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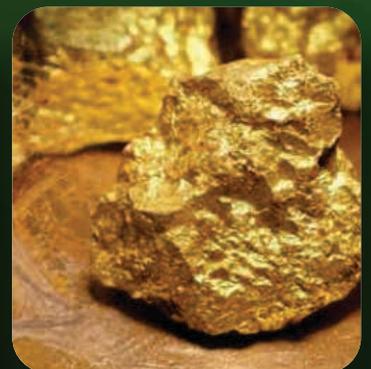
# ECONOMIC

## Affairs



Pakistan's Leap into the  
Global Minerals Economy

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INVESTMENT & GROWTH**





**Rehman Habib  
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**Ali Pervaiz Malik**  
Federal Minister for Petroleum

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**H.E. Mr. Jiang Zaidong**  
Ambassador Extraordinary and  
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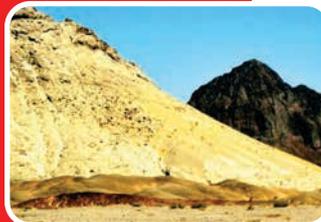
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# EDITORIAL

## Pakistan's Untapped Wealth

Few countries possess the geological wealth that Pakistan does. From the coal-rich Thar desert to the gold and copper deposits of Reko Diq, and the marble and gemstones of Gilgit-Baltistan, Pakistan is endowed with an abundance of natural resources. Yet, despite this immense potential, the country has struggled to translate its mineral wealth into economic prosperity. The country's untapped reserves of coal, copper, gold, and gemstones could serve as a crucial driver of economic growth if properly harnessed.

Sindh's Thar desert holds one of the world's largest lignite coal reserves—often referred to as Pakistan's "black gold." With an estimated 175 billion tons of coal, Thar has the potential to power the nation for decades. However, concerns over environmental impact, inefficient extraction methods, and dependence on outdated coal-burning technology have hindered its full-scale utilization. The government's push for coal-fired power plants under the CPEC has drawn criticism from environmentalists, yet Pakistan's energy needs cannot be met without leveraging domestic coal reserves, at least in the short term.

Balochistan is home to Reko Diq mine, one of the world's largest untapped copper and gold deposits. After years, the project is now being revived in collaboration with Barrick Gold. The mine, estimated to contain 12.3 million tons of copper and 20.9 million ounces of gold, represents a potential economic game-changer for Pakistan. Yet, its success hinges on resolving long-standing grievances in Balochistan, where local communities often feel marginalized in the distribution of mining revenues.

Gilgit-Baltistan in the north boasts vast reserves of high-quality marble, granite, and gemstones, including rubies, topaz, and aquamarine. The region's mining sector remains largely informal, with a lack of modern extraction and processing facilities. Investment in infrastructure, mechanized mining, and value-added processing could transform this sector into a significant contributor to Pakistan's economy.

China has emerged as Pakistan's most significant partner in mineral exploration. Under CPEC, Beijing has invested in multiple mining projects, including coal extraction in Thar and the development of infrastructure to facilitate mineral exports. China's state-owned enterprises have long played a dominant role in Pakistan's energy sector, and now, Beijing's focus on mineral extraction is growing.

While Chinese investments bring much-needed capital and technology, there are concerns over whether these deals adequately benefit Pakistan. Historically, Chinese firms have had a mixed track record in ensuring fair labour practices, environmental sustainability, and local community engagement. To prevent the "resource curse", Pakistan must negotiate contracts that prioritize job creation for locals, enforce strict environmental regulations, and ensure a fair revenue-sharing model.

Pakistan can take lessons from Chile, which has successfully managed its copper resources, and Australia, which has leveraged mineral wealth for long-term prosperity. These countries have a strong regulatory framework that ensures mining benefits the broader population.

Several key challenges must be addressed to maximize Pakistan's mining potential. Pakistan's mining policies remain fragmented, with unclear jurisdiction between federal and provincial governments. A comprehensive national mineral policy, ensuring clear legal frameworks and fair investment conditions, is essential.

Many mining regions, particularly in Balochistan and Gilgit-Baltistan, suffer from poor road connectivity, lack of power supply, and inadequate transportation networks. Without modern infrastructure, efficient mineral extraction and export remain difficult.

Mining projects often face opposition due to their impact on local ecosystems and communities. Pakistan must adopt sustainable mining practices, implement strict environmental regulations, and ensure affected communities receive adequate compensation and development benefits.

Insurgency in Balochistan has repeatedly disrupted mining projects, deterring foreign investors. Addressing local grievances through fair profit-sharing, development initiatives, and job creation will be key to maintaining long-term stability in the region.

Pakistan stands at a crossroads. The country can either continue to let its mineral wealth remain an underutilized asset or take decisive steps to transform mining into a pillar of economic growth. To achieve this, Islamabad must prioritize policy reforms, enhance infrastructure, and enforce sustainable and inclusive mining practices.

Collaboration with China presents opportunities but must be structured carefully to ensure mutual benefits. At the same time, Pakistan should explore diversification by attracting investment to reduce over-reliance on a single partner.

Above all, Pakistan's mining sector must serve its people. That means ensuring local communities see tangible benefits from resource extraction. Whether it is through job creation, infrastructure development, or reinvestment in education and healthcare, mining profits must contribute to long-term national prosperity rather than enriching a select few.

With the right policies, governance, and strategic investments, Pakistan's mines and minerals could become a transformative force—driving industrialization, boosting exports, and reducing economic dependency on external aid. The time for action is now.

- Editor



# Message from the Prime Minister

## Islamic Republic of Pakistan

Nature has blessed Pakistan with abundant natural resources. Large rivers originating from the majestic mountain ranges of Northern Pakistan, fertile land, massive gas, oil and coal deposits, huge reservoirs of Himalayan salt, and the world class reserves of copper, gold and rare earth metals, make Pakistan the best choice for both domestic and foreign investors. Adopting a whole-of-the-government approach, we have constituted a Special Investment Facilitation Council (SIFC) to provide one-window facilitation to investors. Our strategies to bring investment include showcasing our huge resources to mine the important minerals that are in demand globally.

The vast untapped potential of Pakistan's mineral sector is a highly promising destination for investment. The Tethyan Metallogenic Belt - hosting one of the world's most important copper and gold reservoirs offers vast opportunities for large-scale mining and mineral development. Huge investment opportunities also exist for downstream industry.

In the backdrop of a rapidly evolving global demand for minerals, Pakistan has organized the minerals investment forum in April 2025 to bring together industry leaders, policymakers, and investors to explore opportunities in one of the world's most promising mining frontiers - Pakistan.

The objective of this forum is to evolve global partnerships and synergize strategic partnerships for sustainable resource advancement. The 'Pakistan Mineral Investment Forum 2025' will showcase the wealth of minerals and other deposits of Pakistan. Our distinguished delegates and guests will also have the opportunity to visit and extensive expo.

Pakistan looks forward to welcoming our national and international delegations for this great opportunity.

**Muhammad Shehbaz Sharif**  
**Prime Minister**  
**Islamic Republic of Pakistan**

Interview  
**Ali Pervaiz Malik**  
 Federal Minister for Petroleum



# Pakistan's Mineral Potential

Mining has potential to become a catalyst for broader development. It can drive industrial growth, support infrastructure development, and even uplift livelihoods in some of our most underserved regions.

Interview by: Sohail Chaudhry & Nuzhat Mazhar

Born in Lahore, Ali Pervaiz Malik is a distinguished scion of powerful politician clan affiliated with the Pakistan Muslim League (Nawaz) (PML-N). He is the son of the late Muhammad Pervaiz Malik and Shaista Pervaiz, both prominent figures in Pakistani politics.

Malik's political journey commenced with his election to the National Assembly during the 2018 general elections. Demonstrating unwavering commitment to his constituents, he secured re-election in April 2024.

His dedication and expertise led to his appointment as Minister of State for Finance,

Revenue and Energy in 2024 under Prime Minister Shehbaz Sharif's administration. In a significant cabinet reshuffle in 2025, Malik ascended to the position of Federal Minister for Petroleum.

Ali Pervaiz Malik's ascent in Pakistani politics reflects his dedication to public service and his strategic vision for the nation's energy sector, positioning him as a pivotal figure in Pakistan's political landscape.

Pakistan is home to vast mineral wealth—gold, copper, rare earth metals, and more—yet much of this potential remains untapped.

**Economic Affairs had tete a tete with Ali Pervaiz Malik to understand how the country is unlocking this sector, encouraging responsible investment, and laying the groundwork for a globally competitive mining industry. Here are the excerpts of the interview:**

**Economic Affairs (EA):** Pakistan has long been known for its untapped mineral reserves. How is the government planning to transform this potential into real economic growth?

**Ali Pervaiz Malik:** The key is to distinguish between extraction and responsible, sustainable mining. We're not just looking to mine minerals—we're building an ecosystem that ensures long-term value for our people, our environment, and our economy. The government, in close coordination with local communities, is committed to showcasing Pakistan's rare metals on the global stage. Through strategic platforms like the Pakistan Minerals Investment Forum, we aim to convert our mineral wealth into genuine economic assets.

For instance, the Reko Diq Technology initiative in Balochistan—one of the richest mineral zones in the region—is a flagship project currently being operationalized. It's not just a mining project; it's a symbol of our broader vision to make Pakistan a globally recognized hub for mineral investment.

**EA: How are you ensuring that this vision is attractive and secure for both local and foreign investors?**

**Ali Pervaiz Malik:** Investor confidence is essential, and we are addressing this on multiple



fronts. Legally, we're putting strong frameworks in place that guarantee the repatriation of profits, uphold contracts, and provide legal recourse in case of disputes. Economically, we're stabilizing the macro environment, improving the investment climate, and enhancing transparency. And on the ground, especially in mineral-rich regions like Balochistan, we're bolstering institutional security to ensure that projects can move forward safely and fairly.

**EA: Mining is a capital-intensive industry. How are you incentivizing investment and partnerships in such large-scale projects?**

**Ali Pervaiz Malik:** We recognize that exploration and production require significant upfront investment, so we've

created mechanisms to share risk and responsibility. Public-Private Partnerships (PPPs) are central to this strategy, bringing together federal and provincial governments with private sector players. This tripartite model ensures that incentives are aligned, risk is shared, and local communities are engaged throughout the project lifecycle.

**We invite investors from around the world to explore our mineral potential, experience our commitment to reform, and become part of a mutually beneficial journey.**

**EA: What structural reforms are being introduced to support this new mining era?**

**Ali Pervaiz Malik:** One of the biggest barriers has been the lack of reliable geological data. We are addressing this by

significantly strengthening the Geological Survey of Pakistan to create a dependable, scientifically validated baseline. In parallel, we've developed a harmonized national regulatory framework

exchange, and creating skilled jobs locally.

Value addition is central to our economic transformation. We want to move from being a resource-rich nation to a

environmental management. That's why platforms like the Pakistan Minerals Investment Forum are so important. They're not just networking events; they're arenas for innovation, where local and

international stakeholders come together to shape the future of mining in Pakistan.

**EA: The broader goal seems to be economic transformation. How does mining fit into this larger picture?**

**APM:** Prime Minister Shehbaz Sharif has stabilized the macroeconomic environment, and now we're pivoting toward



that replaces fragmented provincial regulations. This unified system has already been adopted by Balochistan and will soon be rolled out across the country, offering clarity and consistency to investors.

**EA: Is Pakistan ready to move up the mining value chain—from exploration to processing and refining?**

**Ali Pervaiz Malik:** Absolutely. Our long-term strategy is not just to extract and export raw materials, but to build a full-spectrum mining economy. In the short term, we are focusing on concentrate exports with 30-40% purity. But within the next 2-3 years, we aim to develop smelting facilities that will allow us to produce minerals with 99% purity—adding significant value, generating more foreign

resource-smart nation.

**EA: What role will international partnerships and technology play in this transformation?**

**Ali Pervaiz Malik:** International collaboration is non-negotiable for a project of this scale.

These ventures require billions in capital and advanced technology. We're inviting global mining giants not just for investment, but for the transfer of knowledge, tools, and best practices. This will ensure sustainable, efficient, and ethical development.

Technology is critical at every stage—exploration, mapping, drilling, extraction, and

growth. Our focus is on productivity—in agriculture, manufacturing, and mining. Low productivity has historically held us back, and we believe that modernizing the mining sector will have a ripple effect across the economy.

**The government's long-term strategy is not just to extract and export raw materials, but to build a full-spectrum mining economy.**

Mining has the potential to become a catalyst for broader development. It can drive industrial growth, support infrastructure development, and even uplift livelihoods in some of our most underserved regions.

**By aligning our mining roadmap with global sustainability goals, we aim to integrate into international clean supply chains—making Pakistan not just a supplier of raw materials but a strategic contributor to the global green transition.**

**EA: What steps are being taken to ensure that mining benefits local communities and promotes inclusive growth?**

**Ali Pervaiz Malik:**

Formalizing the mining sector will unlock a host of opportunities—employment for our youth, corporate social responsibility (CSR) projects in education and healthcare, and better infrastructure in mining regions. We’re building models where mining and community development go hand in hand.

