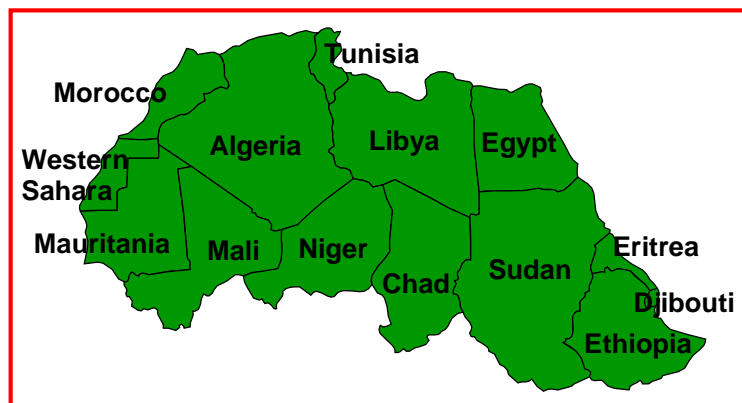




North Africa: Trade Finance Opportunities in the Mineral and Petroleum Sectors

August 2002

The countries covered in this review are shown in the map inset. In general the majority of the countries listed belong to the Maghreb group of countries, which are principally renowned for their oil and gas producing capacity. It should also be noted that there is also a wide variety of minerals available for exploitation and currently are the focus for discussion between the relevant state-owned concerns and western mining companies and traders.



Political stability is a major issue

Whereas it is acknowledged the area is bedevilled by various border clashes and varying degrees of political stability especially in the cases of Sudan, Ethiopia and Eritrea, the significance of the mineral potential of North Africa cannot be understated. Neither can it be over-emphasised the degree to which these resources have been under exploited primarily as a result of difficulties in lack of appropriate infrastructure, severity of climate and cultural issues arising from language and the application of Islamic customs.

The hydrocarbon resource base is huge

A review of the mineral potential of the region indicates that total reserves value based on current conservative estimates for mineral resources and hydrocarbons-in-ground amounts to some US\$ 3400 bln. The primary resources exploited to date are oil, gas and phosphates. Overall trade values account for some US\$ 60 bln, of which 90% are oil and gas related. The majority of the end-user markets are the US, EU and Japan. The EU is the primary recipient of gas via LNG or direct pipelined routes, but the scope for increased swing production to supply other markets is increasing, notably from Algeria. Libya has fallen behind Egypt in terms of gas production and whereas the former continues to suffer from trade restrictions imposed by the UN, the petroleum sector in Egypt continues to grow.

The diversity and scope of the minerals base remains to be fully exploited

It is the exploitation of minerals, which offers countries outside Algeria, Libya and Egypt the best potential for growth of their respective economies. Those cited here as having the best potential are Morocco, due to its continuing political stability; Mali, given the continuing positive developments in the exploitation of precious metals resources and Tunisia, noting the established resource base and proximity to western markets.



Political-economic commentary

Islam is a dominant prevailing force

The region is dominated by Islamic issues. The political stability of Algeria, Sudan, Eritrea, Ethiopia, and Egypt continue to be significantly affected by radical Islamic factions. Sudan in particular has suffered from a protracted Civil War which has split the country in two. There is also continuing uncertainty over the long-term political position of Western Sahara.

Notwithstanding this, most governments (save Libya) have moved towards liberalisation of the mineral resources legislation in place so as to encourage the development of their mineral resources potential. This has been particularly the case of Mali which has seen significant development of the gold sector, and Chad which has seen the involvement of Western oil companies in the delineation of a major oil deposit.

Privatisation is the way forward

Privatisation initiatives are underway in Morocco, Algeria, Tunisia, and Egypt. Algeria alone has 48 divisions set up to facilitate the process of developing its minerals sector. Countries such as Mali, Chad, Niger and Mauritania are significantly reliant on external western funding, both private and inter-governmental to support their fledgling mineral industries. Progress in Sudan and Libya has been and will continue to be handicapped by the imposition of sanctions, mainly from the US. Careful consideration of the domicile of the investing company has to be undertaken so as to ensure that no punitive actions are taken against that company (and associated funding agency). Djibouti, Eritrea and Ethiopia are still struggling to emerge from the ravages of war.

