



OECD GLOBAL FORUM ON INTERNATIONAL INVESTMENT
Conference on Foreign Direct Investment and the Environment
Lessons to be Learned from the Mining Sector

7 - 8 February 2002

OECD Headquarters, 2 rue André Pascal, 75775 CEDEX 16, Paris, France

“ LESSONS FROM BAIA MARE FOR FDI”

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FDI -- LESSONS FROM THE BAI A MARE EXPERIENCE

PART 1; THE EXPERIENCE

Up to 250 000 people are employed directly in the mineral and metal mining sector in Western Europe alone – generating a turnover in excess of 5 billion Euros . Millions of tonnes of wastes both from mining and ore processing are generated each year, and the sector leaves a permanent and ineradicable environmental imprint. In the four years 1998-2000 Europe has witnessed four major accidents , two in Spain and two in Romania . All four accidents involved dam or embankment failures in TMFs (Tailings Management Facilities).

DATE	LOCATION	TYPE OF ACCIDENT
March 10,2000	Borsa,Romania	Tailings dam failure
Jan 30 , 2000	Baia Mare, Romania	Tailings dam crest failure
Dec 31, 1998	Huelva , Spain	Dam failure
April 25, 1998	Aznalcollar , Spain	Dam failure

I was Chairman of the Baia Mare Task Force (BMTF) which was set up to investigate the causes of the Baia Mare and Baia Borsa accidents ; the BMTF Report and Recommendations* were presented to the European Commission and to Hungary and Romania in Dec 2000 . Consideration of the causes of these accidents brought to light some grave weaknesses and gaps in the local regulatory regime , as well as some ambiguities and missing elements in the European Union's regulatory regime.

I have been asked on the basis of this experience to draw some conclusions on how better to integrate environmental goals into the mining projects in those countries hosting FDI in this sector and thus to reduce to the maximum extent practicable the risks of further serious accidents in this sector in the future

Romania is such a country ..

* accessible on : www.europa.eu.int/comm/environment/enlarg/home.htm

THE ACCIDENTS AND THEIR CAUSES

I will start by setting out in brief the nature of the accidents , the reasons they occurred , and the damage that was done.

BAIA MARE

THE FACILITY

- Reprocessing of old cyanide rich tailings, dumped within the city limits, for purposes of recovery of gold ; the reprocessed tailings to be deposited in a new pond 8 kms from the city
 - System built around a closed circuit model in which the new tailings pond received sludge and cyanide rich process waters ; after deposition of the tailing sludge the process waters were re-cycled back to the plant and the cyanide re-used
 - No provision made for emergency discharge of waters
 - Embankment walls constructed from the secondary tailings , spread by hydrocyclones to ensure the fine tailings went to the middle of the pond leaving the coarser sediments for embankment wall construction
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The facility was finally brought into operation after a lengthy (7-year) permitting process in May 1999 after testing in dry weather conditions. Tailings taken from the middle of the old tailings pond were used. During the last half of 1999 the new tailings dam was developing as intended . As winter set in , a significant amount of snow and rain fell on the new tailings pond, which became covered with a layer of snow and ice. Heavy (but not exceptional) rain and snowfall in December and January was followed by rapid snowmelt from Jan 27th causing water levels to rise to critical levels. The embankment walls became saturated and unstable as the snow melted directly on their surfaces .

BAIA MARE

WHAT HAPPENED

- On Jan 30th 2000 after a sequence of unfavourable weather conditions The pond overflowed tearing a 25 m breach in the embankment wall
- 100 000 cubic metres of tailings sludge an waters containing some 120 tonnes of cyanide escaped into local waterways and subsequently down into the Danube.
- 120 tonnes of cyanide is the equivalent of over 500 million lethal doses

On Jan 30th the pond overflowed and washed away a stretch of embankment wall 25 m long and 2.5m deep.

