



ONE DAY CONFERENCE ON “BUILDING INNOVATIVE PAKISTAN”

Through Science, Technology & Innovation Policy



FEBRUARY 14, 2019

JOINTLY ORGANIZED BY: RIPP-RIPHAH, QAU, PIDE, IRP-SATHA, MUISTD & UMT

DISTINGUISHED GUESTS & SPEAKERS

➤ Chief Guest

- **Mr. Shafqat Mahmood** – Federal Minister for Education & Training, Govt of Pakistan.

➤ Senators

- **Lieutenant General (R) Abdul Qayyum HI (M)** – Chairman, Senate Standing Committee for Defense Production
- **Mr. Mushtaq Ahmed** – Chairman, Senate Standing Committee for S&T

➤ Vice Chancellors

- **Prof. Dr. Anis Ahmed** – Vice Chancellor, Riphah International University
- **Prof. Dr. Muhammad Ali (SI)** – Vice Chancellor, Quaid-I-Azam University
- **Dr. Asad Zamaan** – Vice Chancellor, PIDE
- **Rear Admiral Dr Nassar Ikram HI (M)** – Pro Rector, NUST

➤ Speakers

- **Mr. Abid H K Shirwani** – CEO, IRP/ President, SATHA/DG, UMT
- **Dr. Rashid Aftab** – Director, Riphah Institute of Public Policy
- **Prof. Dr. Manzoor H. Soomro** – President, ECOSF
- **Dr. Fazal Hussain** – Dean, PIDE
- **Dr. Khalid Khan** – Director, Department of Science & Tec, Govt of KPK
- **Dr. Tariq Zamaan** – Director ORIC, CECOS-University, Peshawar
- **Dr. Rani Faryal Tahir** – Chairperson Department of Microbiology, QAU.

- **Dr. Hasan Rasool** – Assistant Professor, PIDE
- **Mr. Muhammad Bilal** – Managing Director, Pakistan Stone Development Company (PASDEC), Ministry of Industries and Production, Gov. of Pakistan
- **Mr. Fayyaz Qureshi** – Vice President, Rawalpindi Chambers of Commerce & Industry
- **Muhammad Ijaz Khan Abbasi** – Vice President, FPCCI
- **Mr. Abdur Razzaq Gauhar**, Chief Executive, Infinity Engineering Company
- **Dr. Zahid Ali Memon** – Professor, Mehran University Institute of Science & Technology Development (MUISTD), Sindh
- **Dr. Arabella Bhutto** – Director, MUISTD
- **Dr. Iffat Batool Naqvi** – Assistant Professor, MUISTD



Introduction

One day conference on **“Building Innovation Pakistan” through Science, Technology and Innovative Policy** was jointly organized by; Riphah Institute of Public Policy (RIPP) – Riphah International University, South Asia Triple Helix Association (SATHA), Quaid-e-Azam University (QAU), University of Management & Technology (UMT)-Lahore, Pakistan Institute of Development Economics (PIDE), Mehran University Institute of science & Technology Development (MUSTID)-Sindh on 14th February 2019 at Quaid-e-Azam University, Islamabad.

The policy conference focused how to connect science with state/society through; strengthen education and S&T/R&D organizations, Universities-industry linkages, , economic activities (industrial development, increase export, generate employment) for achieving socio-economic development through science and technology initiatives.

Two technical policy sessions were held followed by Inaugural session. 1st technical policy session was organized by MUSTID-QAU-SATHA on **“Science Technology and Innovation Policy”** while 2nd session was organized by RIPP-RIPHAH and PIDE on **“STI policy for Industrial Development & Economic Growth”**.



Technical Session 1: Science, Technology & Innovation Policy

The science and technology makes the nations strong and secured. The S&T helped the nations to win wars and stay ahead of the enemy in technology as well as defense. The instrument of national security and competitiveness lies in uninterrupted policies and investments in science and technology. The USA led the world in the last few decades due to its economics based on science, technology and innovation. The case of other leading countries also reflects that growth, competitiveness, security and development are backed by science and technology.

Pakistan exports stand at around US\$ 20 billion and GDP per capita income 1,547. The countries which were behind Pakistan 2-3 decades before, now stand at the export of US\$ 200-300 billion and per capita income of US\$ 20000 to 30000. In order to have leapfrog progress, Pakistan needs to address some fundamental issue like giving importance to science,

technology and innovation. Pakistan has the capacity and potential to achieve US\$ 400 billion exports which needs to revitalize its S&T base, supply innovation and innovate its education & skill system by traveling from new Pakistan to Innovative Pakistan.