Technical competitiveness

Western technology is key to opening up the resource base

Judging from the development of the oil, gold, and gas sectors it is evident that involvement of Western companies is essential for the economic development of these resources. The remote location of such resources necessitates the need for up-to-date technology which will enable the relevant operation to be competitive in the world market. Comparing the experiences of Algeria with its neighbour Libya, it is clear that the application of sanctions and other restrictions on the application of new technology has had an adverse effect on the growth of the hydrocarbon sector in the latter. Furthermore, whereas Algeria – among others - has started to focus on the development of its mineral sector, resources in Libya are not being as efficiently developed. Consequently, it is believed that the development of the minerals sector offers significant opportunities for those countries outside Libya and Sudan, greater latitude for the relevant governments with respect to capital funds raising and allocation of funding from external sources.

Organisational issues

Francophone issues impact on governmental thinking

Three types of company involvement can be recognised in this region.

- q *Significant investments made by major multinational companies* e.g. BP Amoco in Algeria and Egypt, Anglo-American in Mali, Chevron and ExxonMobil in Chad, British Gas in Tunisia, OMV and Agip in Libya. In such cases the majority of the receivables are likely to be allocated to project financing transactions.
- q *Parastatal companies working with major French concerns or small independent Western companies* looking to develop resources on the basis of high risk high reward type strategies. In the case of the



former, examples include Cogema in Niger (uranium deposits), and various EU companies tying up with Mauritanian parastatals (copper, gold and iron ore deposits).

- q *Small indigenous companies working through cooperatives and/or under the specified governmental umbrella organisation to produce and explore the commodities. OCP and the 30 phosphate producers in Morocco are one example of this.*

Francophone cultural issues are particularly important in the development of transactions in the western part of the region under analysis. For example, in the cases of Algeria, Mali, Mauritania, Chad and Niger the ability to communicate and to relate business practice using the French language (and understanding the associated political undertones) is essential.

Transport and infrastructure risks

Transport infrastructure is a major problem

Apart from coastal developments, road and rail infrastructure for the North African region is very poorly developed. The absence of appropriate infrastructure as affecting major capital projects was well demonstrated by the fact that Anglo-American had to completely redevelop the rail link from the coast to Sadiola in Mali in order to ensure timely development of the gold mine.

Operations have to be autonomous with back up plans for supply from outside North Africa

Energy shortages are a major issue affecting all parts of the region not only in terms of energy availability but also appropriate infrastructure to service the operations involved. Eritrea and Ethiopia are particular cases in point in which the absence of appropriate suppliers, equipment, and backup maintenance procedures has been compounded by the effects of war and famine. As a result stand-alone energy generation and autonomous methods of support are essential for operations to have a chance of continuous efficient operation.

Environmental issues

The impact of new operations on indigenous peoples cannot be underestimated

The continuing encroachment of desert, especially in the eastern regions of Africa, compound the difficulties in access and development of new resources. Eco-systems will therefore be particularly vulnerable to large-scale earthmoving and plant construction activities. The impact of new industrial activity in regions populated by nomadic tribes or indigenous peoples having little or no education cannot be underestimated. Special attention needs to be made to ensure compliance with international standards not only for public relationship reasons but also to meet the requirements of efficient business practice. There are relatively few case studies in such areas to give a clear view as to potential success for new greenfield site development.

Good environmental sense makes good business sense

Although development of the region is limited, significant environmental concerns from the established mining activity should be noted. Pollution of waters adjacent to the phosphate mining activity in Morocco is a particular case in point. Appropriate regulation of aqueous (process water) and gaseous (chemicals and dust) discharges to "desert" regions needs close monitoring on account of the sensitivity of the environment, such as artesianal water supplies. Impact studies need to be undertaken and regularly updated to ensure that continuity of operations can be maintained. Good environmental sense makes good business sense since pollution of waters and damage to tribal lands can result in hostile reactions from the indigenous population.

