

EXECUTIVE SUMMARY

PAKISTAN SCIENCE FOUNDATION (PSF)

Pakistan Science Foundation (PSF) is apex body for promotion and funding of scientific and technological research and other related activities in the country. The tasks undertaken by the Foundation for the performance of its statutory functions are divided into two broad categories viz., Science Promotion and Science Popularization. Some of these activities pertaining to above mentioned categories are undertaken by Pakistan Scientific and Technological Information Centre (PASTIC) and Pakistan Museum of Natural History (PMNH), the two subsidiary organizations of PSF, while others are performed by PSF Science Wing and are reflected as under:

RESEARCH SUPPORT

Research Support is the principal programme of the Foundation, which provides funding for research projects in natural and physical sciences. Project proposals submitted to the Foundation are evaluated initially by subject experts in relevant fields and then by Technical Committees on the basis of technical merit and relevance to the socio-economic needs of the country. The progress of research is monitored through evaluation of semi-annual and annual progress reports. Multi-disciplinary research projects in areas of economic significance to Pakistan are accorded special priority for award of financial support.

During 2018-2019, a total of 281 research proposals/concept papers in 10 scientific fields namely Agricultural Sciences, Biological Sciences, Biotechnology & Genetic Engineering, Chemistry, Computer Sciences/Maths, Earth Sciences, Engineering Sciences, Health Sciences, Environmental Sciences and Physics remained under active consideration. Among these, 72 projects were under-process, of which, 09 projects were recommended by Technical Committee for the approval by the Foundation and 07 were approved by the Executive Council at a total cost of Rs.34.155 m (*Annexure-II*). Total 57 research projects were remained on-going and an amount of Rs. 20.833 m was released on amount of due installments and evaluation fee of these projects. 28 progress reports (semi annual, 1st, 2nd annual & final) of these projects were received. Semi annual reports were scrutinized by PSF staff, whereas the annual and final reports, after initial scrutiny, were sent for evaluation to the subject experts to assess the interim progress of the projects.

One of the main achievements and usefulness of any research is the publication of its results in scientific journals. Based upon the results of 06 completed projects, 06 research papers were published in national/international journals. In addition, 09 Ph.D. and 20 M.Phil./M.Sc. (Hons) students secured their respective degrees while working as Research Associates in these completed projects.

PAK-US NATURAL SCIENCES LINKAGE PROGRAMME (NSLP) ENDOWMENT FUND:

PSF maintain an Endowment Fund under Pak-US Natural Sciences Linkage Programme (NSLP) to boost the research in agriculture sector in the country. During the year 2018-19, a total 444 concept papers in the fields of natural sciences were received for processing, 19 projects were presented in two Technical Committee Meeting held during the period. Technical Committee recommended 07 new projects for funding at total cost of Rs.26.28 m. During the year, 41 projects were on-going and an amount of Rs.15.1 m was released on account of due installments and evaluation fee of these on-going projects. One of the main achievements and usefulness of any research is the publication of its results in scientific journals. One of the main achievements and usefulness of any research is the publication or patents of its results in scientific journals. Based upon the results of research projects five (05) research papers were published in peer review journals.

SCIENCE PROMOTION ACTIVITIES

During the report period, an amount of Rs.6.2 million was released to various institutions for organizing 33 conferences, seminars, and workshops on important scientific topics and Rs.0.1 million were released to 01 scientific societies/journal for its regular activities. However, Institutional Support and PSF Fellowships programmes were not entertained due to paucity of funds.

SCIENCE POPULARIZATION

Popularization of science, increasing science awareness and development of scientific culture in the society are major functions entrusted to Pakistan Science Foundation. Under the action plans of various S&T Policies, the task of popularization of science at grass roots level in the country has also been assigned to PSF. During the year 2018-19, a total of 33857 students from 105 schools visited Science Caravan Exhibitions. 28th Annual Intra and Inter Board Science Essay and Poster Competitions were organized between the students of all Boards of Intermediate and Secondary Education (BISE) of the country. Students from all over the country took part in the competitions. Winners were awarded cash prizes. Essay Competition was on theme titled “Our changing Earth & Impact of Globalization” and for Science Poster Competition the theme was “Water Scarcity and Best Precautions to use it”. Donation of Popular Science Magazines and Scientific Books is one of the regular and important activities for science popularization. Quarterly “Urdu Science Magazine” was distributed to 2000 (i.e.) 8000 annually distributed in Schools during the 2018-19.PSF supports S&T organizations to organizing their science popularization activities. During the report

period, an amount of Rs.100,000/-was sanctioned to Pakistan Science Club, Karachi for strengthening of its labs and arranging Science Popularization activities.

“World Science Day for Peace and Development” is an international day that highlights the important role that science has in society and is celebrated each year on November 10. PSF celebrates this day every year in a befitting manner. PSF in collaboration with other organizations like UNESCO, Intel, and Federal Directorate of Education organized various activities for students and scientists to commemorate the World Science Day like Convention of Scientists, Science Caravan Exhibitions, Panel Discussions on TV and Prize Distribution to the winners of PSF Annual Inter Board Science Essay and Poster Competitions etc. The theme selected by UNESCO for this year was “Science, a Human Right” the Federal Minister for S&T Muhammad Azam Khan Swati, Federal Secretary for Science & Technology Ms. Yasmin Masood, Ms.Vibeke Jensen, Country Director UNESCO in Pakistan, Prof. Dr. M. Qasim Jan, President Pakistan Academy of Sciences, Chairman PSF and other scientists was highlighted the importance of science and its peaceful use for development and benefit of the mankind. Moreover cash prizes, Awards letters, crest and certificates were also distributed to winners of PSF’s 27th Science Essay & Poster Competitions.

During the report period, 08 Popular Science Lectures were arranged across the country which were attended by large number of students, teachers, and general public.

INTERNATIONAL LIAISON

PSF has the mandate to liaise with similar international bodies across the globe and is in active collaboration with many similar international bodies. In the prevalent global scenario, the importance of international collaborations has become vital for the technological developments and advancement of knowledge. Therefore, PSF has re-vitalized its international collaborations and embarked upon new linkages to harness potential of technologically advanced nations like China, Turkey, Iran, and Sri Lanka. In addition, PSF regularly plays role as a facilitator to link various international organizations/ universities with local universities and research institutions. Delegates from the reputed universities and similar collaborating bodies regularly hold meetings with PSF to discuss the areas of joint collaboration.

Over the years, PSF has established cordial bilateral relations with various international bodies to synergize efforts for achieving technological excellence and socioeconomic well-being of the people at large. Joint research projects are already ongoing with The National Natural Science Foundation of China (NSFC); Scientific and Technological Research Council of Turkey

(TÜBITAK): Ministry of Science, Research and Technology (MSRT), Iran and National Science Foundation, Sri Lanka.

During the year 2018-19, third call of proposals with National Natural Science Foundation of China, NSFC was launched. In addition to this, 05 joint projects with Scientific and Technological Research Council of Turkey (TÜBITAK), Turkey, 08 joint projects with Ministry of Science, Research and Technology, Iran and 06 projects with National Science Foundation (NSF), Sri Lanka were also initiated under “International Matching Grants”. During 2018-19, a total of 360 research proposals received under bilateral calls with China, Turkey and Iran remained under active consideration.

During the report period, 43 projects remained ongoing under first call with NSFC, TUBITAK, SF, Sri Lanka and MSRT. A total 30 technical reports (semi-annual and annual) of ongoing projects were received and an amount of Rs. 35.5 million was released on account of due installment of already ongoing projects and first installment of newly initiated projects.

Chairman, PSF had various meetings with international counter parts to further expand the PSF activities at international scale. Delegates of TUBITAK and NSF-Sri Lanka visited PSF to chalked out the areas of joint collaboration.

PLANNING AND DEVELOPMENT SECTION:

P&D Section intensifies the mandate of the PSF and its subsidiary organizations through getting funds from PSDP of the Ministry of Science & Technology. After the formulation of P&D Directorate in Year 2000, it is coordinating with different Sections of PSF, PASTIC, PMNH and MoST for preparation / finalization / processing of new PC-Is, submission of PC-IVs / PC-Vs to MoST and various non-development activities like compilation & submission of Reports, Briefs, Presentations, Comments, Replies to National Assembly/Senate Questions and travel grant activity.

PAKISTAN MUSEUM OF NATURAL HISTORY

Pakistan Museum of Natural History the only natural history musuem of Pakistan was established in 1979 under Pakistan Science Foundation, Ministry of Science & Technology, (Government of Pakistan). Pakistan Museum of Natural History (PMNH) has four principal divisions namely Earth Sciences Division, Botanical Sciences Division, Zoological Sciences Division and Public Services Division. First three scientific divisions are engaged in the collection, identification and research activities pertaining to plants, animals, fossils and mineral resources of Pakistan, while the fourth one is responsible for mass education and popularization of natural history through various

displays, exhibits and dioramas. Researchers of PMNH carried out extensive field works from the Coast of Arabian Sea to the Alpine regions, roamed through barren areas for the collection of Flora & Fauna, Rocks, Fossils and minerals not only for research work but also for the purpose of education because education is also one of the main objectives of PMNH. For this purpose, PMNH regularly organized trainings, workshops, seminars, symposia and other educational interactive activities related to natural history, environment and Biodiversity of Pakistan. International days are also observed. PMNH has formed many national and international liaisons with the other research institutes in the country and abroad. Due to these collective efforts of scientific and technical staff of PMNH and relations with other research institutions, PMNH has 1,042,711 natural history specimens in its repositories. Research outcome of these field works and National and International projects are published in the form research papers in reputed national and international journals. PMNH is not only conducting research on the natural resources of Pakistan which exists in the form of Flora & Fauna, Rocks, Fossils and Minerals but also educating the students of Pakistan along with the common people with the help of informative, interactive, educative 3-dimensional dioramas and exhibits. Students of schools, colleges and universities from all over the Pakistan visit PMNH as a part of their educational tours. Scientific and Technical staff of PMNH also facilitate the students and researchers from the other universities and institutes by providing help in the research in the form of information, technical assistance, specimens as a loan and guidance in their research work.

PAKISTAN SCIENTIFIC AND TECHNOLOGICAL INFORMATION CENTER (PASTIC)

Pakistan Scientific and Technological Information Center (PASTIC) is the premier organization for dissemination of Scientific and Technological Information to the Scientists, Researchers, Engineers, Entrepreneurs, Industry and Citizens of Pakistan. PASTIC National Center is located at Quaid-e-Azam University Campus, Islamabad. It has 06 Sub Centers throughout Pakistan including Karachi, Lahore, Peshawar, Quetta, Faisalabad and Muzaffarabad. The main objective of PASTIC is to acquire process and disseminate information in all S&T disciplines. PASTIC's services include Bibliographic & Document Supply Service, Abstracting and Indexing Service, National Science Reference Library, Reprographic Services, Technology Information Services, Awareness and Promotion of PASTIC Services, Capacity/skill development of researchers & entrepreneurs and International Liaison. During the report period, 54819 S&T documents and 4804 bibliographies in digital form were supplied to 4609 R&D workers on their request. 10577 abstracts were processed for import into the PSA database. 13163 users visited PASTIC library for getting references, reading, photocopying, internet browsing and web searching. Besides, the

library received 174 issues of national and international journals in exchange and on gratis basis. 12 issues of Fresh Arrivals of PASTIC library published online as well as in print form and distributed among the members. The Library was renovated to improve ambience and affectivity of library services. 157 printing jobs from 08 R&D organizations were completed. 6 online issues of “Technology Roundup” a bimonthly Trade and Technology news e-bulletin and 05 UIP Seminars/workshops were arranged. 20 stalls and 46 awareness seminars at various departments of universities across the country through sub-centres were organized.

Moreover, 47 workshops on various themes such as PASTIC Information Services, Searching Techniques, Library Management, Information Literacy Skills, Strengthening Innovative Library Leaders, Plagiarism, Easy Way of Library Automation & Digitalization, Intellectual Property Rights, Health Awareness, KOHA, Research Tools and Techniques / Citation Management (SPSS, Endnote, Mendeley, etc.), Open Source Technologies in Libraries, Bio-safety Practices, Leadership Communication and Innovation Skills for Information Professionals, Next Generation Sequencing Data Analysis, Library Automation by using Integrated library system software ILS Koha, Radio Frequency Identification (RFID), Developing Lab Bio-Safety Culture, Advance skills in Thesis Writing, Modern Trend in Library & Information Science Research, Literature Searching and Organizing using Emerging Technologies, Data Analysis through STATA Software, Synopsis & Thesis Writing, Strengthening Library Professionals through Enhancing Technical and Soft Skills were also organized.

PASTIC also acts as the National Focal Point of UNESCO IFAP National Committee (UNESCO Information for All Programme IFAP). PASTIC is also executing SAARC Development Fund (SDF) funded Project “Networking of Women Entrepreneurs (SMEs) from SAARC Countries”. PASTIC has also been the national distributor of UNESCO developed library management software “WINISIS”.

INTRODUCTION

Pakistan Science Foundation was established on June 30, 1973 under the Pakistan Science Foundation Act No. III of National Assembly (*Annexure-I*) as an autonomous body to promote and finance scientific and technological activities bearing on the socio-economic needs of the country. The tasks undertaken by the Foundation for the performance of its statutory functions are divided into following three broad categories:

Science Promotion supports basic and fundamental as well as applied research involving researchers/academia at universities and R&D organizations focusing socio-economic needs/development of the country.

Science Popularization endeavoring to image scientific ideas to grasp the concept of fundamental science.

Science Centers to encourage all segments of society in thinking, understanding and exploring science.

Under the Act, the Foundation has been entrusted to carry out the following functions:

- i) Establishment of comprehensive scientific and technological information and dissemination centers.
- ii) Promotion of basic and fundamental research in universities and other institutions on scientific problems relevant to the socio-economic development of the country.
- iii) Utilization of the results of scientific and technological research including pilot plant studies to prove the technical and economic feasibility of processes found to be promising on a laboratory scale.
- iv) Establishment of science centers, clubs, museums, herbaria and planetaria.
- v) Promotion of scientific societies, associations and academies engaged in spreading the cause of scientific knowledge in general or in the pursuit of a specific scientific discipline or technology in particular.
- vi) Organization of periodical science conferences, symposia and seminars.
- vii) Exchange of visits of scientists and technologists with other countries.
- viii) Grant of awards, prizes and fellowships to individuals engaged in developing processes, products and inventions of consequence to the national economy.
- ix) Special scientific surveys not undertaken by any other organization and collection of scientific statistics related to the scientific efforts of the country.

The Foundation shall also:

- i) Reviews the progress of scientific research sponsored by it and evaluates the results of such research.
- ii) Maintain a National Register of highly qualified and talented scientists/engineers and doctors both in and outside Pakistan, and to assist them in collaboration with concerned agencies to seek appropriate employment.
- iii) Establish liaison with similar bodies in other countries.

The activities performed under the above-mentioned statutory functions are as under, however, the details are given in different chapters:

ACTIVITIES AND PROGRAMMES

The activities and programmes undertaken by the Foundation to perform its statutory functions can be divided into the following four categories:

Promotion and Financing of Scientific Research in the Country and the Utilization of the Research Results.

Promotion and Popularization of Science in Society.

International Liaison.

Establishment of Comprehensive Scientific and Technological Information Dissemination Centers.

The main functions of the Foundation i.e., research support and science popularization etc., are performed by the Science Wing of the Foundation and their detail is given as under:

Research Support is performing the following activities:

1. Research Support
 - a) Grants for Research Projects
 - b) Grants for Institutional Support
2. Research Evaluation
3. Promotion/funding of Scientific Societies/Learned Bodies
4. Funding of Conferences, Symposia, Seminars & Workshops
5. Travel Grants
6. International Liaison
7. Awards and Fellowships
8. Survey and Statistics
9. Scientists Pool
10. Innovations & Inventions
11. Planning and Development Programme

Science Popularization carries out science popularization activities including Science Caravans, Science Clubs, Science Fairs and holding of Popular Science Lectures, Workshops, Conferences and Symposia.

Pakistan Scientific and Technological Information Centre (PASTIC) is another subsidiary organization of PSF, performs as Scientific and Technological Information Dissemination Center with its sub offices in all provincial capitals of the country.

Pakistan Museum of Natural History (PMNH) is a subsidiary organization of PSF, established in 1979 to serve the national needs in the vitally important areas of research, conservation and

education involving Pakistan's heritage of natural resources. The Museum is a National Repository for permanent storage of plants, animals, rocks, minerals, and fossils of the country.

I. PAKISTAN SCIENCE FOUNDATION (PSF)

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1.0 RESEARCH SUPPORT:

1.1 Research Funding

1.1.1 Research Projects Funded

Research support is the principal programme of the Foundation, which provides funding for research projects in natural and physical sciences. Project proposals submitted to the Foundation are evaluated initially by subject experts in relevant fields and then by Technical Committees on the basis of technical merit and relevance to the socio-economic needs of the country. The progress of research is monitored through evaluation of semi-annual and annual progress reports. Multi-disciplinary research projects in areas of economic significance to Pakistan are accorded special priority for award of financial support.

a) Under Process Projects

During 2018-2019, a total of 281 research proposals/concept papers in 10 scientific field namely Agricultural Sciences, Biological Sciences, Biotechnology & Genetic Engineering, Chemistry, Computer Sciences/Maths, Earth Sciences, Engineering Sciences, Health Sciences, Environmental Sciences and Physics remained under active consideration. Among these, 72 projects were under-process, of which, 09 projects were recommended by Technical Committee for the approval by the Foundation and 07 were approved by the Foundation at a total cost of Rs.34.165 m is placed at (*Annexure-I*).

b) On-going Projects

Total 57 research projects were remained on-going and an amount of Rs. 20.80 m was released account of on due installments and evaluation fee of these projects. 30 progress reports (semi annual, 1st, 2nd annual & final) of these projects were received. Semi annual reports were scrutinized by PSF staff, whereas the annual and final reports, after initial scrutiny, were sent for evaluation to the subject experts to assess the interim progress of the projects. A list of the semi-annual, annual and final reports is given in *Annexure-II*

c) Completed Projects

During the year, 06 research projects were completed. The subject experts evaluated the final technical reports which subsequently placed before the respective PSF Technical Committee for consideration. After adoption of these reports by the Committee, the accounts of these projects were settled, and files were closed. A list of completed projects followed by their scientific output is given below.

