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Public statement on the gold mining project at Roșia Montană, Romania

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The Ad Astra Association of Romanian researchers is publicly expressing its opposition to the gold mining project by S.C. Roșia Montană Gold Corporation (RMGC) in the Roșia Montană area of north-western Romania.

In our view, the terms of the contract are clearly disadvantageous to the Romanian State, and more importantly the ratio between potential benefits and risks to the Romanian people, both in economic and social terms, argue strongly against the approval and launch of this project. Our position is based on the following arguments.

1. The risks associated with cyanide based extraction, and its negative environmental impact

In spite of claims concerning the safety of its extraction technology made by RMGC, we find no evidence that any cyanide-based technology currently available is completely secure. According to the information provided by RMGC, the ore processed with cyanide is to be deposited in a large lake (known as a “tailings pond” in the industry), following the neutralization of the cyanide¹. The water from this lake cannot be isolated from the environment; infiltrations are inevitable into the underground water table and into the rest of the hydrographic basin. This pollution will be extremely difficult or impossible to avoid. In addition, the processed ore will continue to constitute another major risk as it will contain other substances dangerous to people and to the environment. The risk of acid runoff will continue to threaten the area for a long time after the exploitation will have ended. The financial guarantees offered by RMGC cannot possibly cover the likely damage to the area, which will spread over a period of many decades. In this context, it is far preferable to the public interest that the gold, silver, and other important ores remain in the ground until the extraction technologies advance sufficiently so as not to constitute a threat to people and to the environment. There is no indication that prices of gold and silver will decline in the foreseeable future.

¹ <http://www.rmgc.ro/proiectul-rosia-montana/proiectul-minier/proces-tehnologic> (English version of www.rmgc.ro website is incomplete as compared to the version in Romanian)

The approx. 150 million euros guarantee convened by RMGC with the Romanian Ministry of the Environment is very far from sufficient. By comparison, the costs of decontamination and compensation required after the accident in Baia Mare in the year 2000 have been estimated to be similar to the costs of decontamination of the mine in Summitville Colorado: around 170 million dollars². However, the exploitation at Roșia Montană is planned to be at least 10 times larger than this, and its destructive potential at least proportional. Therefore, a guarantee of 150 million euros cannot be viewed as nearly sufficient. Moreover, the sum offered as guarantee should be deposited by RMGC into a special account, before starting any mining related construction or work in the area.

In the following paragraphs we point out several of the major environmental issues raised by the RMGC project.

1.1. The problem of managing the waste from the tailings pond

The EU Directive concerning management of waste from mining activities (2006/21/EC)³, through article 13(6) requires the concentration of weakly acid dissociable cyanide in the pond to be reduced as much as possible, using the highest performance technologies available. For all the exploitations started after May 1st 2008, the concentration of weakly acid dissociable cyanide in the waste water cannot be above 10 ppm. RMGC failed to publish appropriate documentation explaining how this requirement of the European Directive (2006/21/EC) will be implemented. It is not clear what method is to be applied to the waste waters, prior to draining, the only reference on the RMGC website mentioning a “modern and efficient oxidation process”⁴. If this method implies a treatment with sodium hypo-chlorate, then one of the byproducts is a chloride-cyanide which is also highly toxic⁵.

Following the technological process, other metals will become soluble, besides gold: iron, copper, silver, cobalt, zinc, etc. These metals (in the form of the corresponding ions) will also be collected in the tailings pond, leading to additional pollution of the pond. Consequently, in addition to the cyanide, there is also a risk of spillage from these, other, acid residual waters.

1.2. The water-table contamination problem

Cyanides and other toxic substances resulting from the cyanide-based extraction techniques make the object of regulation via the Groundwater Directive (80/68/EEC) until 2013, when it is to be replaced with the Water Framework Directive (2000/60/EC)⁶. Both European Directives require measures designed to monitor, plan, and intervene in order to prevent the deterioration of the quality of underground water via cyanide infiltration, leaks or spills at any moment during the exploitation, as well as in the long term, after the mining activities have ceased. Recent scientific

² <http://www.thepost.ohiou.edu/archives3/feb00/021500/news1.html>
<http://news.bbc.co.uk/2/hi/europe/1146979.stm>

³ <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2006:102:0015:0033:EN:PDF>

⁴ <http://www.rmgc.ro/proiectul-rosia-montana/intrebari-frecvente>

⁵ Souren, A. (2000) Living with Cyanide. *The Geochemical News* , **105**, 16-26.