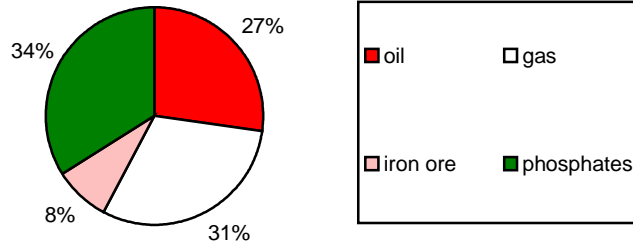


Petroleum resources dominate

The Size of the Market

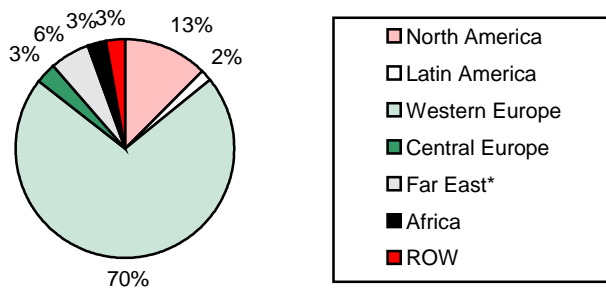
Oil and gas account for some 58% of the overall value of the mineral and hydrocarbon resources which could be exploited. As shown in the diagram below, the most significant non-petroleum resources are phosphates (Morocco, Algeria and Tunisia), and iron ore (Mauritania, Libya and Tunisia).

Resource value: US\$ 3400 bln



Oil and gas together account for US\$ 53 bln of trade. Some 80-85% of total crude production is exported with the balance being refined. The distribution of the markets for oil based on previous historic trends is indicated in the diagram below.

Trade Value : US\$ 53 bln

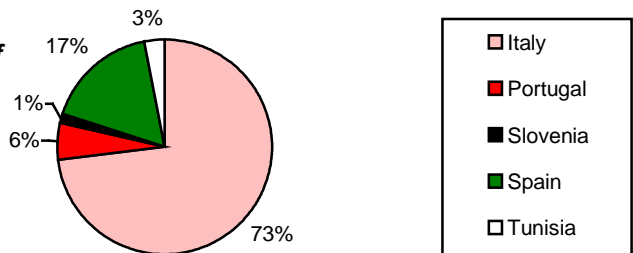


Note: price sets based on prevailing commodity markets have been assumed. Oil price set at US\$25/bbl, pursuant to OPEC pricing collar strategy, gas at US\$ 5/MMBtu

Algeria is the predominant gas producer and exporter

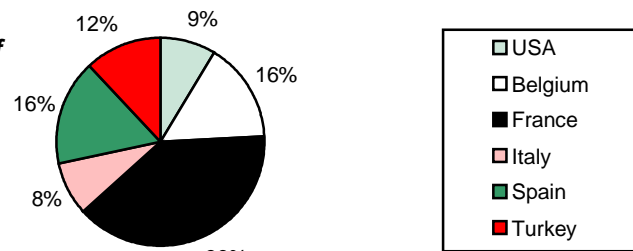
Gas has proved to be the major area of growth in recent years. Algeria has established itself as a major producer in its own right, exporting by pipeline and LNG carriers:

Traded value of pipelined gas: US\$ 6 bln



Diversity of supply has made Algeria a major swing producer for different markets

Traded value of LNG: US\$ 4.5 bln





Libya has stagnated from 15 years of UN sanctions and has the largest undeveloped hydrocarbon resources

In contrast, Libya exports only one seventh of its production as LNG, compared with Algeria which exports a third of its production via this medium. As a result, Algeria has emerged as an important swing supplier of gas, as has been particularly noticeable in the recent shortages which have affected the USA.