Approximately 100 000 cubic metres of tailings water containing 120 tonnes began to flow into the nearby Lapus river , thence into the Somes , and finally into the Tisza/Danube bas

The most remarkable feature of the accident was the fact that no one was killed or became seriously ill as a result . Were it not for the fact that the Somes/Tisza was covered by an ice-cap extending 200kms downstream the risk to life would have significantly greater. On the other hand the spill had very severe effects on plankton, fish , plants , and wildlife.

BAIA MARE

THE DAMAGE

- 1500 tonnes of fish were killed
- Plankton in the Somes and Upper Tisza was substantially destroyed
- Birds and mammals not seriously effected

AND

- Serious economic impacts as the fishing and tourism industries were Destroyed so far as the foreseeable future was concerned

The BMTF was not called upon to involve itself in questions of blame , liability , or compensation. It was called upon however to state clearly the reasons why the accidents occurred. It was not difficult to identify the trigger viz . the sequence of unfavourable meteorological events immediately prior to the accidents. A combination of factors concerning the design , permitting , and operational stages ,caused the accidents.

A. DESIGN FAULTS**B. REGULATORY WEAKNESSES****C. OPERATIONAL FAULTS**

In the first place the closed circuit nature of the design , lacking all provision for emergency discharge of water in climate such conditions was a miscalculation of the first order . That dangers inherent in such a design should have escaped serious examination by those responsible for the initial Environment Impact Assessment , and the subsequent permitting process, is also difficult to understand. In the case of Romania it was not a question of any lack of skills available to the regulator (although the resources allocated to mobilising these skills was inadequate) , but rather to the permitting procedures which were complex and bureaucratic , in which many different authorities were responsible for different aspects , but no one singly and specifically responsible for the final decision on safety.

Inappropriate use of a zero discharge system**plus**

- Inadequate embankment construction due to lack of differentiation in the deposition of tailings
- Inadequacy of hydrocycloning equipment for such temperatures

It is difficult to imagine how a 'zero discharge' system could have been thought appropriate in such a location. It appears the Australian partner had had successful experience of such a system in Australia , but one has to seriously question the the decision of the designers and operators ot propose such a system in the prevailing climatic conditions of the Carpathian region and specifically the Province of Maramures. The particular sequence of weather conditions which triggered the accident were by no means unprecedented in the area.

But this was not the only fault attributable to the designers and operators

- Original Environmental Impact Assessment flawed
- Failure to take account of water balance data
- Inappropriate risk classification of pond for monitoring purposes
- Complex and inefficient permitting procedures

Neither were the flawed EIA and the confused permitting procedure the only failures on the regulatory side. Who can explain the failure of the water authorities who were involved in the permitting process to draw the consequences of the water balance data which must have been available to them , for this design ? How could the tailings pond have been classified as 'low risk' and thus exempted from more stringent monitoring requirements ?

Finally we identified a number of operational faults , principal among which was the failure to ensure that the design requirement in respect of tailings differentiation for embankment construction was respected. There were two factors here ; firstly by the drawing off of the old tailings from the middle of the old pond for initial re-processing , thus depriving the new pond with depositions of new tailings containing adequate proportion of coarser sediments ; and secondly by not observing and reacting to the failure of the hydrocycloning equipment to operate effectively in very low temperatures .

As a result of this analysis we made a series of recommendations in our Report concerning the need for strengthening and clarifying European Union regulation in these areas , knowing that Romania was in any case in the middle of substituting European Union environmental regulation for it's own environmental regulations as part of it's preparation for EU accession. Our experts also offered advice to the Romanian authorities as to the changes which should be introduced before the operation was re-opened .

These accidents , and our analysis of why they happened , have led me to come to a number of conclusions on how the integration of the industrial and environmental goal of FDI in this sector can more effectively achieved , and I now deal with these conclusions and make a number of proposals for action in the following fields ;

- Regulations
- Environmental Liability
- Negotiated Voluntary Agreements

PART 2 ; THE RECOMMENDATIONS

My experience in these matters does not solely derive from the Baia Mare accident. For most of my career in the European Commission I was involved in the framing and proposal of regulation in the Food and Drug area and in respect of the environment.