This is especially important in provinces like Balochistan, where development has lagged. Our approach is to treat mining as part of a larger ecosystem of uplift—investing in people, not just resources.

**EA: How is the government planning to build local capacity and skilled human resources for the mining sector’s long-term success?**

**Ali Pervaiz Malik:** One of our priorities is human capital development. We understand that technology and investment alone are not enough—local expertise is

vital. That’s why we’re actively working with universities, technical institutes, and international partners to design training programs and certifications focused on modern mining techniques, environmental management, and safety standards.

We are also encouraging mining companies to



incorporate capacity-building initiatives into their operational mandates. This includes internships, on-the-job training, and skill transfer arrangements to empower Pakistani engineers, geologists, and technicians. The ultimate goal is to ensure that our people are leading the transformation of this sector, not just participating in it.

**EA: What role do environmental sustainability and global ESG standards play in Pakistan’s mining**

**strategy?**

**Ali Pervaiz Malik:**

Environmental, Social, and Governance (ESG) standards are no longer optional—they’re essential. We are integrating modern environmental safeguards into all our mining projects. This includes waste management protocols, water conservation, and land restoration practices. We’re also aligning our policies with global ESG benchmarks, not just to meet investor expectations but because sustainability is our responsibility. We are in the

process of modernizing our regulatory regime, including updating the 1923 Mines Act, to ensure strict adherence to worker safety and environmental protection.

Our vision is clear: Pakistan’s mining growth must be green, inclusive, and future-focused. We want to become a global example of how natural resource development can go hand-in-hand with environmental and social responsibility.



global sustainability goals, we aim to integrate into international clean supply chains—making Pakistan not just a supplier of raw materials but a strategic contributor to the global green transition.

**This is not just about extracting resources—it’s about building a future. And there’s no better time to start than now.**

and standardized regulations that offer predictability to investors.

**EA: Security and political stability are major concerns in mining regions. How is the government addressing these challenges?**

**EA: Finally, what is your message to the international investment community?**

**EA: With rising global demand for critical minerals in the energy transition, how is Pakistan positioning itself in this evolving landscape?**

**EA: Security and political stability are major concerns in mining regions. How is the government addressing these challenges?**

**Ali Pervaiz Malik:** Pakistan is ready. With recent credit upgrades, renewed IMF partnerships, and a stable macroeconomic outlook, we are open for business. We invite investors from around the world to explore our mineral potential, experience our commitment to reform, and become part of a mutually beneficial journey. This is not just about extracting resources—it’s about building a future. And there’s no better time to start than now.

**Ali Pervaiz Malik:** Security is a legitimate concern, and we do not downplay it. We acknowledge the sacrifices made by our security forces and are committed to enhancing institutional safety in mineral zones. Beyond physical security, we’re also working on political stability through consistent policies

**Ali Pervaiz Malik:** The global shift towards clean energy, electric vehicles, and advanced technologies has dramatically increased the demand for critical and rare earth minerals. Pakistan is uniquely positioned to be a key player in this space, thanks to our untapped reserves of copper, lithium, cobalt, and other strategic resources. Our strategy is twofold: first, we are mapping and prioritizing critical mineral deposits through enhanced geological surveys; and second, we are actively engaging with international partners who specialize in clean energy technologies. By aligning our mining roadmap with



## Interview H.E. Mr. Jiang Zaidong

**Ambassador Extraordinary and  
Plenipotentiary of the  
People's Republic of China to the  
Islamic Republic of Pakistan**



# Mining Future Together

Interview by: Sohail Chaudhry

Following are the excerpts of an exclusive interview of H.E. Mr. Jiang Zaidong, Ambassador Extraordinary and Plenipotentiary of the People's Republic of China to the Islamic Republic of Pakistan with Economic Affairs

**Economic Affairs:** H.E. Ambassador Jiang Zaidong, thank you for sparing precious time for The Economic Affairs. Pakistan Minerals Investment Forum 2025 will be held in Islamabad from April 8th to 9th . Policymakers, entrepreneurs, and experts from around the world will deliberate on how to enhance mining cooperation to boost the economic development. As the China-Pakistan Economic Corridor (CPEC) enters a new phase, could you elaborate on the critical role

of mining cooperation between our two countries in promoting economic growth and improving people's livelihoods?

**H. E Ambassador:** First and foremost, I want to extend my best wishes for the complete success of Pakistan Minerals Investment Forum 2025 and I appreciate your keen focus on the development of China-Pakistan relationship and bilateral cooperation.

Over the years, Chinese mining enterprises have operated diligently in Pakistan, injecting robust momentum into Pakistan's social and economic development, improving people's livelihood, and

free education, healthcare, and utilities such as water and electricity. In this way, our cooperation has tangibly improved living standards of the local people.

laid a solid foundation for Pakistan's future mining industry growth.

**Economic Affairs: We have noted that Pakistani President Zardari paid a state visit to China in February this year, during which the two countries issued a joint statement, encouraging Chinese enterprises to invest in Pakistan's mining sector. What is your vision for the future of our mining cooperation?**



**H. E. Ambassador:** Mining cooperation has always been an important component of pragmatic cooperation between our two countries. It has a very promising future. In my view, the two sides can explore potential cooperation in the following three areas:

significantly enhancing local communities' sense of happiness and fulfillment. It could be reflected in the following aspects:

**Boosting Growth:** Chinese mining enterprises have brought advanced technologies, world-class equipment, and international management expertise to Pakistan, substantially elevating the technical capabilities and production efficiency of Pakistan's mining sector. In this way, our cooperation has strengthened the country's mineral export capacity and driven development in economically underdeveloped regions in Balochistan and Khyber Pakhtunkhwa provinces.

**Improving Livelihoods:** Chinese mining companies actively fulfill social responsibilities by building roads and bridges for the surrounding villages, providing

**Creating Jobs:** Our mining cooperation has generated over 10,000 jobs, dramatically transforming people's lives. Nusrat, a female truck driver at the Thar Coal Mining project, previously worked as a tailor earning 2,000 PKR per month. After working at the Chinese mining project, her income surged to 30,000 PKR. She could not only contribute to her hometown's development but also improve her family's quality of life.

**Cultivating Talent:** Chinese enterprises prioritize "teaching people to fish" by providing training programs and development workshops for Pakistani employees, and sending some excellent workers to study in China. In this way, our cooperation has

Enhancing fundamental work. We should intensify joint geological surveys and mining exploitation, extend the industrial chain to the deep processing of mineral

**The arrival of the first commercial flights at Gwadar New International Airport has opened new prospects for coordinated development between the airport and the port.**

products. In this way, our cooperation could fully tap resource potential and help Pakistan transform resource advantages into revenue.

Upgrading cooperation quality. We should promote technological innovation in mining exploration and

exploitation, with a focus on introducing smart mining equipment and procedure to improve utilization efficiency.

Deepening talent cultivation. We should systematically train local Pakistani mining professionals through more capacity-building opportunities, know-how sharing and localized operation of projects.

**Economic Affairs: Not long ago, the Gwadar New International Airport welcomed its first domestic and international commercial flights, giving wings to the economic development of the region. Your Excellency, how do you view the unique role of Gwadar Port in advancing China-Pakistan economic cooperation? What are your expectations for the future development of Gwadar Port?**

growth and regional hub for connectivity.

Gwadar port's development has been progressing rapidly, with multiple deep-water berths capable of accommodating large cargo ships and oil tankers already completed. Its handling capacity has significantly increased, while supporting facilities, including storage, logistics, and transportation networks, have been improved day by day.

The arrival of the first commercial flights at Gwadar New International Airport has opened new prospects for coordinated development

**Chinese mining enterprises have brought advanced technologies, world-class equipment, and international management expertise to Pakistan, substantially elevating the technical capabilities and production efficiency of Pakistan's mining sector.**

local residents. Over the past six months, the China-Pakistan Friendship Hospital has provided medical care to 150,000 patients and welcomed the birth of 1,260 newborns. This good news brings immense joy and warmth for all of us.

In the next phase, we stand ready to work with Pakistan to advance the comprehensive development and operation of Gwadar Port, further boosting this country's economic growth. We will fully unlock the potential of Gwadar Port as a critical node for connectivity and trade, actively explore cross-border transit trade, and promote the coordinated development between airport and port by taking full advantage of the operation of the Gwadar New International Airport.

Our goal is to transform Gwadar Port into a pivotal hub linking regional countries. We hope Pakistan will maximize the benefits of China-aided projects such as the China-Pakistan Friendship Hospital, Gwadar Vocational and Technical Institute, and the desalination plant, to provide strong support for improving the lives of local communities.



**H. E Ambassador:** Through our joint efforts, the CPEC has been transformed from blueprint into reality. In particular, Gwadar Port, as a flagship project of the CPEC, has evolved from a remote and underdeveloped fishing village into a new engine of economic

between the airport and the port. The completion of the Gwadar Vocational and Technical Institute will help cultivate skilled professionals for Pakistan, and the successful construction of the desalination plant is expected to alleviate water shortages, further improving the lives of



# Unlocking Mineral Wealth

**Pakistan's mining and minerals sector holds immense potential to transform the country's economy. With strategic reforms, robust policy frameworks, and international partnerships, the sector can attract significant foreign investment and contribute to sustainable development.**

**Naghmana A. Hashmi**

Pakistan is gifted with vast untapped mineral resources with an estimated \$6 trillion worth of mineral reserves, the mining and mineral sector of Pakistan has long been viewed as a critical component of the national economy. Presence of large deposits of copper, gold, coal, and rare earth elements, the mining sector holds immense potential to drive economic growth, create jobs, and attract foreign investment.

Despite the vast potential that lies beneath our soil, the sector has historically been

underexploited, leading to a significant gap between Pakistan's mineral wealth and the economic benefits derived from it. Over the past few decades, the sector has attracted significant foreign investment, which has played a pivotal role in its development. Now as Pakistan stands at the cusp of a transformative economic opportunity, realizing the full potential of the mining and minerals sector requires addressing structural challenges and leveraging international partnerships.



Pakistan's geological landscape is rich with diverse mineral deposits. Baluchistan, for instance, hosts the Reko Diq mine, one of the world's largest untapped copper and gold reserves, with an estimated annual production capacity of 350,000 tons of copper and 900,000 ounces of gold. The Reko Diq area is believed to contain one of the largest untapped copper-gold deposits globally, with an estimated 5.9 million tons of copper and 41.5 million ounces of gold. The Reko Diq site is one of the largest undeveloped copper-gold deposits in the world, which has attracted attention from global mining companies. The sheer scale of resources available presents immense potential for profitability.

Although the project faced challenges related to legal disputes and local opposition, the eventual resolution of these issues underscores the importance of a robust regulatory framework. The Pakistani government's willingness to engage in dialogue with foreign investors has been essential in navigating these complexities. The anticipated benefits of the Reko Diq Project extend

beyond direct financial returns; they include job creation, improved infrastructure, and increased foreign direct investment in the region, all of which are crucial for economic development.

Similarly, Sandak copper and gold mine, also located in Baluchistan, is a shining notable examples of successful foreign investment in Pakistan's mining sector. Initially developed in the 1990s with the

assistance of a Chinese consortium, the project has become a cornerstone of Pakistan's copper and gold production. The success of the project can be attributed to several factors including strategic cooperation, government support and substantially large deposits.

The joint venture between the state-owned Pakistan Mineral Development Corporation (PMDC) and the Chinese

Metallurgical Corporation of China (MCC) allowed for the pooling of resources and expertise. This collaboration provided the necessary financial backing and technical know-how to operationalise the project effectively. The government's pro-investment stance and efforts to streamline regulatory processes facilitated the project's implementation. The provision of a conducive environment for foreign investors was crucial in overcoming initial scepticism regarding the nation's investment climate. Finally the Saindak site is rich in mineral deposits, which made it an attractive investment

**Pakistan's geological landscape is rich with diverse mineral deposits. Baluchistan, for instance, hosts the Reko Diq mine, one of the world's largest untapped copper and gold reserves, with an estimated annual production capacity of 350,000 tons of copper and 900,000 ounces of gold.**

opportunity. The project has not only yielded significant financial returns but has also contributed to local employment and infrastructure development.

The Thar Coal Project in Sindh province represents another successful foreign investment initiative, primarily involving Chinese companies. The project aims to exploit the vast lignite coal reserves in the Thar Desert, which are estimated to

hold over 175 billion tons of coal, the second largest in the world. The project addresses Pakistan's energy crisis by providing a domestic source of coal for electricity generation. This alignment with national priorities has garnered substantial governmental support, facilitating investment through reduced bureaucratic hurdles.