Growth in gas sector for Egypt

Despite producing 2.5 times more gas than Libya, Egypt has no significant LNG nor pipeline gas trade activity. The majority of gas is consumed domestically, at this time, although reserve estimates continue to be upgraded such that there is significant gas export potential to Israel and other countries in the near Middle East. The major barrier to the development of such projects remains the protracted political problems affecting the Palestinians and Israel. Nevertheless, Egypt continues to benefit from the continuing interest shown by many Western companies (in excess of 15 exploration companies exploring as of 2000).

Tunisia at this time is a net importer of gas. Exports are limited to petroleum and its products. Morocco and Mauritania are actively promoting petroleum exploration offshore. Woodside in conjunction with ENI, has reported success off the coast of Mauritania, and reserves are being delineated.

Sudan has emerged as a significant producer and exporter

At 200,000 bbl/d Sudan has emerged as a significant oil producer. Oil is now pipelined from the fields in Central Sudan to Port Sudan the capacity of which could be doubled in the near future. Net oil exports are currently 180,000 bbl/d. Comprehensive plans for the development of the oil sector relating to the upstream and downstream sectors are in place. However current US sanctions against the Sudanese government need to be considered in any subsequent financing proposals.

Many other minerals are present

Whereas petroleum and its related products is key to the North African economy, and the resulting trade finance opportunities that could be derived, it should be pointed out that some US\$ 3 bln worth of production accrues from the exploitation of precious metals (gold, silver), oxide minerals (fluorspar, barytes, salt) and other base metals.

Gold is becoming the predominant metal in the area

Gold has emerged as one of the most lucrative and exciting new resource developments in western Africa. The success of Anglo-American in developing new gold mines in Mali is likely to promote interest being taken by other mining companies in the area. Although the gold price is currently at a historic low, the experiences of the Sadiola mine is likely to generate further mine developments given the fact that operating costs can be contained and compare favourably with other mines in world market terms. Whereas the establishment of such gold ventures in Mali has proven to be successful, the prevailing and continuing low gold price has adversely affected the continuing development of the gold sector in countries such as Eritrea.

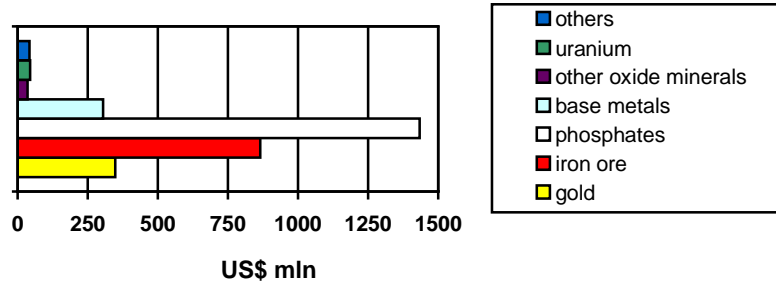
Base metals are also a major trade stream and less likely to be related to project financings

Accordingly, the development of copper, lead, zinc prospects, as well as cobalt, in Morocco and iron ore in Algeria, Libya and Egypt provides scope for the broadening of the mineral resource base.

The diagram below shows the dominance of phosphates with respect to the revenue currently earned from non-petroleum resources. Morocco and Algeria account for the majority of phosphates (all grades) currently mined from the North African region. The Moroccan company, OCP, is the world's largest exporter of phosphates.



Phosphates and super-phosphates are a major trade stream



Other industrial minerals significantly contribute to the economy

A wide variety of minerals have been discovered to date in Morocco. In addition to those listed in the accompanying table, deposits of calcite manganese, bentonite, feldspar, clays have also been delineated. A significant amount of information has been accumulated by BRPM, the Moroccan government agency, which was originally responsible for the majority of non-phosphate mining in Morocco and now is having its interests spun off as part of a privatisation programme. A similar case holds for Algeria, where significant production projects are ongoing involving the production of bentonite, diatomite, barites, celestine and marble. Potential mine developments lie in the areas of gold, tin, tungsten, diamonds, manganese and copper.