⁶ <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2000:327:0001:0001:EN:PDF>

studies demonstrate the infiltration of toxic substances into the water-table connected to surface waters, as a result of cyanide based mining activities^{7,8}. The RMGC Roşia Montană project requires large quantities of cyanide but ignores the problem of the isolation of the tailings pond from the adjacent ground waters, as can be observed from the documentation offered for public debate by RMGC. The location of the tailings pond in the vicinity of the city of Abrud and the risk of contamination of the water resources of this city only augment the potential of disastrous social and economic consequences. We submit that the Roşia Montană mining project contravenes the European Union Directive concerning ground waters (80/68/EEC) and the Water Framework Directive (2000/60/EC)⁶.

1.3. The problem of air pollution and of post-exploitation environmental rehabilitation

The mining project requires deforestation of large areas in order to provide access to the ore extraction area. This will increase the vulnerability of the region to landslides and flash-floods and will amplify the risks and the potential impact of the pollution to the area. We find the argument published by RMGC, regarding the reforestation of surfaces larger than the ones which are to be cleared, completely unsatisfactory. The effects of clearing a particular hillside is not compensated by planting on a different hillside. The latter is located miles away and cannot offset the effects of deforestation in the area neighboring the mine - risks of pollution and runoff due to landslides and flash-floods are therefore significantly increased.

The large quantities of processed ore byproducts left behind after the exploitation will contain several sulphur compounds, which may persist for several decades and up to a century. In dry conditions, these mounds will cause air pollution problems as sources of toxic dust in the atmosphere. Once again, the vicinity with Abrud city amplifies dramatically the importance of these risks. Moreover, the pH of drained waters will be close to neutral and the cyanhydric acid formed in these waters will further pollute the air. There are reports according to which ultraviolet light destroys the cyanide ion⁹; however, there is no strong evidence that the specific conditions for this process exist in the Roşia Montană context, and it is uncertain what the actual rate of this decomposition mechanism would be *in situ*. Moreover, compounds resulting from ultraviolet-driven decomposition (e.g. cyanate and nitrate ions) are also toxic¹⁰, although less than the cyanide ion. RMGC has not clarified how the mining activity will affect air quality and how it plans to ensure that Directive 2008/50/CE¹¹ concerning air quality is respected.

These problems will continue to affect air and water quality in the area for a long period after the end of the mining exploitation. Article 14 of the European Directive on the management of waste

⁷ Al, T.A. et al. (2006) Effects of acid-sulfate weathering and cyanide-containing gold tailings on the transport and fate of mercury and other metals in Gossan Creek: Murray Brook mine, New Brunswick, Canada. *Applied Geochemistry* 21 (11), pp 1969-1985. doi:10.1016/j.apgeochem.2006.08.013

⁸ Maprani, A.C. et al. (2005) Determination of Mercury Evasion in a Contaminated Headwater Stream. *Environ. Sci. Technol.*, 39 (6), pp 1679–1687 DOI: 10.1021/es048962j

⁹ Meeussen et al. (1989) Spectrophotometric Determination of Total Cyanide, Iron-Cyanide Complexes, Free Cyanide and Thiocyanate In Water By A Continuous-Flow System, *Analyst*, **114**, 959-963.

¹⁰ Leybourne MI et al. (2000) Form and distribution of gold mobilized into surface waters and sediments from a gossan tailings pile, Murray Brook massive sulphide deposit, New Brunswick, Canada. *Appl. Geochemistry*, **15**, 629-646.