The speed of technology change is very fast. The countries need to invent, innovate, diffuse and reinvent continuously. The process is not possible without active and dynamic science and technology policy culture. The S&T policy creates an entrepreneurial state that pro-act for new challenges. The S&T sector is not on the radar by all the main actors; i.e Govt-Industry-Academia. The R&D budget in terms of GDP is only 0.2%. We have 300 S&T organizations but our exports are declining each year which shows low level of competitiveness in the international market. Naya Pakistan without S&T effective Governance system, allocation of resources, innovation based R&D, Industrial related research, export based approach and commitment at the highest level, the country cannot be emerged as vibrant entity on the globe.



Technical Session 2: Economic Policy; Education, Science & Commerce, Industrial Growth of Gems & Jewelry and Marble & Granite Sector

Marble & Granite:

Pakistan has huge reserves of natural mineral ores of Marble & Granite besides the potential we are not able to utilize the same. Pakistan Stone Development Company (PASDEC), Govt of Pakistan initiated mining methodology focusing on the improvement of processing marble & granite industry. In 2006, our stone industry worth US\$600,000 and now it reached to US\$60 million industry as compared to Italy it is of billion dollars industry. The Company's core function is to develop the dimensional stone industry of Pakistan in line with best international industrial practices, which is being carried out by demonstration of latest mechanized machinery (Machinery Pools), development of quarries, establishment of state of the art Marble Cities/Industrial Estate and Common Facility & Training Centers/ Warehouses along with the skill development programs to overcome the skilled workforce deficit of the industry. PASDEC has achieved the target of demonstration of latest quarrying techniques, technology and skill development in the sector. The wastage at the mechanized quarries developed by PASDEC has been considerably reduced. Due to the demonstration effect created by PASDEC, the mine owners are shifting towards mechanized quarrying in the country. The Company has also established 14 mechanized quarries, 2 Machinery Pools and 1 Marble City. Besides this, the Company has trained more than 605 operators on mechanized mining, 1,262 females on mosaic, inlay and handicraft to cater for skill development needs of sector in collaboration with the donor

agencies. PASDEC has adopted three prong strategy to uplift the sector comprising of; a) Mechanized mining, b) Standardized Processing and c) Effective Marketing. Thus making the strategy PASDEC focused on rise in value chain productivity, investment in workforce, export marketing, promote strategic partnerships (J.V. & D.F.I.), develop industrial & market information, and cluster development.

However the Main problem that exists is that we lack of human capital, appropriate linkage between academia, industry and government, weak R&D & Innovation which are causing barrier for optimum utilization of indigenous resource i.e marble & granite of the country.

Gems & Jewelry Sector:

Pakistan has the potential to position itself as a regional hub for precious stone cutting & jewellery manufacturing. Developing this potential will have a significant impact on Pakistan' Economy in terms of employment, entrepreneurship, income generation, export revenues, & poverty alleviation. Lack of Internationally Recognized Certification facilities has led to undervaluation of precious stones & loss in export value. In order to improve the export performance of the gems & jewellery sector, it is imperative to introduce Technological Improvements, Technical Assistance, Investment in Product Development, Marketing & Branding, and Policy Interventions in the sector. These interventions will allow the Gems & Jewellery Sector to contribute to the National Economy Of Pakistan & develop into a competitive high value added sector

G&J sector of our country lack hallmarking and branding facilities. Research & development area of this sector is also very feeble. Universities must have

to invest their scholars and researchers in order to nurture the sector thus paved a road to the improvement of G&J sector.

Industries & government should support young trainers & researchers to come up with new innovative ideas for the market and uprising of this sector. Small Market Enterprises plays a vital role in the growth of the respective sector. 51% of the country's population comprises of women thus by giving knowledge about gemstones and jewelry mining, cutting, polishing, branding, marketing etc and groomed them accordingly will contribute a key evolution in this sector. Linkage between academia, industries and government through triple helix model can play a vital part for the betterment of the sector, without this association no sector will be flourished. Awareness regarding the importance and demand of G&J throughout the World and competition in the International market should be created in public through different exhibitions. In order to compete in the International market our focused countries should be our buyers where our G&J potential occurs. Our G&J sector doesn't even meet the International standards of mining, cutting, designing etc. The tariff and non-tariff barriers are also creating barriers for the sector development.