Djibouti's mineral production is limited to small quantities of clays, granite, limestone, marble and sand. Some gold and silver exploration permits are being followed up. Eritrea and Ethiopia present similar cases.

A detailed list of the various commodities the reserve value, and their production value is given in the table opposite.

EU countries form the mainstay of the export markets

The majority of export markets for the North African countries cited here are the European Union, in the main the southern Mediterranean countries. Other significant markets are the United States, Canada, Japan. The table below lists the market destination of the most significant commodities exploited in the region.

Country	Major commodity produced	Significance of operation	Export market
Algeria	oil	hydrocarbons account for 95% of all export earnings of country	W.Europe (60%) USA (30%) Europe, USA
	LNG		France, Spain, Belgium, Turkey
	natural gas		EU (100%)
	phosphates	2% of world reserves	EU (28%), Japan (72%)
Egypt	mercury	1-2% of world reserves	EU (28%), Japan (72%)
	oil, refined/chemical goods	15% of the GDP	Asia (50%) USA (5%)
Libya	oil	95% of all country revenues	Italy (40%) Other EU, Turkey
	iron and steel	largest metallurgical operation in country	W.Europe (40%), Egypt, Tunisia (50%), Indonesia, Brazil, Albania
Mali	gold	30% of GDP	RSA, Switzerland
Mauritania	iron ore	11% GDP; 40% exports	W.Europe(97%),Pakistan (3%)
Morocco	phosphates	30% of all exports	EU (Spain)(25%), USA –Mexico (66%), Japan (9%)
	base metals	50% of world reserves	OECD countries
Niger	barytes	minerals: 35% FX, 6% GDP	
	uranium	6% of world reserves	EU (70%), US (30%)
Sudan	oil	70% of FX	France (100%)
Tunisia	oil	main mineral export	Ethiopia (main target)
	phosphates, lead/zinc, oil	3% of GDP	EU (France, Italy)



North Africa: Mineral and Petroleum Trade Finance Opportunities

Country	Commodity	Companies involved (parastatals)	Reserve volume	Reserve value (US\$ mln)	Annual Production of main commodities	Annual Prod. value (US\$ mln) (% exported)
Algeria	barytes	<i>Metanof</i>	9.5-16 mln te	750-1250		
	gas	<i>Sonatrach, BP*</i>	130 TCF	810,000		
	gold	<i>ENOR</i>	110 te	894		
	iron ore	<i>ENFP/FERPHOS</i>	3.5-5 mln te	175,000- 250,000		
	lead/zinc	<i>Metanof/Glencore</i>	1.6 mln te	320		contact
	marble	<i>ENAMABRE</i>	80 mln cum	320		
	mercury		2 k te	9		
	oil	<i>Sonatrach, BP*</i>	8400 mln bbl	210,000		Solens
	phosphate	<i>ENFP</i>	2400 mln te	96,000		
	salt	<i>ENASEL</i>	1.5-3.5 bln te	600-1400		
Chad	oil	<i>Chevron/Exxon</i>	1000 mln bbl	25,000		for
Egypt	aluminium	<i>ALCOE</i>	nd	nd		
	coal	<i>EGMRC</i>	nd	nd		
	gas	<i>EGPC#</i>	31 TCF	180,000		more
				fertilizers:		
	gold	<i>Centamin /Kara Gold</i>	311 te	2500		
	iron ore	<i>Ademco/Aisco</i>	65 mln te +	3,250		details
	oil	<i>EGPC#</i>	4-10 bln bbl	77,500		
	phosphates	<i>EGMRC</i>	760 mln te	30,400		
	titanium		nd	nd		
	ferroalloys					
	ferrosilicon					
Eritrea	copper	<i>Phelps Dodge</i>	4 mln te	180		contact
	salt		nd	nd		
Ethiopia	gas-to-liquids	<i>Prospective project</i>	<i>feasibility study</i>			
	gold	<i>Midroc Gold /EMRDC</i>	83 te	650		Solens
Libya	gas	<i>National Oil Corp+</i>	470 TCF	32,750		
	iron ore/steel	<i>LISCO</i>	795 mln te (ore)	19,875		
	oil	<i>National Oil Corp+</i>	23500 mln bbl	587,500		for
Mauritania	copper, gold	<i>GEMAK</i>	25 mln te	800		
	iron ore	<i>SNIM</i>	1100 mln te	25,000		
Mali	gold	<i>Anglo/ Nevsun</i>	16 mln oz	4,000		more
Morocco	barytes	<i>Comabar / CADETAF</i>	10 mln te	780		
	cobalt	<i>CTT^ / CMBA^</i>	nd	nd		
	copper	<i>SNAREMA</i>	8 mln te	360		details
	fluospar	<i>Samine^</i>	4 mln te	350		
	lead	<i>CMG^/ONA^ /</i>	23 mln te	500		
	zinc	<i>CMT/CADETAF</i>	8 mln te	750		
	oil shale	<i>ARPC</i>	100 bln te	4,000		
	phosphates	<i>OCP</i>	22 bln te	880,000		
	salt	<i>SSM / SCS</i>	nd	nd		
	silver	<i>SMI^ / ONA^</i>	nd	nd		