¹¹ <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2008:152:0001:0044:EN:PDF>

from extraction activities (2006/21/EC)³ requires mining companies to provide financial guarantees for the activities of rehabilitation of the environment planned for after the end of mining activities. RMGC has not offered any public documentation showing how it plans to comply to this.

1.4. The risks associated with the tailings pond

The tailings pond is to be held behind a stone dam¹². This dam presents additional risks for the environment because a possible weakening could lead to an environmental disaster. We recall the incident at Baia Mare in the year 2000. In the case of Roşia Montană, the possible contamination of rivers in the area would be massively more destructive than the Baia Mare incident, since it would lead to the destruction of the fauna and flora of the pristine basin of the Arieş river¹³, later affecting the Mureş, Tisa, and Danube basins. As a consequence of the dangers that cyanide-based mining represents, the European Parliament has recently adopted a resolution which recommends that the European Commission abolish cyanide-based mining in the European Union altogether¹⁴.

The stone dam (named Corna) described in the RMGC project will hold the tailings pond with the cyanide-processed ore. The dam is to be 185 meters high with a length of 1350 meters. This is a major construction project, which must withstand the pressure from millions of m³ of water and processed ore¹⁵. Between 1970 and 2003, 59 accidents have been recorded related to the damage or failure of tailings pond dams, often leading to the destruction of the local ecosystem, major negative impact on the human population, and the loss of approx. 700 lives¹⁶. Overall, the United States alone have recorded 185 accidents from such tailings pond dams [U.S. Committee on Large Dams (USCOLD), 1994]¹⁷.

In addition to irreversible destruction of the environment, the costs of cleaning up after such disasters are enormous and most often paid for by public funds. The gold mine in Summitville Colorado, which was leaking acid waters, went bankrupt, leaving the massive decontamination job (150-200 million gallons of acid waters) to the State of Colorado. The operation cost the State between 100 and 120 million dollars¹⁸. Pollution is also a major risk to the private sector in the area. A recent example is the massive oil spill in the Gulf of Mexico, which has produced losses of billions of dollars¹⁹ to affected businesses (including tourism) and will require funds on the order of hundreds of millions of dollars for the clean-up operation. As of May 17th, only one fifth of the oil gushing from the undersea well is being collected. BP spends approximately 10 million dollars per day on the clean-up effort²⁰.

¹² <http://www.rmgc.ro/proiectul-rosia-montana/mediu/apa>

¹³ <http://journals.usamvcj.ro/agricultura/article/viewFile/2644/2535>

¹⁴ <http://www.europarl.europa.eu/sides/getDoc.do?pubRef=-//EP//NONSGML+IM-PRESS+20100505IPR74149+0+DOC+PDF+V0//EN>

¹⁵ http://www.rmgc.ro/sites/default/files/RMP_EIAcap2_Proctehn_mai06_0.pdf, page 18

¹⁶ <http://www.antenna.nl/wise/uranium/mdaf.html>

¹⁷ Tailings Dam Incidents, U.S. Committee on Large Dams - USCOLD, Denver, Colorado, ISBN 1-884575-03-X, 1994, 82 pp.

¹⁸ <http://pubs.usgs.gov/of/1995/ofr-95-0023/summit.htm>

¹⁹ http://en.wikipedia.org/wiki/Deepwater_Horizon_oil_spill

²⁰ <http://www.reuters.com/article/idUSTRE6480VJ20100509>

1.5. The impact on wildlife

According to a 2007 report by the University of Queensland Australia, cyanides used to extract the gold have a powerful impact on the wildlife in the area²¹. In Nevada, USA, between 1990 and 1991, 9512 animal corpses were reported from over 100 species - this clearly being an underestimation due to voluntary reporting. In 1995, Northpakes Australia recorded 1583 bird corpses at an initial count, and later over 2700 corpses were documented over a period of 4 months. Contrary to the claims of RMGC, the above-mentioned report emphasizes that controlling the exact concentration of cyanide is very difficult. In addition, cyanide has a very steep toxicity curve and thus, small variations (due partially to the copper concentration in the ore) can lead to a high level of toxicity.

