

AN INDEPTH ANALYSIS OF PAKISTAN'S
MINERAL POLICY WITH SPECIAL REFERENCE
TO NORTHERN REGION*

BY

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ABSTRACT

Since the creation of Pakistan all the Governments have shown keen interest in the development of mineral resources for which various steps were taken to accelerate and generate momentum in the development of minerals. In spite of these efforts no concrete results were achieved.

The author being a member of the advisory committee on planning for mineral resources has observed some pitfalls which directly or indirectly created a sluggish environment which caused the retardation in the development and exploitation of mineral resources. In this paper the author has attempted to shed light on the impediments in order to generate a healthy climate for strengthening the base to raise a structure in which the minerals could get a square deal for their economical and commercial exploitation.

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INTRODUCTION

The main thrust of Pakistan's development has all along been towards the creation of bi-sectoral economy. Targets for infrastructure facilities as well as for service industries had been kept subservient to the needs of the two leading sectors i. e. agriculture and manufacturing. After pumping massive

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doses of investment in the expansion of irrigation facilities and textile industry in the first round, repeat action was staged when much higher levels of investment were justified for salinity control/reclamation projects and minor/major modernisation of the manufacturing sector. The absorptive capacity for funds shown by these two sectors since independence is indeed remarkable. The mineral sector had also held out a vast potential for expansion from the very first day of independence, which aside from offering vast prospects for accelerated growth of country's economy, the development of this sector would have directly benefacted the relatively poor mountainous regions of the country i. e. N.W.F.P. Baluchistan and Northern Areas. Somehow order of national priorities determined for the successive five years development plans has consistantly placed mineral sector at the tail end of the list.

The country has witnessed radical improvements, over a broad front, in the socio-economic life during the past five years. It is, however, unfortunate to mention that progress in mineral sector during 1970-75 has been extremely poor and disappointing. It is imperative that the causes responsible for our past failings are identified and the magnitude of challenges that lie ahead are evaluated in their true perspective. Any effort at concealing true facts from the higher policy making authority would only impede the progress which the government is determined to achieve within the shortest possible time. The new planning must, therefore, base its conclusions and future guidelines on an indepth analysis of the past and prevailing situation.

A GLANCE AT THE PAST ACCOMPLISHMENTS

The following table highlights some of the trends in relation to the development of mineral sector in the recent past (source: Pakistan Economic Survey, 1975-76 and ADP 1975-76 and 1976-77)

	Five year Aggregate 1970-75	Annual 1975-76 Revised	1976-77 Estimate
a) GNP-(Current cost) Rs. Crore.	33970	12129	...
b) Contribution of Mineral Sector to GNP. Rs. Crooe.	234	112	...

	Five year Aggregate 1970-75	Annual 1975-76 Revised	1976-77 Estimate
c) Percent Contribution of Minerals to GNP.	0.69	0.92	...
d) Total public sector investment Rs. Crore.	3732	1460	1700
e) Public Sector Investment in Minerals. Rs. Crore.	10	5	7
f) Percent Public Sector Investmeat in Minerals.	0.27	0.34	0.42
g) Public Sector Investment in Minerals as percent of Income (Contribution to GNP from Minerals.	4.36%	4.46%	...

It is observed that contribution of mineral to GNP was 0.7 percent during 1970-75 and had increased to 0.9 percent in 1975-76. On the other hand proportion of public sector investment in mineral sector was only 0.3 percent during 1970-75 and has increased to 0.4 percent in 1976-77. Average investment for mineral development (including replacements) in the public sector was not more than 4.5 percent of the income earned (contributed) by the mineral sector.

From the preceding analysis, it can be safely inferred that minerals' development in the country remained stagnant as usual with adverse consequences for N. W. F. P., Baluchistan and the Northern areas as a result of lowest priority and minimum resources to this sector. The low priority constraint has remained in force, despite indications that marginal capital output ratio in the mineral sector is extremely attractive to justify large-scale diversion of resources to this sector.