North Africa: Mineral and Petroleum Trade Finance Opportunities

Country	Commodity	Companies involved (<i>parastatals</i>)	Reserve volume	Reserve value (US\$ mln)	Annual Production of main commodities	Annual Prod. value (US\$ mln) (% exported)
Niger	gold	Etruscan			-	
	oil	Hunt Oil			-	
	uranium	Cogema/Somair/ Cominak			2916 te	
Sudan	gas	GNPOC -Talisman			-	
	gold	LaSource Companiere Miniere/McVicar Minerals Ltd			90000 oz	
Tunisia	oil	Arakis, <i>Sudapet</i> >			10 mln te	
	gas	<i>ETAP</i> ~			2 bln cum	
	oil	<i>ETAP</i> ~			4 mln te	
	iron ore	<i>Societe du Djebel Djerissa</i>			221000 te	
	lead/zinc	Breakwater Resources			83 kte Zn conc 10 kte Pb conc	
	phosphate	<i>Compagnie des Phosphates de Gafsa</i>			8 mln te	

Abbreviations used in table:

*: oil companies involved in Algeria: Agip, Anadarko, Arco, BP, BHP, Cepsa, Conoco, ENI, Exxon Mobil, Gaz de France, Enigas, Halliburton, Lasmo, Louisiana, Maersk, Neste Oy, Oryx, PetroCanada, Phillips, Ranger, Repsol-YPF, Sasol, Samsung, Sun Oil, Talisman, TotalFinaElf, Tullow, Wintershall

+: oil companies involved in Libya: Agip-ENI, Canadian Occidental, Husky Oil, Lundin Oil, Nimr Petroleum, OMV, PanCanadian, Pedco, Petrobras, Petronas, Red Sea Oil Corp., Repsol-YPF, Saga, TotalFinaElf, Veba, Wintershall

#: oil companies involved in Egypt: Apache, British Gas, BP-Amoco, Canadian Occidental, Deminex, TotalFinaElf, ENI-Agip, Exxon-Mobil, Marathon, Norsk Hydro, Novus, Repsol-YPF, Royal Dutch Shell, Samsung, Texaco

\$\$: aspirations for LNG and LPG exports

^: controlled by the Managem Group

>:oil companies involved in Sudan: Agip, China National Petroleum Corp. (CNPC), Gulf Petroleum Corp. (GPC), Lundin Oil Corp., Exxon Mobil, National Iranian Gas Company (NIGC), OMV, Petronas, Royal Dutch/Shell, Talisman Energy, TotalFinaElf, Trafigura Beheer B.V.