Conclusion

Science and technology are the key drivers in the acceleration of development in a society. Science and technology directly alter the living standards of the people, and the way they connect and communicate with each other. Technological improvements provide a root to the advancement of economic development, health system and infrastructure. The development of science and technology in developing countries plays a crucial role in the reform of poverty level, and technological advancement can be considered as an engine of growth. Technology is a better weapon to

tackle the poverty level with and enhance the economic growth of a developing country.

Modernization of any society is a manifestation of the implementation of science and technology by those nations. The modernization is solely dependent upon the development in science and technology. The categorization of the countries is based upon economic development, which, in turn, is dependent upon the application and importance of science and technology among the public of that nation. Modernization turns villages into towns and towns into cities.

Countries like South Korea, Japan, Thailand and Indonesia were considered as countries with poor policies and low discipline with no advancement, but today they have created ripples across the globe in the field of research and exploration. Where does Pakistan stand in the field of research and exploration? We need to look at our policies and where we are heading in the fields of science and technology. Our curriculum and ways of teaching focus upon the reproduction of bookish knowledge without its resonance to the utilization need of the country.

The nation is in need of exceptionally able scientists, engineers, and health professionals to serve in executive positions in the federal government and on federal advisory committees. Such persons, when serving as presidential appointees, make key programmatic and policy decisions that will affect our lives and those of our children. Similarly, skilled scientists and engineers are needed for advisory committees to provide advice on the myriad issues with complex technologic dimensions that confront government decision makers. Our nation has long been served by its ability to draw qualified S&T candidates to government service because of the opportunities for intellectually challenging work that affects the world in which we live and

that encourages and protects the scientific process. We must continue to enlist the best candidates for these important positions and ensure that the obstacles to their service are minimized.

Dr. Rashid Aftab – Director, Riphah Institute of Public Policy (RIPP) lastly presented First Draft of Gems & Jewelry (G&J) National Policy in the conference for its adoption at various tiers as follows:



DRAFT NATIONAL GEMS & JEWELRY (G&J) POLICY

PRESENTED BY:

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Institute of Public Policy (RIPP) Riphah
International University, Islamabad*

**At
“One Day Conference on
Building Innovative Pakistan
Through Science,
Technology and Innovative
Policy”**

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Section 1: Introduction

The Global Scenario:

- Global Gems & Jewelry Industry Size reached to US\$255 Billion per annum while annual growth rate of G&J industry is 5.2%. Annual consumption of precious metals is 4,065 metric tons globally.
- In accordance with “Global Gems and Jewelry Market Analysis”, global gems and jewelry market is expected to exhibit a vigorous progress of over 4.73% during 2017-2022, mainly driven by supportive laws and regulations regarding the authenticity of the jewelry, aggressive marketing and persuasive strategies by leading jewelry companies.
- Regions accounting for major share of gems and jewelry market in 2016 are the Asia-Pacific. However, Rest of the World is forecasted to gain major share in 2022 as the region (comprising countries like Brazil, Saudi Arabia, UAE, and South Africa) account for sizeable number of high net worth population, robust legislative measures and its implementation, and the existence of big jewelry companies with substantial financial wherewithal to invest in marketing and promotional activities as well as undertake synergic investments like merger, acquisitions and even R&D activities inclining to propel the market.

Pakistan G&J Sector:

- Pakistan is naturally blessed country having large reserves of mineral ores and gemstones widely used in ornaments. According to KPK’s Bureau of Statistics:
 - ❖ Swat has reserves of 70 million carats of emerald.
 - ❖ Mardan has reserves of 9 million carats of pink topaz.
 - ❖ Kohistan has 10 million carats worth of reserves of peridot.
 - ❖ In Swat, pale green to green coloured emeralds found in talc-carbonate schist.
 - ❖ In Hunza, pink to red crystals of ruby are found.
- Pakistan’s jewellery sector has the potential to support in economic uplifting of Pakistan, by contributing significantly towards reducing the trade deficit through export promotion

and import substitution. However, the unfortunate negligence towards this sector has hampered growth and stopped it from reaching its full potential.