Based on this experience , I believe that the majority of firms in any given sector are pre-disposed to running their businesses in a manner consistent with high standards of safety and environmental protection. But I also know that there are firms whose performance depart from such standards , where corners are cut on health and safety issues , or where advantage is taken of weak regulatory regimes, in order to maximise short term profit. So, in sectors where safety and environmental risks are high , it is not acceptable to be satisfied with self-regulation or non mandatory codes of practice , in the belief that all firms have the same high sense of societal responsibility. Such approaches are , of course , admirable as complements to regulation in such high risk sectors.

Secondly I am a passionate supporter of the non-prescriptive approach to the framing of regulation , which leaves to the technical skills and creative enterprise of the businessman the choice of how to achieve regulatory targets in the most cost-efficient way, Indeed I believe that over prescriptive regulation can impede technical innovation and progress. Nevertheless there are high risk areas where it becomes necessary not only to lay down in regulation what must be achieved but also a detailed specification of how the goal is to be achieved . I believe that important aspects of the mining/ore-processing fall within this latter category.

Finally , I believe in simplicity , in making the pursuit of high levels of protection as easy as possible. Thus the way in which operating permits are is important. The regulatory structure should be simple , unifies , and where possible a “one stop shop”. This not only makes it easier for the prospective operator , but it also contributes to better balanced regulation , easier to enforce , and leaves no scope for ambiguity about responsibility

Bearing this in mind , and ready to see these factors taken account of where possible It must be acknowledged that in many countries today which host FDI in this sector there are gaps in the regulatory capacity and regime ,and therefore the regulatory standards actually applied can be substantially less stringent than in the more developed countries. There can be many different reason for this such as ;

- *simple inadequacy of regulation
- *confusion in regulatory responsibilities
- *absence of skills in applying them
- *lack of resources with which to enforce them.

Furthermore there can be 'political' pressures 'inhibiting application and enforcement of regulation arising from;

*low valuations of environmental assets

*squabbles between 'strong' Mining/Industry Ministers and weak Environment Ministers

*national and local pressures for job creation

In such circumstances unscrupulous operators may be attracted to invest, and take advantage of the situation to maximise profit by cutting costs on environmental protection costs. In such circumstances, there is little use in looking to 'voluntary agreements' for any kind of effectiveness.

In the case of Romania and many other FDI host countries, most of the above factors apply. And it is unlikely that the situation will change in the immediate future, regardless of what progress is made to transpose EU regulations. New legislation can quickly be brought onto the statute book, but new attitudes take much longer to become effective. With pressure building for the creation of more and more jobs, and the other pressure arises from the 'economic/political climate' which is unfavourable for the expansion of the public administration so as to create an efficient infrastructure for regulation enforcement.

The only leverage one has, that can be in such circumstances to ensure adequate protection of the environment, is through the financiers and providers of capital for these operations. Clearer environmental liability principles, including those which have trans-national validity, could be enunciated so as to make the provider of capital jointly liable for environmental damage caused by the actions of the operator. This could be expected to produce on the part of the financier a direct and detailed interest in the environmental aspects of a project, from the initial Environmental Impact Assessment through to the closure and aftercare aspects. It would result, I am sure, in the financier requiring of the operator, in cases where the host countries regulatory regime is inadequate, that he apply the regulations applicable in his country of origin, or in any other headline country..

My proposal is that while waiting the emergence of an effective convention on trans-national environmental liability, which would build in financier liability, that the providers of capital and finance reach a negotiated agreement between themselves and with some appropriate counterpart, whereby they undertake to intervene in the environmental design, environmental assessment and ongoing management systems of any mining/ore processing venture they finance, with a view to achieving agreed international standards of environmental care.