The Thar Coal Project's success is also attributable to international collaborations, particularly through the China-Pakistan Economic Corridor (CPEC). This strategic partnership has not only provided financial resources but has also integrated the project into a broader framework of regional development, enhancing its viability. The involvement of Chinese firms such as Sino-Sindh Resources and others has introduced advanced mining technologies and practices to Pakistan. This transfer of technology not only enhances operational efficiency but also contributes to the development of local expertise.

We have some of the largest coal reserves in the world, particularly in the Thar region, where lignite coal deposits are estimated to exceed 175 billion tons. The Khewra Salt Mines in Punjab, one of the oldest and largest salt mines globally, contribute considerably to the country's mineral exports. Other regions, such as Khyber Pakhtunkhwa and Gilgit Baltistan are rich in gemstones, coal, and iron ore.



has often been insufficiently robust, resulting in an environment that discourages foreign investment and technological advancement.

Moreover, the mining industry is plagued by several challenges, including inadequate infrastructure, limited access to modern technology, and insufficient skilled labour. The lack of comprehensive geological surveys and data hampers exploration efforts, while bureaucratic red tape and corruption further deter potential investors. The Environmental Protection Agency's (EPA) regulations, though crucial for sustainable development, often lack enforcement, leading to environmental degradation and community unrest.

While challenges remain, the opportunities for development

Despite these promising reserves, the mining sector has not flourished as it should, which raises questions about the barriers to development and the potential benefits that could be realised if these resources were effectively exploited. The mining sector thus contributes only 2.51% to Pakistan's GDP, far below its potential. The historical trajectory of the mining sector in Pakistan has been marred by mismanagement, lack of investment, and political instability. The nationalisation policies of the 1970s



significantly hindered private investment, leading to inefficiencies and a decline in production. Additionally, the regulatory framework governing mining operations

are substantial, particularly in the context of global mineral demand and infrastructure investments through initiatives like CPEC. By implementing strategic policies and

promoting sustainable practices, Pakistan can transform its mining sector into a cornerstone of its economy, providing benefits that extend beyond mere economic metrics to encompass social and environmental dimensions as well. A concerted effort towards realising this potential will not only enhance national prosperity but also position Pakistan as a key player in the global mining landscape.



Therefore, the recent government initiatives, such as the establishment of the Special Investment Facilitation Council (SIFC), aim to address these challenges and attract foreign investors. The SIFC, launched in June 2023, serves as a single-window facility to streamline investment processes and provide security assurances to foreign investors. The council, co-chaired by the Prime Minister and the Chief of Army Staff, underscores the government's commitment to creating a conducive environment for investment.

Recent interest from global investors, particularly from the Gulf Cooperation Council (GCC) countries, signals growing confidence in Pakistan's mining sector. For example, Saudi Arabia has expressed keen interest in investing in Pakistan's mining, energy, and IT sectors, with high-level delegations visiting the country to explore opportunities. Similarly, the United States remains a

significant source of FDI, with American companies showing interest in renewable energy, agribusiness, and mining projects.

Strategic Initiatives and Incentives to attract foreign investment, the Pakistani government has introduced several policy measures and incentives. The Foreign Investment Promotion and Protection Act (FIPPA) of 2022 offers tax exemptions, guarantees for profit

between mining and downstream industries. The government has also prioritized the development of special economic zones (SEZs) and export-processing zones (EPZs) to facilitate foreign investors. These zones offer tax holidays, duty-free imports, and streamlined regulatory processes, making them attractive hubs for mining and mineral processing. Despite these efforts, several challenges persist. Security

concerns, particularly in resource-rich regions like Baluchistan, remain a significant deterrent for foreign investors. Additionally, the lack of modern infrastructure, such as roads and power supply, hampers the efficient extraction and transportation of minerals. To overcome these challenges, Pakistan must adopt a

**The joint venture between the state-owned Pakistan Mineral Development Corporation (PMDC) and the Chinese Metallurgical Corporation of China (MCC) allowed for the pooling of resources and expertise.**

multi-pronged approach. Strengthening public-private partnerships, investing in infrastructure development, and enhancing regulatory transparency are critical steps. Moreover, leveraging international collaborations, such as the China-Pakistan

repatriation, and the establishment of an investment ombudsman to address grievances. Additionally, sector-specific policies, such as the Electric Vehicle Policy (2020-2025) and the Textile Policy (2021), aim to create synergies

**Aa a catalyst for growth, Foreign Direct Investment (FDI) is crucial for unlocking Pakistan's mineral potential. The mining and mineral industry of Pakistan possesses significant untapped potential that, if harnessed effectively, could drive economic growth and development.**

Economic Corridor (CPEC), can provide the necessary capital and expertise to modernize the mining sector.

Aa a catalyst for growth, Foreign Direct Investment (FDI) is crucial for unlocking Pakistan's mineral potential. The mining and mineral industry of Pakistan possesses significant untapped potential that, if harnessed effectively, could drive economic growth and development. The untapped potential of Pakistan's mining and mineral industry presents numerous opportunities for growth. Firstly, the global demand for minerals is on the rise, particularly with the

positioning Pakistan favourably in the global supply chain.

increasing emphasis on renewable energy and technological advancements. Metals such as copper and lithium are crucial for electric vehicle batteries and renewable energy technologies,

opportunities and enhancing living standards (Wang and Zhang 2020). Furthermore, promoting sustainable mining practices can lead to long-term economic benefits. By adopting environmentally friendly technologies and practices, Pakistan can ensure that its mining activities do not compromise ecological integrity while still contributing to economic development. International partnerships and collaborations can help transfer knowledge and



Secondly, the China-Pakistan Economic Corridor (CPEC) offers a unique opportunity to enhance mining infrastructure and attract foreign investment.

The development of roads, railways, and ports under CPEC can facilitate the transportation of minerals, reducing costs and improving access to markets. This infrastructure can also support local communities by providing job

technology, improving the overall efficiency of mining operations.

To realise the untapped potential of the mining and mineral industry, a comprehensive policy framework is essential. The government must priorities the establishment of a stable and transparent regulatory environment that encourages both domestic and foreign investment. Streamlining the licensing process and reducing bureaucratic hurdles can facilitate quicker project approvals, making Pakistan an

attractive destination for mining investments. Investment in geological surveys and research is also crucial. A detailed understanding of mineral deposits can guide exploration

create a more inclusive approach to mining development. Engaging local communities in decision-making processes can ensure that their concerns are addressed, leading to more

wealth, Pakistan can unlock a new era of economic prosperity. The Saindak Copper-Gold Project, Thar Coal Project, and Reko Diq Project, illustrate a complex interplay of strategic

**Recent interest from global investors, particularly from the Gulf Cooperation Council (GCC) countries, signals growing confidence in Pakistan's mining sector.**



efforts and attract investors by providing them with reliable data. Additionally, enhancing the skill set of the local workforce through education and training programmes can ensure that communities benefit from mining activities while fostering a culture of innovation and technological advancement within the sector. Finally, fostering collaborations between government, industry, and local communities can

sustainable and socially responsible mining practices. Pakistan's mining and minerals sector holds immense potential to transform the country's economy. With strategic reforms, robust policy frameworks, and international partnerships, the sector can attract significant foreign investment and contribute to sustainable development. As global demand for minerals continues to rise, Pakistan has a unique

partnerships, supportive government policies, and rich resource potential. These investments have not only bolstered the mining sector but have also contributed to broader economic development goals. However, addressing the challenges of political instability, regulatory inefficiencies, and environmental concerns remains critical for sustaining and expanding foreign investment in the future. As Pakistan continues to navigate its path towards economic growth, leveraging its mineral wealth through successful foreign investments will be integral to its development strategy.

opportunity to position itself as a key player in the global mining industry. By addressing existing challenges and capitalizing on its natural



*The writer is Former Ambassador to China, European Union, Belgium, Luxembourg and Ireland.*



# Mineral Mines

**Pakistan’s mineral wealth—from the coal reserves of Thar to the copper and gold deposits of Balochistan and critical minerals of Gilgit Baltistan—remains largely untapped.**

## Egineer Asad Ahmed

As Pakistan stands at the cusp of a mineral revolution that promises to transform our economic landscape. I am honored to share my viewpoint on the transformative journey of the Pakistan Mineral Development Corporation (PMDC) and the immense potential our mineral sector holds for national economic growth.

Since assuming leadership of PMDC, with over 30 years of extensive experience in strategic leadership, corporate governance, and operational excellence roles in both national and multinational organizations, we have embarked on a comprehensive reform agenda that has yielded unprecedented results.

PMDC has achieved remarkable financial performance, with the highest-ever revenue, operating profit, and net profit after tax in our organization’s history. This turnaround stems from our unwavering commitment to operational excellence, strategic vision, and corporate governance.

Our journey has been marked by bold initiatives, securing strategic large scale metallic leases, attracting \$200 million in

foreign investment through our joint venture with Miracle Salt Collective Inc. USA, implementing enterprise-wide digital systems; developing four fully automated mines; establishing specialized business units; and transitioning to rigorous Environmental, Social & Governance standards.

Yet these achievements merely scratch the surface of what’s possible. Pakistan’s mineral wealth—from the coal reserves of Thar to the copper and gold deposits of Balochistan and critical minerals of Gilgit Baltistan—remains largely untapped. To fully harness this potential, we must embrace a comprehensive approach that addresses current challenges while capitalizing on emerging opportunities.

Pakistan is blessed with long stretch of Tethyan Metallogenic Belt, known to globally host copper-gold minerals covering the south-western, western and northwestern borders of the country. Other potential of critical minerals includes Lithium, Antimony, Cobalt, Graphite, REEs. Moreover, geological surveys have shown vast untapped reserves for nonmetallic minerals, dimension stones and gemstones.

The current challenge is to run aggressive exploration plans to convert these mineral

compliance ensuring responsible resource extraction.

economy like Peru or Chile.

The upcoming Pakistan Minerals Investment Forum 2025 represents a pivotal moment for our sector. It offers a platform to showcase our mineral potential and forge strategic partnerships that will drive economic growth, create meaningful employment, and establish Pakistan as a regional mining powerhouse. Other than critical metallic minerals, opportunities in large scale processing minerals used in domestic and regional industries is an attractive option for the investors who wishes to participate in vertically integrated chain stemming from rock salt, potash, phosphate, soapstone etc.



The role of provincial governments is pivotal, they should open their doors generously to the technically sound national mining companies having financial

resources into reserves. Means to complete quantitative and qualitative analysis of these resources.

First, we must intensify exploration efforts using AI-driven technologies to map our vast underground resources and develop mineral resource estimation reports on JORC or NI 43-101 international standards. Second, we need regulatory excellence through one-window operations and transparent frameworks that attract investment.

Third, we must move beyond raw extraction to value-added processing that creates high-value mineral products for global markets.

Equally important is human capital development—building a skilled workforce through specialized education and training programs. Public-private partnerships will accelerate technology transfer and operational excellence. Finally and the most important, environmental sustainability must remain a core priority, with strict ESG

muscle. These companies will take all the risks and invest to get the provinces to explore and develop mineral resource estimation reports on JORC or NI 43-101 international standards. Subsequently,

**The role of provincial governments is pivotal, they should open their doors generously to the technically sound national mining companies having financial muscle.**

results of detailed exploration will be published through National Mineral Cadastral Portal to attract FDI. By adopting such strategies, we can enhance mineral share in GDP from 1% to 10% in less than a decade's time and develop mineral based

I extend an invitation to investors, policymakers, and industry leaders to join us in this transformative journey. Together, we can convert geological abundance into economic prosperity. "For millions of years, the treasures hidden beneath Pakistan's soil have rested in silence, waiting for their moment to shine. That moment has arrived. The time to act is now—not just to extract, but to innovate, transform, and build a legacy that will endure for generations. The future of Pakistan's mineral wealth is no longer a distant dream; it is a present-day opportunity.



*The writer is Managing Director/CEO of Pakistan Mineral Development Corporation.*



# Reko Diq Gold & Copper Mines

**With the establishment of the Special Investment Facilitation Council (SIFC) and its vow to improve the economy of the country through attracting foreign direct investment in the country, things have started moving in the right direction.**

**Lieutenant Colonel Rizwan Mir, TI(M)**

Reko Diq is a small town located in Chagai District of the province of Balochistan, in Pakistan. The term 'Reko Diq' translates as 'Sandy Peak' in English, being based on desert area of Balochistan. With a population density of slightly over 5 persons per square kilometer, Chagai is the largest district of Balochistan.

South-Eastern Balochistan, housed in the Tethyan Eurasian Metallogenic Belt (TEMB), possesses very rich deposits of copper, gold and other rare earth metals, which are in great demand in the world. This belt stretches from Western Europe through Turkey and the

Himalayas to Burma and Sumatra, to link finally with the West Pacific Metallogenic Belt. The zones of Reko Diq and Saindak in the Chagai District of Balochistan are the gold and copper rich zones of the Tethyan belt which are estimated to possess more than \$ 8 trillion worth of the precious metals.

In the ensuing lines, I intend to briefly touch upon the historic aspects of Reko Diq, various initiatives being undertaken by the investors in developing the area, role of SIFC in improving the business environment, a few challenges and the way forward for Pakistan.

