

National Technology Innovation through Industry-Research Centers and Other Stakeholders Collaboration

- **Executing Agency and Location:** Pakistan Science Foundation, Islamabad
- **Project Details;**

Generating new knowledge, and creating innovation is the crucial role of research institutions/universities, as they are the main hub to produce and develop human resource with required skill set for R&D. Research institutions work hard to achieve scientific excellence for which they focus at the cutting edge of science and technology. On the other hand, if research institutions have on board the relevant industry, they can successfully transform the new knowledge into valuable and patentable applications. On the other hand, besides creating jobs they can adopt new technologies to enhance their competitiveness. With the aim to take benefit from research institution-industry collaboration, and to promote research collaborative culture, this PSDP Project was designed, and expected that by developing such linkages can be mutually beneficial in variety of ways, and for this following objectives are set to be achieved:

- To achieve social prosperity
- To develop better and successful university-industry linkages
- To develop the capacity and capability of R&D institutions
- To develop Institutions and individual researcher networks
- To enhance the innovation, productivity, and creativity
- To develop entrepreneurial eco-system
- To produce a pool of highly trained manpower
- Knowledge transfers
- Establishment of Specialized Incubation Centers (ICs)
- Promotion and incentivization of Academia in Product development, and commercialization

- Incentivization of R&D in private sector / industries
- Hub of innovation
- Hosting of Start-ups
- Commercialization through incubation centers.
- To create employment opportunities

Research institutions-industry collaboration and cooperation are considered as key factors for the success of both academia and the industry, sharing their resources, skills, and knowledge to accomplish mutual goals of research, innovation, and commercialization. In last couple of decades, special focus has deserved world-wide research, technology, and innovation. Knowledge and information have become important assets and powerful tools for competitiveness and growth world-wide. Research centers/organizations play a key role by training and educating large number of youngsters and creating large pool of trained individuals. In the developed countries, often on the initiative of policy-makers, many research institutions have taken steps to develop a ‘third mission’ *i.e.* fostering links with knowledge users (industries) and are now facilitating technology transfer. In the developing countries, a lot of measures are taken for boosting innovation and increasing knowledge and technology transfer between research institutions and industry. It is needed to encourage and provide opportunities for innovation and knowledge transfer, to focus on capacity building for the growth of knowledge economy, as well as to facilitate the effective use of research outputs by the industry. Though numerous mechanisms for such interactions are common and prevalent in the economically developed countries. Nevertheless, its practice is relatively novel in our part of the world. Still universities or research institutions in Pakistan have not catch-up the level of excellence in the field of research and innovation that developed countries have. Whereas, the industrial sector in the country has its own set of problems in achieving the required competitive level and desire to apply new knowledge. Hence, a strong partnership could not evolve between academia and industry in Pakistan.

On the other hand, industries too in Pakistan do not have the well-established and relevant infrastructure, and strong financial strength to effectively invest in R&D related activities. They are traditionally being engaged in ‘me-too-production’ (producing the same

products which others produce over and over again). In fact, our industries are operating at a very low level of innovation and technology. Hence, there is a serious omission between the two important entities, and at low cost and little effort has been spearheaded to bridge the gap. For example, very limited work has been done to increase the level of trust to solve each other's problems, to increase each other's capabilities and friendly working relationship. No step is taken to bridge the mutual trust, commitment, and confidence of both sides. Moreover, educational system of our universities is in no way helpful to meet the needs of the practical working environment.

In order to realize the true potential and effectiveness of such endeavors, academia should design and align their curricula and research programmes to meet the requirements of industries. Such kind of cooperation and collaboration can only be established through continuous and constant efforts, trust and effective coordination. Innovation is the major factor of the rise and fall of any nation. Current surge for pursuing innovation is the fourth wave of industrial revolution, with creativity and innovation at top priority. Startups or scalable economic models are the essential building blocks for the economic growth. Governments need to provide incentives and help to address the problem of market failures and to design and implement regulation that balances the associated risks with innovation. This PSDP Project will fund to establish specialized incubators (for startups) and projects that utilize incremental and breakthrough innovative technologies to solve community problems and to achieve global standard of educational opportunities, information and communication technologies (AI, mobile internet, IoT, cloud technology, autonomous vehicles, advance robotics, automation of knowledge work), biological sciences (advance genomics, industrial biotechnology, regenerative medicine) material science (advance materials, nanotechnology), energy, and other fields. These specialized incubators in Pakistan will encourage the startups system and will also engage them with different stockholders.

Under this proposed PSDP Project, several programs will be offered to prepare a critical mass of human resources, and capacity building of the public-private sector through training support program for the future of work. Through studies, in the guidance of stakeholder, experts and consultants we will help in planning for public and private sectors to come and work closer to each other. The proposed project will outreach activities to mutually engage students,

professionals, organizations, media and decision/ policy to face the challenges and threats posed by the new economy, and the importance of innovation and urgent need to increase engagement in this proposed programs. Under the PSDP, a project co-ordination office/project management unit will be established at PSF. This unit will manage, co-ordinate and execute the proposed programs. This office will be adequately staffed with human resource.

The current proposal, recommended several initiatives to stimulate industry-academia interactions. Proposed activities/programs in this PSDP Project are as follows:

1. National Technology Innovation Fund
2. Specialized Incubators (02)
3. Technology Innovation Portal
4. Public-Private Sector Innovation Capacity Building
5. National Technology Innovation Strategy
6. National Strategies for Verticals & Horizontals

- **Outcome/Benefits on completion**

- It will facilitate and enable the development of new and high quality innovative products.
- Through proper university-industry collaboration programs, our graduates get proper training and will contribute well in the socio-economic development of Pakistan.
- It will certainly be helpful for generating knowledge with practical applications. This will also result in high quality research oriented products, which have direct impact on the economy of Pakistan.
- It will certainly help in tremendous employment prospects of our train personnel not only in Pakistan but also all over the world.