RECOMMENDATIONS FOR REGULATION

Clear and Severe technical specifications

For all of the reasons just enunciated , and in the light of experience of the accidents in recent years , I am convinced that stringent detailed written down regulations are necessary in this sector specially in respect of Tailings Management Facilities (TMFs) These should apply to :

- risk assessment methodologies
- structural specifications for wall , dams ,linings , and emergency discharge facilities for TMFs .
- obligatory detoxification of process waters and sludges of hazardous and toxic substances before deposition in ponds
- rigourous automatic monitoring of pond level
- requirements for monitoring
- requirements for accidents and emergencies
- requirements for closure and aftercare

I would like to see a total ban on the storage in tailings ponds open to the elements of highly toxic substances for all new TMFs. Closed circuit systems for recovery of leaching agents should be banned except in dry arid conditions .

I am well aware that industry representative bodies have in many instances successfully promoted the view that, because each mining/processing/TMF site is so unique in relation to it's location , it is not possible to have detailed mandatory common technical specifications for e.g. tailings pond structures. My colleagues in the BMTF rejected this view . On foot of our recommendations the European Commission is currently preparing a Directive on Waste Management in the Mining Sector in which such specifications will be included. We do not yet know whether they will be in the form of mandatory specifications , or BAT notes.

Accidents and emergencies

In the European Union and those countries which are currently negotiating access to it , the provisions of the Seveso11 Directive are being revised so as to make it more applicable to the mining sector . At international level this area is covered by the Convention on the Transboundary Effects of Industrial Accidents to which countries should adhere . What should really be a corporate objective for mining and processing companies is the cultivation of a "safety culture". I should also like to see operators being obliged , as a condition of the granting of an operating permit ,to

follow recognised international management standards such as ISO 9000 , ISO 14000 , or the EU's EMAS scheme.

Climate change

Most people , I believe , now accept as real the phenomenon of climate change , there is a long way to go in building it in as a factor in structural specifications and in regulation .Any industry involving substantial open air storage of residues in ponds and lagoons need to take account of the fact that the structures which in the past were quite adequate to withstand the worst weather conditions of the last fifty or hundred years , may not be adequate to withstand the conditions which may prevail in the ten years ahead. Those responsible for structure design and regulation need to take note.

Closure and After Care

While travelling in Central and Eastern Europe in the course of our investigations we became acutely aware of the threat posed by badly closed mining and processing operations in terms of seepage of hazardous materials and risks of collapse. Indeed the same may be observed in the Western States of the USA. We therefore recommended that there be a European requirement that a 'Comprehensive Closure and After Care Plan' be submitted with the necessary financial sureties for it's funding, , as a pre-condition for the granting of an operating permit . The arrangements agreed between the EPA of Ireland and the operators of Europe's largest lead and zinc mine in Lisheen Co. Tipperary is recent example of good practice in this area. Indeed in our view the operator should be constrained to demonstrate to the regulator the validity and effectiveness of the Plan .

Time does not permit an account of the actions which I believe are urgently required to make safe the many abandoned badly closed ponds and lagoons which presently constitute a major threat to the environment in many areas of the world. I would hope that the EU and the World Bank could cooperate to catalogue , and classify such sites , so that an accepted 'inventory' might be established and form the basis on which remedial action could be planned. I would hope that the Mining Industry would , in theses circumstances , see it as part of their "sustainable future' to contribute to such an operation.