CAUSES OF PAST FAILINGS

1. Infra-Structure: The dominantly mountainous provinces contain some of the most promising mineralized areas which lie in the unsympathetic

inaccessible terrain. Mineral exploration in these, though relatively expensive and cumbersome, is yet very much courageous in view of its economic minerals and rocks potential, and further more, no major problem may be expected to arise so stall smooth survey and investigation. But after proving a mineral deposit in such terrain, its large scale development will have to absorb the cost of providing the required Infra-structure. Consequently the discovery and development of high volume low cost minerals will have a very little economic impact. Even for high cost low volume minerals, small tonnages of material requiring labour intensive operations, may not prove attractive.

This impediment could be overcome by the government during planning for roads and highways or by scattering the industries in the mineralized areas so that the cost in raising the desired Infra-structure could be diversified.

2. Investment: Lack of continuity and stability in investment on mineral development, both in the public and private sectors, had also considerable impact on systematic and accelerated growth of mineral-based industry in these provinces. Frontier Province, with meagre resources, has no sound and stable base to generate enough money to give due share to minerals, and due to low priority constraints in the national planning on mineral development, the funding from the Federal Government was also not liberal.

The private sector in the beginning did take enough interest in minerals but their participation could not bloom because of the inconsistency in government planning which created legal and fiscal barriers. The excesses of government agencies for acquiring special rights of some minerals and mineralized areas have also created a bad climate for private investment. The bank loans which were so liberally advanced to other industries have more or less remained shy in investing on minerals.

3. Planning: These provinces have lacked in having objective oriented planning which could not fertilize the roots for proper growth of the mineral sector. To develop a mineral industry, three important phases are to be planned successively. Firstly, mineral exploration where a deposit is searched, reserve evaluated and graded, secondly to develop Infra-structures to open the mine for operation, and in the third and last phase the mineral is exploited and marketed. In the mountainous regions three categories of mineral deposits are recorded.

- i. Those mineral deposits which are located in the accessible areas, having proven reserves and are readily available for commercial exploitation.
- ii. Mineral deposits which are commercially exploitable but lack of Infra-structure forbids their immediate exploitation.
- iii. Minerals which occur as tiny showings associated with various geological horizons. Currently these are not available in workable quantity but geological setup warrants their occurrence in large reserves at depth. This category of mineralization mostly includes metallic minerals.

Thus the mineral development based on mode of mineralizations in these provinces necessitates:-

- i. The proven and accessible mineral deposits where infra-structure exists should be planned for exploitation, marketing, and for setting up mineral-based industries.
- ii. Those mineral deposits which are proven but are located in the inaccessible terrain may be examined for opening by providing basic Infra-structures. In case, the time factor is involved then planning can be diverted to conduct feasibility studies for utilizing those minerals by setting up cottage industries in the close vicinity of the deposits.
- iii. The third category, where surficial mineral showings abound, needs a sound planning for a detailed geological and geophysical investigations for deciphering subsurface behaviour of mineralization to pin point the location of exploitable deposits at depth.

4. Technological Constraints: Currently there are seven provincial and federal organisations with their regional offices and headquarters established at Peshawar and elsewhere who are engaged in mineral exploration and development. Most of them are understaffed and ill-equipped, some virtually with no basic laboratory facilities. There is no coordination with each other, as a result there is overlapping both in the field and laboratory operations. The service conditions of the personnel manned by these organisations are not uniform which further deteriorated their working conditions and resulted in red-tapism and inefficiency.

In this connection the government policy for floating numerous mushroom type organisations for mineral sector has also to be accounted for duplicity and inefficiency. There is already dearth of specialists in various fields of geosciences in the country, and by creating these geo-organisations, we have divided and diversified our higher skilled manpower resources, which weakened the most desired base, for promoting basic and fundamental research in mineral sector.

Pakistan is not lucky, as were some of the other countries of the world, in having large metallic mineral deposits exposed on or near the surface. On the contrary we have huge areas located in the northern and southern tips of the country where several geological formations have associations of numerous metallic minerals. These surface showings, though not of economic importance now, yet their very presence point out to various geological processes involved in migrating the mineralized solutions from deep beneath to the surface. For unravelling these hidden mysteries a stupendous task is ahead for the geoscientists of this country to participate effectively for solving geological riddles and this involves specialized research for which specialists are required.