S.#	Project No.	Project Title
1.	PSF/Res/P- PMAS-AAU/Bio (418)	Ethnobotanical Survey of Thal Desert, Punjab, Pakistan
2.	PSF/Res/S-KU/Bio (456)	Genetic Diversity of Some Ocypodoid Crabs with Special Reference to Gnera <i>Uca</i> and <i>Macrophthalmus</i> along the Coast of Pakistan
3.	PSF/Res/P-AU/Bio (478)	Exploitation of Wild Edible Plant Diversity of the Punjab
4.	PSF/Res/C-NILOP/Med (330)	Development of Optical Control Switch Gene Interference Technique as a New Therapeutic Approach for Lung Cancer
5.	PSF/Res/C-NUST/Med (374)	Development and Commercialization of Intelligent Functional Stent for the Treatment of Lung Cancer
6.	PSF/Res/ Biotech /P-NIBGE/Med (58)	Cloning Expression and Characterization of INGAP Encoded Gene: A Prospective Means of Amelioration of Diabetes

BIOLOGICAL SCIENCES:

Project No: PSF/Res/P-PMAS-AAU/Bio (418)
 Project Title: Ethnobotanical Survey of Thal Desert, Punjab, Pakistan
 Duration: 03-Years
 Date of Initiation: 06.01.2010
 Date of Completion: 05.1.2013
 Total Cost Rs. 1,783,980/-
 Total Expenditure: Rs.1,436,463/-
 Principal Investigator: Dr. Rehmatullah Qureshi
 Name of Institution: PMAS Arid Agriculture University
 Rawalpindi.

SUMMARY:

This project was designed to collect the folk knowledge of indigenous plants used by the inhabitants of Thal Desert, Punjab, Pakistan. A semi-structured questionnaire was employed for

the collection of traditional knowledge about plants by the local people, *Hakeems* and *Ethnoveterinarian* of the study area. In all, 261 species belonged to 166 genera and 38 families are reported which are being used by the inhabitants for fulfilling their various needs.

Ethnobotanically, natives mostly utilize local flora in fulfilling their 9 major use needs/requirements such as fodder/forage, fruits, medicinal, vegetable, ethnoveterinary, fuel, timber/agricultural implements, soil binder/shelter belt and others. Local communities ranked five species viz., *Azadirachta indica*, *Cordia gharaf*, *C. myxa*, *Moringa oleifera* and *Ziziphus mauritiana* that were used in accomplishing their seven use categories. It was followed by *Acacia jacquemontii*, *Acacia nilotica*, *Aerva javanica*, *Azadirachta indica*, *Calligonium polygonoides*, *Calotropis procera*, *Cicer arietinum*, *Citrullus colocynthis*, *Citrus medica* var. *acida*, *Citrus sinensis*, *Cordia gharaf*, *Cordia myxa*, *Cymbopogon jwarancusa* subsp. *jwarancusa*, *Ficus bengalensis*, *Leptadenia pyrotechnica*, *Morus nigra*, *Phoenix sylvestris*, *Psidium guajava*, *Punica granatum*, *Syzygium cumini*, *Tamarix aphylla*, *Withania coagulans*, *Ziziphus mauritiana* and *Ziziphus nummulari* that fulfilled 6 use categories. Overall, the use categories were found inversely proportional to the number of species seemingly the highest use categories recorded for fewer species (i.e. 7 categories versus 5 species).

Most of the species were recognized as palatable by the herders and used as fodder (234 spp., 35.62%), followed by folk medicine (120 spp., 18.26%), fuel (108 spp., 16.44%), etc.

Out of 261 species, 120 plants belonged to 88 genera and 44 families were used as medicinal purpose by the natives. There was high diversity of medicinal plants in the study area compared to Cholistan and Nara Desert. Compared to the medicinal literature, four species viz., *Farsetia jacquemontii*, *Indigofera hochstetteri*, *Launaea residifolia* and *Limeum indicum* possessed novel medicinal uses not reported earlier in the literature. Besides, 76 species had new uses in addition to the medicinal record, while the rest of the species contained similar use. In all, 45 different diseases were treated by using 120 medicinal plants. Constipation was found the topmost and widespread ailment in the area, hence most of the species (29 spp., 8.17%) were utilized for this complaint. It was followed by abdominal/stomach problem (24 spp., 6.76%), boils (22 spp., 6.76%), pain (18 spp., 5.07%), jaundice, pimples, skin problems (17 spp., 4.79% each), digestive problems.

Leaves were heavily used (27.46%) for the preparation of recipes, followed by fruits (17.61%), whole plant (14.50%), roots (12.95%), Seeds (10.36%), aerial parts (3.62%), stem (3.6%), flowers (3.1%), etc. For treating 45 different diseases, 21 different formulations were used by the

inhabitants of the area. Amongst them, most of the recipes were given in powder form (15.7%), followed by extract (12.6%), raw fruits (9.2%), potherb (8.81%), etc.

With reference to fidelity level (FL), *Citrullus colocynthis* was found the most important medicinal plant in the study area, which was particularly used to treat constipation with 100% FL. Three species viz., *Momordica balsamica*, *Moringa oleifera* and *Withania somnifera* were found the 2nd most important plants having 97.78% FL used in diabetes, joints pain and sexual problems, respectively. It was followed by *Azadirachta indica*, *Melia azedirach*, *Tribulus terrestris* (95.56% FL each), *Tamarix aphylla* (93.33% FL), *Cymbopogon jwarancusa*, *Fagonia* spp. (92.86% FL each), etc.

Informant Consensus Factor (ICF) establishes the distribution of informants' knowledge about the use of medicinal plants. It validates homogeneity of the gathered information regarding plant usage for curing same disease through the same or different methods. There was the existence of consensus factor ranged from 0.85 to 0.90 with an average across all data from 0.90, which strongly indicated that the peoples in the study area are dependent on plants for treating their various ailments. This indicates that people living in the area are well aware of the plants in the study area.

The number of use report (Nur) revealed that the constipation was the prevailing disease and the highest use reports were recorded for constipation (241), followed by abdominal/ stomach problems (230 reports), boils (224 reports), digestive problems (220), jaundice (200).

From the preference ranking point of view, three species viz., *Citrullus colocynthis*, *Withania oagulans* and *Aloe vera* are ranked 1st that scored 96% by the local herbalists (*Hakeem*) which they use them in treating various diseases. It was followed by *Tribulus terrestris* (90%), *Rhazya stricta* (86%), *Momordica balsamica* and *Azadirachta indica* (82% each), *Fagonia* spp. (78 each) with the 2nd to 5th rank respectively.

As a research output, five national and international papers and two abstracts are published along with one PhD and five M. Phil. students successfully completed their degrees from the funding of this project.

Project No: PSF/Res/S-KU/Bio (456)
Project Title: Genetic Diversity of Some Ocypodoid Crabs with Special Reference to Gnera *Uca* and *Macrophthalmus* along the Coast of Pakistan
Duration: 02-years
Date of Initiation: 09.09.2016

Date of Completion: 08.09.2018
 Total Cost Rs. 2,241,756/-
 Total Expenditure: Rs.2,002,555/-
 Principal Investigator: Dr. Noor us Saher
 Name of Institution: University of Karachi
 Karachi

SUMMARY:

Collection of selected crab species from different coastal areas of Pakistan has been done. Preliminary morphological identification of species as collected from different sites through available taxonomic keys. The biochemical screening of protein through SDS-PAGE electrophoresis and isozyme variations through Native PAGE Electrophoresis. The significance of general protein and selected isozyme variations for the discrimination of sibling or cryptic species of subfamily Macrophthalminae (Genus Macrophthalmus) and Gelasiminae (Genus Austruca and Tubuca). The significance of procured biochemical data through genetic analyses by using PopGENE software. The successful amplification and procurement of DNA sequences of selected species of subfamily Macrophthalminae and Gelasiminae. In the two year of study a total eleven (11) species confirmed through DNA molecular markers with one novel species (*T. saherie*). Submission of obtained sequences to the international gene bank (Patents) and all sequences now available online for reference and records on the website (www.ncbi.nlm.nih.gov) as following:

1.Total	submissions49
2.16S	sequences.....	21
3.COI		sequences.....20
4. 12S sequences.....		08

The five species (*Macrophthalmus (Venitus) dentipes*, *M (Mareotis) depressus*, *M (Macrophthalmus) grandidieri*, *M (Macrophthalmus) laevis* and *Macrophthalmus dilatatus sulcatus*) 16S and COI data submitted first time to GeneBank.

Project No: PSF/Res/P-AU/Bio (478)
Project Title: Exploitation of Wild Edible Plant Diversity of the

	Punjab
Duration:	02-Years
Date of Initiation:	01.10.2015
Date of Completion:	30.03.2018 extended
Total Cost	Rs. 1,263,178/-
Total Expenditure:	Rs.863,407/-
Principal Investigator:	Prof. Dr. Mumtaz Hussain
Name of Institution:	University of Agriculture Faisalabad

SUMMARY:

In accordance with the objectives of the project survey of various districts of the Punjab, was performed during the project period (2015 to 2018) to collect the desired wild edible plant samples from different sites namely, Bahawalpur, Bahawal Nagar, Bhakkar, Chakwal, Dera Gazi Khan, Faisalabad, Gujrat, Gujranwala, Jhang, Jhelum, Layyah, Multan, Muzaffargarh, Rahim YarKhan, Sahiwal, Sargodha, Talagang, Toba Tek Singh, and Vehari. Edible plant samples to becollected included Kachnar (*Bauhinia variegata* L.), Kareer (*Capparis decidua* L.), Chungan (*Caralluma edulis* L.), Lasoor (*Cordia myxa* L.), Sohanjna (*Moringa oleifera* L.), Bhian (*Nelumbo nucifera* L.), Qulfa (*Portulaca oleracea* L.) and Mako (*Solanum nigrum* L.).

The plant samples were analyzed to determine their food values by performing proximate analysis i.e dry matter (%), crude ash (%), crude fat (%), crude fiber (%), crude protein (%) and crude carbohydrates (%). Mineral contents of these plant samples were also determined using various analytical techniques. Plant samples were biochemically analyzed to determine their Total Soluble Proteins (mg/g), Total Amino Acid (mg/g), Total Phenolic contents (mg/g) and Total Soluble Sugar (mg/g). Soil samples collected from different sites were also analyzed to note their pH, potassium, calcium and sodium contents.

Almost all the plants under the study proved to be good source of nutritional components with some variation. Their nutritional, biochemical and ionic contents indicated much spatial variation among different districts of the Punjab. While soil analysis proved much informative for determining the health of plant species.

The information regarding traditional use of wild edible plant was collected through interviews with local inhabitants and herbalists at various sites. A questionnaire (appendix; Table

4) was developed to interview inhabitants of area surveyed for determining their interest and familiarity with their local wild edible plants.

Information relating to use of wild plant (as vegetables, for cooking, pickling or for medicinal purpose) and It was recorded that majority of the wild plants were being used for nutritional as well as medicinal purposes. Various measures taken for the publicity of findings of the project included display of charts, seminars, post-graduate students were engaged/trained for the exploitation of wild edible plants. Thirteen students were engaged to conduct their thesis research on edible plants out of which six students completed their M. Phil thesis research and the research of seven students is still in progress. For their demonstration wild edible plants grown in Botanical Garden were displayed during “Rabi” and “Kharif” festivals organized by the University. Preparation of research papers for submission in scientific journals is in progress.

MEDICAL SCIENCES

Project No:	PSF/Res/C-NILOP/Med (330)
Project Title:	Development of Optical Control Switch Gene Interference Technique as a New Therapeutic Approach for Lung Cancer
Duration	02-Year
Date of Initiation:	15.02.2016
Date of Completion:	14.02.2018
Total Cost	Rs.1,760,203/-
Total Expenditure:	Rs.1,222,263/-
Principal Investigator	Dr. Abida Raza
Name of Institution	National Institute of Laser and Optronics (NILOP), Islamabad

SUMMARY:

Cyclooxygenase-2 (COX-2) is involved in the synthesis of prostaglandins and thromboxanes, which are regulators of processes that are relevant to cancer development. High expression of COX-2 has been found an unfavorable prognostic factor for overall survival in several cancers. Study Problem: COX-2 is expressed in many tissues for their normal functioning; its non-specific inhibition can affect pancreas, eyes, kidney, female fertility, etc. Also, non-steroidal anti-inflammatory drugs (NSAIDs), causes several adverse effects like renal, cardiac and gastrointestinal toxicity. COX-2 specific and targeted inhibition is required.

Nanoparticles, gold nanorods (GNRs) are successfully prepared with tunable longitudinal plasmon resonance (LSPR) wavelengths between 682-906 nm. The hydrodynamic diameter of the GNRs was estimated to be 20.90 ± 2.15 to 50.5 ± 2.13 nm. The zeta potential of the prepared GNRs was measured as $+33.3 \pm 0.34$ - -40.1 ± 0.71 mV. We tailored the aspect ratios of GNRs between 2.5 to 4.6 by optimizing growth parameters. Fine tuning of LSPR is achieved across a broad range by varying silver ion and seed concentration. Colloidal stability of GNRs was studied through UV-vis spectroscopy based particle instability parameter ($PIP < 0.1$). GNRs are stable at 28-60°C; however, prolonged high temperature ($>60^\circ\text{C}$) and alkaline pH can trigger colloidal instability. GNRs remain stable at higher salt concentration, physiological and slightly acidic pH. GNRs can be stored in 0.001 M CTAB for 03 months without compromising their stability. PEG-GNRs are quite stable in cellular media solution ($PIP < 0.1$). Gold nanorods, with aspect ratio 3.4 ($\lambda_{\text{max}} = 785$ nm) were selected for gene knockdown. The silencing efficacy after ONCOS activation in HepG2 cells is 96% compare to untreated cells. The decrease in protein level in the ONCOS-activated cells versus the control sample indicates that ONCOS has effectively interfered with COX-2 protein expression. We have successfully demonstrated a novel gene-interfering technique presenting spatial and temporal control. We may conclude optical switches can be conjugated with oligos that can be released by remote optical extinction at desired intracellular location at specific time to block the expression of target gene.

Project No:	PSF/Res/C-NUST/Med (374)
Project Title:	Development and Commercialization of Intelligent Functional Stent for the Treatment of Lung Cancer
Duration:	02-years
Date of Initiation:	01.06.2016
Date of Completion:	31.05.2018
Total Cost	Rs.2,251,956/-
Total Expenditure:	1,981,695/-
Principal Investigator:	Dr. Murtaza Najabat Ali
Name of Institution:	School of Mechanical and Manufacturing Engineering (SMME), National University of Science and Technology (NUST), Islamabad

SUMMARY:

Lung cancer in Pakistan is caused directly by tobacco in 90% of cases, and due to excessive use of tobacco about 100,000 people die every year. Up to 20-30% of these cancers eventually affect the central airways and result in reduced quality of life, dyspnea, haemoptysis, post obstructive pneumonia and ultimately death. Surgery is the treatment of choice for those patients with early-stage lung cancers; unfortunately, most patients normally develop advanced lung cancer at the time of diagnosis. These patients branded with a poor prognosis may not benefit from surgery with a curative intent; however, palliative treatment is required in such cases with the hope of providing a reasonable quality of life. Only stenting can provide effective structural support for patients with extrinsic airway compression as well as those with intra-luminal obstructions. Therefore, a study will be required to develop a cost-effective and commercially viable Auxetic airway stent-graft which will not only provide palliation to the patient suffering from central airway obstruction (CAO) due to both malignant or benign lung cancers, but (i) to improve the lifespan of the patient by controlling the surrounding tumour growth, (ii) to dispense targeted local chemotherapy directly from the stent surface to the neighboring diseased tissue instead of administering painful systemic chemotherapy drugs, (iii) to program biodegradable Auxetic stent-graft made of polyurethane in such a fashion that it will degrade after sometime in order to restore ventilation of the patient effectively and to avoid late stent complications linked with painful re-intervention (stent removal) procedures, and (iv) to offer cost-effective palliative and curative treatment modality (Auxetic stent-graft) by eliminating the factor of expensive dedicated delivery device and the Auxetic stent will be deployed using a low cost balloon catheter.

This research focuses on designing and development of two novel auxetic geometries named as Hollow Square Auxetic Geometry (HS) and Solid Square Auxetic Geometry (SS). The 3D films and seamless stents were fabricated using semi-rigid Polyurethane, a biocompatible polymer to combat the complications that occur in response to bare metal stents. The mechanical analysis and stent expansion analysis demonstrated the anisotropic behavior of both auxetic geometries and poisson's ratio was calculated as -0.58. The an-isotropic behavior of the auxetic geometries presented in this research makes them ideal Lungs. The stent expansion analysis with the help of commercially available balloon catheter of novel seamless auxetic geometries demonstrated a very less pressure value (2atm) for complete plastic deformation which serves as a unique feature when compared with already reported auxetic polymeric non-vascular stents. Furthermore, polymeric chemotherapeutic films were synthesized and tested. The 5-Fluorouracil

(chemotherapeutic drug) loaded polymeric blends of (PCL-PVA/PLA-PVA) were synthesized by casting. The SEM, EDS, in vitro and in vivo analysis were performed to characterize and analyze the drug release kinetics of the blends for Polymeric chemotherapy and stent coatings. The results illustrated the enhanced and sustained drug release from both the blends when compared with drug loaded pure PCL and pure PLA, thus making them suitable for the use in the treatment of lung cancer.

BIOTECHNOLOGY & GENETIC ENGINEERING

Project No:	PSF/Res/ Biotech /P-NIBGE/Med (58)
Project Title:	Cloning Expression and Characterization of INGAP Encoded Gene: A Prospective Means of Amelioration of Diabetes
Duration	03-Years
Date of Initiation:	16.08.2007
Date of Completion:	15.08.2010
Total Cost	Rs. 1,148,520/-
Total Expenditure:	Rs.396,000/-
Principal Investigator	Prof. Dr. Javed Anver Qureshi Head, Health Biotechnology Division
Name of Institution	National Institute of Biotechnology & Genetic Engineering (NIBGE), Faisalabad

SUMMARY:

Diabetes mellitus is a metabolic disorder in which there is either absent or reduced secretion of insulin due to defects or loss of beta-cells of pancreas (Type 1 Diabetes) or it can be due to insulin resistance in the target tissues (Type 2 Diabetes). In both these types of diabetes, beta-cell damage or dysfunction occurs at some stage. Hence, one of the therapeutic options for diabetes is to regenerate the functional insulin producing beta-cells. In this regards, some earlier studies tried a number of biological molecules for beta cell regeneration or neogenesis. One such molecule called, Islet Neogenesis Associated Protein (INGAP) was identified in hamster, which showed some promising effects on pancreas regeneration.

In this regards, this PSF funded project was proposed to clone and express INGAP for therapeutic purpose using biotechnological approach. However, undertaking this study in human samples for INGAP gene was ambitious project at the time of proposal because the underlying molecular

biology of INGAP action was not well studied. Hence, instead of investigating human INGAP owing to bioethical issues, this study was slightly modified to undertake these experiments in the mouse model which is very close to human and extensively used for human disease biology and therapeutics.