RECOMMENDATIONS IN RESPECT OF ENVIRONMENTAL LIABILITY

Principle 13 of the Rio Declaration states :

“ States shall develop national law regarding liability and compensation for victims of pollution and other environmental damage. States shall also cooperate in an expeditious and more determined manner to develop further international law regarding liability and compensation for adverse effects of environmental damage caused by activities within their jurisdiction or control to areas beyond their jurisdiction”

The international community has tried and until now failed to develop and implement principles for liability for environmental damage. The Convention on Civil Liability for Damage Resulting from Activities Dangerous to the Environment completed at Lugano in 1993 did establish a general framework for liability , however it has been criticised inter alia for an inadequate definition of ‘environmental damage’ and only nine members of the sponsoring organisation , The Council of Europe , have signed it. Current efforts to develop a liability protocol to the Convention on the Protection and Use of Transboundary Watercourses and International Lakes have been launched by UN ECE and the hope is that there may be a draft ready for discussion at the Conference of Pan European Environment Ministers in Kyiv in 2003. This initiative was launched in UN ECE in response to the liability uncertainties about the liability for the damage caused in Hungary and FR Yugoslavia by the Baia Mare and Baia Borsa accidents. The European Commission , having already introduced a White Paper in the matter , is committed to introducing proposals for a Directive on Environmental Liability this year.

An internationally applicable legal instrument covering liability for environmental damage would be a potent force for ensuring sustainable behaviour on the part of FDI in countries with a weak regulatory regime.

Role of Financial Institutions

A significant proportion of the capital used in FDI in this sector comes from financial institutions , both private and public. It is a matter of record that during the period 1994 to 2000 the World Bank/IFC provided some \$3 billion as capital:/loans to the Extractive Industries. I have no estimate of the amounts provided by private financial institutions . What is certain is that the amounts involved are substantial. In the case of the Aurul Company , the operating company in Baia Mare , the financial backing came from Rothschild , and Dresdner Kleinwort Benson . The Dresdner Bank supplied \$8.5 million to the project. An appropriately worded international convention on environmental liability which made not just the operator liable for compensation for damage caused , but also the provider of the capital , would have a number of advantages.

LIABILITY OF FINANCIAL BACKERS

ADVANTAGES

- COMPENSATE FOR A WEAK REGULATORY REGIME
- REMOVE PRESSURE TO CUT CORNERS IN FAVOUR OF JOBS
- PERSUADE BACKERS TO INSIST THAT THE OPERATOR APPLIES THE ENVIRONMENTAL REGULATIONS IN HIS COUNTRY OF ORIGIN
- PERSUADE BACKERS TO UNDERTAKE INDEPENDENT ENVIRONMENTAL IMPACT ASSESSMENT AT THE OUTSET
- ATTACH ANY OTHER CONDITIONS WHICH MIGHT BE HARD FOR HOST COUNTRY TO DO
- FACILITATE THE POSTING OF BONDS TO PAY FOR CLOSURE AND AFTER CARE

Transparency

Good environmental regulation , and its effective implementation , is immensely strengthened in circumstances where public awareness and interest in the environment is high , and public participation in local environmental decision is facilitated. The Environmental Impact Assessment process is a cornerstone of public participation ,as are the provisions of the Aarhus Convention. It is crucial in areas where there is significant mining/ore-processing activity that the public and their NGOs are made aware of the regulatory rules within which the mining/ore-processing activities are undertaken in their locality . This is not so much a plea for the operators to involve and inform them , but an appeal to Governments , and to the European Commission , to set out in understandable non-legal language , the requirements of the law in respect of such activities. Certainly is it the case with EU law that mining/ore-processing activities are covers by several different Directives , and their transposition into national law can produce an even more complex picture. I believe that in these circumstance the public need to be provided with a ‘handbook ‘ in which they will be able to find the regulatory requirements applicable in the sector. Without this the principle of transparency , to which everybody subscribes in principle , is almost impossible to apply in practice.

RECOMMENDATIONS FOR NEGOTIATED VOLUNTARY AGREEMENTS

I believe in the effectiveness and efficiency of so-called ‘voluntary agreements’ in certain circumstances. The term I am using here however i.e. “negotiated voluntary agreements” goes beyond the normal usage of the term. The concept of what our British friends call “ the chaps regulating the chaps” is not what I have in mind. In this year of Rio + 10 I have in mind agreements which are the subject of discussion and negotiation with international bodies and with the main environmental NGOs. They should incorporate an agreed monitoring process , and a regular reporting.