The formation of the copper and gold reserves in the TEMB dates back to millennia, owing their formation to the movement of tectonic plates - mainly the Eurasian and Indian Plates - but the discovery of these metals in Balochistan is relatively recent. The Geological Survey of Pakistan identified the reserves in 1978, and the project gained international attention in the early 1990s, when two international mining companies, Barrick Gold and Antofagasta, entered into a joint venture agreement with



and a recent revival with Barrick Gold, aiming for a world-class mine with a 40-year lifespan.

Entering into litigation, a few years after the signing of the agreement, the project kept lingering on for good about two decades, after which it got resolved through an out of court settlement of Pakistan with Barrick Gold in 2022, while Antofagasta withdrew from the project. Currently, Barrick Gold holds half the shares of the new project and the other

seen substantial progress. Barrick Gold has started developing the site and is also working to fulfill its Corporate Social Responsibilities, through development in the area. In a short span of just two years since the settlement, the company has totally changed the configuration of Chagai. Today, the project sees \$10 Billion in terms of investment and creation of 8000 jobs .

In the past two years, the quality of life of the people of the area has immensely improved. I had a chance to visit the project site in the month of January 2025. During the visit, I was shown various CSRs being undertaken by Barrick Gold in the area. Some major initiatives undertaken by the company include;

- An International Graduate Development Program (IGDP) has been initiated under which 9 graduates from various parts of Balochistan were sent to the operational project sites of Barrick Gold in Africa and South America last year, to get on-job training

**The Chief Minister of Balochistan has also announced the opening of a college for women in Naukundi, which will be first of its kind in the district.**



the governments of Balochistan and Pakistan, to develop the Reko Diq project. In a nutshell, we can call the Reko Diq project, a large undeveloped copper-gold mine in Balochistan, having a history marked by initial agreements, legal challenges,

half are split between provincial and federal state owned companies. \$11 Billion worth of penalties by the arbitration court were set aside, giving a sigh of relief to the government of Pakistan. Since the settlement of the issue however, the project has

on various aspects related to mining - geological survey, safety, mining, HR etc. This year the number of students has been doubled.

- Naukundi and Wallai (the neighbouring villages of Reko Diq) have been developed into quality centers of the area.
- There was issue of drinking water in the locality, which was resolved by installing a reverse osmosis plant in the town.
- The Hunnar Foundation has been established in Naukundi, which provides

area. The company has literally breathed a new life in the area, which speaks of the commitment of Barrick Gold to develop the area along with their own business. The Chief Minister of Balochistan has also announced the opening of a college for women in Naukundi, which will be first of

**Another great initiative has been undertaken by the company by adopting the abandoned schools of the area. The company has literally breathed a new life in the area, which speaks of the commitment of Barrick Gold to develop the area along with their own business.**

around.

In the past two years the council has worked a lot to improve the policy framework of various economic sectors of the country. We can safely assume that SIFC is our new hope for economic revival. In a short span of about one and a half year, it has adopted a whole of the government approach to bring all the stakeholders at one platform to reduce the bureaucratic hurdles, and to serve as one window destination for the investors.

There are however some very serious challenges which are being faced by the country and required to be surmounted at the earliest if it is desired to create the desired effects in an early time frame.



vocational training to the women and men in order to help them have their own means of earning.

- A 50 bedded hospital has been established in Naukundi, with state-of-the-art equipment, laboratory and other medical services.
- Barrick Gold has also established a Primary School in Wallai, to provide quality education to the children of local population.

Another great initiative has been undertaken by the company by adopting the abandoned schools of the

its kind in the district. With the establishment of the Special Investment Facilitation Council (SIFC) and its vow to improve the economy of the country through attracting foreign direct investment in the country, things have started moving in the right direction. SIFC has included minerals and mining sector as one of its priority sectors for improvement - what it terms as the low hanging fruits for economic turn



Achieve Political Stability. Whatever may be the situation in the country, it is very important to achieve political stability in the country which is necessary in a sound decision making process. With political polarity, and tensions, the menaces like terrorism, propaganda, lack of governance, and corruption cannot be overcome. This is the utmost responsibility of the government and political leadership to leave their prejudices aside and join their hands to help take Pakistan out of the economic quicksand.

Security and Safety. Ensuring safety and security in the country is the next important challenge, the assurance of which emanates from political stability. The investor has to be given surety that the investor and their investment is safe in Pakistan and it will give good dividends. The law enforcing agencies, are making all out efforts to achieve this. They are giving a lot of sacrifices to ensure this.

Ease of Doing Business. Creation of an environment which is conducive for the investors is next important aspect, which will ensure that

if any FDI comes to the country, it creates a win-win situation. SIFC since its creation, has come a long way in achieving this goal. A lot has been done in the past few months. Now the investors, both domestic and foreign - see Pakistan as an important country where they can make investments and earn profits, while the host doesn't have to compromise on its benefits.

I can confidently say that today's Pakistan is quite different from what it used to be a few years ago. Today when a foreign investor comes to Pakistan, we ask them to first let us know what is there in it for Pakistan. This is one reason why the companies like Barrick Gold take on the CSRs before developing their mines, this is why DP World collaborates with our state organizations to synergize rather than establishing its own business, that is why Miracle Salt

**SIFC has included minerals and mining sector as one of its priority sectors for improvement - what it terms as the low hanging fruits for economic turnaround.**

Company vows to establish a value addition plant in Pakistan rather than taking raw salt to USA and make use of our product.



And this is why today's Pakistan is different from what it used to be. I have all my hope and belief that the time has come for Pakistan to rise and shine in the comity of nations as an advanced and forward looking economy. I said it before and I reiterate that I see the 2028 as the year of revival for Pakistan. This is the year, I foresee when Pakistan is going to reach the summit edge and take off the flight to economic prosperity.



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# Catalyzing Mineral Exploration

**Pakistan has witnessed several successful mineral exploration projects over the past decades, demonstrating the country's potential in this sector. It is home to an abundant mineral reserves.**

**Muhammad Zubair Ahmad**

Successful Mineral exploration and subsequent benefaction & value addition is playing an important role in the economic development of many countries around the world. Pakistan is blessed with significant mineral resources and has yet to fully capitalize on its potential.

Comparing Pakistan's mineral exploration with other mineral-rich countries like Australia, Canada, and Chile reveals significant differences in terms of policies, technologies, infrastructure, and economic impact. This article provides an overview of mineral exploration in Pakistan and contrasts it with

leading countries in this sector.

Australia is one of the top global leaders in mineral exploration and mining, contributing significantly to its GDP. Australia is rich in iron ore, gold, bauxite, and lithium, and the government supports continuous geological surveys, research, and foreign direct investment. Canada is prominent mining nation, known for its exploration of gold, nickel, uranium, and potash. The country's success is attributed to the favorable investment policies, strong environmental standards, and significant emphasis on sustainable mining practices.

Chile is the world's largest producer of copper and an emerging leader in lithium production. The mining sector is a cornerstone of Chile's economy, contributing over 10% to its GDP. Chile's mining success is driven by political stability, efficient regulatory bodies, and well-developed transport and energy infrastructure.

Pakistan has witnessed several successful mineral exploration projects over the past decades, demonstrating the country's potential in this sector. It is home to an Abundant Mineral Reserves, including:

- **Gemstones:** The northern areas of Pakistan, including Swat and Gilgit-Baltistan, are rich in emeralds, rubies, and topaz.
- **Gypsum and Limestone:** These are extensively used in the cement and construction industries.
- **Iron Ore:** Found in Punjab and Balochistan, iron ore is vital for the steel industry.

### Roadmap for Mining Development

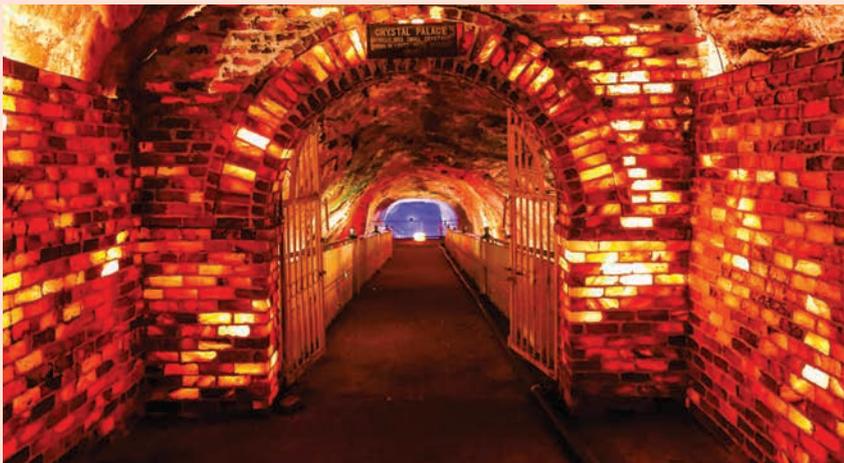
Pakistan is fostering mining growth through investor-friendly policies, streamlining

economic benefits. Pakistan's mining sector struggles with infrastructure gaps, regulatory hurdles, and security issues. With proper investment and sustainable mining practices, Pakistan's mining industry has the potential to become a leading contributor to the national economy. The development of infrastructure, better policies, and improved exploration techniques will further enhance the growth of the sector, ensuring long-term benefits for the country.

#### Role of Allied Infrastructure in Mining

Mining operations depend heavily on robust infrastructure, which enhances efficiency, reduces costs, and ensures sustainability. Essential allied infrastructure includes:

- **Transportation Networks** – Well-developed, rail network, roads and highways facilitate the movement of raw materials to processing plants and export hubs, while railways offer cost-effective bulk transportation.
- **Water Management Systems** – Water storage facilities and Dams, ensuring a sustainable water supply for processing activities. pipelines, and drainage networks support mineral processing and environmental sustainability.
- **Power Supply and Energy Infrastructure** – Reliable electricity and alternative energy sources are vital for uninterrupted mining operations.
- **Worker Settlements and Facilities** – Housing, healthcare, and operational



- **Copper and Gold:** The Reko Diq mine in Balochistan contains one of the world's largest undeveloped copper and gold deposits, attracting international interest
- **Coal:** The Thar coalfield holds immense reserves, among one of the largest in the world, playing a key role in Pakistan's energy sector.
- **Salt:** Pakistan is one of the largest producers of salt, with the famous Khewra Salt Mine known for its high-quality Himalayan pink

regulatory frameworks, and infrastructure upgrades. Public-private partnerships and foreign collaborations are expanding, particularly in Balochistan and Khyber Pakhtunkhwa. Improved roads, railways, and processing facilities are boosting mineral extraction and exports. Modern mining techniques, including automation and eco-friendly processes, are enhancing efficiency while reducing environmental impact. Sustainable practices aim to protect ecosystems and support local communities through job creation and

- buildings ensure a stable and productive workforce.
- Waste Management and Environmental Controls – Proper disposal networks and eco-friendly initiatives minimize environmental impact.
- Investment in allied infrastructure is crucial for maximizing the potential of mining industries, improving productivity, and fostering long-term economic growth.

Pakistan holds vast mineral potential but requires substantial reforms to match the performance of global mining leaders. By adopting transparent policies, investing in modern technologies, improving infrastructure, and fostering sustainable practices, Pakistan can elevate its mineral sector to become a significant contributor to economic growth, employment, and exports, similar to the success stories witnessed in Australia, Canada, and Chile.

### RHC's Contribution to Mining and Minerals Sector

Rehman Habib Consultants (Pvt) Ltd is making significant contributions to Pakistan's mining and energy sectors through its involvement in planning and design of critical infrastructure projects that enhance resource extraction and transportation. One of its key projects is the Gwadar-Nok-Kundi rail link (675 km

Mineral Corridor), a feasibility study and transaction advisory service aimed at connecting Gwadar Port to Nok-Kundi near the Reko Diq Copper Mine, ensuring efficient and cost-effective transportation of minerals. Similarly, the Mashkhel-Panjgoor Road (200 km Mineral Corridor) project focuses on upgrading a crucial transport route in Balochistan, improving access to mining



sites, reducing logistical expenses, and fostering local economic growth. In the energy sector, RHC has played a pivotal role in the Thar Coal Connectivity project, involving the construction of a 105 km railway line linking New Chhor Station to Block-2 Thar Coal Mines, facilitating Pakistan's energy sector by the export of Thar's lignite coal reserves.

Additionally, RHC has provided construction design and supervision services for Saindak Dam (Saindak Area) & Shandaq Dam (Nokundi) under the Project named Construction of 100 Dams in

**Public-private partnerships and foreign collaborations are expanding, particularly in Balochistan and Khyber Pakhtunkhwa. Improved roads, railways, and processing facilities are boosting mineral extraction and exports.**

Balochistan, ensuring a sustainable water supply for mining operations in the Saindak Copper-Gold Mine region. Another strategic initiative is the Kohat-Kurlachi Rail Link Project in Khyber Pakhtunkhwa (KP), designed to improve coal and mineral transportation from Khyber Pakhtunkhwa's mining areas, reducing logistics costs and dependence on road transport.