Therefore, INGAP-rP (INGAP related protein) which is a member of mouse Reg family of proteins and termed as Reg3 δ implicated in regeneration was investigated for pancreas developmental biology. The aim of was to clone and express this recombinant protein that can ultimately be explored in further studies for evaluating its potential as a promising therapeutic for diabetes by inducing regeneration/neogenesis of pancreatic beta cells. For this purpose, total RNA was isolated from BALB/C mouse pancreas, cDNA was synthesized and Reg3 δ (INGAP-rP) gene was amplified with gene specific primers. A recombinant plasmid (pET28a vector) was constructed with Reg3 δ gene. Recombinant protein was expressed in BL21 (DE3) strain in LB media. Expressed protein was isolated and separated on 12% SDS-PAGE. Clones were successfully confirmed with restriction and colony PCR and SDS-PAGE confirmed the 16 kDa band in IPTG induced samples. Based on this progress, future projects will help to obtain and evaluate this therapeutic protein for diabetes therapy by modulating pancreas regeneration.

1.1.2 Scientific Publications Produced through PSF Supported Projects

One of the main achievements and usefulness of any research is the publication of its results in scientific journals. Based upon the results of completed projects, 06 research papers were published in different national / international journals. Details are at *Annexure-IV*.

1.1.3 Higher Degrees Earned through PSF Supported Projects

One of the major goals of the Foundation is the development of scientific human resource in the country. This results in strengthening of R&D infrastructure of various scientific organizations. The Foundation has been developing scientific manpower through its research projects and the Research Associates employed in the PSF supported research projects to register for higher degrees. During the year, 09 Ph.D and 20 M.Phil/M.Sc (Hons) students secured their degrees while working as Research Associates in these completed projects. Following students working on PSF supported research project were awarded Ph.D/M.Phil/M.Sc. (Hons) degrees: Details in placed at *Annexure-IV*.

1.1.4 Science Promotion Activities

During the report period, an amount of Rs.6.20 million was released to various institutions for organizing 33 conferences, seminars and workshops on important scientific topics and Rs.0.1 million were released to 01 scientific society/journal for its regular activities. However,

Institutional Support and PSF Fellowships programmes were not entertained due to paucity of funds. The detail list is placed at *Annexure-V*.

1.1.5 R&D-Industry Programme

Focusing on collaborative research and strong industrial linkages, R&D-Industry Programme is bringing together researchers, end-users and the funding institutions at one platform to create an environment of a unified approach to identify and solve industrial problems through applied research and technology transfer mechanism.

During the year 2018-19, a total of 16 research projects in R&D-Industry Programme remained under active consideration. Among these, 05 were under process, of which, 01 project costing Rs. 3.34 million was sanctioned and an amount of Rs. 1.64 million was released to new project on account of 1st Installment. During the year, 11 projects were on-going and an amount of Rs. 1.658 million was released on account of due installments and evaluation fee of these projects.

Based upon the results of 02 completed projects, 01 M.Phil.degree second and 02 research papers were published in national / international journals.

1.1.6 Inventions to Innovations Programme

Pakistan Science Foundation (PSF) organized 04 “Invention to Innovation Summits” at University of the Punjab, Lahore, University of Engineering & Technology, Peshawar, University of Karachi, Karachi and the University of Balochistan, Quetta, wherein, hundreds of indigenous technologies, varieties, products, processes, posters presentations and documentaries etc were presented in the Summit. These events are regular activity of the joint collaboration of R&D-Industry Programme of Pakistan Science Foundation (PSF) and Pakistan Scientific & Technological Information Center (PASTIC), University of the Punjab and Institute of Research Promotion (IRP).

Several different workshop sessions of industry, academia & R&D experts were also arranged in these Summits from different Technology Sectors. The industrial issues identified during these summits are being taken up jointly by Pakistan Science Foundation, Academia and the Industry. The most innovative technologies, finalized by the panel of judges, were awarded with the Innovation Award.

Moreover, under the Invention to Innovation Programme, one financial grant of Rs. 0.10 million was provided to 02 proposals of “Inventions & Innovations” to the final year graduates for completing their projects to compete with their international counterparts through participation in international events.

2.0 SCIENCE POPULARIZATION

Popularization of science, increasing science awareness and development of scientific culture in the society are major functions entrusted to Pakistan Science Foundation. Under the action plans of various S&T Policies, the task of popularization of science at grass roots level in the country has also been assigned to PSF.

2.1 Objectives and functions

Popularization of science plays a central role in the socioeconomic, cultural, and environmental development of any country. It is usually understood as the system of measures aimed at the dissemination, appropriation, and valuing of science and technology goods, which include critical thought, ideas and values, the history and sociology of scientific knowledge, how science is practiced, and the results of scientific research and technological development. Popularization of science makes it possible to spark vocations and encourage talent for scientific research, technological development, and intellectual endeavors in general. It fosters creativity and innovation, further contributes to producing better trained human resources, expands social opportunities, and strengthens the educational system. It also helps to enhance the critical sense of the population, by increasing its involvement in decision-making and contributing to sustainable development.

To achieve the objective of increased science awareness, PSF is undertaking a number of programs including:

- Science Caravan (Mobile Science Exhibitions)
- Establishment of Science Centre, Museums, Herbaria & Planetaria
- Strengthening of the Laboratories of the Govt. High Schools of rural areas
- Organizing of S&T Fairs and Travelling Expos.
- Organizing Science Poster, Essay and Quiz Competitions
- Holding Popular Science Lectures
- Donation of Popular Science Magazines and Scientific Books to Schools, Universities and S&T Organizations
- Preparation and dissemination of Scientific Literature in the form of Leaflets, Posters, Booklets and Brochures
- Financial assistance for publication of Scientific Books
- Financial Assistance for Science Popularization activities of the other organizations
- Establishment of Science Clubs in High Schools

- Inquiry Based Science Education Programme in Pakistan

2.1.1 Science Popularization Activities

2.1.2 Science Caravan is a Mobile Science Exhibition that has been designed to increase public awareness about science and to motivate the younger generation of the country towards study of science. Science Caravan consists of three major components, firstly the Exhibits & Display items, secondly film/multimedia projectors for screening of science films/documentaries and lastly the Starlab Planetarium system. Microscopes, computers, laser holograms and working models reflecting various phenomena of physics, chemistry, mathematics and biology are included in Caravan Exhibitions. At present, 09 Science Caravan units are in operation, 02 for each of the 04 provinces and 01 for Federal and adjoining areas. During the year 2018-19, 33857 students from 105 schools visited Science Caravan Exhibitions as detailed below;

- Federal Unit:-9,715 students from 40 schools visited the exhibition.
- Sindh Units: 5650 students from 27 schools visited the exhibition.
- Punjab Units: 5555 students/general public from 20 schools visited the exhibition.
- Khyber PakhtoonKhwa Unit, Peshawar: -11397 students from 35 schools visited the exhibition.
- Baluchistan Unit: 1540 students from 11 schools visited the exhibition.

2.1.3 28th Annual Intra and Inter Board Science Essay and Poster Competitions were organized between the students of all Boards of Intermediate and Secondary Education (BISEs) of the country. Students from all over the country took part in the competitions. Essay Competition was on theme titled “**Our Changing Earth & Impact of Globalization**” and for Science Poster Competition the theme was “**Water Scarcity and Best Precautions to use it**”. Thousands of students from all over the country participated in these competitions.

2.1.4 Donation of Popular Science Magazines and Scientific Books

Donation of Popular Science Magazines and Scientific Books is one of the regular and important activities for science popularization. 8000 copies of Quarterly “Urdu Science Magazine” were distributed to 2000 schools during the report period.

2.1.5 Financial Assistance of Schools and Institutes Support for Science Popularization Activities.

PSF supports S&T organizations to organizing their science popularization activities. During the report period, an amount of Rs.100,000/-was sanctioned to Pakistan Science Club, Karachi for strengthening of its labs and arranging Science Popularization activities.

2.1.6 World Science Day for Peace and Development

World Science Day for Peace and Development is an international day that highlights the important role that science has in society and is celebrated each year on November 10. PSF celebrates this day every year in a befitting manner. PSF in collaboration with other organizations like UNESCO, Intel, and Federal Directorate of Education organized various activities for students and scientists to commemorate the world science day like Convention of Scientists, Science Caravan Exhibitions, Panel Discussions on TV and Prize Distribution to the winners of PSF Annual Inter Board Science Essay and Poster Competitions etc. The theme selected by UNESCO for this year was “Science, a Human Right” The Federal Minister for S&T Muhammad Azam Khan Swati, Federal Secretary for Science & Technology Ms. Yasmin Masood, Ms. Vibeke Jensen, Country Director UNESCO in Pakistan, Prof. Dr. M. Qasim Jan, President Pakistan Academy of Sciences, Chairman, PST and other Scientifics highlighted the importance of science and its peaceful use for development and benefit of the mankind. Moreover, cash prizes, Awards letters, Crest, and certificates were also distributed on 13th Nov 2018 among the winners of PSF’s 27th Science Essay & Poster Competitions.

2.1.7 Popular Science Lectures

Pakistan Science Foundation arranges series of lectures where eminent Scientists and educationists express themselves for the benefit of the audience i.e., scientists, scholars, students and the general public as one of its mandatory functions. 08 Popular Science Lectures were arranged across the country in which large number of students, teachers and general public attended the lectures.

2.1.8 Participation of Pakistani Students In International Forums

A group of 04 students including group leader Ms. Dr. Saima Huma Tanveer SSO, PASTIC, Participated in London International Youth Science Forum-2017 in London.

Under its motivational programmes for students to create science awareness in them and to engage them in creative activities, PSF encourage such programe.

2.1.9 Fastest Arrangement of Periodic Table of Elements - Pakistani Little Professor Breaks World Record

Islamabad (May 30, 2019): Little professor Zidane Hamid breaks world record for fastest arrangement of the periodic table of elements. He arranged all 118 elements in order in 05 minutes and 41 seconds on 28 May 2019 at Pakistan Science Foundation. This specific Guinness World Record (GWR) in Chemistry was first set by Purdue University Faculty Professor Dr. Vilas Pol at Davidson School of Chemical Engineering. The fastest time to arrange all elements of the modern

period i.c table taken by Pol in correctly arranging the 118 individual elements was 8 minutes and 36 seconds on August 15, 2018, at Forney Hall of Chemical Engineering's Henson Artium.

2.1.10 Pakistani Students Shine in The 2nd Belt & Road Teenager Maker Camp Teachers Workshop At Beijing-China

PSF sponsored participation of Pakistani young scientists in said well with the objective to give a greater insight into science and its application for the benefit of all mankind. The students shared their ideas and projects with fellow students around the world and eminent scientists. The programme opened up opportunities for youth by combining hands-on enriching cultural activities and outdoor adventures with access to fascinating people, places and events which will reflect well for their future access to universities and employment opportunities. In the said Camp, 120 students from 29 countries alongwith 30 teachers participated.

The following four students, from pakistani participated in the event,

1. Ms Aleesha Zahoor
2. Ms Farzazia Tariq
3. Mr. Hassan Sarfaraz
4. Ms. Fatima Nasir

The 2nd Belt and Road Teenager Maker Camp & Teacher Workshop was held on November 15 to 21, 2018 The event was organized at Children & Youth Science Center of (CAST), by the China Association for Science and Technology, Ministry of Science and Technology of the People's Republic of China. The maker's camp was aimed to strengthen the cross cultural exchange, promote intentional understanding and inspire innovation in younger children. The venue was Beijing at No.80 Middle School No. 16, Wangjing North Road, Chaoyang District, Beijing, China, Ms. Saman Rauf, Scientific Officer, Research Support also participated in this event as group leader to guide and assist the students in preparation for camp activities including a teachers training session. The opening ceremony was held on 15th Nov 2018 in the Auditorium of Beijing at No.80 Middle School No. 16, Wangjing North Road, Chaoyang District Beijing China, Which was attended by senior officials from Ministry of Science and Technology, China. The students work in the mix groups of students from other countries briefed about 05 different disciplines according to their interest. These students were the part of the groups working on "Bridge Model Design and Making" and the "Intelligent Robot Study and Application" All the students performed with their best abilities during the camp.

2.1.11 Inquiry Based Science Education Programme in Pakistan

Two days capacity building workshop for master trainers (teachers) on Inquiry Based Science Education (IBSE) was organized on 17-18 Sept, 2018 at PSF with collaboration of Federal Directorate of Education and Private School net work (PSN). The training Session was based on Biological Sciences, Physical Sciences and Chemical Science Modules. The training programme was attended by over 33 master trainers from Islamabad and Rawalpindi. Five days teachers training sessions on IBSE was also arranged by Science Caravan, Federal Unit at Murree, Abbottabad, Mansehra and Islamabad. More than 200 teachers and students participated in the workshop.

2.1.12 Memorandum of Understanding for Promotion in Science and Technology

Pakistan Science Foundation is the first scientific organization in the country which in collaboration with Ministry of Science and Technology and National Press Club has instituted the Science Popularization and promotion of science. Two days workshop on organized in 2019 at Quetta.

Pakistan Science Foundation (PSF), being the apex body for science promotion and popularization in the country, is striving for promotion of science among the youth and motivating them towards science education. There are many non-governmental as well as governmental organizations and Individuals/engaged in various activities related to science popularization. Keeping in view, the extraordinary efforts/contributions of the individuals and organizations in the field of science popularization, PSF has initiated the granting of awards to recognize outstanding efforts aimed at popularizing science and technology and promoting scientific attitude among people.

There are many journalists also engaged in various activities related to science popularization and to recognize their outstanding efforts aimed at popularizing science and technology and promoting scientific attitude among people, the Foundation has also initiated Science Journalist Award from the year 2017.

3.0 PAK-US NATURAL SCIENCES LINKAGE PROGRAMME (NSLP) ENDOWMENT FUND

Natural Sciences Linkage Programme (NSLP) Endowment Fund is an important component of Pakistan Science Foundation (PSF) which is aimed at enhancement of agricultural production through effective research. The outcome of this research will benefit the end user by uplifting the life standard and income of the farmers. The Fund is being managed by PSF through Board of Governors (BoG) and Fund Management Committee (FMC). The Chairman, PSF is the Chief Executive of the Programme/Fund.

3.1 Aims and Objectives:

To enhance cooperation among scientists from Pakistan and the United States of America, in areas of significant mutual interest and benefit relating to natural sciences as applicable to agriculture.

To increase the contact and collaboration among scientists and institutions of biological research, development, and higher learning institutes between the two nations.

To provide researchers and institutions with opportunities to exchange information, ideas, skills and techniques.

To enhance opportunities to collaborate in solving problems of common interest relating to natural sciences and to utilize special research and development facilities or opportunities available.

To identify the researchable areas in natural sciences especially agricultural sciences with aim to increase farmers profitability

Research Priority Areas:

Selected priority areas for collaboration may include, but are not limited to; Collection, Evaluation and Exchange of Germplasm, Plant Genomics, Plant Biotechnology, Stress Biology, Bio-Informatics, Application of Information Technology in Agriculture, Identification and Control of Animal/Plant Diseases, Dryland/Sustainable Agricultural Production System; Integrated Pest and Disease Management, Biotechnology, Microbiology, Agribusiness Development, Biophysics, Chemistry, Environment, Energy, Water Resource Management and Climate Change particularly with reference to Agriculture.

Project proposals which highlight main problems of agricultural sector are invited from universities and R&D organizations across the country. Research work is emphasized on the food production & food security issues in Pakistani scenario. Currently 60 projects are being funded in different Universities and R&D organizations around the country under this programme.

Projects are received from researchers throughout the year; they undergo scrutiny and peer review before presenting to the Technical Committee, which comprises of eminent scientists from different specialized areas of agriculture and natural sciences. The target areas of these projects include germplasm screening of different crops, insect and pest management for the disease free crop production, nutrition management of crops and post-harvest technology. All these research issues are vital component of today's agriculture and are imperative in bringing the value added products in the market. Apart from this, many projects from specialized fields of animal sciences are also being funded. These projects include research in genetic screening of different animal breeds, feed technology and milk quality areas. In future, the fund aims to maintain focus on

applied research projects related to Energy, Water resources management, Environment and Climate Change.

3.2 ACTIVITIES AND PROGRAMMES

3.2.1 Research Funding

Research funding is the principal activity of Natural Sciences Linkage Programme (NSLP) efforts are being made to establish linkages between end-users and scientists of different R&D organizations and Universities throughout the country. Projects of applied nature are selected for funding and research proposals received undergo the strict process of scrutiny before the funding. The criteria include the competence of the scientific personnel to carry out the research, institutional capabilities i.e availability of the basic equipment and laboratory facilities, scientific merit of the proposed research proposals and likelihood of completion of proposed research work within the stipulated time and funds requested. The proposals are reviewed by two Pakistani experts along with US experts. The proposals recommended by experts are placed in the relevant subject Technical Committee for technical evaluation and recommendation. Technical Committee on NSLP comprises of the renowned scientists from various fields of agriculture and natural sciences. The proposals recommended by the Technical Committee are then submitted to NSLP Fund Management Committee (FMC) for administrative and budgetary approval before the release of funds.

a) Under process Projects:

During the report period, 444 concept papers remained under consideration of the NSLP. Out of these, 19 projects were presented in two Technical Committee meetings held during the report period. Technical Committee recommended 07 new projects for funding at a total cost of Rs.26.28 million. List of projects recommended for funding during the report period is given in *Annexure VI*.

b) On-going Projects

During the year, there were 41 ongoing research projects and the progress reports of these projects (semiannual, 1st and 2nd annual & final reports) were received. The NSLP staff scrutinized the semiannual reports before releasing of next due installment. Whereas, annual and final reports after initial scrutiny by NSLP team were sent for evaluation to the subject experts to assess the interim progress of the projects before next due installment was released. It is worth mentioning that due installment of the on-going projects are released only if the interim progress of the projects at the end of each year is rated as satisfactory by the subject expert. An amount of Rs.15.15 million was

released on account of due installments of on-going projects. A list of semiannual, annual and final reports is given in *Annexure VII*.

c) On-site Monitoring of NSLP Projects

Natural Sciences Linkage Programme supports the scientific research throughout the country by funding projects of applied nature in different universities and R&D organizations across the country. Technical Progress of these projects is monitored through the Semi Annual and Annual reports. During the year 2017-18, M&E Wing monitored 16 projects being executed at different institution of Rawalpindi, Lahore, Sargodha, Multan, Vehari and Bahawalpur.

The monitoring team discussed the technical and fiscal issues and progress of the projects with the Principal Investigators and observed that all the projects are running smoothly without any major hurdle. Monitoring of the projects helped to improve the research quality for better results and in managing the issues related to management and execution of project. The list of projects monitored is placed at *Annexure-VIII*.

d) Completed Projects

During the year 11 projects were completed. The subject experts evaluated the final technical reports, of the projects which were subsequently placed before the Technical Committee for adoption. The accounts of these projects were settled. Details of the projects along with the scientific output are given below.