The tailings pond described in the RMGC project will therefore most probably have a disastrous effect on the wildlife in the area, especially on the birds whose access to the pond cannot be controlled. According to the Romanian Ornithological Society, the nearby area of Munții Trascăului²², classified as Birdlife C1 and C6 protected area, is a refuge for the species *Aquila chrysaetos*, *Pernis apivorus*, *Falco peregrinus*, *Crex crex*, *Bubo bubo*, *Dryocopus martius*, *Picus canus*, *Dendrocopos leucotos*, *Lullula arborea*, and *Ficedula albicollis*. This protected area is located less than 17 km from Roșia Montană town center. The Birdlife C1 criterion includes protected species in danger of extinction and whose conservation is considered important internationally. The C6 criterion refers to species threatened in the European Union, for which the given area is among the top 5 breeding or migration areas, and which are included in Annex 1 of the 2009/147/EC Directive of the European Parliament and the European Commission concerning bird life²³. The RMGC project represents a direct threat to the species in this protected area, thereby being in contravention of Directive 2009/147/EC.

2. Economic arguments

There is no economic urgency to open new gold mines now, when the global gold production is approximately 2600 tons per year and industrial consumption below 400 tons per year²⁴. The price of gold (~\$1160/ounce) is much higher than the production cost (~\$500)²⁵ and, as always throughout history, it is mainly driven by its use as store of value (either pure or as jewelry). There is no indication that its value will decrease significantly in the foreseeable future, and the ore in the Rosia Montana can be stored *in situ* until a safe extraction is available or its industrial need increases.

In this latter regard, the gold market is completely different from the markets for other natural resources, such as lithium (used in rechargeable batteries), platinum and palladium (needed for catalysts), and others, the shortage of which would block the development of major industries. For such essential resources, it may be possible to argue that certain environmental risks may be

²¹ <http://www.ncbi.nlm.nih.gov/pubmed/17540445>

²² http://iba.sor.ro/aia_muntii_trascaului.htm

²³ <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2010:020:0007:0025:EN:PDF>

²⁴ http://www.galmarley.com/FAQs_pages/production_consumption_faqs.htm

²⁵ [http://www.commodityonline.com/news/Average-gold-production-cost-likely-to-be-\\$400-500-24530-3-1.html](http://www.commodityonline.com/news/Average-gold-production-cost-likely-to-be-$400-500-24530-3-1.html)

justified. Gold, however, is not one of these. Globally, sovereign states hold over 25 thousand tons of gold, which is sufficient to supply the industry for over 60 years at the current rate of consumption, even if the rate of recovery and recycling were zero (in reality it is close to 100%) and even if all mines were shut down now (in reality their production is far beyond current needs)²⁶.

3. Archaeological, historical and cultural arguments

The way in which states and communities understand to defend and preserve their past is reflected directly in the maturity with which they choose between short-term economic benefits (highly debatable in the case presented here) and the need to preserve their historical and cultural treasures. Numerous public statements from well known historians and archeologists, Romanian as well as foreign, have drawn attention to the long list of unique historical vestiges which would be lost forever if the RMGC project were allowed to proceed. Some of these are unique not only in the national historical patrimony, but have been recognized internationally.

In a statement from the 4th of March 2003, the Romanian Academy underlined that in the case of *Alburnus Maior* we are dealing with an area of almost uninterrupted mining activity going back to the bronze age. During the archeological explorations in the years 1999-2002, researchers unearthed places of worship, burial grounds, a funerary enclosure, a construction with a hypocaust, and votive altar. To these must be added the mine galleries from the antiquity and the middle ages, which have been studied by the researchers at the University “Le Mirail” in Toulouse France²⁷. In a public statement in 2003, the Romanian Academy also emphasized that, before drawing any conclusions about the archeological potential of the area, more ample investigations are required. The archaeological discharge of several hundred hectares in 2001 only relied on some superficial searches on less than 4 hectares. The Academy upheld this position in further consistent statements, such as the declarations of February 27th 2006²⁸ and November 3d 2009²⁹. Notably, the opinion of the Romanian Academy stands on the experience of some remarkable Romanian historians and archeologists such as Ioan Piso or Mircea Babeş³⁰.