MINERAL STRATEGY

If we have a glimpse of the mineral map of N. W. F. P. Baluchistan and the northern mountainous areas, the known mineral deposits, as discussed earlier, can be divided into the following three categories :

- i. Minerals which occur in mineable reserves and some of them which are accessible and are presently being mined: these minerals and industrial rocks include; rock salt, gypsum, marbles, limestone, serpentinite, quartzite, antimony, barite, orpiment realgar, chromite, decorative and ornamental stones, clays (china clay, bentonite, fullers earth), carbonatite, dolomite, magnesite, feldspar, garnet, lateriate, glass sand, iron ore, phosphate, quartz, slates, soapstone, emerald, coal and a few others.

For these minerals the next stage towards their development is to:-

- a) Prepare detailed mining plans to shed light on the present methods of mining being employed and the future guidance to develop and improve these techniques,

- (b) Mining equipment desired to mechanize mining operations and whether these equipments are available in Pakistan or to be imported,
- (c) Cost of mining equipment including spares and replacements for the future,
- d) Output of minerals per day/month by improvements in the mining techniques,
- e) Cost of production per ton of the minerals,
- f) Cost on raising/improving the infra-structure and
- g) An appraisal of the present demand of the minerals in the country and utilization of the surplus products.

The data collected during this study will provide a base for a feasibility study on utilization of the minerals :

- a) Whether adequate industries exist in the country to utilize whole of the minerals produced,
 - b) to prepare plans for setting up mineral-based industries, based on the present and future indigenous demands and
 - c) to collect details of the foreign country which import these minerals for appraising their export potential.
- ii. In the second category those minerals are listed where surficial occurrences are quite adequate and merit detailed investigations for collecting more geological data to prove them economical or discover fresh deposits which are commercially exploitable. Some of the known minerals which fall under this head are :
- alum, beryl, aquamarine, calcite, chromite, cinnabar, copper, galena, chromite, graphite, bauxite, laterite, manganese, mica, nickel, tungsten, vanadium, ochres, kyanite, rare earth, uranium, sulphur, zinc, gold and a few others.

As far as spot checks and reconnaissance type of geology is concerned, the geologists have already confirmed the mineralizations and mineral occurrences. But more detailed geological work relating to various geological episodes

responsible for their concentrations and precipitations, or in other words to ascertain their evolutionary history, coupled with structural and stratigraphical controls of mineralizations, are the desired lines of actions which are necessary to appraise such deposits scientifically. For being more vocal I would like to cite an example that beryl and aquamarine are associated with the pegmatites which is their "mother rock". In Lutkho valley, in Upper Chitral, some pagmatites have yielded these minerals. In Chitral, which is underlain by Hindukush Mountain Ranges, there are many pegmatite bodies scattered all over the terrain belonging to different geological ages. Now all the pegmatites may not be mineralized, but some of them may have. By conducting detailed geological mapping, a geologist, will be in a position to plot them and classify them from each other on the basis of petrology and mineralization. Consequently, by this type of work which is though time consuming, the approach to investigation becomes more methodical and scientific for correlating the mineralized bodies and thus discovering the new deposits.

iii. The third category of mineralization, discussed earlier also, is associated with the igneous rocks and is related to the igneous provinces, which contain numerous metallic mineral showings. These indications are exposed in systematic way in sequential order and have widespread spatial coverage. Such areas are called Metallogenetic Provinces or Districts. The following such districts occur in N.W.F.P. and the tribal area which are our future hope for discovering metallic mineral deposits.