Project No	PSF/NSLP/S-SAU (231)
Project Title	Screening of Cotton Germplasm for Viral Resistance Using DNA Molecular Markers
Duration	3-years
Date of initiation	15-05-2013
Date of completion	14-05-2016
Final report received	03.01.2018
Final technical report was adopted in the Technical Committee meeting held on	15.11.2018
Location of project	Department of Biotechnology, Sindh Agriculture University, Tandojam
Principal Investigator	Dr. Aneela Yasmin Assistant Professor
Total Expenditure	Rs.2,550,200/-

Main objectives	<p>To tag the resistance locus in wild cotton genome active against CLCuV by developing specific molecular markers.</p> <p>To identify resistance genes restricting the multiplication of virus in cotton</p> <p>To collect maximum sequence data for the dissection of resistance pattern in cotton against CLCuV.</p>
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Project No	PSF/NSLP/P-UAAR (268)
Project Title	Development of Breed Identification Marker for Pakistani Dairy Cattle Breeds
Duration	3-years
Date of initiation	15-12-2013
Date of completion	14.12.2017
Final report received	25-01-2018
Final technical report adopted in the Technical Committee meeting was held on	15.11.2018
Location of project	Faculty of Veterinary & Animal Sciences, PMAS Arid Agriculture University, Rawalpindi
Principal Investigator	Dr. Muhammad Moaeen-ud-Din Assistant Professor
Total Expenditure	Rs.1,654,562/-
Main objectives	<p>Find breed specific standard molecular markers for genetic identification of individual dairy breeds viz. Sahiwal, Red Sindhi and Cholistani</p> <p>Ascertain their purity for breeding purpose using PCR-RFLP</p>

Project No	PSF/NSLP/P- NIAB (277)
Project Title	Development of Cost Effective and Potential Biocontrol Agents for Area Wide Management of Sucking Pests in Bt Cotton
Duration	3-Years
Date of initiation	29.05.2014
Date of completion	28.05.2017
Final report received	03.04.2018
Final technical report was adopted in the Technical Committee meeting held on	15.11.2018
Location of project	Nuclear Institute for Agriculture & Biology (NIAB) Faisalabad
Principal Investigator	Dr. NaziaSuleman Principal Scientist
Total Expenditure	Rs.1,605,511/-
Main objectives	Development and testing of cost effective technology for production of C. carnea and coccinelid beetles. To develop and optimize a mass rearing system based on artificial diets. Use of nuclear techniques to improve shelf life and storage.

Project No	PSF/NSLP/P-AU (296)
Project Title	Development of Conditioned (Omega-3 rich) Meat and Eggs through Modifications in Feed Ingredients
Duration	3-years
Date of initiation	01.05.2014
Date of completion	30-04-2018 (Project withheld w.e.f. 01.09.2014 to 31.08.2015)

Final report received	05-07-2018
Final technical report was adopted in the Technical Committee meeting held on	15.11.2018
Location of project	National Institute of Food Science & Technology, University of Agriculture, Faisalabad
Principal Investigator	Dr. Muhammad Issa Khan Assistant Professor
Total Expenditure	Rs.2,915,158/-
Main objectives	To develop conditioned meat with the aim improve fatty acids profile To develop omega-3 rich and low cholesterol eggs To assess the shelf stability and quality of omega-3 rich meat and eggs To assess the health impacts of conditioned meat and eggs on human health

Project No	PSF/NSLP/P-UAAR (308)
Project Title	Development of Genetic Evaluation Model for Dhanni Cattle as Potential Beef Cattle in Potohar Region of Punjab
Duration	3-years
Date of initiation	01-09-2014
Date of completion	31.08.2017
Final report received	27-04-2018
Final technical report was adopted in the Technical Committee meeting held on	15.11.2018
Location of project	Faculty of Veterinary and Animal Sciences, PMAS Arid Agriculture University, Rawalpindi

Principal Investigator	Dr. Ghulam Bilal Assistant Professor
Total Expenditure	Rs.1,899,528/-
Main objectives	Estimation of the genetic parameters for birth weight, weaning weight, yearling weight and mother ability in Dhanni cattle Estimation of breeding values/expected progeny differences of bulls and cows (of Dhanni cattle breed) for above mentioned traits

Project No	PSF/NSLP/P- AU (357)
Project Title	Diagnosis of Acaricide Resistance in Ticks of Cattle and Management of Acaricide Resistant Ticks by Using Medicinal Plant Extracts
Duration	3-Years
Date of initiation	01.06.2014
Date of completion	01.06.2017 (Extended till 31.11.2017)
Final report received	12.07.2018
Final technical report was adopted in the Technical Committee meeting held on	15.11.2018
Location of project	Department of Parasitology University of Agriculture, Faisalabad
Principal Investigator	Dr. Zia ud Din Sindhu Assistant Professor
Total Expenditure	Rs.1,965,800/-
Main objectives	Diagnose the ticks for development of cypermethrin resistance and maintainence of tick colony for experimental period <i>In vitro</i> evaluation of selected pakistani plant extracts for their ixodicidal activity against cypermethrin resistnat ticks. Fractionantion of three most effective extracts

	<p>in order to find most effective acaricidal fraction and</p> <p><i>In vivo</i> evaluation of acaricidal activity of top two fractions identified durin <i>in vitro</i> testsstatus, sex-linkage if present, the number of resistance alleles and the biochemical explanation for the resistance phenotype.</p>
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Project No	PSF/NSLP/GB-KIU (478)
Project Title	Assessment of Maize Legume Multiple Intercropping System for Sustainable Production in Gilgit-Baltistan
Duration	3-year
Date of initiation	01.01.2015
Date of completion	31.12.2017
Final report received	08.01.2018
Final technical report was adopted in the Technical Committee meeting held on	15.11.2018
Location of project	Department of Agriculture & Food Technology, Karakoram International University, Gilgit.
Principal Investigator	Dr. Muhammad Arshad Assistant Professor
Total Expenditure	Rs.2,422,183/-
Main objectives	<p>To discover the suitability of legume type with maize in intercropping for increased land productivity, bio diversity and income.</p> <p>To explore suitable temporal adjustment to reduce competition of intercropping legume</p>

	with maize. To optimize the nitrogen inputs for decreased useage of chemical fertilizers and cost of production.
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Project No	PSF/NSLP/B-BUITMES (488)
Project Title	Assessment of Yeast Species Efficacy for the Biological Control of Post Harvest Fungal Diseases of Fresh Fruits of Balochistan
Duration	3-year
Date of initiation	01-01-2015
Date of completion	31-12-2017
Final report received	05-03-2018
Final technical report was adopted in the Technical Committee meeting held on	15.11.2018
Location of project	BUITEMS, Quetta
Principal Investigator	Dr. Muhammad Mushtaq Associate Professor,
Total Expenditure	Rs. 2,481,943/-
Main objectives	To collect samples of fresh fruits such as apple, apricot and cherries from different localities of Baluchistan. Isolation of yeast mycoflora from fruits using standard techniques on culture media. Laboratory screening of antagonistic yeast species. Identification of antagonistic yeasts on the basis of DNA PCR techniques. To determine the <i>In vitro</i> and <i>In vivo</i> specificity / efficacy of antagonistic yeasts as bio-ontrol agents against postharvest fungal

	pathogens / diseases.
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Project No	PSF/NSLP/P-UAAR (543)
Project Title	Developing Various Dimensions of Indigenous Hydroponics System
Duration	3-years
Date of initiation	01-11-2014
Date of completion	31-10-2017
Final report received	03-05-2018
Final technical report was adopted in the Technical Committee meeting held on	15.11.2018
Location of project	PMAS Arid Agriculture University, Rawalpindi
Principal Investigator	Prof. Dr. RaiNiaz Ahmad Vice Chancellor
Total Expenditure	Rs.5,787,884/-
Main objectives	Design and development of low cost indigenous hydroponics greenhouses for commercial agriculture. Investigations into the indigenous growing substrates, nutrient solutions, system designs etc. Development of small scale hydroponics models for livelihood of urban households. Establishment of tissue culture laboratory for preparation / multiplication of virus & disease free vegetable nursery.

Project No	PSF/NSLP/P-US (382)
Project Title	Detection and Innovative Management of Postharvest Disease Incursions in Citrus

Duration	3-years
Date of initiation	01.02.2015
Date of completion	31.01.2018
Final report received	24.04.2018
Final technical report was adopted in the Technical Committee meeting held on	15.11.2018
Location of project	University College of Agriculture Sarghodha
Principal Investigator	Dr. Zafar Iqbal Principal
Total Expenditure	Rs.3,602,639/-
Main objectives	Determine disease position to update existing statistics. Glean an insight into frequency of pathogens. Conduct biochemical assay of diseased and healthy parts. Develop innovative and eco-friendly control approaches to conform to local as well as international needs.

Project No	PSF/NSLP/KP-AU (281)
Project Title	Genetic Engineering of Sugarcane with the Rice Tonoplast H ⁺ PPase Gene to Improve Sucrose Content and Salt Tolerance
Duration	3-years
Date of initiation	01-06-2014
Date of completion	31-05-2017
Final report received	29-06-2018
Final technical report was adopted in the Technical Committee meeting held on	15.11.2018
Location of project	Institute of Biotechnology & Genetic

	Engineering, The University of Agriculture, Peshawar
Principal Investigator	Dr. Sayyar Khan Kazi Assistant Professor
Total Expenditure	Rs.1,842,163/-
Main objectives	<p>Establishment of <i>in vitro</i> culture of sugarcane lines</p> <p>Making the desired construct with the target H⁺-PPase gene from rice</p> <p>Transformation of the already existing better performing sugarcane cultivars with H⁺-PPase gene under the constitutive Ubiquitine promoter and the stress-inducible hox24 promoter</p> <p>Select and analyse at molecular level the transgenic sugarcane lines</p> <p>Explore whether constitutive and stress-inducible expression of H⁺-PPase gene increases the sucrose accumulation by influencing activities of the vacuolar membrane transporters</p> <p>Evaluation of transgenic lines under normal and saline conditions to determine salt tolerance conferred by expression of the H⁺-PPase gene</p> <p>Environmental risk assessment studies of the transgenic lines</p>

3.2.2 Scientific Publications and Patents Produced through NSLP Funded Projects

One of the main achievements and usefulness of any research is the publication or patents of its results in scientific journals. Based upon the results of research projects 05 research papers were published in peer review journals. The details of which are given at *Annexure XI*.

3.2.3 Project Formulation Workshops

A total of 03 Project Formulation Workshops were organized to enhance the capacity of the researchers for writing project proposals. The workshops were organized at the following venues.

- University of Engineering & Technology, Peshawar
- Government Sadiq College for Women University, Bahawalpur
- Pakistan Science Foundation for all S&T Organizations of MoST;
- The workshop enabled and trained 141 researchers and scientists in preparing fund winning project proposals.

3.2.4 Meetings of Fund Management Committee of NSLP

During the year 02 meetings of the Fund Management Committee (FMC) were held on 11.04.2019 and 20.06.2019, respectively to review the financial matters of NSLP. The meetings were chaired by the Chairman, PSF/Chief Executive, NSLP and attended by members of the Fund Management Committee. The FMC approved budgets of 08new projects of worth Rs.32.47 M, recommended by the NSLP Technical Committee.

3.2.5 Meetings of Technical Committee of NSLP

During the year, 02 meetings of the Technical Committee (TC) were held on 15.11.2018 and 29.05.2019, respectively to technically evaluate the projects to be funded. The meeting were chaired by the Chairman, PSF/Chief Executive, NSLP and attended by the renowned scientists related to agriculture and natural sciences. A total of 19 new projects were presented to the Technical Committees out of which 07 projects were recommended for funding.

4.0 Science Talent Farming Scheme (STFS) for Young Students Phase-I, Component-I (Revised)

Development project “Science Talent Farming Scheme (STFS) for Young Students, Phase-I, Component-I (Revised)” was conceived by the Pakistan Science Foundation (PSF). The original PC-I was approved by the CDWP in June 2015, however the PC-I was revised and approved by the CDWP on July 6, 2017 at a total cost of Rs.1,285.361 million for a period of 5 years (December 2015 – December 2020).

4.1 Objectives

Primarily, the project is meant to achieve knowledge based economy through capacity building of the youth, having aptitude towards Science, Technology, Engineering and Mathematics (STEM) education. It is an endeavor to sow a crop of young talented students, who will be groomed to turn

into a full lot of productive scientists through additional interventions likely to be carried out under STFS, in addition to their formal education.

Each year 300 students, passed their SSC/matriculation from pure Government schools are selected to groom them to achieve the highest degrees (up to PhD level) in various scientific disciplines. PSF is undertaking STFS for F.Sc. studies, whereas Higher Education Commission (HEC) is responsible for university level/higher education under STFS, Phase-II.

4.1.1 Implementation Strategy

The project objectives will be achieved through the following processes and activities:

Selection of 300 students, each year, through evaluation by a specialized testing agency e.g. NTS etc. Scientific aptitude test to be conducted in three phases:

Specialized written/screening test

Paper Based IQ Test

Presentation on innovative ideas/Interview

Scholarships @Rs.10,000/- per month, Tuition fee @Rs.10,000/- per year and hostel fee (where applicable) @Rs.10,000/- per year

Research projects to be undertaken by each student under supervision of university teacher/researcher.

Visits to universities and S&T organizations both at national and international levels

Science lectures, Presentations, Film/ Planetarium Shows and Hands on activities through Mobile Science Labs

Interaction with eminent scientists

Participation in Summer Colleges and National Youth Science Forums

Computer/android-based learning through laptops/tablets

Online meetings and Interaction with eminent scientists through Mobile Science Labs

Allocation for the Year 2018-19

Fund allocation for Year 2018-19: 312.254 million

Sr. No	Item Description / PC-I Head	Expenditure in 2018-19
1	ESTABLISHMENT OF National Science School	0
2	Advertisements about STFS and selection of students	2.632
3	Selection / Monetary Benefits for the students	96.251
4	Additional Interventions	0

5	Special Activities of the project	2.0
6	Salaries / Allowances / Honoraria	6.454
7	Strengthening of Mobile Labs, Addition of Working Models	0
8	Transport	0
9	Office Furniture/Equipment and other facilities for the Project Management Unit	2.290
10	Contingencies including POL and other Misc expenses	0.648
	Total	110.275

4.1.2 Achievements

(a) Selection of STFS 4th batch

For selection of 300 students for STFS 4th batch, as per directives of Ministry of Science and Technology, the services of Candidates Testing Service (CTS) were hired through open bidding process, which conducted the scientific aptitude test combined with IQ test in 06.01.2019. Afterwards interviews were conducted by PSF all over the country in March-April, 2019. The formula approved by MoST for final selection is described below;

Matric (9 th & 10 th combined)	Scientific Aptitude Test	IQ Test	Interview/Presentation on Scientific Ideas	Total
30%	40%	20%	10%	100%

Accordingly, a provisional merit list of 300 successful candidates was prepared and placed before a “Scrutiny Committee” for final selection. The “Scrutiny Committee” finalized a list of 300 students after verification of their educational certificates and other documents viz., SSC certificate, B-form, domicile etc.

Details regarding distribution of students are given below;

Total seats: 300

BISE position holders(10%) seats = 30

Quota wise distribution of remaining seats (300-30 = 270)

4.1.3 Monetary Benefits for the students

Selection of 4 batches of STFS (1200 total) has been completed. Monetary benefits i.e., scholarships and tuition fee for 2 years to 1st, 2nd and 3rd batch completed.

4.1.4 Selection of Universities and Research Supervisors/mentors for undertaking research projects of STFS students

As per approved PC-I, the STFS students have to undertake research projects under the mentorship of universities teachers/professors. The STFS students will use the labs and other facilities of selected universities and S&T/academic institutions nearby their areas. In this regard 36 mentors were to be selected for mentorship of students.

Payment @Rs. 1.0 million each to 02 newly selected universities (University of Blochistan and Islamia University of Bahawalpur) on account of financial assistance for undertaking research projects of STFS students was made. In addition, honorarium @Rs.100,000 on account of mentorship of STFS students to 22 newly selected/replaced mentors was paid.

4.1.5 Research Projects of STFS Students

Undertaking research projects by STFS students, under university teachers is an important activity of the project. In this regard, 36 university teachers were approved as mentors from nine universities from all over the Pakistan. Subsequently, students of 1st and 2nd batches were completed their research projects and submitted their reports in the form of posters. The research projects by 3rd batch students are in progress. So far, more than 140 research reports/posters were been received from students of 1st, 2nd and 3rd batch.

4.1.6 Payment to Advertisement Agencies

In connection with selection of STFS students, tenders for procurement of different items, i.e., hiring of travel agencies, and Request for Proposals (RFPs), a number of advertisements/tenders were floated in the national press through PSF designated advertising agencies. In this regard, the agencies submitted their bills, duly verified from the Press Information Department (PID) for payment.

Accordingly, as per PID quota policy, payments were made to following 05 agencies; the Public Procurement Regulatory Authority, M/S TNI Communications, Islamabad, M/S Interlink Advertising (Pvt) Ltd, Islamabad, the Circle Agency (Pvt) Ltd, Islamabad, and M/S Maxim Advertising Company (Pvt) Ltd, Islamabad.

4.1.7 Purchase Of office Equipment

As per approved PC-I, there is provision of some office equipment and furniture. Therefore, some new office equipment i.e. electric water cooler, oven and refrigerator were purchased for PMU-STFS.

5.0 INTERNATIONAL LIAISON

PSF has the mandate to liaise with similar international bodies across the globe and is in active collaboration with many similar International bodies. In the prevalent global scenario, the importance of international collaborations has become vital for the technological developments and advancement of knowledge. Therefore, PSF has re-vitalized its international collaborations and embarked upon new linkages to harness potential of technologically advanced nations like China, Turkey, Iran and Sri Lanka. In addition to this PSF regularly plays role as a facilitator to link various international organizations/ universities with local universities and research institutions. Delegates from the reputed universities and similar collaborating bodies regularly hold meetings with PSF to discuss the areas of joint collaboration.

Over the years, PSF has established cordial bilateral relations with various international bodies to synergize efforts for achieving technological excellence and socioeconomic well-being of the people at large. Joint research projects are already ongoing with The National Natural Science Foundation of China (NSFC); Scientific and Technological Research Council of Turkey (TÜBITAK); Ministry of Science, Research and Technology (MSRT), Iran and National Science Foundation, Sri Lanka.

During the report period, third call of proposals with National Natural Science Foundation of China, NSFC was launched. In addition to this, five joint projects with Scientific and Technological Research Council of Turkey (TÜBITAK), Turkey, 08 joint projects with Ministry of Science, Research and Technology, Iran and 06 projects with National Science Foundation (NSF), Sri Lanka are also initiated under “International Matching Grants”. During 2018-19, a total of 360 research proposals received under bilateral calls with China, Turkey and Iran remained under active consideration.