Numerous international experts have also written about the unique architectural style at Roşia Montană. For instance, Beatrice Cauuet, one of the best known French experts on underground archeology, has declared at a debate organized by the “Nicolae Iorga” institute at the beginning of this year that at least in the case of the rooms and water evacuation wheels of the Păru-Carpeni area, one may speak of vestiges unique in Europe³¹. Moreover, for the last several years, the

²⁶ http://en.wikipedia.org/wiki/Gold_reserve

²⁷ http://www.acad.ro/com2003/pag_com03_0304_2.htm

²⁸ http://www.acad.ro/rosia_montana/declaratie060227-RM.doc

²⁹ http://www.acad.ro/noutati2009/pag_noutati09_1125RosiaMontana.htm

³⁰ <http://www.evz.ro/detalii/stiri/se-cauta-solutii-prietenosase-pentru-rosia-montana-886871.html>
<http://www.ecomagazin.ro/proiectul-rosia-montana-dezbatut-de-istorici-arheologi-si-reprezentanti-ai-rmcg-la-institutul-nicolae-iorga>

³¹ <http://www.ecomagazin.ro/proiectul-rosia-montana-dezbatut-de-istorici-arheologi-si-reprezentanti-ai-rmcg-la-institutul-nicolae-iorga>

worrying situation at Roșia Montană has been discussed regularly at numerous international conferences of history and archaeology³².

4. Long term social effects

Arguments in favor of the RMGC project refer mainly to the potential social benefits to the Roșia Montană area. According to statements of the RMGC and of some political figures, the mine will bring prosperity to the area and will create employment. We find these arguments at best biased and at worst disingenuous, and certainly unjustified in light of medium- and long-term considerations – economic, social and cultural.

To begin with, the experience of the previous mining activities in the Apuseni Mountains in the last 60 years have illustrated direct negative impact of mining activities on the health of inhabitants of the region, especially those who worked in the mines. There is no way to avoid the serious health risks that such activity implies. The World Rainforest Movement³³ reports the serious degradation in the health of populations in the majority of the world's mining regions. There is no better illustration than the situation in the other major mining regions within Romania itself: Baia Mare, The Jiu Valley, Zlatna, etc.

Reports by the World Health Organization (WHO) describe the powerful negative effects of cyanide and derived substances on human health. This includes individuals involved in the extraction activity as well as those affected indirectly, mostly via the water supply^{34,35}. Cyanide limits oxygen absorption, affecting the central nervous system. The toxicity curve of cyanide as a function of concentration is very steep, the negative effects growing very quickly as the concentration is increased. Gold and silver extraction areas are singled out as among the major sources of cyanide contamination, according to the WHO. In spite of the claims of RMGC concerning the safety of this technology, WHO reports describe at least 30 major incidents which have led to the massive contamination of seas and water courses since 1975. The total quantity of cyanide-contaminated water generated in the USA in the year 1983 alone is estimated at 3 billion liters.

A recent study, aimed at shedding light on the effects of cyanide exposure on the residents of gold mining regions in Ghana (managed by the Bogoso Gold Limited company) demonstrates that the health risk of residents increases following the contact with a contaminated surface or underground water supply³⁶. In addition, retrospective studies have been undertaken in order to determine the impact of occupational exposure to cyanide. The most frequent symptoms related to occupational exposure were: cephalgia (headaches), vertigo, tinnitus (ears ringing), insomnia, disturbances of the olfactory and gustatory senses, epiphora (excessive tear secretion), nose bleeding, hypersialosis (excessive salivary secretion), vomiting, irritation of the eyes and larynx,

³² http://www.international.icomos.org/madrid2002/eng/resol_eng.htm
<http://www.international.icomos.org/venicecharter2004/icomosappeal.pdf>
http://www.international.icomos.org/quebec2008/resolutions/pdf/GA16_Resolutions_final_EN.pdf