RHC's involvement in Pakistan's mining sector highlights its commitment to developing sustainable infrastructure. The company's expertise in feasibility studies, detailed design services, and project execution ensures high-quality deliverables that align with international standards. Through these projects, RHC is contributing to Pakistan's mining infrastructure, enhancing economic opportunities, and ensuring the efficient movement of critical resources.



*The writer is Chief Executive, Rehman Habib Consultants (Pvt) Ltd*

# Pioneering Energy Security

**Despite its immense natural wealth, Thar remains one of Pakistan's most underdeveloped regions, ranking low on the Human Development Index**

**Kashif Rizwan**

In the early 1990s, the Geological Survey of Pakistan (GSP) uncovered a staggering 175 billion tonnes of lignite coal beneath the golden sands of the Thar Desert. This vast, indigenous resource held the promise of transforming Pakistan's destiny by ushering in a new era of energy security and economic prosperity.

To realize this Thar dream, Engro, in partnership with the Government of Sindh and other associates, established the Sindh Engro Coal Mining Company (SECMC) in 2009. The Thar Block II, allocated to SECMC, contains 2.4 billion tonnes of coal - a mere 1.5% of Thar's total potential. With Phase 1 and 2 of the mine expansion completed and Phase 3 by mid-

2026, the mine's capacity is set to reach 11.2 million tonnes per annum.

Since its inception, the project has saved Pakistan approximately USD 1.3 billion in foreign exchange by reducing reliance on imported fuels. While the energy potential of Thar is undeniable, the story of SECMC is not just about coal extraction or energy production; it is about transforming lives. Thar, despite its immense natural wealth, remains one of Pakistan's most underdeveloped regions, ranking low on the Human Development Index. Historically, the people of Thar have faced challenges such as limited access to quality education, healthcare, and sustainable livelihoods.

From the onset, SECMC adopted a holistic approach to development, ensuring that the benefits of the Thar project reached the local community. This was not just about corporate social responsibility; it was a moral imperative. In collaboration with other Thar Block II entities, SECMC established the Thar Foundation to drive an inclusive business model based on the United Nations' Sustainable Development Goals (SDGs).

Out of the 17 SDGs, 13 priority areas have been targeted for direct intervention, focusing on poverty alleviation, sustainable livelihoods, healthcare, education, clean water, sanitation, and gender equality. Driven by its vision to create socio-economic opportunities for the people of Thar, SECMC nurtures local talent to actively contribute to the region's transformation.

The Company has created approximately 4,100 jobs, with 60% of these positions filled by individuals from the Thar region. Additionally, over 2,000 people have received vocational training in fields such as solarization, welding, and hospitality, equipping them with skills to secure sustainable livelihoods. Remarkably, SECMC and the



plants, equipping them with advanced expertise. Upon their return, these skilled individuals were seamlessly integrated into local industries.

Eight medical facilities, such as Thar Foundation Hospital, Marvi Clinic, and Gorano Clinic

and others, have offered free critical healthcare services to more than 300,000 community members since inception. Access to clean

Thar Foundation prioritized community well-being even before coal mining began.

Today, the Foundation operates 28 school units, providing quality education to over 5,000 students, with 35% female enrolment. Additionally, skill development programs continue to expand, offering training in diverse fields such as welding, solarization, IT, stitching, and dressmaking.

The Government Polytechnic Institute (GPI) in Mithi provides a Diploma of Associate Engineering (DAE) in mining, electrical, mechanical and civil engineering. Over 300 students, including 13 women for the first time, are enrolled in these diploma courses.

Furthermore, 75 students were sent to China for specialized training in Operations & Maintenance (O&M) of power

**In partnership with the International Union for Conservation of Nature (IUCN), a detailed flora and fauna study was conducted, highlighting the region's rich ecological treasures and efforts for its preservation.**

drinking water through the installation of 22 Reverse Osmosis (RO) plants across Thar Block II and surrounding areas has further improved the region's health indicators.

These RO plants supply approximately 2.8 million gallons of clean drinking water to the community each month. Among these, six RO plants are operational in Gorano area providing approximately 507,000 gallons of clean drinking water every month to over 5,000 individuals.

**Thar Foundation has empowered over 300 women by training them as lady health workers to serve in various healthcare facilities. Additionally, more than 180 female teachers are inspiring and educating the next generation in local schools.**

SECMC has also been a catalyst for gender equality in Thar. Historically, cultural restrictions and low female literacy rates limited women's participation in the workforce. Thar Foundation has empowered over 300 women by training them as lady health workers to serve in various healthcare facilities. Additionally, more than 180 female teachers are inspiring and educating the next generation in local schools.

The resilient and talented women of Thar are breaking barriers by taking on unconventional roles, such as RO plant operators, solar panel operators and dump truck drivers. Approximately 130 grants have also been provided to various beneficiaries including Small and Medium Enterprises (SMEs) and low-income families who invested in tuck shops and livestock to enhance their livelihoods.

The Thar Foundation's Village Electrification Project (VEP) for the first-ever installation of solar systems with battery has brought uninterrupted power supply and a renewed sense of hope to 15 villages and

settlements across Thar Block II and the Gorano area. Under this project, almost 100 percent solarization of 3,150 households - including 361 in Gorano - has been achieved.

SECMC has also prioritized environmental conservation and biodiversity. In partnership with the International Union for

The Foundation's 'Thar Million Tree' program has also been a resounding success, under which a dense forest was grown on 100 acres at Thar Block II site to increase greening efforts and promote biodiversity. The success of Thar project showcases that when governments, private entities and local communities collaborate, transformative change is achievable. It is a reminder that economic growth and human development are two sides of the same coin.



Conservation of Nature (IUCN), a detailed flora and fauna study was conducted, highlighting the region's rich ecological treasures and efforts for its preservation. The Gorano Reservoir has been declared a Wetland Sanctuary by IUCN, serving as a haven for migratory birds and vultures. The area has also become a hub for bio-saline agriculture, with 16 edible plant species successfully cultivated and over 120,000 fish thriving in bio-saline waters, directly benefiting 1,500 households.

As Pakistan stands on the brink of a mining revolution, lessons from Thar must guide our path forward. By placing people at the heart of progress, we can unlock the full potential of our nation's resources and build a more inclusive future for all.



*The writer is the Climate & Environmental Journalist & Editor.*



# Marble Potential

**Pakistan has a unique identity in the global market of minerals, but, unfortunately, neither it has been developed according to the international market yet nor tapped entirely.**

**Fateh Shah Arif**

Pakistan is one of the most potential country among the globe, blessed with countless treasures of mineral resources, its worth is estimated around more than six trillions. Besides it also has huge untapped capacity of most precious minerals which is known as 'metallic minerals' i.e. on top demand in today's international market, subsequently, non-metallic, gem stones and dimension stones as well.

Due to these future prospects, Pakistan has a unique identity in the global market of minerals, unfortunately, neither it has been developed according to the international market yet nor tapped entirely.

Amongst these minerals, Pakistan has a huge potential in dimension stone, containing different types of marble reserves, which is estimated around more than 300 billion metric tons, in unique colors, with standard strength, structure, design and high quality.

Pakistan is blessed with marble of different colors and myriad variety that not only meets the requirements of the national market but also demand of the international market. Marble and Granite are used for both construction purposes and Handicrafts manufacturing, whereas, Onyx which is a semi-transparent is generally used by handicrafts manufacturing industry.

The recent attention of the federal and provincial authorities and revisits of the mineral policies specially after formation of “Special Investment Facilitation Authority” SIFC in which all the stakeholders were not only observed on one page but also committed to uplift the sector with mutual consensus of all stakeholders with sharing of responsibilities. The recent exercise of Mines and Mineral Harmonization Act, 2025 development and taking all stakeholders in confidence for mining sector uplifting indicates that the State after an extended wait is now in a proactive position and is now laying down the ground for international communities for a secure investment with full assurance.

It is worth to mention that, Pakistan is currently exporting around 45 million dollars’ worth of marble to the

white marble or something special in context of bright and rich, Pakistan marble market has the potential accordingly, having every preferences and class of marbles according to the market requirements.

Cumulatively, Pakistan is having more than 1650 marble mining operations in all four provinces including Gilgit Baltistan with 2500 factories and 5000+ showrooms. Pakistan’s inherent capabilities



All four provinces of Pakistan including Gilgit-Baltistan have huge potential of different marble reserves, this is an edge of Pakistan marble that

in Marble market is categorized in three portions according to its worth and colors;

**There are 10 mines in operation, however the total reserves are not known yet as efforts in this region have not been made so far. The mines are producing blocks in squared shape and are supplied to meet the local industry requirements.**

every type of marble that is required to the international market exists in Pakistan. Currently Pakistan is exporting huge quantities of Marble, especially Ziarat White, Green Onyx and Gray Travertine. Each Marble having

- Granite in different and unique colors which is rarely found in international market, lavender gold, Amber gray, imperial white, Indus gold, lavender, Azul indus blue, salt and pepper, black granite, tropical gray, sado pink, black and gold, brown pearl etc.
- Onyx in different colors, traver, pink onyx, pearl white, multi green, mist green, medium green, light green, ice white, dark green, Bianco gold, Bianco etc.
- Mosaic tile, in different color and quality black and gold, terracotta, Indus gold, Boticina green, brown travertine, Ziaratwhite, dark empradore, parlino, black granite blue pear etc.

international market. The highest export of the Pakistan marble was in 2013, where Pakistan exported around 96 million dollars’ worth of marble to international market. It’s noteworthy that, whether you are looking for traditional

extra ordinary advantages, however Ziarat White has an advantage of cooling the surface flooring and roof especially in hot zones, which is required not only by the Gulf States but also has demand in the African countries.

In context of Provincial available assets Khyber Pakhtunkhwa is the province having the most potential of different marble in huge quantity. Its worth according to Geological Survey of Pakistan is more than 297

**The most famous districts with abundant treasures of dimension stones having the potential of mining opportunities are, Chaghi, Loralai, Lasbela, Khuzdar Mastung, Bolan, Zhob, Sibi and Ziarat.**

Billion Metric Tons, comprising of Marble and Granite in different colors, almost every district of the province has potential of marble and granite reserves. There are distinctive varieties of marble i.e. Ziarat White, Black Granite with numerous other marbles. Currently there are more than 1000 mines of marble across the province, with 1735 factories, and more than 330 showrooms across the province which indicates that it is the largest dimension stone holding province in Pakistan with extra ordinary market potential for international market.

Interestingly, the province contributing approximately 90% production of overall Pakistan. This indicates that the most important market for the international community is not only for exporting but also for mining with formal JVs with provincial authorities and

local mine owners. In Khyber Pakhtunkhwa almost every district has marble and granite reserves, however the market districts areas i.e. Buner, Dir, Chital, Mardan, Noshera, Sawabi, Malakand, Manshera, Chitral, Manshera, Chitral,

North and South Waziristan, Mohmand Agency and Bajore Agency. In addition to this, adjacent to KPK in Northern Areas i.e. Gilgit-Balthishan the districts having potential are Gilgit, Chillas, Hunza and Skardu that are very famous

due to its unique treasury of granite and marble, however some areas are still untapped.

Baluchistan is the second largest potential of marble market in Pakistan which is having the treasures of most precious marble for national and international market. The marble and granite mining in the province commenced in 1950, which indicates the oldest inherent capabilities in the country. The province having potential of more than 2.5 Billion Metric Tons, is bestowed with enormous

mineral resources including Marble and Granite. Among these inherent potentials, the most important and attractive marble is its Onyx, famous across the globe due to its unique colors and variety. In addition, Baluchistan is having huge reserves of Granite, ordinary dimension stone specially Travertine.

The most famous districts with abundant treasures of dimension stones having the potential of mining opportunities are, Chaghi, Loralai, Lasbela, Khuzdar Mastung, Bolan, Zhob, Sibi and Ziarat. The province is having more than 530 mining sites, along with 275 factories and more than 350 showrooms across the province for production of Marble to meet National and International market demands. Due to its durability and captivating appearance, the natural look of this marble is a marvel.

Sindh the southern province of Pakistan is famous owing to its potential in strategic minerals



however it is also blessed with exceptional variety of marbles. Sindh province is renowned for its premium quality beige and

brown marble. Its marbles are of high quality and durability that uplift its decent look and makes it more appealing for high-end projects. Most of the large scale construction projects, especially villas and

each unit, medium size units.

Sindh province is usually considered as the hub of Marble market in Pakistan due to its huge population and existence of Karachi port as an

potentials indicate that, Pakistan in the region is not only having huge opportunities in the mining sector but also future prospects for dimension stones, Marble and Granite for

**Pakistan is having more than 1650 marble mining operations in all four provinces including Gilgit Baltistan with 2500 factories and 5000+ showrooms.**



luxury hotels use Sindh marble due to its unique pattern and defined colors, it stands very distinct. Sindh has striking colors of Granite i.e. widely spread in the area of Thar Parker.