During the report period, 43 projects remained ongoing under first call with NSFC, TUBITAK, SF, Sri Lanka and MSRT. A total 30 technical reports (semi-annual and annual) of ongoing projects were received and an amount of Rs. 35.5 million was released on account of due installment of already ongoing projects and first installment of newly initiated projects.

Chairman, PSF had various meetings with international counter parts to further expand the PSF activities at international scale. Delegates of TUBITAK and NSF-Sri Lanka visited PSF to chalk out the areas of joint collaboration.

5.1 Joint Research, Bilateral Projects, and Calls

5.1.1 PSF-NSFC, China joint call for proposals

During the year 2018-19, third call of proposals with National Natural Science Foundation of China, NSFC was launched between 11.09.2018 and 30.11.2018 under the discipline of “Agriculture & Biotechnology. A total 168 proposals were received at PSF-NSFC. 26 projects awarded under first and second calls remained ongoing in different universities/S&T organizations across the country.

5.1.2 PSF-TUBITAK, Joint Call for Proposals

Ten new proposals were selected for funding by technical Committee between PSF-The Scientific and Technological Research Council of Turkey (TUBITAK), Turkey held on 29.05.2019 (**Annexure-V111**). Five projects awarded under first with TUBITAK are ongoing in different universities/S&T organizations across the country.

5.1.3 PSF-MSRT joint call for proposals

After three tier review process, 10 new proposals were selected for funding by technical Committee between Ministry of Science, Research and Technology (MSRT), Iran held on 23.01.2019 (**Annexure-XIII**). While on other side, 08 projects awarded under first call are ongoing in different universities/S&T organizations across the country.

5.1.4 Call for Joint Proposals with Sri Lanka

06 projects with National Science Foundation (NSF), Sri Lanka initiated under International Matching Grants” and their first installments were released.

6.0 PLANNING AND DEVELOPMENT

6.1 Activities under Development Budget:

6.1.1 On-going Development Project:

a) Science Talent Farming Scheme (STFS) for Young Students Phase-II (Component-I)

An amount of Rs. 110.275 million was utilized under the on-going development project titled “Science Talent Farming Scheme (STFS) for Young Students Phase-I (Component-I)”. Funds were utilized for the monetary benefits and the additional interventions designed for the students.

b) Financial Support to Scientific Societies in Pakistan (Phase-II)

The project proposes to strengthen the role of Scientific Societies in Pakistan by providing them financial assistance for:

- Holding National and International Conferences, Seminars, Workshops, Lectures on important scientific topics

- Publication of Scientific Journals / Periodicals
- Development of Linkages with their Counterpart Societies in advanced countries and to remain updated in the contemporary Science and Technology.

The long term objective of the project is to strengthen the scientific/research base and to develop a culture of science in society which would ultimately result in development of Science & Technology in the country.

During the year 2018-19, an amount of Rs. **8.326** million was utilized under the PSDP project and spent mainly for provision of financial assistance to the registered Scientific Societies for undertaking their regular scientific activities. In this regard, Grant-in Aid provided to following sixteen (16) registered Scientific Societies.

- Pakistan Society for Biochemistry and Molecular Biology
- Pakistan Physiological Society
- Islamic Society of Statistical Sciences
- Soil Science Society of Pakistan
- Pakistan Academy of Engineering
- Pakistan Society of Nematologists
- The Biological Society of Pakistan
- Pakistan Nuclear Society
- Society of Economic Geologists and Mineral Technologists (SEGMITE)
- The Zoological Society of Pakistan
- Pakistan Vacuum Society
- Pakistan Thalassaemia Welfare Society
- Weed Science Society of Pakistan
- Chemical Society of Pakistan
- Pakistan Botanical Society
- Pakistan Association for the Advancement of Science

The request received from the societies were considered in the 04 meetings of the Committee constituted in the approved development project. The meetings were held on **30th October 2018, 12th February, 16th May and 18th June 2019**. Following activities were undertaken by the societies,

Seventeen International / National Science Conferences / Workshops / Seminars organized (**Annex-XIII**).

Forty Six issues of 11 Scientific Journals were published (**Annex-XIV**).

Linkages Fee paid to 05 International Federations.

(c) Achievements:

Selection of STFS 4th Batch:

For selection of 300 students for STFS 4th batch, as per directives of Ministry of Science and Technology, the services of Candidates Testing Service (CTS) were hired through open bidding process, which conducted the scientific aptitude test combined with IQ test in 06.01.2019. Afterwards interviews were conducted by PSF all over the country in March-April, 2019. The formula approved by MoST for final selection is described below;

Matric (9th & 10th combined)	Scientific Aptitude Test	IQ Test	Interview/Presentation on Scientific Ideas	Total
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Accordingly, a provisional merit list of 300 successful candidates was prepared and placed before a “Scrutiny Committee” for final selection. The “Scrutiny Committee” finalized a list of 300 students after verification of their educational certificates and other documents viz., SSC certificate, B-form, domicile etc.

Details regarding distribution of students are given below.

Total seats: 300

BISE position holders (10%) seats = 30

Quota wise distribution of remaining seats (300-30 = 270)

Details of quota wise distribution of seats (270)

No. of students	Merit	Punjab/Is lamabad	Sindh		KPK	Balochistan	GB/FA TA	AJK	Total
%age	7.5%	50%	19%		11.5%	6%	4%	2%	100%
270	20.25 (21)	135	*51.3 (51)		31.05 (31)	16.2 (16)	10.8 (11)	5.4 (5)	270
			31(R)	20 (U)					

6.2 Activities under Non-Development Budget

Provision of Travel Grants, Compilation of reports, presentations/comments on various S&T documents and replies to the National Assembly / Senate Questions.

6.2.1 Provision of Travel Grants

During the year 2018-19, an amount of Rs. **5.0** million was allocated / released and spent mainly for provision of travel grants to scientists/technologists/ other heads of the project. A total of **264** requests were received from scientists and technologists of the country. After comprehensive scrutiny as per eligibility criteria **156** requests were presented in **10** meetings of Travel Grant Award Committee (TGAC). A total of **108** requests were dropped due to non-confirmation to the eligibility criteria and non-provision of requisite documents by the scientists. Out of the **156** requests presented to the TGAC, **69** were recommended whereas **35** scientists/technologists availed the grant and **34** could not proceed abroad due to visa problems and other reasons. However, **87** requests were not recommended by the Committee.

6.2.2 Submission of Important Reports to MoST/ Planning Commission

Fixing of Targets and Submission of Regular Report on Achievements of the organizations

Monthly Progress Report (Short Term and Long-Term Targets/Action Plan)

Monthly Progress Report on the prescribed proforma from organizations of MoST

Implementation of the Project titled “Prime Minister Programme for Development of Ph.Ds in Science & Technology”

Full Year Review of PSDP 2017-18 (July 2017-June 2018)

First Quarter Review of PSDP 2018-19 (July 2018-September 2018)

Mid-Year Review of PSDP 2018-19 (July-December 2018)

6.2.3 Replies to the National Assembly/ Senate Questions/ Standing Committees

Admitted List No.1 of Motions under Rule 259 of the Rules of Procedure and conduct of Business in the National Assembly 2007

Minutes of The Meeting of Senate Standing Committee on Science & Technology held on 14th March, 2019 at 11:00 a.m. In the Committee Room No. 1 Parliament House, Islamabad

Meeting of the Senate Standing Committee on Science & Technology scheduled held on 3rd May, 2019 at 2:30 p.m. in Seminar-II room, Pakistan Institute of Parliamentary Services, Ataturk Avenue, Islamabad.

Recommendations / Decisions of the National Assembly Standing Committee on Science and Technology made in its meeting held on 15-05-2019 at 11:00 am in PCSIR, Islamabad.

6.3 New Development Project submitted to MoST:

PC-I of following PSDP projects were submitted to MoST for the consideration/approval of DDWP / CDWP forum.

(Rs in Million)

Project Title	Duration	Amount
Up-gradation, Renovation and Improvement of Existing Infrastructure and Facilities of PMNH Islamabad	24 months	172.65
Development of National Digital Archive of Research published in Pakistani Journals	24 months	58.299
Completion of Pakistan Museum of Natural History (PMNH) Building, Islamabad and Up-gradation, Renovation and Improvement of its existing Infrastructure and Facilities	24 months	1369.49
Establishment of PSF Science Centre at Lasbela, Balochistan	24 months	333.397

**II. PAKISTAN SCIENTIFIC AND TECHNOLOGICAL
INFORMATION CENTRE (PASTIC)**

II. PAKISTAN SCIENTIFIC AND TECHNOLOGICAL INFORMATION CENTRE (PASTIC)

PASTIC is an ISO 9001: 2000 Certified S&T Information Provider and is the oldest organization in the field of S&T information management and dissemination serving as a gateway for access to and delivery of global S&T information. It caters to the information needs of the researchers in all areas of Science and Technology as well as social sciences. Users of PASTIC services include researchers, academicians, scientists, engineers, entrepreneurs & the industry.

PASTIC National Centre is housed in its own building at Quaid-e-Azam University Campus, Islamabad with comprehensive information resources in different fields of Science and Technology. Its six Sub-Centres are working in different cities viz. Karachi, Lahore, Peshawar, Quetta, Faisalabad and Muzaffarabad all have access to global information resources for dissemination of information to their users. The total sanctioned strength of PASTIC is 147 including Scientific, Technical and Administrative Staff including the sub-centers.

Major achievements and initiatives taken during 2018-19 are summarized below:

Bibliographic & Document Supply Service: 54819 S&T documents and 4804 bibliographies in digital form were supplied to 4609 R&D workers on their request.

Abstracting and indexing service: 10577 abstracts were processed for import into the PSA database.

National Science Reference Library: 13163 users visited PASTIC library for getting references, reading, photocopying, internet browsing and web searching. Besides, the library received 174 issues of national and international journals in exchange and on gratis basis. 12 issues of Fresh Arrivals of PASTIC library published online as well as in print form and distributed among the members. The Library was renovated to improve ambience and affectivity of library services.

Reprographic Services: 157 printing jobs from 08 R&D organizations were completed.

Technology Information Service: 6 online issues of “Technology Roundup”, a bimonthly Trade and Technology news e-bulletin and 05 UIP Seminars/workshops has been arranged.

Awareness and Promotion of PASTIC Services: 20 stalls and 46 awareness seminars at various departments of universities across the country through sub-centres were organized.

Capacity/skill Development of Researchers & Entrepreneurs: 47 workshops on various themes such as PASTIC Information Services, Searching Techniques, Library Management, Information Literacy Skills, Strengthening Innovative Library Leaders, Plagiarism, Easy Way of Library Automation & Digitalization, Intellectual Property Rights, Health Awareness, KOHA, Research Tools and Techniques / Citation Management (SPSS, Endnote, Mendeley, etc.), Open

Source Technologies in Libraries, Bio-safety Practices, Leadership Communication and Innovation Skills for Information Professionals, Next Generation Sequencing Data Analysis, Library Automation by using Integrated library system software ILS Koha, Radio Frequency Identification (RFID), Developing Lab Bio-Safety Culture, Advance skills in Thesis Writing, Modern Trend in Library & Information Science Research, Literature Searching and Organizing using Emerging Technologies, Data Analysis through STATA Software, Synopsis & Thesis Writing, Strengthening Library Professionals through Enhancing Technical and Soft Skills were organized.

International Liaison: PASTIC has been designated as National Focal Point of UNESCO IFAP National Committee (UNESCO Information for All Programme IFAP). PASTIC is also executing SAARC Development Fund (SDF) funded Project “Networking of Women Entrepreneurs (SMEs) from SAARC Countries”. PASTIC has also been the national distributor of UNESCO developed library management software “WINISIS”. During the year, a total number of 17772 users/researchers were served through various PASTIC S&T Information services while 3006 researchers were trained.

1.0 Aims and Objectives:

- Development of a National S&T/R&D Information Repository of indigenous information resources (databases)
- S&T/R&D information dissemination through contemporary reference information tools
- Strengthen National Science Reference Library for resource sharing & Inter-library collaborations (consortium) and empowerment of information professionals.
- Promotion of R&D based industrial development
- Facilitate printing of S&T/R&D Publications
- Capacity/skill development of researchers & entrepreneurs
- Develop collaborations with national and international information networks

2.0 Activities and Services

PASTIC is a national multidisciplinary S&T Information Centre. It procure, process and preserve national scientific, technological and industrial information for catering the S&T information needs of R&D and industrial community through anticipatory and responsive Information Services leading to sustainable socio-economic development in the country.

The Services provided and activities undertaken during the period, July 2018 to June 2019 are described below:

2.1 Bibliographic Information & Document Supply Service

This service promotes local Research and Development (R&D) among young scientists/researchers/engineers, technologists, faculty members, R&D workers and & industry people. Under this service, copies of Research Articles (Abstracts/Full text) Reports, Conference Papers, Books or Book-chapters etc. published locally or abroad are provided free of cost and within no time to the clients. Documents and bibliographies are supplied through email service for quick delivery and minimized delays.

For acquisition of documents from within the country, the Union Catalogue of the S&T libraries of Pakistan compiled by PASTIC, resources of LEJ-HEJ and HEC were mainly used.

PASTIC has access to all countrywide digital resources such as:

HEC Digital Library Resources

Wiley-Blackwell Journals	IMF Ebrary
Taylor & Francis Journals	E-brary
Springerlinks	University of Chicago press
ASTM	OVID
Springer E-Books (2005-2007)	INFORMS

LEJ Resources, Karachi (Under MoU)

- Institute of Electrical and Electronics Engineers (IEEE)
- American Chemical Society (ACS)
- Nature Publishing
- Jstor
- Springerlink
- Taylor & Francis Journals
- Wiley - Blackwell Journals
- Elsevier (Science Direct)
- Emerald
- ISI Web of Knowledge
- Science Finder

HEC licensed databases through VPN

PASTIC has also access to HEC subscribed databases through VPN which are as under:

- All disciplines of Science Direct
- Web of Knowledge
- IEEE

Under the Bibliographic Information & Document Supply Service, 54819 S&T documents and 4804 bibliographies in digital form were supplied to 4609 R&D workers, on users' request during the year 2018-19.

2.2 Abstracting and Indexing Service

PASTIC has been providing abstracting and indexing service by compiling abstracts of research articles published in Pakistani Journals and Conference proceedings under the title of "Pakistan Science Abstracts" in different scientific disciplines, which serves as a secondary information resource to give support to research and development activities in the country. Earlier it was published in the form of a printed secondary journal with detailed author and keyword index. Since 2011, an online database application has been developed for its wider use.

During the period under consideration, 10577 abstracts were processed for import into the database.

2.3 Publications

Pakistan Journal of Computer Sciences & Information System (PJCIS): PJCIS is a peer reviewed biannual journal of Computer Science and Engineering published by PASTIC. It is an open access online journal published twice a year. The mission of the journal is to provide a forum for researchers to debate and discuss interdisciplinary issues in Computer Science, Computer System Engineering and Information Systems. It invites and welcomes contributions in all areas of Computer Science, Computer System Engineering and Information Systems.

During the period, PJCIS Vol.2, Issue 2 was published online.

Abstract book/Conference Proceeding: PASTIC collaborates with S & T /R & D institutions by publishing Abstract Book/Proceeding of Conferences organized. During current period Abstract Book of 4th Conference on SPI was published.

Technology Roundup: A bimonthly Trade and Technology news bulletin entitled "Technology Roundup" was regularly published and six issues of this news bulletin were brought out online.

2.4 Technology Information Service

This service is meant for dissemination of Technological Information Services to R&D Workers, Engineers, Entrepreneurs, SMEs and the Industrialists. The aim is to facilitate growth, potential and competitiveness among SMEs at national and international level, build effective coordination between R&D Sector and Industry for enhancing innovations, competitiveness and development & promotion of indigenous technologies.

During 2018-19, 6 online issues of “Technology Roundup” and 05 UIP Seminars/workshops has been arranged.

2.5 PASTIC National Science Reference Library Service

The National Science Reference Library is located at the PASTIC National Centre. The library serves the information needs of the research scholars and others seeking scientific literature. PASTIC Library is equipped with both Print and Electronic information resources. It has a collection of more than 8000 books; 900 titles of journals (300 journals regular among them) and approximately 5000 miscellaneous documents such as reference material/secondary sources, encyclopedias, government documents, conferences/seminars proceedings, etc. Automation of the library is underway. The HEC Digital library is also accessible at PASTIC. The library also organizes capacity building programmes in the area of Library & Information Management, Library Automation, Digital Library, Soft Skills for Librarians, Information Literacy, etc.

Main services are:

- Reference & Referral Services
- Reader Service
- Journal Listings
- Photocopying & Scanning Services
- Free WIFI access

During 2018-19, 13163 users/researchers visited PASTIC library for reference purpose, reading, photocopying and internet browsing. Besides, the library received 174 issues of different national and international journals, 28 miscellaneous documents, reports, etc. All this library material was processed and shelved for use. 12 issues of the library bulletin “Fresh Arrivals” of PASTIC library were regularly published on monthly basis during the period under review and distributed among relevant circles. The same was regularly uploaded on PASTIC website. The Library has also been renovated during the current financial year for providing a better environment to the library users for study, consultation and internet facility for web surfing.

2.6 Reprographic Service

PASTIC Reprographic Section has facilities for composing, designing, plate making, offset printing, binding etc. for Printing of books, Pamphlets, Brochures, Journals, Newsletters, Cards, Folders etc. These facilities are not only used for printing of PASTIC publications but are also extended to all other S&T and R&D Organizations. The Unit is equipped with:

- Offset Printing Machines
- Printing Down Frame
- Cutting Machine
- Stitching Machine
- Creasing Machine
- Dark Room Camera
- Latest Computers/Printers

During the year 2018-19, 157 printing jobs were carried out for 30 R&D organizations.

2.7 IT Support Service

PASTIC has a well-equipped IT section with a dedicated team of IT professionals working hard to enhance the IT infrastructure for strengthening and effective delivery of its services. PASTIC IT section also provide their expertise to PSF and PMNH website updation activities on request.

During the year 2018-19, following activities were undertaken by the IT team of PASTIC:

2.8 New Software Application Development

Launched **Learning Management System (LMS)** at PSF along with video content development and uploading under STFS project.

Launched **National Library Automation software solution** (300 plus libraries) through cloud infrastructure initiative to promote Library consortium toward information sharing among S&T Libraries of Pakistan.

Compiled and Launched **National Information portal** of R&D equipment/services available with scientific organizations for resource sharing.

Launched **online Journal Management System** for PASTIC journal entitled “Pakistan Journal of Computer and Information Systems (PJCIS)” through OJS application system

Launched **digital archive application (Dspace)** for digitization of material available in PASTIC National Library.