1. Chitral Metallogenetic District containing showings of antimony—lead—copper—iron—mercury—gold—silver—molybdenum—tungsten—.
2. Waziristan Metallogenetic District containing showings of chromite—copper—nickel—platinum—iron—.
3. Khyber—Mohmand Metallogenetic District containing showings of antimony—lead—iron—uranium—rare earths—.
4. Hazara—Lower Swat Metallogenetic District containing, lead—iron—copper—uranium—tungsten—manganese—rare earths—ilmenite—barite—.
5. Malakand--Bajaur Metallogenetic District containing showings of chromite—nickel—iron—antimony—manganese—rare earths—fluorite—.
6. Kohistan Metallogenetic District containing showings of chromite—nickel—iron—copper—uranium—barite—.

These are some of the known Metallogenetic Districts in this province but still informations about the mineral showings are scanty as a result these could not be properly spelt out.

Currently, the author from the Centre of Excellence in Geology, University of Peshawar, is associating on a joint project with Said Badshah, Mineralogist, and Jahan Zeb Khan, Geologist, from Federally Administered Tribal Areas Development Corporation, to conduct mineral investigations in Waziristan Metallogenetic District. To start with, a detailed examination of chromite and copper is being undertaken. In one drill-hole in Shinkai area near Boy Scout Post, North Waziristan, below 100 meters depth, chalcopyrite (copper ore) mineralization has been confirmed consistently upto 50 meters. Below this horizon till 200 meters depth, six more copper mineralized pockets varying in thickness from 2 to 7 meters are also encountered. It is too early to spell out anything on economics till the samples are thoroughly examined in the laboratory and nearly ten more drill holes are drilled to delineate the subsurface mineralized area to estimate the reserve. However, it may be confidently said that the copper sulphide mineralization the type discovered near Boya in Waziristan, always forms on a regional scale, and one may expect substantially large deposit in this area.

This cursory information on the copper find in Waziristan has been incorporated to limelight the potentials of Metallogenetic Districts for discovering metallic mineral deposits.

FUTURE GUIDELINES

To trim the mineral industry for its healthy and quick growth in the mountainous regions, the following guidelines may help to improve upon the prevailing set-backs.

- i. For a scientific approach to mineral planning a cell namely Mineral Appraisal and Evaluation, may be created to screen the project proposals, advise on various ongoing mineral projects being undertaken both in the private and public sectors, and to asses accountability during execution and after completion of the projects.
- ii. A close liaison is necessary between the provincial and federal planning cells on minerals to coordinate planning and evade overlapping.

- iii. To coordinate the working of various provincial and federal geo-organisations working in these regions, and special measures to be adopted to increase their performance. This can be done by the provincial Government by assigning them special mineral projects and conducting periodic checks to assess accountability.
- iv. The private sector can play a complementary role in accelerating mineral development in the poor provinces where ample funds are not available in government exchequer. All the incentives required to attract this sector should be provided for its healthy growth for liberal investment.
- v. The precious gem, like emerald and ruby, are very valuable commodity for attracting foreign investment. Except the socialist countries, no other country in the world having precious gem deposits, exploit them through government agencies. Gemmining is a sophisticated job which needs experience to develop skill. Besides, to check theft, special electronic techniques are developed to screen the miners while leaving the mine after work. It is pity that we have ruined our precious resource by erroneous planning and sheer neglect. Still time is ripe to invite foreign reputed firms to bid on joint ventures on Swat and Mohmand emerald and Hunza ruby mines. These firms will not only bring technical know-how but would enlarge the scope of foreign investments in other mineral ventures too.
- vi. Kohat, Mianwali; Sargodha, D. I. Khan, Jhelum and D. G. Khan expose billion of tons of gypsum deposit in their vast far flung terrains. Very little use is being made of this non-glamorous industrial rock. Besides its numerous other usages, gypsum plasters wallboard and tiles in building industries are most popular in many countries of the world.

In Pakistan due to quicker pace in development, cement has become scarce in the market and its price has also gone sky high, which is not in the reach of a common man. It is recommended that lime and gypsum plaster industries should be developed in the country as replacement for cement. This will help to release pressure on indigenous demand of cement which is a foreign exchange earner. Moreover its replacements, lime and gypsum

plaster, will be comparatively a much cheaper product which would greatly help in economizing the developmental work in the country. The lime and gypsum plaster industries do not need heavy investment and could be developed on cottage scale too. Most of the gypsum deposits are located in the most depressed parts of the country and establishment of gypsum-based industries will undoubtedly give momentum to their economy.