There are 10 mines in operation, however the total reserves are not known yet as efforts in this region have not been made so far. The mines are producing blocks in squared shape and are supplied to meet the local industry requirements. Sindh Granite can compete in the international markets with India, as the colors found in Sindh are better than the colors found in the neighboring countries. There is a big cluster of processing units in Sindh at Karachi with over 180 medium size units. In addition to this, there are more than 600 units of small and micro sizes with 1-3 cutters in

ideal place for export of Marble to the international market. This province is having more than 1200 showrooms, 400 hundred factories with more than 10 mining sites where a big range needs to be tapped in the upcoming days. Nagar Parker, Dadu, Thatta Sindh, the estimated reserves of Granite are 10.06 Billion Tons.

Punjab in the context of Population, it is the largest province of Pakistan, and also the largest market of local Marble consumption, Punjab province having potential of Lime Stone in Khushab, Mianwali, DG Khan, Kohat, however the marble potential is not tapped yet. Overall Punjab Province is having more than 105 Marble producing factories with more than 3500 showrooms across the province.

The above emphasized

investment. Shortly this is the only place in region which can not only fulfil the international market's requirements but also carve the way of mining opportunities for international community to invest with proper allotments and JVs contracts with local mine owners. Pakistani government in recent past declared marble holding zones as marble cities, where extra ordinary potential existing for investment specially in international standard marble cutting, polishing and packing unit establishment, which will not uplift the sector but also fulfil the requirements' of international market with secure investment.



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# Coal-Powered Industrialization

**Lessons from global success stories such as Germany, China, and US highlight viability of lignite-based power in supporting industrial development. Enhancing existing mining operations, developing key infrastructure like the Chor-Thar rail link, and establishing SEZs allow Pakistan to create a robust industrial ecosystem that ensures long-term energy reliability, supports economic expansion, and reduces reliance on energy imports.**

**Dr. Fahad Irfan Siddiqui**

The Thar coal basin, located in Sindh, Pakistan, spans approximately 9,100 square kilometers and consists of multiple blocks with distinct investment potential, holding an estimated 30 billion tonnes of measured resources across 12 blocks. These resources play a crucial role in Pakistan's energy security and industrial growth. Existing operational mines at Block I (SSRL) and Block II (SECMC) require immediate expansion to meet rising industrial energy demands. Expanding mine capacity will also drastically reduce power costs for electricity consumers in Pakistan, creating affordability that stimulates economic growth across multiple sectors.

Lower electricity prices will enhance industrial competitiveness, improve manufacturing output, and attract new investments, promoting a diversified and sustainable economic framework.

These SPVs will manage dedicated power transmission lines, enabling direct electricity sales to copper smelters and allied industries without routing through distribution companies. This arrangement reduces power tariffs, stabilizes energy costs for industrial consumers, and supports a sustainable business model for power producers.

Expanding capacity beyond existing operations is essential, and Block VIII should be considered for development to meet future industrial demand. Block VII is also a preferred option due to its thicker main seam and lower stripping ratio, which improve mining efficiency and reduce operational expenses.

A phased approach that balances the rapid expansion of existing mines with the

measures, such as carbon capture and storage (CCS), allow lignite coal to remain a viable energy source while keeping emissions in check. China relies on its extensive lignite reserves in Inner Mongolia to develop large-scale industrial hubs.

**Expanding mine capacity will also drastically reduce power costs for electricity consumers in Pakistan, creating affordability that stimulates economic growth across multiple sectors.**

example of coal and copper integration. For more than a century, Kennecott, now owned by Rio Tinto, depended on coal-fired power to support its large-scale copper mining, smelting, and refining operations. The Bingham Canyon Mine, one of the world's largest open-pit copper mines, ran on a dedicated coal-fired power plant to maintain a steady and cost-effective electricity supply. This setup helped control operating costs and improve production efficiency. While the facility has since moved toward alternative energy sources, the historical model of coal-based power supporting a fully integrated copper production system remains a key reference for large-scale industrial operations.

Infrastructure enhancements, including the Chor-Thar railway link, improve coal



initiation of Block VIII or Block IV would secure a stable coal supply while maintaining cost efficiency. Several countries successfully integrate lignite coal resources with industrial growth, offering valuable insights for Pakistan. Germany uses lignite coal from the Lausitz Basin to supply power for industrial operations. The region supports several mine-mouth power plants, which provide electricity at competitive rates to metallurgical industries, including copper smelting and refining.

Advanced gasification technologies and environmental control

These zones connect coal mining, power generation, and metallurgical operations, including copper refining. Dedicated transmission lines deliver stable, low-cost electricity directly from mine-mouth power plants to industrial consumers, reducing dependence on grid-based distribution. This approach strengthens industrial competitiveness and ensures long-term energy security.

The Kennecott Utah Copper operation in the United States provides a strong



transport logistics and significantly reduce operational expenses. Dedicated rail corridors ensure efficient coal transportation to industrial hubs, facilitating the integration of coal-based power with downstream industries. This infrastructure strengthens supply chain reliability and attracts long-term investment in energy-intensive industries such as copper smelting.

Establishing Special Economic Zones (SEZs) near these energy hubs attracts investment and drives industrial expansion, particularly in sectors requiring stable and cost-effective power sources such as copper smelting and refining. SEZs provide incentives such as tax exemptions, streamlined regulations, and infrastructure support, making them attractive destinations for foreign and domestic investors. The integration of coal-based power with industrial operations enables sustainable economic growth and enhanced value addition within the country.

Feasibility studies should prioritize the expansion of existing operational mines at

Block I and II while also evaluating the potential development of Block VIII to ensure long-term energy security. Coordination with SSRL and SECMC accelerates project timelines, while planning for Block VIII and IV serves as a backup strategy if additional coal supply is required. The establishment of SPVs for power transmission facilitates direct and cost-effective electricity supply to copper smelters and industrial users. Policy measures should prioritize SEZ development near these mines, integrating energy security with industrial growth. Integrating Thar coal with industrial applications, particularly copper processing, offers significant economic

and strategic benefits for Pakistan.

Lessons from global success stories, such as Germany, China, and US, highlight the viability of lignite-based power in supporting

**Lower electricity prices will enhance industrial competitiveness, improve manufacturing output, and attract new investments, promoting a diversified and sustainable economic framework.**

industrial development. Enhancing existing mining operations, developing key



infrastructure like the Chor-Thar rail link, and establishing SEZs allow Pakistan to create a robust industrial ecosystem that ensures long-term energy reliability, supports economic expansion, and reduces reliance on energy imports.



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# Resource Rich Gilgit-Baltistan

**Although several metallic and non-metallic resources have been reported in various parts of the region, the most important mineral resources include dimension stones including granites, marble, and serpentine.**

**Engr. Prof. Dr. K. G. Jadoon**

The Gilgit Baltistan region of Pakistan spans around 72,000 square kilometers with an estimated population of over 2 million people. The region is known for its breathtaking beauty and high mountains including the famous peaks like K-2, Nanga Parbat, Rakaposhi, etc.

The mesmerising mountain landscape coupled with typical local hospitality attracts millions of tourists every year to various valleys of the region. Besides its unmatched tourism, the GB region is also famous for its mineral resources including world-class gemstones. Nature has blessed the area with a variety of metallic, non-metallic, and gemstone resources.

Gilgit-Baltistan, which is a region of significant geological importance, is home to a variety of

mineral resources. Although several metallic and nonmetallic resources have been reported in various parts of the region, the most important mineral resources include dimension stones including granites, marble, and serpentine. The region is also home to high-quality gemstones. The gemstones found in Skardu, Hheramosh, Hunza, and other areas of Gilgit-Baltistan are internationally recognized for their quality and uniqueness. Important varieties of gemstones include Aquamarine, Emerald, Color Tourmaline, Apatite, Morganite, Topaz, Quartz, etc., occurring in almost all districts of the region. The most important areas for gemstones varieties are found in many localities of the Shiger district, Hunza district, Nagar district, Hheramosh, Ghizer district, and Yasin valley.



Large deposits of granites and marble are reported from almost all districts of Gilgit Baltistan, The main localities having significant deposits of granites and marble are Gilgit district, Nagar district, Hunza district, and Shiger district. The GB region is also famous for large placer gold deposits found along the Indus River and its tributaries, Hunza River, Gilgit River, and Bagrote Valley.

In addition to high-quality gemstones, large occurrences of dimensions stones, and potential placer gold deposits, the region is also hosting metallic deposits like high-grade copper ore of Kargah Nalla, Danyore, Bagrote Valley in district Gilgit, Ghizer Valley, Yasin Valley, Shiger district Skardu. Iron ore is found in the Chilas area and east of Gilgit and Heramosh. Reported anomalous Nickel, Chromium, and Cobalt were identified in the Yassin Valley and Pakora areas. Tungsten has been reported in the Indus River as a placer deposit. In addition to these findings, many potential areas need prospecting and exploration to identify economic concentrations of minerals.

### Mining Activities

Even though a variety of economic minerals are available in almost every district of the Gilgit Baltistan region, so far, the mining activities have been small-scale, mostly informal or artisanal mining mainly carried out by the local people. These small-scale operative mines run into hundreds providing livelihood to thousands of local people. Gemstone mining in Hunza, Nagar, Heramosh, Shigar, and other localities is carried out in small clusters by groups of locals using simple hand tools.

These local workers without any formal training, mostly follow the outcrops to certain depths and eventually

abandon the work due to issues like poor ventilation and excessive underground water conditions. Except few localities in the Hunza district, most of the gemstone mining areas like Chumar Bakor, Istak, Shiger, Heramosh, and Bashu Valley have limited access. The main reasons hindering systematic mining are the remoteness of localities, lack of access roads, meager investments, and harsh weather conditions.

Dimension stone mining is also being carried out in almost every area of the region.



**Given large occurrences of important resources like gemstones, dimension stones, placer gold, and heavy metals, there is huge space for investment in mining projects in the region of Gilgit Baltistan.**

Surface mines of granites and marble are located in Gilgit, Nagar, Hunza, and Skardu districts. Small-scale operations for extraction of granite and marble employ traditional drill and blast

techniques, while some comparatively larger mines in Gilgit, Nagar, Hunza, and Shiger districts are using rope-cutting techniques to ensure improved quality and size of blocks. Few cutting and polishing units for granite and marble are established locally to meet the local requirements, however, good quality marble and granite blocks excavated through mechanized rope-cutting techniques are transported to markets in Taxila and other parts of the country. Recently, mining of Nephrite has been reported from Nagar, and Astore.

mechanized techniques by employing excavators and advanced screening methods to process large quantities of placer sand in a short time.

The major placer gold mining activities are concentrated along the river the Indus near Chilas, at the delta of the Indus and Gilgit rivers near the famous three mountain ranges junction, along the Hunza

**Even though a variety of economic minerals are available in almost every district of the Gilgit Baltistan region, so far, the mining activities have been small-scale, mostly informal or artisanal mining mainly carried out by the local people.**

resources like gemstones, dimension stones, placer gold, and heavy metals, there is huge space for investment in mining projects in the region of Gilgit Baltistan. The untapped resources available in almost all districts of the region, provide quite promising investment opportunities for local and foreign investors. The local government and the society due to lack of financial resources and necessary infrastructure were not able in the past to extract and utilise these hidden treasures.

Now, keeping in view the increased demand for minerals and minerals-based products at national and international levels, it is the right time to develop and extract these resources through proper planning and adopting modern scientific methods. Gemstones of the region due to their



Another significant mining activity involves the extraction of placer gold and heavy metals from placer deposits along the Indus, Hunza, and Gilgit rivers and their tributaries and streams along the Bagrote valley and adjoining areas. For the last many years, only the traditional Nomadic families have extracted placer gold through the decades-old manual panning technique, but in the last few years, extensive placers gold extraction has been witnessed using semi-

River, and Bagrote valley. With the introduction of semi-mechanization extraction techniques, significant improvements in gold recovery have been noted as compared to the traditional panning technique.

**Investment Potential**

Given large occurrences of important



uniqueness, high quality, and clarity are in very high demand in the international markets. Similarly, dimension stone deposits are of significant importance and could yield much revenue if properly developed through medium and large-scale surface mining. Nephrite is also a potential resource that could attract

improved road connectivity and improved infrastructure, the region would become a favorite place for local and foreign investors to capitalize on the most demanded minerals and minerals-based products.

**The National Minerals Policy 2013 encourages investment in the minerals sector by local and foreign investors.**

minerals more than 400 small and medium-sized licenses, permits, and leases.

The National Minerals Policy 2013 encourages investment in the minerals sector by local and foreign investors.