2.9 Databases developed/Updated:

- Conferences / Workshops / Seminars / Proceedings of Pakistan
- S&T and R&D Projects (Ongoing/Completed) of Pakistan (3405 records)
- Research Material available in Pakistani libraries(UCAT)
- S&T and R&D organizations/Institutions of Pakistan
- Books available in Pakistani libraries (Union OPAC)
- Commercializable Pakistani Products (Indigenous)
- Scientific Books Published by Pakistani Authors(10235 records)
- Industrial Problems & Solutions of Pakistan
- Scientific Societies/Associations of Pakistan
- Pharmaceutical Companies across Pakistan
- Publications (Climate Change) of Pakistan
- Industrial Linkages (Local & International)
- Publications (Energy related) of Pakistan
- Industry-Academia Linkages of Pakistan
- Universities/Institutes of Pakistan
- Foreign Industries in Pakistan
- S&T libraries of Pakistan
- Pakistani Scientists(2786 records)
- Pakistani Industry
- Chambers of Commerce of Pakistan
- Industrial Associations of Pakistan
- Offices of Research, Innovation and Commercialization (ORIC) of Pakistani Universities
- Overseas Investors of Industry and Commerce in Pakistan
- University-Industry Linkages
- Industrial issues

2.10 International Liaison

PASTIC has been designated as National Focal Point of UNESCO IFAP National Committee (UNESCO Information for All Programme IFAP), PASTIC is executing SAARC Development Fund (SDF) funded Project “Networking of Women Entrepreneurs (SMEs) from SAARC Countries”. PASTIC has also been the national distributor of UNESCO developed library management software

“WINISIS”. A proposal is prepared for cooperation in information science and digital environment strategies between Pakistan and Thailand and is under consideration by both the governments.

2.11 Newsletters and Reports

PASTIC Monthly Newsletters were compiled, edited and uploaded at PASTIC website.

- Monthly action plans / target reports were compiled.
- Quarterly reports were compiled.
- Yearbook Report 2017-18 was compiled.
- Annual Report 2017-18 was compiled.
- Minutes of Monthly Review Meetings January and March 2019 were compiled.
- Monthly Progress Reports of PASTIC for MoST were prepared.

3.0 PASTIC Services Awareness Seminars/Stalls

In order to publicize PASTIC Services& activities, PASTIC service awareness seminars and stalls were organized at universities’ various departments regularly. Through this activity, PASTIC services are brought to the doorsteps of the researchers. As a result, a large number of new research scholars and faculty members have come to know about PASTIC information services.

During the year, following Seminars/stalls have been organized:

3.1 Seminars

Title	Date	Venue
PSC FAISALABAD		
PASTIC Awareness Seminar	October 5, 2018	AARI, Faisalabad
Awareness Seminar	October 18, 2018	Faculty of Agriculture UAF
PASTIC Awareness Seminar	October 19, 2018	Faculty of Agricultural Engineering. & Technology University of Agriculture Faisalabad
PASTIC Awareness Seminar	October 30, 2018	NIBGE, Faisalabad
PASTIC Services Awareness Seminar	November 7, 2018	NIAB Faisalabad
PASTIC awareness	November 23, 2018	NTU Library Faisalabad

seminar		
PASTIC Awareness seminar	December 21, 2018	Govt College University Faisalabad
PASTIC Services Awareness Seminar	January 17, 2019	Department of Mathematics & Statistics, University of Agriculture Faisalabad
PNC ISLAMABAD		
PASTIC Services Awareness Seminar	October 19, 2018	Defense & Strategic Studies Department, QAU Islamabad
PASTIC Services Awareness Seminar	October 22, 2018	Animal Sciences Department, QAU, Islamabad
PASTIC Services Awareness Seminar	October 24, 2018	Chemistry Department, QAU Islamabad
PASTIC Services Awareness Seminar	October 26, 2018	Fatima Jinnah Women University Rawalpindi
Awareness Seminar	November 06, 2018	Bioinformatics Department, QAU Islamabad
Awareness Seminar	November 7, 2018	Environmental Sciences Department, QAU Islamabad
Awareness Seminar	October 24, 2018	Chemistry Department, QAU Islamabad,
Awareness Seminar	November 14, 2018	Electronics Department QAU Islamabad
Awareness Seminar	March 3, 2018	PNC Islamabad
PSC KARACHI		
PASTIC Services Awareness Seminar	August 30, 2018	University of Sindh, Thatta Campus.
PASTIC S&T awareness Seminar	September 24, 2018	University of Sindh, Laar Campus, Badin
PASTIC S&T awareness Seminar	September 25, 2018	Shaheed Benazir Bhutto University of Veterinary & Animal Sciences, Sakrand

PASTIC S&T awareness Seminar	October 8, 2018	Mohtarma Benazir Bhutto Shaheed Campus Dadu University of Sindh.
PASTIC S&T awareness Seminar	October 9, 2018	Shaheed Zulfiqar Ali Bhutto Agriculture College, Dokri.
PASTIC S&T awareness Seminar	October 11, 2018	University of Sindh, Campus Larkana
PASTIC S&T awareness seminar	October 12, 2018	Shah Abdul Latif University, Campus Shahdatkot
PASTIC S&T awareness Seminar	March 11, 2019	Syed Allahndo Shah Sindh University Campus, Naushehro Feroz
PASTIC S&T Awareness Seminar	March 12, 2019	Institute of Chemistry, Shah Abdul Latif University, Khairpur
PASTIC S&T Awareness Seminar	March 13, 2019	Department of Zoology, Shah Abdul Latif University, Khairpur
PASTIC S&T Awareness Seminar	March 14, 2019	Shah Abdul Latif University Ghotki Campus
PSC LAHORE		
PASTIC Services Awareness Seminar	October 5, 2018	Institute of Agricultural Sciences, University of the Punjab
PASTIC Services Awareness Seminar	October 11, 2018	Centre of Excellence in Molecular Biology (CEMB)
PASTIC Services Awareness Seminar	October 24, 2018	Civil Engineering Department, UET Lahore
Awareness Seminar	November 7, 2018	UET Lahore
Awareness Seminar	November 14, 2018	Chemical Engineering Department, UET Lahore
Awareness Seminar	December 5th 2018	Mechatronics & Control Engineering Department, UET Lahore
Awareness Seminar	March 12th, 2019	University of Lahore
PSC PESHAWAR		
Awareness Seminar	November 15, 2018	NIFA Peshawar
Awareness Seminar	November 19, 2018	Islamia College Peshawar

Awareness Seminar, titled: PASTIC S&T Services for young Researchers	December 07, 2018	Zoology Department, University of Peshawar
Awareness Seminar during two days workshop: Modern Trend in Library & Information Science Research	December 14, 2018	University of Peshawar
Seminar on PASTIC S&T services	February 2019	Department of Soil and Environmental Sciences, The Agriculture University Peshawar.
Seminar on PASTIC (S&T) services	April 2019	Centre of Biotechnology & Microbiology, The University of Peshawar
PSC QUETTA		
PASTIC Awareness Seminar	October 2, 2018	Balochistan Study Center, University of Balochistan, Quetta

3.2 Pastic Services Stalls

S.#	Date	Venue
PSC FAISALABAD		
1.	18.10.18	Faculty of Agri. Eng.,UAF Faisalabad
2.	19.10.18	Faculty of Agri. Eng.,UAF Faisalabad
3.	30.10.18	NIBGE Faisalabad
4.	07.11.18	NIAB Faisalabad
5.	16.11.18	NIFSAT UAF Faisalabad
6.	23.11.18	NTU Library Faisalabad
7.	21.12.18	GCU Faisalabad
8.	17.01.19	Department of Mathematics & Statistics, UAF Faisalabad
9.	22.01.19	Faculty of Agriculture,UAF Faisalabad
10.	23.01.19	Faculty of Agriculture,UAF Faisalabad

PSC KARACHI		
1.	19.12.18	University of Karachi
2.	26.03.19	Faculty of Pharmacy, Hamdard University, Karachi
PSC LAHORE		
1.	24-25.10.18	4th SPI Conference
2.	11-12.04.19	PCSIR Laboratories Complex, Lahore, during Conference cum Expo.
PSC MUZAFFARABAD		
1.	10.12.18	University of AJ&K Muzaffarabad
2.	19.10.18	Department of Zoology, University of AJ&K Muzaffarabad
PSC PESHAWAR		
1.	18.10.18	Agriculture University of Peshawar
2.	24,25.10.18	UET Peshawar
3.	15.11.18	NIFA Peshawar
4.	19.11.18	Islamia College Peshawar
5.	22.11.18	CECOSE University Peshawar
6.	07.12.18	Zoology Department, Peshawar University
7.	14.12.18	Peshawar University
8.	17.01.19	Peshawar University
9.	13.02.19	Agriculture University of Peshawar
10.	25.03.19	Agriculture University of Peshawar
11.	23.04.19	Islamia College Peshawar
12.	02,03.05.19	Hazara University Mansehra
PSC QUETTA		
1.	04.10.18	Balochistan Study Center, UoB, Quetta
2.	10.10.18	Chemistry Department, UoB, Quetta
3.	25.10.18	Institute of Management Sciences, UoB, Quetta
4.	15.11.18	Zoology Department, UoB, Quetta
5.	17.11.18	Pharmacy Department, UoB, Quetta
6.	29.11.18	CASVAB Department, UoB, Quetta
7.	04.12.18	Arts Gallery, UoB, Quetta
8.	21.03.19	Chemistry Department, Sardar Bahadur Khan Women's

		University, Quetta
9.	20.05.19	Institute of Public Health Department, Govt: of Balochistan, Quetta

4.0 Human Resource Development

Another important activity of PASTIC is to impart training to information professionals and researchers through workshops / seminars on topics such As Computer Applications for Library Automation, Information Management, Searching Techniques, Research Tools & Techniques, IPRs, etc. In addition, PASTIC also organizes Awareness Seminars about PASTIC Services. In this regard, following 70 training workshops / seminars were organized.

4.1 Trainings/Workshops/Seminars/Symposia/ Meetings Organized

Title	Timings	Venue	Organized by
PSC-FAISALABAD			
Training workshop on SPSS Software	August 16-17, 2018	NTU, Faisalabad	PSC-Faisalabad
Seminar on Leadership, Communication, and Innovation Skills for Information Professionals	September 29, 2018	E-Library	PSC Faisalabad
Training workshop on Library Automation by using KOHA ILS	September 26-28, 2018	Islamia University of Bahawalpur	PSC-Faisalabad,PNC
Seminar on Capacity Building of Young Scientists on Communication Science to Society	October 05, 2018	AARI	PSC-Faisalabad
20 th training workshop on “Make your research life easier with Mendeley	November 1-2, 2018	Women University, Mattital Campus,	PSC-Faisalabad,PNC Islamabad

Tool”		Multan	
Seminar/workshop on Literature Searching and Organizing Using Emerging Technologies	December 7, 2018	Ghazi University	PSC Faisalabad ORIC, Ghazi University, D.G. Khan
Seminar on “Resource Sharing and Networking: Needs of Librarians and Libraries of 21 st Century”	April 13, 2019	e-Library	PASTIC e-Library Faisalabad & Society of Reading and Knowledge
Workshop on “Integrating emerging ICT tools with Agriculture Research in 21st Century”	May 15-16, 2019	University of Balochistan	PSC Faisalabad
A grand meeting/one day Seminar under Consortium “Networking of S&T and R&D Libraries of Faisalabad” and “launching PASTIC cloud KOHA free library automation software in Faisalabad”	June 21, 2019	Agriculture University, Faisalabad	Agriculture University, Faisalabad
PNC ISLAMABAD			
Training workshop	July 27-28, 2018	PNC Islamabad	PNC, PLWO
Training workshop on Make Your Research Life Easier with Mendeley Tool	July 18-19, 2018	PNC Islamabad	PNC Islamabad
Training workshop on Research Tools and	July 10-12, 2018	PNC Islamabad	PNC Islamabad

Techniques (SPSS)			
Training workshop on Research Tools and Techniques (SPSS), Advance Level	August 1-3, 2018	PNC Islamabad	PNC Islamabad
Lecture on Electronic-Filing of Tax Returns by Tax E-filing expert, Advocate Mr. Faraz Fazal Sheikh	September 19 th , 2018	PNC Islamabad	PNC Islamabad
Training workshop on Research Tools and Techniques (SPSS)	September 11-13, 2018	PNC Islamabad	PNC Islamabad
Training workshop on “Make Your Research Life Easier with Mendeley Tool”	October 24-25, 2018	PNC Islamabad	PNC Islamabad
Training workshop on “Next Generation Sequencing Data Analysis”	November 14-16, 2018	PNC Islamabad	PASTIC, NGS-Pakistan
Training workshop on “Research Tools and Techniques (SPSS)”	January 29-31, 2019	PNC Islamabad	PNC Islamabad.
Training workshop on “Research Tools and Techniques (SPSS)”.	February 26-28, 2019	PNC Islamabad	PNC Islamabad
Training workshop on “EndNote”	March 20, 2019	PNC Islamabad	PNC Islamabad
National training workshop on KOHA ILS software	March 13-15, 2019	E-Library Rawalpindi	PNC Islamabad, E-library, PLWO

Seminar	March 16, 2019	E-Library Rawalpindi	PNC , PLWO
Training workshop on “Make Your Research Life Easier with Mendeley Tool”	April 18-19, 2019	PNC Islamabad	PNC Islamabad
Training workshop on“Research Tools and Techniques (SPSS)”	April 24-26, 2019	COMSATS University, Abbottabad campus	PNC Islamabad
Training workshop on “Library Automation for College Librarians”	June 26-28, 2019	PNC Islamabad	PNC Islamabad
Training workshop on “strengthening library professionals through enhancing technical and soft skills ”	June 24-28, 2019	Quaid-i-Azam Public Library, Quetta	PNC Islamabad
Training workshop on “Research Tools and Techniques (SPSS)”	June 25-27, 2019	Holy Family Hospital Rawalpindi	PNC Islamabad, RMU
PSC KARACHI			
3 rd Invention to Innovation Summit, Sindh 2018	December 19-20, 2018	University of Karachi	PASTIC, PSF, IRP
Training workshop on Learning Data Analysis through SPSS	August 15-16, 2018	PSC Karachi	PSC Karachi
Seminar on Bio safety Practices	August 28, 2018	National Institute of Blood Disease	PSC Karachi

		& Bone Marrow Transplantation	
Training workshop on Learning Data Analysis through SPSS	September 10-11, 2018	PSC Karachi	PSC Karachi
Seminar on Literature Search and Endnote	September 27, 2018	PSC Karachi	PSC Karachi
Training workshop on Library Automation by using Koha ILS Package	October 24-26, 2018	MUET	PNC, PSC Karachi, MUET
Training Workshop on "Research Tools & Techniques through SPSS"	October 3-4, 2018	PSC Karachi	PSC Karachi
Training workshop on "Advance skills in Thesis Writing"	December 11 th , 2018	National Institute of Blood Disease & Bone Marrow Transplantation	PSC Karachi
Awareness Seminar on "Women's Health & Breast Cancer"	December 13 th , 2018	National Institute of Blood Disease & Bone Marrow Transplantation	PSC Karachi
Training Workshop on "Research Methodology & Hands on training with SPSS"	January 2-3, 2019	PSC Karachi	PSC Karachi
Training Workshop on "Literature Search & Endnote"	January 8, 2019	PSC Karachi	PSC Karachi
training Workshop on	January 24, 2019	PSC Karachi	PSC Karachi

"HEC Plagiarism Policy & Effective Usage of Turnitin Service"			
Workshop on "Radio Frequency Identification (RFID)",	November 22, 2018	Newports Institute of Communication	PSC Karachi
Training Workshop on "Senayan Library Management Systems (SLiMS)"	February 12, 2019	PSC Karachi	PSC Karachi
Training workshop on "Data Analysis through STATA Software"	February 26– 27, 2019	PSC Karachi	PSC, Karachi
Workshop on "Research Data Analysis through SPSS"	March 20–21, 2019.	PSC Karachi	PSC Karachi
Training Workshop on "Literature Search & Endonote"	March 26 th , 2019	Harmdard University, Karachi	PSC Karachi
Training Workshop on "KOHA ILS Software as services (SAS)"	April 15-17, 2019	Government College University Hyderabad	PSC Karachi, Sindh College Library Association (SCLA).
Training Workshop on "HEC Plagiarism policy & Effective usage of Turnitin Service"	April 16, 2019	Sindh Agriculture University, Tandojam	PSC Karachi
Training Workshop was arranged on	June 24, 2019	PSC Karachi	PSC Karachi

"Citation Management with Endnote"			
PSC-LAHORE			
Seminar on Topic Selection and Literature Review Step By Step	September 25, 2018	LCWU	PSC-Lahore, LCWU
Training workshop on Plagiarism: How Do I Avoid It? & Use Of Turnitin	December 18 th , 2018	PITAC, Lahore	PSC Lahore, PITAC, Lahore
Seminar on "IQRA" to mark World Book & Copy right Day,	April 23, 2019	COMSATS University, Lahore	PSC Lahore, COMSATS University, Lahore Campus, and Danish Society of Library and Information Services
PSC-MUZAFFARABAD			
Training workshop on "Library Automation by using Integrated library system software ILS Koha	November, 7-9 2018	MUST, Mirpur	PSC Muzaffarabad
Seminar on "Information Literacy Skills"	January 18, 2019	University of Women Bagh Azad Kashmir	PSC Muzaffarabad
PSC-PESHAWAR			
Seminar on Significance of Intellectual Property Rights & Patents in Engineering Sector	March 21, 2019	UET, Mardan	PSC-Peshawar, ORIC-UET, Mardan , IPO-Pakistan
Seminar on	November 15,	NIFA, Peshawar	PSC Peshawar

Intellectual Property Seminar titled “Protection of Rights on Intellectual Property of Scientists”	2018		
Training workshop on “Developing Lab Bio-Safety Culture	November 19, 2018	Gulls Association Pakistan	PSC Peshawar
Technical session on “Technology Development: Policy, Funding and Diffusion Frame work” during 5th KP Innovation to Invention Summit	November 22, 2018	CECOSE University Peshawar	PSC Peshawar & Islamia College University Peshawar
4 th SPI-2018 International Conference on Sustainability in Process Industry	October 24-25, 2018.	UET Peshawar	UET Peshawar PSC Peshawar HEC-Islamabad,
Awareness Seminar on Causes Symptoms & early Treatment of Breast Cancer	October 18, 2018	Agriculture University	PSC Peshawar
Awareness Seminar on breast cancer awareness	October 27, 2018	Tajo Bibi Girls Degree College District Charsada	PSC-Peshawar IRNUM Hospital
Seminar on “Importance & Protection of Rights on Intellectual Property of Scientists”	January 17, 2019	University of Peshawar	PSC-Peshawar University of Peshawar

Meeting regarding Networking and Capacity Building of Women Entrepreneurs from SAARC Countries	January 8, 2019	Women Chamber of Commerce, Peshawar	PSC-Peshawar PNC Islamabad
Seminar under SDF Project “Networking and Capacity Building of Women Entrepreneurs from SAARC Countries”	February 7, 2019	SWCCI Peshawar	PSC Peshawar &PNC Islamabad
Technology & Innovation Support Centre (TISC) seminar titled “Patents & Trademarks as Social Sciences Resources	February 28, 2019	Qurtuba University of Science & Information Technology, Dera Ismail Khan Campus, KPK	PSC Peshawar ORIC-QUSIT, D.I.Khan & IPO-Pakistan
National workshop on Research Methods in Biological Sciences and Use of EndNote Software	May 2-3, 2019	Department of Agriculture, Hazara University Mansehra	PSC Peshawar, PNC, Hazara University
Training course on “Synopsis & Thesis Writing”	May 10-11, 2019	Pakistan Forest Institute	PSC Peshawar
A grand meeting/Seminar on LIS professionals to launch PASTIC KOHA CLOUD	June 17, 2019	University of Peshawar,	PSC Peshawar

PSC-QUETTA			
Training Workshop “Research Methodology & EndNote”		Sardar Bahadur Khan Women’s University Quetta.	PSC Quetta
Training Workshop on “Advance Research Tools / EndNote”	November 29-30, 2018	CASVAB, University of Balochistan,Quetta	PSC Quetta
Training Workshop on “Research Tools / EndNote”	December 11-12, 2018	Depart. Microbiology, University of Balochistan, Quetta	PSC Quetta FTDC
Training Workshop on “EndNote”	April 9-10, 2019	Depart. Zoology, University of Balochistan. Quetta	PSC Quetta

4.2 Exhibitions Organized

A one-day PASTIC-UAF-ICT-expo titled “innovative trends in science and education” was organized on 20-02-2019 at University of Agriculture Faisalabad.