~: oil companies involved in Tunisia: Agip, Anadarko, British Gas, Centurion, CMS Oil and Gas, EHT, Elf, Esso Tunisia, Kufpec, Marathon Oil, Mobil, Neste Oy, Nuevo Energy, Petro-Canada, Phillips Petroleum, Pluspetrol, Shell, TotalFinaElf, Union Texas Petroleum

text: regarding commodities: as original and/or refined products

text: net imports

nd: no data available



Petroleum projects continue to dominate with increasing emphasis on gas treatment

The previous table does not include capital projects, which are currently underway in the region. Compared to the mining sector, it is evident that oil, gas and petrochemical products are likely to continue to be the major capital investment projects for the region. Of particular note are the developments for the refining sector and gas processing sector. Here Algeria has a new refinery being planned at Adrar whereas Libya has a comprehensive developmental programme at Asswiya, the estimated cost of work being at least in excess of US\$ 400 mln. Egypt has a number of projects at their operations at Alexandria, Assiut and Suez, predominantly hydrotreating crude, the overall cost of which remains to be assessed but is likely to be in excess of US\$500 mln. In addition to this, there are ongoing petrochemical projects at Arzew, Algeria namely a US\$350 mln ammonia plant, whereas at Ras Lanuf there is a new 120,000 te/yr polypropylene plant under construction.

Some additional 870 mln cubic feet /day treating capacity is being added in Algeria in the Berkine basin and at In Amenas. The Sirte Oil Company has a US\$ 247 mln plant capable of treating 275 mln cubic feet/day at Attahardy, Libya and British Gas is expanding its facility at Sfax, Tunisia.

Funding could be a major issue for contractors especially for Libyan projects

Throughout, major contractors are involved notably Foster Wheeler (Egypt), Kellogg Brown and Root (Algeria), Fritzwerder (Algeria), IFP (Mainly in Libya), Parsons (Algeria), Hyundai (Libya), UOP (Egypt), Krupp Uhde (Libya), ABB (Algeria), Kvaerner (Egypt) and Costain (Tunisia).

Notwithstanding the project finance oriented approach that inevitably will be taken for the majority of the projects noted above, there lies the possibility of trade finance approaches being developed given the political sensitivities of countries such as Algeria and Libya.

Conclusions

- q The diversity of hydrocarbon receivables prompts the possibility of facilitating key capital investments especially where the oil and gas producing fields are fundamental to the relevant country's economic well-being.
- q Most major mineral development has been limited to industrial minerals and associated products (e.g. phosphates, fertilisers). The size of the resource base is such that this will continue for the long term.
- q Despite significant efforts at privatisation, the governments continue to have major review/controlling processes in place which needs to be considered in shaping financing proposals for the development of the targeted resources.
- q A growing list of minerals are being developed notably, gold, base metals (copper, lead, zinc), cobalt, iron ore with significant western interest and investment. Such development could well be facilitated through appropriate linkage through the relevant coordinating government department.
- q Scope for development and subsequent financing of manufactured goods should also provide lucrative opportunities.

**Company Directory**

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Aisco Systems Inc www.aiscosystems.com		PO Box 655 Burlington Ontario Canada L7R 3Y5	Tel: 905 335-0002 Fax: 905 355-9643
ALCOE (Egyptalum) www.egyptalum.com.eg	Aluminium Company of Egypt	Cairo Office : 48-50 Abdel Khalek Sarwat Street, Cairo, Egypt.	Tel: (02) 3904710 Fax: (02) 3906793
ARPC	Office National de Recherches & d'Exploitations Petrolieres / Ministere de l'Energie et des Mines	BP 6208 Rabat, Institute Haut Agdal, Rabat, Morocco	Tel: 212 7 772846 Fax: 212 7 777942
BRPM	Bureau des Recherches et des Participations Minières	5 Avenue Moulay Hassan BP 99 Rabat, Morocco	Tel: 212 7 705005 Fax: 212 7 709411
CADETAF	La Centrale d'Achat et de Developpement de la Region Miniere	Ministere de l'Energie et des Mines BP 6208 Rabat, Institute Haut Agdal Rabat, Morocco	Tel: 212 (7) 772846 Fax: 212 (7) 777942
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