Several Professional bodies also exist to provide professional guidance. Among these include Pakistan Gems and Jewellery Development Company (PGJDC), Pakistan Gemstones and Minerals Association (PGMA)



**Local Facilitation**

The Mines and Minerals Department (MMD), gov't of Gilgit Baltistan is the regulatory authority to grant and renew prospecting, exploration licenses, and mining leases under GB Mining concession Rules 2016 amended in 2024. The MMD is responsible under these rules to facilitate the lease holders. This department has already granted for different

The Department of Mining Engineering, Karakoram International University (KIU), Gilgit, Pakistan has established state-of-the-art labs under a PC-1 approved by the Gov't of Pakistan. This facility is available at the doorsteps to the local mining industry and investors to provide services including Lab testing and elemental analysis of rocks and minerals samples. Professional guidance is also available for surface and underground mine design, etc.

attention of investors. Based on its extent, the Placer gold is another promising area that offers promising investment opportunities for local and foreign investors.

Besides ample space for investment in direct mining of these important resources, there are also investment openings in value addition of minerals products and investment in establishing minerals-based industry locally. Under the China-Pak Economic Corridor (CPEC) initiative, in a few years, this region is expected to be the hub of economic activities. With



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# Pakistan's Mines Deposits

**Pakistan's mineral sector has the potential to contribute significantly to the country's economy. With its diverse range of mineral deposits, including copper, gold, chromite, iron ore, and coal, Pakistan is well-positioned to attract investment and become a major player in the global mining industry.**

## Engr. Muhammad Yousaf

Pakistan is endowed with significant mineral resources, including metallic minerals (copper, gold, silver, chromite, iron, manganese, lead, zinc etc.) non-metallic minerals (Quartz, Feldspar, Mica, Calcite, Dolomite, Gypsum, Salt, Silica sand, Limestone, Clay etc), energy minerals (Oil, Gas and Coal etc) dimension stones (Marble, Granite Onyx, Lime Stone etc), Industrial minerals, Gem Stones, semi-precious and precious stones etc.

The country's mineral sector has the potential to contribute significantly to its economy. The estimated mineral potentials of Pakistan are worth over \$ 8 trillion. This sector has not given proper attention in past, but now the Govt of Pakistan and Special Investment and Facilitation Council (SIFC) focusing this sector and hopefully its results will come in coming years. Please find herewith a cause study of Batswana, who's mineral sector played a vital role in economic development of Batswana.

Mining Miracle, Batswana's Game Changer

There is good example of Botswana, which was the poorest country in 1960 with GDP per capital income 60 US\$ while Pakistan's have 379 US\$, while now GDP per capital income of

Botswana is 17,871 US\$ while Pakistan's 1457 US\$. Botswana focused its mineral sector and grow economically, if Pakistan work on its mineral potential definitely its economy will also grow.

Pakistan's geological setting is characterized by a diverse range of rocks, including sedimentary, igneous, and metamorphic rocks. The country's geology has been shaped by its location at the boundary between the Indian and Eurasian tectonic plates. This has resulted in the formation of a range of mineral deposits, including metallic, nonmetallic, industrial, dimension stones, energy minerals, precious, semi-precious minerals and gem stones.

**Key Mineral Deposits**

Saindak Copper Project: Saindak copper project is currently Pakistan's largest operational copper project since 2002. Its total reserves are 412 billion tons with average grade of 0.4%. This project is producing 16,000 tons' blister copper with 1.5



Tons gold and 3.5 tons' silver. The plant capacity was 15,000 tons per day. Now the plant capacity has been enhanced from 15,000 tons per day to 20,000 tons per day due to this the annual production of blister copper will also increase from 16,000 tons to 20,000 tons per years.

The Reko Diq Project: Reko Diq copper mining project of Balochistan is one of the largest undeveloped copper-gold projects in the world. The mine has estimated reserves of 5.9 billion tons of ore, with an average copper grade of 0.41% and an average gold grade of 0.22 grams per ton. From this project annually 200,000 tons' copper will be produced with 8 tons' production of gold.

There are about 13 more blocks in Chagai area which can be worked and Chagai is rich in minerals like copper, gold, iron, manganese, lease, chromite, marble, granite and

onyx. Almost every economic mineral is there in Chagai.

Chromite: Pakistan has significant chromite deposits, particularly in the Muslim Bagh area of Baluchistan. The country is among the top producers of

chromite in the world. From more than 100 years' chromite mining is Muslim Bagh is in progress and there is not a plant of ferrochrome in

**Pakistan's geological setting is characterized by a diverse range of rocks, including sedimentary, igneous, and metamorphic rocks. The country's geology has been shaped by its location at the boundary between the Indian and Eurasian tectonic plates.**

Pakistan and in raw form chromite is exported at a very cheap rate. If in Pakistan mineral processing units are installed, which not only help in national economy, lots of job opportunities will also be created.

Iron Ore: Iron ore deposits have been found in various regions of Pakistan, including Nokundi, Chiniot, and Kalabagh. Based on the Iron Ore of, Kala Bagh, Makerwal, Kurd, Chichali, Distt Karak, Pezu, D I Khan, Chitral a steel

**There are sufficient reserves of industrial minerals, but there is no proper working on industrial minerals. Secondly in Pakistan electricity is much expensive and industry is not competitive. If we control two things Pakistan's economy will grow one, we control the law and order situation and second electricity rates.**

mill of one million tons per year can be installed. Its feasibility study was carried by Germans in 1960

Coal: There are about 185 million plus tons' coal reserves in Pakistan. In Distt. Tharparkar there are about 175 billion tons' coal reserves. There are 12 blocks and each is about 100 sq km, two blocks are under production and from there electricity of 2640 KW is produced. Local coal is the cheapest source of energy and electricity generation. From this project 100,000 MW electricity can be produce for 500 years. Govt is working to install a rail track to supply coal from Thar to power stations and replaced the imported coal with local coal. Due to this not only we can produce cheaper electricity we can also safe billion dollars which we consume on purchase of imported coal.

### **Distribution of Coal Reserves**

Marble & Granite: Pakistan has about 297 billion tons of dimension stone reserves with more than 70 varieties and

colors. Particularly Pakistan's Zirat white marble and black granite of Mansehra is very famous. Only in Tharparkar about 70 km form Thar Coal Field there are about 10 billion tons of granite reserves. This deposit is one of the world's best

quality granite.



Himalayan Pink Salt: As per PMDC-GSP data in Warcha, Khushab salt approved reserves are 2.65 billion tons while in Bahadurkhel, karak there are 10.54 billion tons of salt approved reserves. Pakistan is producing around only 5 million tons salt, you may calculate the life of the salt reserves. If we focus the proper marketing of salt we can contribute a lot to national economy.

Cement Industry: Pakistan is not only sufficient in countries cement demand, we are also

exporting cement to the world. Currently there are around 30 cement factories operational in Pakistan. Till there are so many reserves and potential that in Pakistan 50 more factories can be installed.

Placer Gold: There are good prospects of gold in Indus river of Pakistan. The Govt of Khyber Pakhtunkhwa has auctioned 4 blocks in 2024 amounting Rs. 4.93 billion, there are 13 more blocks ready for auction and as per the Govt. report there are reserves of about Rs. 16 billion rupees and in Punjab side in an area

of 32 Km there are gold reserves of about Rs. 8 billion.

Placer mining is comparatively very easy as compare to hard rock mining as there is no drilling, blasting, crushing and grinding involve. If proper working is done on placer gold lot of economic activities will be generated.

Industrial Minerals: There are sufficient reserves of industrial minerals, but there is no proper working on industrial minerals. Secondly in Pakistan

electricity is much expensive and industry is not competitive. If we control two things Pakistan's economy will grow one, we control the law

network is not available, lack of proper exploration and resource estimations and no bank financing like ZTB and IDB.

Pakistan can unlock the full potential of its mineral sector and contribute significantly to the country's economic growth and development.

**This has resulted in the formation of a range of mineral deposits, including metallic, non-metallic, industrial, dimension stones, energy minerals, precious, semi-precious minerals and gem stones.**



and order situation and second electricity rates.

Semiprecious Stones: Pakistan has good reserves of semi-precious stones like serpentine, nephrite jade etc and we export it in raw form, we are lack in processing, cutting and polishing.

Despite its significant mineral resources, Pakistan's mining sector faces several challenges, including lack of investment and institutional weakness, infrastructure is not supportive, roads and railway

**Way Forward**

To realize the full potential of Pakistan's mineral sector, the government and private sector must work together to address the challenges facing the sector. This includes:  
 Improving Infrastructure: Investing in infrastructure, including roads, railways, and ports, to facilitate the transportation of minerals.  
 Simplifying Regulatory Frameworks: Streamlining regulatory frameworks to make it easier for investors to operate in the sector.

Attracting Investment: Encouraging investment, particularly from foreign investors, through the establishment of special economic zones and other incentives.  
 By addressing these challenges and opportunities,

Pakistan's mineral sector has the potential to contribute significantly to the country's economy. With its diverse range of mineral deposits, including copper, gold, chromite, iron ore, and coal, Pakistan is well-positioned to attract investment and become a major player in the global mining industry.

However, the sector faces several challenges, including a lack of investment, infrastructure, and regulatory frameworks. By addressing these challenges and opportunities, Pakistan can unlock the full potential of its mineral sector and contribute significantly to the country's economic growth and development.



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# A Strategic Asset

**Pakistan's dimension stone industry holds immense potential for global expansion, driven by geological wealth, rising international demand, and opportunities for technological transformation.**

**Engr. Khawar Jalil & Engr. Prof. Dr. K. G. Jadoon**

Pakistan is endowed with an extraordinary wealth of dimension stone resources, positioning it as a key player in the global natural stone industry. With high-quality marbles, granites, onyx, travertine, and limestone, the country has the potential to meet growing international demand for premium architectural, infrastructure, and luxury interior applications (Geological Survey of Pakistan, 2022).

The dimension stone reserves of Pakistan are estimated to be 287.0 B tons approximately (PASDEC, 2017). Among its most distinguished offerings, Ziarat White Marble is prized for its pristine elegance and durability (PASDEC, 2021), while Hazara Black Granite is valued for its deep hues and structural resilience (TDAP, 2020). Light-colored granites from Sindh and Balochistan, well-suited for GCC climates, are gaining prominence due to their heat resistance and aesthetic appeal (Geological Survey of Pakistan, 2023).

The Thar Desert's untapped granite reserves and Punjab's extensive limestone deposits further offer immense industrial and export potential (Ministry of Energy, 2022). Pakistan's dimension stone sector is structured into several high-potential mega-clusters, catering to diverse global demands. The Mohmand, Buner, and Malakand mega-clusters are renowned for premium marble and granite deposits (GSP, 2021), while the Hazara, Gilgit, and Skardu mega-clusters provide structurally resilient, visually distinctive stones for luxury markets (Nawaz et al., 2023).

The Thar Granite Mega-Cluster, with massive reserves collectively spanning over tens of kilometers, holds significant export potential, particularly for the Middle East and Asia (TDAP, 2023). Similarly, the Chagai Onyx and Granite Mega-Cluster remains a coveted source of luxury-grade stones, ideal for high-end architectural projects (Geological Society of Pakistan, 2023).

Despite this geological abundance, Pakistan has yet to establish a strong global presence in the dimension stone sector. The industry continues to face challenges in quarrying efficiency, value addition, and international branding. This gap presents lucrative investment opportunities in modern quarrying techniques, stone processing innovations, and global trade expansion.

**Technology-Driven Quarrying: A Catalyst for Growth**

The dimension stone industry is undergoing a transformation, driven by technological advancements that enhance extraction efficiency, waste reduction, and sustainability. In an increasingly competitive market, state-of-the-art quarrying techniques are no longer optional; they are essential for growth, profitability, and long-term sustainability.

Pakistan’s quarrying sector largely relies on manual extraction, uncontrolled blasting, and inefficient block cutting, leading to significant material wastage, lower recovery rates, and inconsistent product quality. Please refer to figure 1 which shows a conventionally operated white marble mine in district Mohmand- Khyber Pakhtunkhwa. The excavation method is drill and blast.

In contrast, global best practices in mechanized quarrying have demonstrated

that advanced extraction techniques can increase productivity, improve stone integrity, and enhance profitability. The adoption of diamond wire saws, chain saws, disc cutters, and automated drilling systems significantly reduce fracturing and material loss. Unlike conventional methods, which is anticipated to yield low recovery rates (30–40%), these precision technologies are anticipated to allow for 85–90% extraction efficiency, minimizing environmental impact while maximizing profitability. Please refer to figure 2 which shows a mechanized white marble mine in district Mohmand-Khyber Pakhtunkhwa. The excavation method is diamond wire sawing.

A major challenge in Pakistan’s

**By investing in mechanized quarrying, smart processing, waste utilization, and global stone trading networks, Pakistan can position itself as a leading supplier of premium natural stones to the world’s most demanding markets.**

dimension stone industry is waste generation, with a large percentage of quarried stone discarded due to inefficient processing and extraction. Non-explosive rock



fragmentation techniques, such as hydraulic splitting and expansive mortar usage, reduce structural damage to extracted stone, ensuring higher material recovery. Furthermore, automated 3D scanning and geological mapping technologies enable quarry operators to identify high-quality deposits with precision, optimizing resource utilization and waste reduction.