³³ <http://www.wrm.org.uy/deforestation/mining/text.pdf>

³⁴ <http://www.who.int/ipcs/publications/cicad/en/cicad61.pdf>

³⁵ http://www.who.int/water_sanitation_health/dwq/chemicals/second_addendum_cyanide_short_term20_4.pdf

³⁶ <http://www.ncbi.nlm.nih.gov/pubmed/16897533>

skin eruptions, paresthesia, shortness of breath, precordial pain, weight loss, hyperhemoglobinemia, cyanhemoglobinemia and lymphocytosis^{34,36,37,38}. Difficulty in metabolizing vitamin B12 and folate has also been linked to long-term occupational exposure to cyanide. Moreover, the thyroid function of individuals involved in the mining activity is affected^{37,39}. Thiocyanate, the substance produced during the reaction of detoxification of the cyanides, blocks iodine assimilation in the organism and causes goiter. This effect is more pronounced in individuals with renal insufficiency, which leads to a slower renal transit and excretion of the thiocyanate³⁴. The serum level of thiocyanate is significantly higher in the subjects involved in cyanide-based mining as compared to unexposed subjects. This leads to lower serum levels of triiodothyronine (T3) and thyroxine (T4), two important thyroid hormones, as well as an increased level of the thyroid stimulation hormone (TSH)³⁹.

In addition to these aspects, recent history demonstrates that mining activities have almost never led to the sustainable development of an area. A report published by the University of Queensland Australia⁴⁰ shows that, in the mining region studied, economic activity narrows to the exploitation of short-term opportunities linked to the mining activity. In general, economic development in mining areas is rarely sustainable, and the eventual, inevitable closing of the mining operations leads almost always to economic and social collapse. Numerous examples can be given, from the socio-economic problems which resulted from the closing of the mines in the Apuseni mountains and the Jiu valley in Romania, to the massive subsidies injected by the German Federation to sustain the Ruhr region after mining activity in the area stopped.

Consequently, the mining project at Roșia Montană cannot offer real economic and social solution in the medium or long term. Another major mining operation in the region would only collect the low-skilled workforce in the area, offering only a short-term solution. Indeed, it will actually delay or impede accumulation of know-how, economic diversification in the area and the development of sustainable industries, thus compromising the long-term development of the region.

5. The destruction of touristic potential

Roșia Montană currently disposes of a touristic potential unique in Europe, due to the combination of its position in the heart of a picturesque region of the Apuseni Mountains, the history of over two millenia, the archeologic vestiges, and of course, the gold under the ground. Among the touristic attractions we must mention the protected geological sites – designated monuments of nature – the Raven's Rock, the Split Rock, The Fortress Hill with the famous roman mining galleries, the Alburnus Maior fortress, the Mining Museum, the old peasant homes dating back to the 18th century, and the over 105 artificial ponds in the area.

³⁷ Blanc P, Hogan M, Mallin K, Hryhorczuk D, Hessel S, Bernard B. Cyanide intoxication among silver-reclaiming workers. *JAMA*. 1985 Jan 18;253(3):367-71.

³⁸ El Ghawabi SH, Gaafar MA, El-Saharti AA, Ahmed SH, Malash KK, Fares R. Br J Ind Med. Chronic cyanide exposure: a clinical, radioisotope, and laboratory study. 1975 Aug;32(3):215-9.

³⁹ Banerjee KK, Bishayee A, Marimuthu P. Evaluation of cyanide exposure and its effect on thyroid function of workers in a cable industry. *J Occup Environ Med*. 1997 Mar;39(3):258-60.