- Currently, Pakistan's Gems & Jewelry Industry is extremely unorganized with 0.31% global share in gemstone trade. Pakistan is the 8th largest G&J consumer of the world that contribute 0.07% to the national GDP.
- Pakistan export potential of G&J sector is US\$ 5 Billion annually.
- The total volume of inland trade of gems and jewellery is between US\$ 9 to 10 billion per annum and the annual consumption of gold within Pakistan is projected to be about 200 tons per year. The sector provides employment to more than 500,000 people in the country's workforce and there are approximately 90,000 gems and jewelry enterprises existing currently.
- Globally, Pakistan ranks at 79th in the world in jewellery exports with total exports amounting to about 4.5 million US\$. These export figures show a worrisome picture for Pakistan's jewellery sector as there is a colossal drop in exports within the time frame of a single economic year. In 2016, Pakistan was 38th in world jewellery exports with total exports worth 60.5 million US\$, representing an alarming 93% drop in exports from 2016-2017. The current export figures convert to about Rs.54.7 million, but this figure pales in comparison to the potential foreign exchange that can be earned through jewellery exports which is estimated to be worth up to Rs.17 billion (US\$ 25.7 million). This highlights the need for a focused effort towards this sector's development.

Vision/ Mission

- The vision is to make Pakistan a significant participant in World Gems and Jewelry Market by the year 2025 and to enable the country to position itself as a regional hub for precious stone cutting and jewellery manufacturing.
- To bring Pakistan back into the top 50 exporting countries initially, like they were until last year, and then move toward being in the top 10 countries exporting countries in jewelry with increased economic size of at least 5billion US\$ by adding value in the value chain of min-market of G&J sector.

Goals/Objectives:

- The gemstone mining sector has seen little or no development and thus the lucrative gemstone reserves within Pakistan are not fully utilized which means that the demand for gemstone in Pakistan is quenched through imports. Mining activity in Pakistan is confined to industrial and construction minerals and contribute less than one percent of Pakistan's Gross Domestic Product (GDP). A major policy initiative is therefore launching in order to expand gemstone mining activity and enhance the contribution made by this economic activity to GDP and also lend support to the social uplift programs.
- Pakistan has the potential to position itself as a regional hub for precious stone cutting & jewellery manufacturing. Developing this potential will have a significant impact on Pakistan's Economy in terms of employment, entrepreneurship, income generation, export revenues, & poverty alleviation. In order to improve the export performance of the gems & jewellery sector, it is imperative to introduce Technological Improvements, Technical Assistance, and Investment in Product Development, Marketing & Branding, and Policy Interventions in the G&J sector. These interventions will allow the Gems & Jewellery Sector to contribute to the National Economy of Pakistan & develop into a competitive high value added sector.

Section 2: Strategic Approach

Targets:

- Enhancements of G&J annual exports by 10% every year.
- Improve export competitiveness.
- Increase share in regional trade.
- Improving assaying & hallmarking system and National standards of precious metals.
- Improve National and International Logistic Support.
- Availability of gold and precious metals through banking system.
- Reviewed regulatory regime for jewelry imports and exports to ensure that the legitimate exports of jewelry are not damaged due to overregulation.

Key Enablers:

To achieve the above targets, the key enablers are:

- Competitiveness (Quality infrastructure, labor productivity, access to utilities, and level of technological development).
- Compliance to standards (Convergence of local and international standards)
- Policy environment (monetary policy, tariff and tax regime, and investment policies).
- Market access (Multilateral, regional and bilateral).

Pillars:

3 main pillars are identified on the basis of key enablers, emerging global trade scenario, and extensive consultation with the private sector and other stakeholders. These pillars are as follow:

- Jewelry sophistication and diversification (research and development, value addition, and branding).
- Market access (enhancing share in existing markets, exploring new markets, trade diplomacy and regionalism).
- Trade facilitation (Standardization and Regulatory Measures).

New Regulatory Regime:

- The existing regulatory regimes causing hiccups and delay resulting in sluggishness in the business export/import. The new rules too be chalk out to meet the concerns of the stakeholders/investors for user friendly environment and to improve ease of doing business process chain of G& J sector. The availability of raw material like precious metals and gemstones may be available through formal system.

Geological Survey:

- Availability of geological, geophysical and geochemical maps and reliable geodata are a pre-requisite to large scale gemstone exploration. Geological survey of Pakistan or SUPARCO may carry out mapping of natural resource i.e. Gemstones in terms of quantity and quality for geological, geophysical and geochemical mapping, geodata generation and research.