This shift toward mechanized quarrying may open new business opportunities, including sales and trading of modern mineral exploration equipment, trading imported quarrying machinery, and developing transport fleets for stone logistics. It also promotes small-scale stone-based industries, large-scale machinery maintenance businesses, and technical training programs to build a skilled workforce.

Additionally, mining tourism - the nature’s views integrating sustainable quarrying practices with scenic landscapes - could emerge as a high-growth sector within 5–8 years, offering investors

global branding opportunities in a modernized, eco-conscious mining environment.

**Smart Processing & Waste Utilization: Maximizing Resource Efficiency**

The global dimension stone industry is evolving rapidly, with a focus on efficiency, sustainability, and circular economy practices. In this transformation, smart processing and waste utilization have emerged as critical factors in ensuring



profitability, environmental responsibility, and global competitiveness.

Pakistan's traditional stone processing industry is often labor-intensive and inefficient, leading to inconsistent product quality, excessive raw material consumption, and substantial losses. However, modern stone-processing technologies can enhance precision, minimize waste, and increase export viability. Multi-wire saws, fully automated bridge cutters, waterjet cutting, and CNC machines enable high-precision cutting, uniform slab thickness, and optimized material usage. Automated polishing and resin-filling techniques further improve surface durability and aesthetic appeal, making

Pakistani stones more competitive in luxury architectural markets.

A large proportion of stone extracted during quarrying and processing is traditionally discarded as waste, impacting profitability and sustainability. However, waste utilization technologies now allow for the conversion of discarded stone into high-value byproducts. Crushed stone aggregates can be repurposed for construction materials, road bases, and engineered stone

composites, reducing reliance on virgin resources. Additionally, stone dust and slurry waste can be refined for ceramic production, cement additives, and sustainable building materials, reinforcing Pakistan's alignment with global green economy trends.

This shift toward smart processing may also unlock new business opportunities in local manufacturing, trading of processing machinery and chemicals, and the development of stone-based products such as stone furniture, decorative items, and engineered surfaces. Furthermore, stone-derived chemicals could support industries such as paints, poultry feed, and confectionery manufacturing, driving diversified industrial growth.

**Stone Trading: A High-Growth Investment Avenue**

The global stone trading industry is witnessing substantial expansion, driven by rising demand for premium natural stones in luxury real estate, high-end interiors, and large-scale infrastructure projects. With Pakistan's vast reserves of high-quality dimension stones, the country is well-positioned to capitalize on lucrative international markets by enhancing its stone trading networks, value-added processing, and global market integration.

Rapid urbanization and growing investments in real estate, hospitality, and commercial architecture have fuelled demand for dimension stones across the Middle East, China, North America, and Europe. Pakistan's light-colored granites and heat-resistant stones, ideal for GCC climates, and luxury-grade onyx and marbles, sought after for premium interior applications, present significant export potential. Establishing organized stone trading hubs will streamline global supply chains and strengthen long-term trade partnerships.

Currently, Pakistan primarily exports raw or semi-processed



stone, limiting revenue potential. A strategic shift towards trading in finished, precision-cut slabs, calibrated tiles, and customized architectural elements will maximize profitability and global competitiveness.

Investments in warehousing, transport infrastructure, and



digital trading platforms will further enhance market accessibility and trade efficiency. Success in stone trading requires adherence to international standards (ANSI/ASTM, ISO, CE, and LEED certifications), ensuring premium product acceptance in high-value global markets. Strengthening branding, strategic marketing, and supply chain logistics will reinforce Pakistan's position in the international stone trade, driving sustained economic growth and investment potential.

**The Wayforward: A High-Potential Sector for Strategic Investment**

Pakistan's dimension stone industry holds immense potential for global expansion, driven by geological wealth, rising international demand, and opportunities for

technological transformation. By investing in mechanized quarrying, smart processing, waste utilization, and global stone trading networks, Pakistan can position itself as a leading supplier of premium natural stones to the world's most demanding markets. Strategic investments in sustainability, value addition, and international branding will unlock long-term growth and strengthen Pakistan's competitive edge in the global dimension stone sector.

To unlock the full potential of Pakistan's

dimension stone sector, public-private partnerships (PPPs), foreign direct investment (FDI), and targeted government incentives must play a central role in driving industry modernization, sustainable quarrying, and workforce development. Collaborations between the public and private sectors can facilitate the adoption of advanced quarrying technologies, infrastructure development, and regulatory reforms, ensuring a globally competitive and environmentally responsible industry. Incentivizing foreign investment through tax benefits, streamlined regulations, and special economic zones (SEZs) will further attract capital for cutting-edge extraction and processing units, improving efficiency, quality, and export competitiveness.

Additionally, mining tourism

and small-scale stone-based enterprises present diversified economic opportunities. Sustainable quarrying sites integrated into eco-tourism models can create new revenue streams, showcasing Pakistan's geological wealth while promoting environmental responsibility. Meanwhile, small and medium-sized enterprises (SMEs) focused on value-added stone products - such as furniture, décor, and engineered composites - can drive industrial innovation and local employment. By fostering strategic investments, skill development, and sustainable initiatives, Pakistan can establish itself as a global leader in premium dimension stones, ensuring long-term economic resilience and industrial growth.

Now is the time to seize this opportunity. We call upon industry leaders, investors, and policymakers to champion innovation, sustainability, and strategic market expansion. By committing to quality, technology, and responsible resource management, Pakistan's dimension stone sector can secure a globally dominant position, ensuring long-term economic growth and industrial success.



*The writer is a Consulting Mining Engineer; and Director - KJ Mining Engineers and Consultants (SMC-Private Limited); Ph.D. Scholar at Sustainable Advanced Geo-Mechanical Engineering (SAGE) - Military College of Engineering (MCE) - NUST (Risalpur).*

IN PICTURES



President Asif Ali Zardari conferring the award of Nishan-i-Khidmat upon Mr. Sultan Ali Akbar Allana in recognition of his public services, at the investiture ceremony to confer the insignias of Civil Awards, held at Aiwan-e-Sadr on 23-03-2025.



President Asif Ali Zardari conferring the award of Hilal-i-Imtiaz upon Dr. Syed Tauqir Hussain Shah in recognition of his public services, at the investiture ceremony to confer the insignias of Civil Awards, held at Aiwan-e-Sadr on 23-03-2025.



President Asif Ali Zardari conferring the award of Hilal-i-Imtiaz upon Khawaja Anver Majid in recognition of his social services, at the investiture ceremony to confer the insignias of Civil Awards, held at Aiwan-e-Sadr on 23-03-2025.



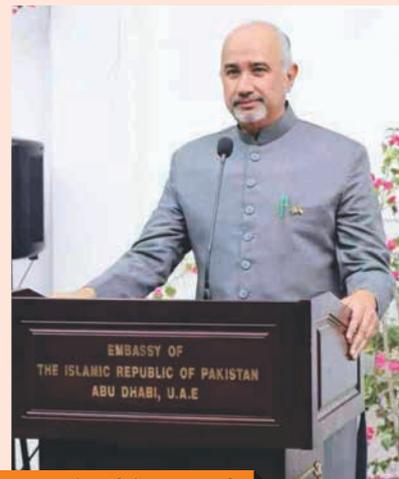
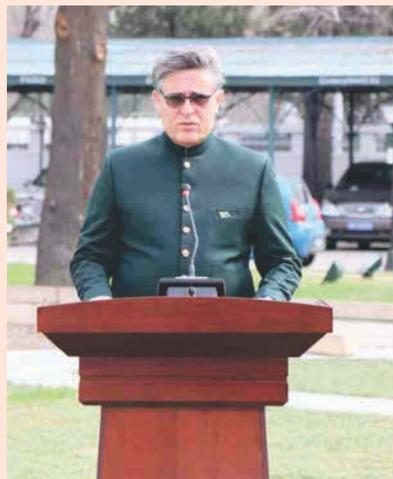
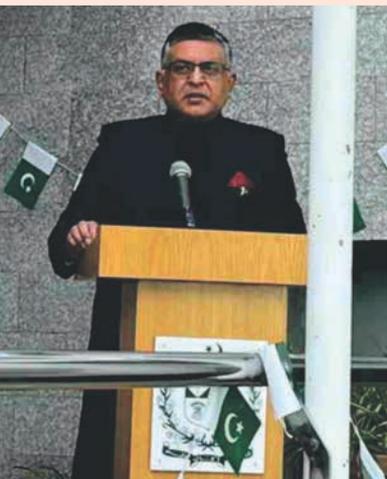
President Asif Ali Zardari conferring the award of Sitara-i-Imtiaz upon Ms Sana Hashwani in recognition of her social services, at the investiture ceremony to confer the insignias of Civil Awards, held at Aiwan-e-Sadr on 23-03-2025.



President Asif Ali Zardari conferring the award of Sitara-i-Imtiaz upon Ms Safinaz Muneer in recognition of her social services, at the investiture ceremony to confer the insignias of Civil Awards, held at Aiwan-e-Sadr on 23-03-2025.



President Asif Ali Zardari conferring the award of Hilal-i-Imtiaz upon Mr. Hussain Dawood in recognition of his social services in the field of Philanthropy, at the investiture ceremony to confer the insignias of Civil Awards, held at Aiwan-e-Sadr on 23-03-2025.



# Leading chemical manufacturer in Pakistan

## About Us

- Tufail Multichem is considered a premier manufacturer known for its expertise and quality products.
- Tufail Multichem has a significant presence across various regions, including the Middle East, East Africa, West Africa, South America, and North America. Their reach suggests a global distribution network and strong market penetration.
- Tufail Multichem has operational bases in Pakistan, Dubai-UAE, and the UK.
- It serves a diverse range of sectors including detergent, textile, petroleum, fertilizer, power generation, and leather industries.
- The company collaborates with multinational corporations like Unilever and P&G on a global scale, ensuring high-quality solutions.
- Tufail Multichem's expansion strategy includes plans to establish manufacturing and commercial operations in Saudi Arabia and the USA.

## Why Choose Us?



**50 Years Experience**



**Catering to diverse sectors**



**Collaborations on a global scale**



**Delivering high quality solutions**

## Our Products

- ✓ LABSA 96%
- ✓ SLES 70% 2Mole
- ✓ SLES 60% 3Mole
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- ✓ n-Butyl Acetate 99%
- ✓ Formic Acid 85%



### Local sale inquiries

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### Global sales and supply chain

**Saira Yasin**

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saira.yasin@tufailmultichem.co

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- Ethyl Acetate
- Methyl Acetate
- Propyl Acetate
- Isopropyl Acetate
- Amyl Acetate
- PVAC Glue (Wood Glue & Packaging Glue)
- Adhesives & Sealants
- Solvents & Thinners
- Styrene Base Acrylics 38% & 50%
- Textile Apraton
- Textile Binders
- Textile Auxiliaries
- Textile Softeners
- Textile Sizing Agent
- Vinyl Acrylic (Paint Binder)
- Pure Acrylic (Paint Binder)

IN PICTURES

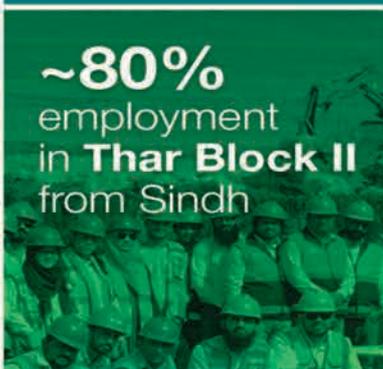


# Transforming **THAR** Through **Inclusive DEVELOPMENT**

Thar Foundation, the CSR wing of Block II entities, is collaborating with its partners to drive impactful initiatives that are transforming lives in Thar. The Foundation remains committed to providing healthcare, education and employment opportunities to thousands, ensuring inclusivity and growth.



**~100%**  
homes  
**solarized**  
in Block II



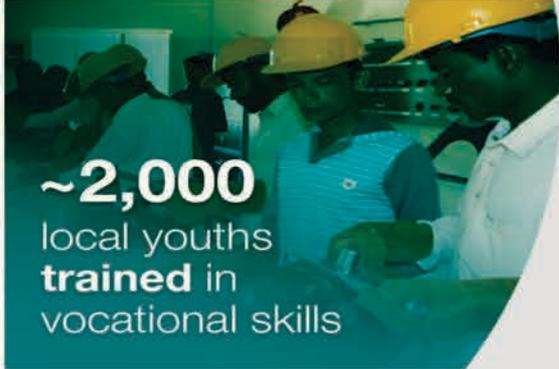
**~80%**  
employment  
in **Thar Block II**  
from Sindh



free of cost  
**health  
services** for  
**~300,000**  
patients



**~5,000**  
students in  
**28 school  
units**



**~2,000**  
local youths  
**trained** in  
vocational skills

**Thar Badal Raha Hai  
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