I look to the industry itself to make a public commitment to use the best environmental standards in existence in their FDI ventures , regardless of what the

local regulations require. I hope this may be one of the outcomes of the MMSD action now reaching it's concluding stages.

Because some industrial operators are unlikely to agree to or implement such an 'accord', and because In the area of environmental liability and because international conventions are notoriously difficult and time-consuming to conclude , I cannot see how respectable financial institutions , either public and private , could object to using their undoubted muscle to insist with FDI operators they were about to finance, that they observe and implement the rules and regulations they abide by in their country of origin .in their FDI operations. For the small minority care would have to be taken to see they did not resort to a "flags of convenience" approach to avoid such an obligation.

With two "negotiated agreements" such as these we can ensure that the environmental goal is integrated into FDI in this sector in the future

CONCLUDING REMARKS

It is clear that this sector will continue to expand in response to the demand for higher living throughout the world. In this expansion the role of FDI will be extremely important. But , as will be underlined later this year in Johannesburg later this year This growth in production needs to be decoupled from the hitherto directly associated growth in pollution and environmental damage. This will involve emission reduction and waste minimisation .The industry does not have a good image in environmental circles. Les than 18 months ago one of the better known NGOs called on IFIs and Multilateral Development Banks to to phase out funding for fossil fuel and mining projects. Much of the damage done to the environment has arisen in FDI where the operator pursues practices which would be forbidden in its country of origin.

In the light of my experience in the case of the Romanian accidents, and my previous experience in the role of a 'regulator', I make these recommendations. These are made in the knowledge that the mining industry perceives that it has an image problem and is currently financing a project with the World Business Council for Sustainable Development called "Mining Metals Sustainable Development' (MMSD) Which is designed to produce a strategy for a new sectoral approach in the mining area which will be unveiled later this year .

These proposals are also put forward in the knowledge that the publicly owned IFIs are already involved in the implementation of environmental guidelines.

The year of RIO + 10 is an appropriate year in which to make fresh commitments to the protection of the environment , in particular the protection of environment in host countries of FDI;

RECOMMENDATIONS

- **NATIONAL , REGIONAL , AND INTERNATIONAL LAWS CONCERNING LIABILITY FOR ENVIRONMENTAL DAMAGE SHOULD ASSIGN THE LIABILITY NOT ONLY TO THE OPERATOR BUT ALSO TO THE PROVIDER OF CAPITAL**
 - **PUBLIC IFIs , MERCHANT BANKS, AND OTHER PROVIDERS OF PROJECT CAPITAL AND FINANCE SHOULD , REQUIRE OPERATORS WHICH THEY FINANCE FOR “FDI” TO OBSERVE THE ENVIRONMENTAL RULES AND REGULATIONS WHICH ARE APPLIED IN THEIR COUNTRY OF ORIGIN ; THIS TO BE THE SUBJECT OF A “NEGOTIATED AGREEMENT” BETWEEN THE INSTITUTIONS AND AN APPROPRIATE ENVIRONMENTAL COUNTERPART.**
 - **THE CAPITAL PROVIDERS THEMSELVES SHOULD AS PART OF THAT AGREEMENT JOINTLY AGREE TO COMMISSION INDEPENDENT ASSESSMENTS OF THE ENVIRONMENTAL IMPACTS OF PROJECTS PRIOR TO CONCLUDING FINANCING AGREEMENTS : IN PARTICULAR SUCH ASSESSMENTS VERIFY THE APPROPRIATENESS OF THE PROJECT DESIGN IN RELATION TO LOCAL CONDITIONS**
 - **INSIST ON COMPREHENSIVE CLOSURE AND AFTERCARE PLANS AND INCLUDE THE FUNDS FOR PAYING THEM IN THE OVERALL CAPITAL PACKAGE.**
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