Gems & Jewelry Trade:

- Gems & Jewelry is an important labor intensive sector that must continue to be encouraged. This sector has relatively low value addition but contribute a high value of exports and employment. G&J manufacturing sector largely consist of SME units, employing skilled and semi-skilled labors. This sector is not only a source of revenue generation but also a source of employment.
- The gems and jewellery sector is an import intensive sector with export orientation. It also requires high working capital. In order to make the sector more efficient, initiatives to be undertaken to address wastage and value addition norms for the jewellery sector.
- These interventions in the value chain from Mine-Market can contribute to the National Economy of Pakistan & develop into a competitive high value added sector.

Marketing Strategy:

- Going beyond the conventional course of dealing makes jewelry manufacturers skeptical about the payments and whether they would get their required payments on time. Generally jewelry traders organize exhibitions and fairs to market their product and showcase it in a manner that makes it sell much easier and faster.
- Visiting showrooms and showing their catalogues or samples of gemstones and jewelry is another traditional way of G&J business. This is a physical way through which the retailer can touch and feel the product and test its quality and authenticity. But with the new age the marketing strategy is bound to evolve as we are living in the world of technology and internet.
- The ideal marketing strategy for the suppliers should be to showcase their products on a social media platform or create their own websites so that they can remain updated with the upcoming changes in the [new generation of gems and Jewelry market](#) scenario. But then comes the threat factor that the suppliers feel while engaging themselves on an online platform as the online world of e- commerce can be deceptive and illusory.

Policy Implementation Framework

Sr. No	Identified Problems in G&J Sector	Responsibility
01	<ul style="list-style-type: none"> • Geological mapping of gemstones in terms of quantity & quality is not available. 	Geological Survey of Pakistan, SUPARCO, Mining Departments
02	<ul style="list-style-type: none"> • Cutting & polishing and lab facilities absent. 	All Pakistan Commercial Exporters Association (APCEA), All Pakistan Gems Merchants & Jewelers Association (APGMJA), Pakistan Gems & Jewelry Development Company (PGJDC), Trade Developing Authority of Pakistan (TDAP) & Private Entrepreneur
03	<ul style="list-style-type: none"> • Not enough vocational training programs and facilities for development and promotion of ‘jewellery designers’ who are the back bone of jewellery industry as they impact the quality of jewelry production and designs. • Various level of education and skills development is nonexistent. 	Pakistan Gems & Jewelry Development Company (PGJDC), NAVTTC, TEVTAs, Secondary & Tertiary Level Educational Institutions
04	<ul style="list-style-type: none"> • The gold mining sector has seen little or no development and thus the lucrative gold reserves within Pakistan are not fully utilized which means that the demand for gold in Pakistan is quenched through imports. • The absence of a ‘Gold Bank’ in Pakistan to facilitate trading of gold within and abroad Pakistan. 	Ministry of Commerce, FBR, State Bank of Pakistan
05	<ul style="list-style-type: none"> • Industry friendly policies that encourage investment and growth do not exist for this sector. • Policy regimes with respect to tariff & non-tariff barriers and regulatory regimes of SROs and 	Ministry of Commerce & Industries, FBR, State Bank of Pakistan, APCEA, APGMJA, Think Tanks, Universities, FPCCI, & Respective Chamber of Commerce & Industries

	duplication of taxes creating hurdles for the growth of the sector.	
06	<ul style="list-style-type: none"> • The sector requires technological advancements for our jewellery to compete at an international level and thus investment in R&D is required which is missing presently. • Proper standards do not exist for determining quality of jewellery, these standards need to be set and strictly maintained to increase exports. • Assaying & Hallmarking System is missing. 	Ministry of Science & Technology, PSQCA, R&D Organizations
07	<ul style="list-style-type: none"> • Pakistan has failed as of yet, to establish an international brand name in jewellery which is vital to promote this industry. Brand development in the jewellery sector needs to be a prioritized agenda. 	Ministry of Commerce, All Pakistan Commercial Exporters Association (APCEA), All Pakistan Gems Merchants & Jewelers Association (APGMJA), Pakistan Gems & Jewelry Development Company (PGJDC)
08	<ul style="list-style-type: none"> • Services for the convenience of the industry that can encourage new traders of gold and jewellery need to be established. These services include facilities such as courier services for the easy transportation of gold and jewellery, airport locker facilities and testing labs. 	National/International Couriers Services, Airlines, Pakistan Customs, Logistic Companies, PGJDC
09	<ul style="list-style-type: none"> • International transactions through pay pall etc is not available. 	State Bank of Pakistan