⁴⁰ http://www.csrn.uq.edu.au/docs/Hunter_Valley.pdf

The RMGC project would certainly have a powerful negative impact on the touristic potential of the area. First, the massive excavation, which requires the displacement of a large portion of the village, will have an enormous destructive footprint on the landscape. This will lead to the transformation of an area of major historical importance into an excavation dig, thus compromising the area in the long term. Second, the mining activity on a large scale, as intended by RMGC, is not compatible in any way with future touristic development and would discourage this kind of investment in the area for the foreseeable future. Finally, the intense industrial activity would compromise not only the Roşia Montană village, but the whole of the Arieş river basin, with negative impact on possible investments in the Abrud, Câmpeni, Luşă, Baia de Arieş and Sălciua regions. Massive quantities of sulphur-containing processed ore, will be left behind after the project is finished (see 1.3 above), which will remain as a deterrent for visiting tourists for many decades to come.

6. Alternatives for the development of Roşia Montană

The touristic potential of this area can be exploited in the long term, including the use of the gold itself as a tourist attraction. In contrast to the RMGC project, touristic development and the small businesses it can sustain can produce sustainable employment, the development and stimulation of the enterprising spirit of the local population, leading to true prosperity in the long term.

Without a doubt, a proper and serious public debate will identify suitable alternatives to this project, better suited in economic and social terms while avoiding the destruction of a unique cultural heritage and natural environment. For instance, a much better adapted solution for sustainable development would be a tourist program, perhaps supported by public funds, for the ecological exploitation of the gold at Roşia Montană, using traditional methods exclusively. The 19th century American “Gold Rush” can be used as an inspiration for the creation of tourist attractions. Visitors may extract surface gold which they would keep as a souvenir. Such a project would be unique, and over the long term would bring profits superior to a major mining operation. Moreover, the underground gold would be preserved, and would remain as a guarantee for future generations.

Roşia Montană has a major potential for agro- and eco-tourism. These could constitute an important source of revenue for the local population. In order to stimulate this kind of development the State should provide good road access to the area, and could invest in a publicity and marketing campaign both in Romania and internationally in order to increase the historic, cultural and environmental visibility of the area.

Wood processing is another important economic activity which could be developed in the area. The State must become more actively involved to limit the exportation of unprocessed timber and to stimulate wood processing which brings much larger added value. One possibility is to provide financial incentives to furniture factories and to introduce a new tax on unprocessed wood. These measures would help shift the economic development away from deforestation, since the major part of the profits will come not from the sale of the raw material, but from processing it into a finished product.

Last but not least, the region could also benefit from the stimulation of dairy farming. Especially in the Apuseni region, the State could stimulate the creation of small eco-friendly farms. The region is well suited for this kind of activity due to the large existing grazing areas. Similar to wood processing, one solution to increase the profitability of the businesses is to produce the finished products at the source. These businesses can then be coupled with the tourism sector, with mutual reinforcement. Moreover, the local cultural traditions would enable the production of unique products, specific to the area, driven by tourism and exports. This would require a sustained communication effort to create the corresponding external markets for these products.

In our view, therefore, the Romanian State can contribute to the sustainable development of the Apuseni region, and especially the Roșia Montană area, in a number of efficient and complementary ways already evident. The RMGC project is not, however, one of these, quite the contrary. It would only collect once again the local low-skilled workforce, undermine the individual enterprising spirit of the inhabitants, and create long-term social, economic and environmental problems. Its effect would be not to stimulate but rather delay, perhaps indefinitely, the clean, natural and sustainable long-term development of the region.

7. Conclusions

In view of the data and arguments presented above, the Ad Astra Association of Romanian Scientists considers the RMGC gold mining project at Roșia Montană as ill-advised. Our arguments come in addition to the objections raised by the Romanian Academy⁴¹ and underline the fact that the risks of the cyanide-based mining are not justified by any supposed benefits, either in the short term or the long term. In fact, this project not only fails to benefit, but also poses an extremely serious threat to the local communities and the Romanian society at large. Consequently, we do not see any internal economic condition which would justify, much less require, any compromise on environmental or public health considerations. Ad Astra hereby expresses its public opposition to the RMGC Roșia Montană project and urges a responsible, objective and transparent public debate on this issue, one based above all on the economic and social needs and interests of the Romanian people.

⁴¹ http://www.acad.ro/rosia_montana/doc_pv/pv_ghaiduc.doc