4.3 Meetings/Workshops/Trainings/Seminars Attended

Workshops / Trainings / Seminars attended by Mr. Muhammad Hasnain, Deputy Director, PSC Faisalabad: -

- Third Knit to Achieve at National Textile University Faisalabad on 12.02.2019.
- English Access Micro scholarship Programme at Serena Hotel Faisalabad on 21.02.2019
- Project Dissemination Workshop “Delivery of Protein and Micronutrients to School Going Children through shelf Stable Ready to Eat Crispy Nutribars” at NIFSIT, UAF on 11.02.2019
- Project and Poster competition at University of Faisalabad on 13.09.2018
- All Pakistan DICE-AFS 2018 Agriculture Food Science at UAF on 03.09.2018
- Training Linkage ("Networking and Capacity Building of Women Entrepreneurs From SAARC Countries") WFCCI on 03.01.2019 at WFCCI.

- Linkage ("Networking and Capacity Building of Women Entrepreneurs from SAARC Countries") on 22.01.2019 at WMCCI.
- Interviews of Candidates for STFS 4th Batch were conducted on 04.04.2019.
- Dr. Saima Huma Tanvir, Additional Director (STI), PASTIC and Dr. Syed Aftab Hussain Shah, Sr. SIO, PASTIC participated in closing ceremony of the "4th Invention to Innovation Summit, KP-2018," held on November 22- 23, 2018 at CECOS University, Peshawar.
- Dr. Syed Aftab Hussain Shah, Sr. SIO, PASTIC attended meeting of the working group for formulating Independent Intellectual Property Rights Policy, for organizations working under Ministry of Science & Technology (MoST) on November 27, 2018 at Pakistan Science Foundation.
- PASTIC Officers attended "Award Ceremony of Top KP Scientists for year 2018" on January 29, 2019 under Directorate of Science and Technology (DoST), Government of Khyber Pakhtunkhwa
- Dr. Syed Aftab Hussain Shah, Sr. SIO, PASTIC attended IRP meeting on February 15, 2019 at PIDE, Islamabad regarding forthcoming Islamabad Innovation Summit in 2020 at Quaid-i-Azam University, Islamabad.
- Dr. Syed Aftab Hussain Shah, Sr. SIO, PASTIC attended training workshop on "Patent Database Searches & Development of Technology & Innovation Support Centres (TISCs)," organized by IPO- Regional Office Lahore & HEC-WIPO at Lahore University of Management Sciences (LUMS), Lahore on February 20-21, 2019.
- The Director General PASTIC attended a three-day Conference cum Expo organized by the Ministry of Science and Technology at PCSIR Laboratories Complex, Lahore on February 11, 2019.

Meetings/Workshops attended by Ms. Ghazala Ali Khan, Deputy Director, PSC Peshawar

- Attended 37th BOG Meeting on nomination of Chairman PSF at NCE in Physical Chemistry Univ. of Peshawar on Nov. 27, 2018.
- Held Meeting regarding Networking and Capacity Building of Women Entrepreneurs from SAARC Countries" on Jan. 8, 2019 at Women Chamber of Commerce Peshawar;
- Attended Khyber Pakhtunkhwa Science & Technology Awards 2018 on 29 Jan. 2019 on directives of DG PASTIC.
- Held meetings with chairpersons of Psychology, Biotechnology & Botany departments for PASTIC Services Awareness sessions in Feb. 2019.

- Deputy Director PASTIC Peshawar attended Second & Fourth Stakeholders Consultation 2nd& 4th Workshop on Provincial SIT Policy and Roadmap: under Directorate of Science and Technology (DoST), Government of Khyber Pakhtunkhwa held on 14 and 27 March, 2019 at Green Olives Peshawar.
- Attended meeting of the notified committee under the scheme: “Supporting Innovation in Schools, Colleges, and Universities” for financial assistance to proposals received (189 projects) from Schools, Colleges and Universities, held on April 04, 2019 at Directorate of Science and Technology (DOST), Peshawar.
- Held meeting with Director Directorate of Science & Technology (DOST), Dr. Khalid Khan to collect data of S&T projects funded by DOST.
- Participated as judge during Regional Science Olympiads / Fair 2018 organized by Directorate of Science & Technology (DOST) KP Gov. Peshawar in Nov. 2018.

Meetings/Workshops / Seminars attended by Mr. Abdul Fatah Shaikh, Deputy Director, PSC Karachi:-

- Attended Pakistan Library Club International Conference on 02-04 August 2018 at ICCBS, University of Karachi.
- Attended 18thITCN Asia 2018 at Expo Centre Karachi on 27 September 2018.
- Held meeting with Professor Dr. Abdul RazzaqMahar Pro-vice Chancellor & faculty members in Shah Abdul Latif University, Shikarpur Campus, Shikarpur on 10 October 2018to collect data of S&T projects& Highly Qualified Scientist.
- Held a Library Consortium meeting at Hyderabad gymkhana on 25 October 2018regarding development project ‘Modernization of PASTIC National Science Reference Library for Effective Resource Sharing among S & T libraries in Pakistan has been approved by the Planning Commission.
- Attended Proceedings of the 11th Symposium of the Pakistan Academy of Engineering “Our Mineral Resources - The Most Neglected Sector” held on October 27, 2018 at Mövenpick Hotel, Karachi - Pakistan
- Held meeting with Prof. Dr. Abdul Rehman Memon Rector of Newports Institute of Communication and Economicson November 22, 2018, at Newports Institute of Communication to collect data of S&T projects & Highly Qualified Scientist.
- Attended 14thPSBMB Biennial Conference on “Molecular Biosciences: Research & Innovations” held at KIBGE, University of Karachi on December 09-12-2018.

- Held meeting With Director ORIC Iqra University to collect data of S&T projects & Highly Qualified Scientist on 18-12-2018 at Iqra University.
- Attended Training Workshop on “Patent Database Searches & Development of Technology and Innovation Support Centers (TISCs)” on 11-12 February, 2019 at PNEC-NUST, Karachi.
- Attended Science Expo on 12 February 2019 at at Pakistan Council Scientific and Industrial Research (PCSIR).
- Attended Board of Governor meeting at Centre of Excellence Analytical Chemistry, University of Sindh, Jamshoro on 25-02-2019.
- Attended Proceedings of the 12th Symposium of the Pakistan Academy of Engineering “BIOECONOMY & ENGINEERING NEXUS” Held on March 2, 2019, at Mövenpick Hotel, Karachi – Pakistan
- Held meeting with Prof. Dr. Munsif Ali Talpur, Dean Faculty of Science, Director ORIC, Director, Institute of Chemistry on 12-03-2019 at Institute of Chemistry, Shah Abdul Latif University, Khairpur to collect data of S&T projects & Highly Qualified Scientist.
- Held meeting with President Sukkur chamber of Commerce & Industry special reference to Women Entrepreneurs, NCBWESC Project on 13-03-2019.
- Held meeting with Director General National Institute of Oceanography on 11-04-2019 to collect data of S&T projects & Highly Qualified Scientist.
- Held meeting with Director Pakistan standards & Quality Control on 12-04-2019 to collect data of S&T projects & Highly Qualified Scientist.
- Attended Symposium on Water Stress on 27 April 2019 at Regent Plaza Hotel Karachi.
- Attended 12th meeting of the board of governors on 23rd May 2019 at CEAD, MUET, and Jamshoro.

4.4 Development Project

PASTIC is also executing Development Project entitled, “Modernization of PASTIC National Science Reference Library for effective Resource Sharing among S&T Libraries in Pakistan”. Main objectives of the project are:

- Development of Information Communication Technologies (ICT’s) infrastructure for PASTIC National Science Reference Library.
- Development of Consortium of library & information scientists (librarians) of R&D organizations (CRDLP).
- Capacity building of library information scientists (librarians) for Library Automation, Digital Library & Library Management, etc.
- Revamping and strengthening of PNSR library.

5.0 Other Activities

- PASTIC published PASTIC Monthly Newsletter and uploaded it on PASTIC website.
- Deputy Director PSCPeshawar participated as judge during Regional Science Olympiads/Fair 2018 organized by Directorate of Science & Technology (DOST) KP Gov. Peshawar in November 2018.
- PSCPeshawar Collected 07 projects data info regarding Data Collection for R&D projects.
- PSCPeshawar held Interviews of shortlisted students of Khyber Pakhtunkhwa province, under Science Talent Farming Scheme of Pakistan Science Foundation Islamabad, on March 28, 2019.
- Prof. Dr. Muhammad Akram Shaikh, Director General PASTIC visited the office of Federal Minister for Science & Technology on July 31, 2018 and briefed the Minister about the activities and services of PASTIC.
- IPO delegation visited PASTIC for follow up of Technology and Innovation Support Centre (TISC) in July 2018.
- Mr. Adnan Alam, Assistant Director (Monitoring & Evaluation (M&E)), SAARC Development Fund (SDF) visited PASTIC on August 29, 2018 regarding monitoring of SDF funded Project entitled “Networking and Capacity Building of Women Entrepreneurs (NCBWESC) in SAARC Countries”.
- A meeting of Librarians was held on September 27, 2018 at Islamia University Bahawalpur for the development of Consortium (CSTRDLP).

- Secretary MoST, Ms. Yasmin Masood visited PASTIC National Centre on November 30, 2018.
- A High level Committee constituted by the government to evaluate the existing potential of the organizations under the Ministry of Science & Technology visited PASTIC in December 2018.
- PASTIC Sub Centre Faisalabad arranged an introductory meeting with WFCCI and the Project Director PASTIC on January 3, 2019 at WFCCI. Miss Robeena Amjad, President Faisalabad Women Chamber of Commerce & Industry (FWCCI), delivered the welcome address, Dr. Saima Huma Tanveer, Project Director NCBWESC, gave a comprehensive presentation, and explained the ultimate objective of this project.
- The PASTIC Sub Centre Faisalabad arranged an introductory meeting with WMCCI and the Project Director PASTIC on January 22, 2019 at WMCCI.
- PASTIC / PSF and Rawalpindi Medical University (RMU) have signed an MOU in March 2020 to develop cooperation, and to ensure their commitment in order to collaborate in organizing trainings and sharing of information resources.
- Director General PASTIC participated in Sahafi Summitheld in Karachi from May 2-3, 2019.
- Chaudhry Fawad Hussain, Federal Minister for Science & Technology visited PSCFaisalabad on May 31, 2019 and was given briefing on the services and activities of the sub-centre.
- Capt. (Retd). Nasim Nawaz, Secretary for Ministry of Science & Technology visited PSCFaisalabad on May 31, 2019, and was given briefing on the services and activities of the sub-centre.
- A meeting with Mercurial Minds was held on May 30, 2019 at PASTIC.
- SDF Project Mid-Year Review Meeting was held over Skype on June 24, 2019. All the 6 project collaborating countries including Afghanistan, Bangladesh, Bhutan, Nepal, India and Pakistan participated in the Skype Meeting.
- Deputy Director PASTIC, Peshawar participated as judge in Regional Science Olympiad / Fair June 12, 2019 held at Abbottabad, for students/research scholars of Mansehra region, organized by Directorate of Science & Technology, Khyber Pakhtunkhwa.
- PSCKarachi conducted Interviews of 100 students of Karachi & Hyderabad Sindh Province, under the project of Science Talent Farming Scheme 4th Batch, which were held on April 2, 2019 at PASTIC Sub Centre Karachi.

5.1 PASTIC Membership

1878 new members joined PASTIC and were added to PASTIC Services Users Membership Database.

III. PAKISTAN MUSEUM OF NATURAL HISTORY (PMNH)

III. PAKISTAN MUSEUM OF NATURAL HISTORY (PMNH)

Pakistan Museum of Natural History the only natural history of Pakistan was established in 1979 under Pakistan Science Foundation, Ministry of Science & Technology, (Government of Pakistan). Pakistan Museum of Natural History (PMNH) has four principal divisions namely Earth Sciences Division, Botanical Sciences Division, Zoological Sciences Division and Public Services Division. First three scientific divisions are engaged in the collection, identification and research activities pertaining to plants, animals, fossils and mineral resources of Pakistan, while the fourth one is responsible for mass education and popularization of natural history through various displays, exhibits and dioramas. Researchers of PMNH carried out extensive field works from the Coast of Arabian Sea to the Alpine regions, roamed through barren areas for the collection of flora & fauna, rocks, fossils and minerals not only for research work but also for the purpose of education because education is also one of the main objectives of PMNH. For this purpose, PMNH regularly organized trainings, workshops, seminars, symposia and other educational interactive activities related to natural history, environment and Biodiversity of Pakistan. International days were also observed. PMNH has formed many national and international liaisons with the other research institutes in the country and abroad. Due to these collective efforts of scientific and technical staff of PMNH and relations with other research institutions, PMNH has 1.5 natural history specimens in its repositories. Research outcome of these field works and National and International projects are published in the form of research papers in reputed national and international journals. PMNH is not only conducting research on the natural resources of Pakistan which exists in the form of flora & fauna, rocks, fossils and minerals but also educating the students of Pakistan along with the common people with the help of informative, interactive, educative 3-dimensional dioramas and exhibits. Students of schools, colleges and universities from all over the Pakistan visit PMNH as a part of their educational tours. Scientific and Technical staff of PMNH also facilitate the students and researchers from the other universities and institutes by providing help in the research in the form of information, technical assistance, specimens as a loan and guidance in their research work.

PMNH program in given below:

1.0 Botanical Sciences Division

1.1 Field Work:

- One day field trip, was conducted to Ayubia National Park Galliat for the collection of branches of gymnosperms and angiosperms for Forest Diorama. It included the Piceae, Abies pindrow, Pinus wallichiana, Quercus incana, Rosa sp. etc.

- One day field work for the study of vegetation of Shah Allah Ditta Margalla National Park to Collect Picea, Pinus, and Texus, juniper, Ficus and other plant specimens for herbarium as well as for Forest Diorama.
- Field visit for collection of Confires, Lenzites, Auricularia and Ganoderma funguses from adjacent areas of PMNH for Diorama.
- Field exploration of Galliat for collection of tree samples of Gymnosperms i.e Cedrus deodara, Abies pindrow, Picea smithiana, Pinus wallichiana etc
- Field visit to Potowar (Baga Sheikhan, Sukhu more) for collection of sample of Ficus benghalensis and grasses for BSD Diorama.
- Curation and processing of the plant specimens collected from the field visit w.e.f. 15-02-2019 to 06-03-2019, and from Sindh and Baluchistan Coastal area for the BSD Higher and lower plants herbarium and the material for the BSD forest diorama.
- Field visit for collection of Confires, Lenzites, Auricularia and Ganoderma funguses from adjacent areas of PMNH for Diorama.

1.2 Laboratory Work:

- Experiment One (Germination ability of Capparis spinosa var. himalayensis of two years old seed
- Research on endemic Seeds of Capparis spinosa var. himalayensis separated from fruits and leave them for chilling in LEEC seed chamber @15°C for 60 days with and without moistened sand in same completed.
- Research conducted for the soaking of both sets of seeds in GA 3 (500ppm) for 24 hours
- Trails of Plantago ovata, for viability with and without soil. In both the trail good percentage of seedlings emerged.
- Research work on Plant Growth Chamber in BSD, Laboratory (experiment phase-II & III) in progress.
- Literature reviewing for different priming of seeds of Prosopis cineraria, Vachellia nilotica (Acacia nilotica) family Fabaceae.
- Preparations for Milky mushroom cultivation (spawn substrate and preparation of tunnel).

Activities	No. of Plant Species Preserved
Identified	706
Catalogued	27609
Cultured	8639
Preserved	1967
Digitized	3788
Photographed	354
Biodiversity Global Network (BGN) Data Entry	5601

Summary

Total Collection (Provide information on 01-yearly basis as well)

Years	No. of Specimens collected	Total
	2017-2018	
Higher Plants	1550	1550
Mycology	1150	1150
Phycology	200	200

1.3 National Collaborative Projects:

Discussion with the faculty of the University of Haripur (Department of Forestry and Wildlife) for the mutual research activities and signing of the MoU in future.

