition markets. This is also acknowledged by other key economic indicators such as the GDP.
- On a political level, in particular the slow enforcement of political reforms and a relative administrative incoherence contribute mainly to a general hesitance of foreign investors to step in to the NIS markets. However, it remained mostly critical in how far the relatively low environmental standards contributed to this effect. Hence, it has to be discussed whether more voluntary approaches or well-defined environmental regulations are more suitable in order to balance the potential conflict between FDI and environmental regulations.
- On a sector-related level, the unattractiveness of the NIS has become obvious: The conditions in Latin America and in particular in the case of Peru and Chile are more suitable to attract foreign investment. Main reasons for these tremendous differences in the perception of foreign investors can be found in the structure and segmentation of the national markets. Slow progressing privatization processes and markets dominated by large, former state-owned enterprises were not likely to fit the needs of foreign investors.

Focusing on a national level, these elaborations could be acknowledged. Compared to possible, positive impacts of FDI on the environment, a deeper look on the environmental implications of domestic investment have shown a considerable effect: None of those potential impacts could be

verified in the case of domestic investment. As mentioned in the introductory chapter, FDI may have positive effects on the environment in particular in terms of modernization and implementation of new and cleaner technologies and management standards. The analyzed case studies show that Russian and Kazakh enterprises, endowed with foreign investment, start to invest in environmental protection. However, in these specific cases, it remains unclear to what specific extent foreign investment has contributed to this effect. A more detailed discussion might lead to findings whether FDI in general is suitable to meet social and environmental needs.

In addition to those considerations, it is also of interest, what role governments can play in order to take into account sustainable effects of investment while at the same time seeking to attract FDI stimulating the economy. It appears that the role of host country governments is particularly critical in NIS. At a minimum, governments should set in place effective environmental regulatory regimes and to enforce them. It is equally important that host countries establish policy frameworks for attracting environmentally sound investments in the mining sector. In short, more needs to be done in this area. In particular, more attention needs to be paid to the building of regulatory frameworks and development of the necessary institutional capacity so that host countries can hold investors accountable for the environmental impacts of their activities.

Especially on an enterprise level public disclosure by mining companies revealing environmental performance should become more frequent. Such disclosure can take many forms including separate annual environmental reports, period publications and statements, required statutory filings with government authorities, and other forms of disclosure. As a matter of best practice, disclosure regulations (covering frequency, standards, thoroughness of reporting, and other aspects) should apply to all mining operations in a uniform manner.

It is furthermore striking that the examples cited in this paper, where environmental concerns were successfully integrated into proposed investments, were easily accessible and transparent to the public. On the other side many investors approached during the preparation of the paper requested to provide relevant information about their activities have been very hesitant due to various reasons. One of them being the fact, that questions related to environmental activities might not be sufficiently dealt with in their operational procedures.

Concluding lessons learned from this analysis mainly refer to the point that positive impacts of FDI on the environment cannot be assured, but can be extrapolated by the few domestic and foreign investor examples which have been stated as case studies in the paper.

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