- vii. There is a need of a balanced growth of the two important phases in mineral sector i. e. mineral exploration and evaluation, and mineral development. Our past experience shows that as a result of retarded pace in mineral exploration the country is still far behind in bringing to limelight some of geologically important areas which are known for their mineral potentials. This short-coming may be further exemplified by glancing at our metallic mineral resources. Besides chromite of Muslimbagh in Baluchistan, which was discovered much before independence, no other economic metallic mineral could be added during last thirty years, after independence.

On the other hand, on mineral development side, a substantial part of the investment in public sector has been made on the development and modernizing mining of rock salt, Coal, gypsum, and limestone and the investment was repeated till the saturation point was reached. Thus the lion's share of the investment on minerals in public sector was shared by a few industrial rocks, which squeezed the chances of spatial growth of mineral industry by deciphering the known virgin mineralized terrains by adopting modern sophisticated techniques, to discover and add new minerals to our present resources.

This problem has been created because of the bifurcation of the mineral sector among the provinces and federal governments; mineral exploration and evaluation remaining as federal subject, and mineral development being shared by both federal and the provincial governments. Another snag in this set-up is that the systematic exploration is being undertaken by one national geo-organisation, the Geological Survey of Pakistan, whereas for mineral development there are nearly seven organisations.

This whole set-up needs revision and re-adjustment keeping in view the regional problems and their needs. For instance the N.W.F.P., Baluchistan, Tribal belt and the Northern areas which are dominantly mountaineous, contain

vast expanse of terrain, to be brought within the fold of a thorough geological investigation for minerals and thus, their primary need is to have a good scientific base for exploration.

When I talk of mineral exploration it means by utilizing ultramodern techniques with well established laboratories which are rather heavy on financial side.

viii. I have already elaborately discussed about lack of specialization in mineral sector. Those good old days have gone when amateurs used to dominate the scene. A geologist used to cover most of the fields of geology during field work, stretching from water problem to metallic minerals investigation, and engineering geology to geologically mapping of sedimentary, metamorphic, and igneous terrains. Now the technological advancement has enabled a geologist to think of deeper horizon and confirm the results with sophisticated equipments. This is the need of the present and future generations because after exhaustion of the surficial mineral resources, naturally Mankind is to probe deeper to harness them for their survival. For this purpose a very sound scientific base is to be created in this sector by producing specialists and handing over to them the responsibility of this specialized job. Therefore the government should ascertain that the inflow of the specialists in mineral sector is adequate and specialists are properly placed on the projects which need specialized research.

- ix. As discussed earlier that in mineral venture three phases are to be planned and executed successively:
- a. mineral exploration and evaluation.
 - b. mineral development and
 - c. mining and marketing.

Because of the bifurcation of the subjects among the Federal and Provincial Governments, there exists a vaccum between a—b & c. For conducting feasibility studies and preparing development plans the access to the required information is not straight and easy, There is no coordination between various geo-organisations, as a result no arrangement exists for exchange of infor-

mations. This is one of the major drawbacks which has retarded the growth of this sector and created chances of overlapping and duplication. To nip this problem, centralized bureaus should be established at the provincial and centre levels to pool the periodic reports of various agencies, which should be properly catalogued and should be made available to everybody for reference.

- x. As a result of creation of so many geo-organisations in the country for minerals in the public sector, a fiscal control on their expenditure has become imperative. Every geo-organisation should have a set programme and should be asked to prepare project proposals which should be properly scrutinized by an expert committee and due weightage should be based on short term and long term economic merits. There should be a balanced distribution between mineral exploration and development (I have set aside mineral-based industry, which becomes the subject of Ministry of Industry), which should follow the needs of the regions. For instance Baluchistan, N. W. F. P., Tribal belt and the Northern Areas where a lot of basic geological investigations are desired to explore and discover new mineral deposits, mineral exploration and evaluation should be held on top priority.

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