1.4 Publications:

a) National:

- A Hussain, M Q. Hayat, Sumaira Sahreen, Qurrat ul Ain, S A I Bokhari. 2017. Pharmacological Promises of Genus Artemisia (Asteraceae): a Review. Proceedings of the Pakistan Academy of Sciences: B. Life and Environmental Sciences 54 (4): 265–287.
- Hussain,A.,M .Q. Hayat, Sumaira Sahreen, S A.I. Bokhari. 2018. Unveiling the Foliar Epidermal Anatomical Characteristics of Artemisia L. (Asteraceae) from Northeast (Gilgit-Baltistan), Pakistan. International Journal of Agriculture and Biology 21:630-638. (impact factor= 0.869)

b) International:

- **Sumaira Sahreen**, Khan MR, Khan RA. 2017. Evaluation of *Rumex hastatus* leaves against hepatic fibrosis: a rat model. *BMC Complementary and Alternative Medicine* 17:435 (Impact Factor = 2.288)
- **Sumaira Sahreen**, Khan MR, Khan RA. 2017. Evaluation of antioxidant profile of various solvent extracts of *Carissa opaca* leaves: an edible plant. *Chemistry Central Journal*, 11: 83. (Impact factor 2.442).
- Khan K. S., Ahmad M., Gilani S.A., Zafar M., Sultana S., Ashfaq S. 2017. "Himalaya's herbal medicine for the treatment of tuberculosis" Submitted in the *Journal of Ethnopharmacology*

1.5 Popular articles:

Reviewed the article for international peer reviewed journal 'Pharmaceutical Biology'.

1.6 Seminars/Trainings/Workshops/Organized:

Dr. Syed Aneel Ahmad Gilani (Associate Curator BSD), Mr. Razaqat Masroor (Associate Curator ZSD) and Mr. Khalil ur Rehman (Associate Curator ESD) facilitated the media persons in the field visit to Islamabad as resource persons at the Media workshop held at PMNH.

Imparted the two days training to the forestry and wildlife officials of Punjab area at Parera (Distt.Chakwal) for the baseline and ecological studies of the vegetation/floral diversity of the Chakwal area under the SFM (Sustainable Forest Management) project.

Trained the DFOs, RFOs and staff from the forest and Wild Life Department of KPK (including Abbottabad, Mansehra, Balakot, Kohistan and Haripur) in the field at Saharan and Manchi forest (Kaghan, Distt. Mansehra) on the learning of the floral diversity and vegetation analysis of the said area from 21-24, Sept. 2017 under the SFM (Sustainable Forest Management) project.

1.7 Seminars/Trainings/Workshops/Attended:

Dr. Syed Aneel Ahmad Gilani (Associate Curator, Botanical Sciences Division) and Mr. Razaqat Masroor (Associate Curator, ZSD) participated in The ICOM-ITC International Training Workshop as Museum expert from November 07-15, 2016 and April, 3-11, 2017 at Palace Museum Beijing China.

Aneel Gilani and Dr. Sumaira Sahreen participated in CABI workshop on knowledge and data sharing *Parthenium* weed held on 16-17 May 2017.

Attended the inaugural session of the two days training program on the formulation of the dossier for the Biosphere Reserves in Pakistan with collaboration with the Ministry of Climate Change, Pakistan on 09-10-2017 at PMNH.

Attended one day validation workshop entitled “Development of Pakistan Snow leopard Ecosystem Protection Program” at hill view hotel, Islamabad on July 13th 2017 organized by SLF Pakistan.

Attended two days project formulation workshop for R& D organizations of MoST at PSF Auditorium during 26th and 27th June 2018.

Attended the Horizon2020 Awareness Seminar at PSF.

1.8 National/International Collaboration /Liaison

Mutual research project with the Natural History Museum, London, Botany department for the collaborative research work in Pakistan and UK remained in progress.

Submitted as **HEC-NRPU Project** entitled “Ethnobotany and Molecular Characterization of the selected Mangrove Species in Pakistan” as Co-PI with collaboration of Department of Plant Sciences, Quaid-I-Azam University, Islamabad.

1.9 Services Rendered to Other Organizations:

Conducted viva of M.Phil student Ms. Maria Ameen on 17-02-2017 at the Department of Plant Sciences, Quaid-i-Azam University, Islamabad.

Identification of plant species of *Pilea umbrosa* (family Urticaceae) collected from Dunga gali (KPK) of one of the Ph.D student from Department of Plant Sciences, Quaid-i-Azam University, Islamabad.

Identification of 15 plant species of family Asteraceae and Acanthaceae for the M.Phil. students from Department of Botany, Quaid-i-Azam University Islamabad.

Identification of 60 higher plants samples of the B.Sc. students from Punjab College, Rawalpindi.

Curation and arrangement of 110 Berberis species from Azad Kashmir area for the Ph.D. student from the University of Azad Kashmir, Muzaffarabad.

A group of 45 students led by Dr. Zafar (Assistant Professor) from the Department of Plant Sciences, Quaid-i-Azam University, Islamabad visited the Botanical Sciences Division.

A group of 40 students of BS. Biology from COMSATS University, Islamabad led by Dr. Kamran visited PMNH Display galleries along with the visit to the Zoological Sciences Division.

Guided the A levels and O levels students from different schools and colleges for the training and education about the herbarium techniques and plant collection in 2017 and 2018.

Conducted 03 month internship Programme Biosciences student about herbarium techniques, research planning and report writing w.e.f. 03th July to 18th Sept , 2018.

Conducted a 05 days internship Programme to O Levels students about plant collection techniques w.e.f. 9th Sep, 2018 to 13th July 2018.

Guided the group of delegates from the three days International conference on Proteomics conducted at Department of Plant Sciences Quaid-i-Azam University, Islamabad, including two delegates from China and one delegate from Brazil at the PMNH display galleries. The delegates were facilitated by the officials of WWF. Pakistan including the officer Mr. Amjad from WWF Khanewal office.

Guided one M.Phil. Student from Hazara University and one Ph.D. student from Quaid-i-Azam University in their research work.

Guided 2 groups of students (comprising 35 students) of the Department of Forestry and Wildlife from University of Haripur at the higher and lower plants herbarium.

Delivered a lecture at the higher plants herbarium to the students of the Department of Forestry and Wildlife from University of Haripur on the flora of Pakistan and the herbarium techniques.

Guided two Ph.D. students from University of Agriculture, Rawlakot, AJK and PMAS Arid University Rawalpindi for the identification and research guidance towards the completion of their Ph.D. research.

Discussion with the faculty of University of Haripur for their official visit of the students to visit the herbaria at BSD in July and August-2017.

1.10 Education programs

Formal education to:

B.Sc students

300 (helped in the research work)

M.Sc. students

200 (helped in the research work)

M. Phill students

150 (helped in the research work)

Ph.D students

50 (helped in the research work)

(Students from QAU, NUST, Peshawar University, AJK University, FJ.Womens Unievrnsity RWP, Arid PMAS Arid University Rwp and Islamic University Islamabad etc.)

2.0 Earth Sciences Division

2.1 Field Work:

In July, 2018, Eight days field work carried out in Zhob, Balochistan in connection with Dinosaur Display project between (PMNH) and Factum Foundation (Madrid/London), Palaeostreet (Warsaw) for “Zhob Dinosaur track way reconstruction Project” preserved near Zhob, Baluchistan, Pakistan.

In September, 2018, two researchers of ESD proceeded for the geological field work in the area of Chitral and its surroundings for the collection of Granites and other rocks/minerals w.e.f. 24.09.2018 to 06.10.2018.

In November, 2018, two weeks field work in D.I. Khan District with National Centre of Excellence in Geology, University of Peshawar was carried out. During the field visits the rocks from Cambrian to Eocene age have been studied, logged and samples have also been taken from various formations for Sedimentological and paleontological studies. The areas visited in this field are: Saiyduwali, Painiala, Sheikh Badin, Mughal Kot, Darband and Drazinda.

Along with the team of ESD Researchers and staff member conducted 15 days field work w.e.f. 17th to 31st December, 2018 in the area of Thana Bholi Khan, Rani Kot, Meri Kot, Gawarband and adjoining localities of Dadu District, Sindh for the collection of Large wood fossils, geological study of Paleocene and Eocene formations . During this field 05 large and 06 small pieces of Petrified wood fossils, 80 samples of Sedimentary rocks and more than 200 invertebrate fossils have been collected for the purpose of study and research.

Two researchers of ESD carried out fifteen days geological field work w.e.f 07-01-2019 to 21-01-2019 in Balochistan for the collection of fossils and minerals, pyroclasts from metallogenic zones of Baluchistan. Different areas of Balochistan have been visited including Kanmehtarzai, Muslim Bagh, Zargoan, Khonozai, Kach, Taftan, Dalbandin Nokkundi, Khuzdar and Bela. As a result 354 minerals, ores samples and fossils have been collected from different metallic and non-metallic minerals zones. Collection comprised on Fluorite, Onyx, Aragonite, Pumice, Sulphur, Coal, Iron ore, Copper ore, Lead-zinc ore, Chromite, Manganese etc. Invertebrate fossils of Gastropods, Belemnites, Bivalves and Pelecypod etc. have also been collected.

Hafiz Shahid Hussain, Research Associate, ESD, PMNH proceeded to South Waziristan and F.R. Tank to participate with National Center of Excellence in Geology (NCEG), University of Peshawar for field work from 22.04.2019 to 02.05.2019.

2.2 Laboratory Work:

Cataloguing of 1165 vertebrate & invertebrate fossils has been done for the proper preservation of scientific materials/specimens in ESD reference collection.

Digitization of 810 vertebrate & invertebrate fossils has been done for the Proper preservation of scientific materials/specimens in ESD reference collection.

Study of almost 140 thin sections for micropaleontological fossils research.

Maintained the fossils record and curated the paleontology laboratory, ESD.

Proper numbers given to the specimens collected from the field work.

Identification, preservation, cataloguing and digitations of 250 rocks/wood fossils in reference collection of the PMNH.

375 hard rock Natural History specimens were identified, labeled, catalogued, digitized and curated in PMNH reference repository.

2.3 Publications:

National:

Aamir Yaseen, Khalil-ur-Rehman, Muhammad Ahmad Farooqui and Mujeeb Ur Rehman Khaskheli (2018). First record of Pelecypod Fossils from Dhok Pathan Formation, Hassnot Area, District Jhelum, Pakistan. *University of Sindh Journal of Animal Sciences. Vol. 2, Issue 1, pp. 53-57.*

K. A. Mirani, M. H. Agheem, S. H. Solangi, H. Dars and A. G. Sahito, 2017. Petrographic Studies of the Vihowa Formation, Sulaiman Range, Pakistan: Implications for Provenance. *Sindh Univ. Res. Jour. (Sci. Ser.) Vol.49 (004) 835-842.*

International:

Ghazala Roohi, S. Mahmood Raza, Elke Schneebeili-Hermann, Hugo Bucher, Aamir Yaseen, Khalil-ur-Rehman and Muhammad Imran. "Permo-Triassic climate change and faunal turnover in the Salt and Surghar ranges, Northern Pakistan". *Journal of Himalayan Earth Sciences Volume 50, No. 1A, 2017 pp. 1-12*

Alexander Nutzal, David Ware, Hugo Bucher, Michael Hautmann, Ghazala Roohi, Khalil ur Rehman and Aamir Yaseen(2018). An early Triassic (Dienerian) microgastropod assemblage from the Salt Range, Pakistan and its implication for gastropod recovery from the end- Permian mass extinction. *Bulletin of Geosciences, Vol 93, Issue 1.*

Ware, D., Bucher, H., Brühwiler, T., Schneebeili-Hermann, E., Hochuli, P.A., Roohi, G., UR-Rehman, K. & Yaseen, A.(2018). Dienerian (Early Triassic) ammonoids from the Northern Indian Margin. *Fossils and Strata. An international monograph series of palaeontology and stratigraphy. Number 63.*

2.4 Popular article:

Article entitled “Reservoir rocks play an important role to economy” published in Technology Times Weekly newspaper.

Oneresearch Article entitled ‘Is it possible to have life on Mars?’ has been published in Weekly Technology Times English newspaper.

2.5 Seminars/Symposia/ Training/Workshop Organized:

Organized 3 days training workshop on Gem & Gemology (Gemstone Identification/ Cutting, Polishing, Grading, Value Assessment and Evaluation) at PMNH from 24th to 26th September, 2018 in collaboration with PSF GGIP, PAPG, IGL, PGJDC, IWCCI & ICCI Secretary MoST Mr. Kamran Ahmed Qureshi was the chief guest of the occasion.

Arranged one day training for students on Relief Map Study in connection with Celebration of Biodiversity Day on 22nd May 2019. 120 students from eleven Schools of Islamabad and Rawalpindi participated in this event.

2.6 Seminars/Symposia/ Training/Workshop Attended:

Attended one day course on “Environmental Impact Assessment” organized by Pakistan Engineering council.

Participated in an international seminar on “French Contributions to Pakistan Studies” held at Quaid-i-Azam University.

Attended two days Media Workshop on “Understanding Science” at PMNH.

Attended seminar on “Threatened wildlife species” at PMNH in collaboration with Ministry of Planning Development & Reform.

Attended inaugural ceremony of capacity building workshop to “Preparation of Nomination dossiers of biosphere reserves in Pakistan”.

Attended seminar regarding celebration of World Science Day, 2018 at PSF.

Attended workshops on “International day for Museum” and “International Day for Biological Diversity 2018” at PMNH.

Attended celebration event on International Snow Leopard Day, 2018.

Attended Inception Workshop arranged by Snow Leopard Foundation and Ministry of Climate Change, 2018.

Attended workshop on “International Museum Day, 2018” in Lok Virsa, Pakistan”.

Attended workshop on “National Workshop on Exchange of Information on Snow Leopard Population in Pakistan”.

Attended seminar on “Threatened wildlife species” at PMNH in collaboration with Ministry of Planning Development & Reform.

Attended inaugural ceremony of capacity building workshop to “Preparation of nomination dossiers of biosphere reserves in Pakistan”.

2.7 Education Programme:

Thin sections prepared for university students to study the microfossils and Petrographic studies.

Internship and Supervision of 50 BS Geology students of University of Haripur.

Prepared rocks/minerals Mobile Expo for display in different scientific events and in PMNH Display Gallery.

Three days training related to geology to 15 students of University of Haripur.

One month supervision and training to students from Bahria University Islamabad on depositional environment and sedimentary petrography.

2.8 National/International collaboration /Liaison

Pakistan Museum of Natural History and Centre for Pure and Applied Geology, University of Sindh, Jamshoro signed a Memorandum of Understanding for cooperation in the field of Geology/Paleontology for mutual collaboration on research and education, training of scientists, information sharing, holding of exhibition/ workshop/ conferences/ symposia/ seminars and joint research projects.

2.9 Display Work:

Prepared the poster on “Earthquake Causes and Safety Measures” and incorporated the amendments suggested by Prof. Dr. Muhammad Asif Khan, Vice Chancellor, Karakoram International University (KIU), Gilgit-Baltistan. Later on transformed the poster into brochure according to the Secretary, Ministry of Science & Technology’s advice.

Prepared Mobile Expo on Minerals & Rocks of Pakistan along with other officers and staff of Earth Sciences Division.

Delivered lecture and guided group of 50 boys’ students and 04 teachers during their visit to PMNH display galleries and ESD repositories.

One Brusher entitled “Rock Garden” reviewed and ready to printing for public information.

3.0 Zoological Sciences Division

3.1 Field Work:

Dr. Khalid Mahmood, Curator ZSD, Mr. Muhammad Asif Khan, Associate Curator ZSD, Mr. Rifaqat Masroor Associate Curator ZSD, Mr. Mishkat Ullah Research Associate ZSD and Mr.

Muhammad Kabir Lecturer University of Haripur carried out fieldwork for the collection of Animals Fauna (Amphibians, reptiles, mammals, birds, butterflies and ground beetles) of Kaghan areas Moist Temperate Forests (Sharan Reserve Forest), Mansehra-KPK from 20-24th September 2018 in connection with Sustainable Forest Management Project.

Dr. Khalid Mahmood Curator ZSD, Mr. Muhammad Asif Khan Associate Curator ZSD, Mr. Razaqat Masroor Associate Curator ZSD, Mr. Mishkat Ullah Research Associate ZSD and Dr. carried out fieldwork for the collection of Animals Fauna (Amphibians, reptiles, mammals, birds, butterflies and ground beetles) of three Chakwal Division “A” category Scrub Forests including Pararah Reserve Forest, Diljabba Game Reserve and Arra Range from 17-24th October 2017 in connection with Sustainable Forest Management Project.

Dr. Khalid Mahmood Curator ZSD, Dr. Syed Aneel Gilani Associate Curator, Mr. Razaqat Masroor Associate Curator, Mr. Mishkat Ullah Associate Curator and Mr. Muazzam Khan conducted fieldwork in connection of UNESCO’s project “Dossier preparation for Establishment of Indus Blind Dolphin Biosphere Reserve in Pakistan” to Chashma, Taunsa, Guddu and Sukkur Barrage areas from 20th-25th November 2017.

Dr. Khalid Mahmood Curator ZSD, Dr. Syed Aneel Ahmad Gilani Associate Curator BSD, Mr. Muhammad Kabir Lecturer University of Haripur (UH), Muhammad Shakil Lecturer University of Kotli fieldwork for the collection of Animals Fauna (Amphibians, reptiles, mammals, birds and butterflies) of Lakhat Dingano Reserve Forest Nawabshah and Ketishahu Reserve Forests Sukkur from 10-25th March 2018 in connection with Sustainable Forest Management Project.

Dr. Ahsan Feroze Associate Curator, Dr. Shabir Ali Amir and Dr. Muhammad Abbas Associate Curator carried out fieldwork for the collection of taxonomically important animals fauna of Coastal Waters of Karachi, Gawader and adjoining areas from 30th-23rd March 2018

Dr. Khalid Mahmood Curator ZSD, Dr. Syed Aneel Ahmed Gilani, Associate Curator BSD and Mr. Rahat Saeed, Senior Operational Manager PSD carried out fieldwork for collection of insect fauna and higher plant flora of Khunjab National Park near Gilgit and adjacent areas from 26th June-14th July 2018.

3.2 Laboratory Work:

During this period, 2894 specimens of animals, birds, insects, and other zoological specimens were collected, catalogued, identified, digitized and preserved in the Zoological Sciences Division repositories as reference collection for future research.

3.3 National Research Project:

Carabidae of Northern Pakistan (continued).

3.4 Collaborative Research Project:

National project

Project Title:

Fauna and flora baseline establishment and capacity building of Forest Department in Sustainable Forest Management” project areas

Objectives:

Baseline surveys to prepare checklists of fauna and flora in, i). Khyber Pakhtunkhwa (Temperate forest), ii. Sindh (Riverine forest), iii. Punjab (Scrub forest and Riverine forest)

Capacity building of Provincial Forest and Wildlife Department staff with respect surveying and monitoring of animal and plant biodiversity.

Benefit to Public Industry

Checklist of the different animal groups and plants prepared for the first time

The general biodiversity of the proposed sites protected and project benefits monitored Forest and Wildlife department’s staff capacity developed in monitoring animals and plant biodiversity at their respective dusty station

Achievement (Quantified)

Five days baseline studies were carried out at Manchi Reserve Forest, Paras, Balakot-Mansehra from 20-24th September 2018 in connection with Sustainable Forest Management Project. Moreover 25 officers and field staff of Khyber Pakhtunkhwa Forest and Wildlife Department were also trained in animals and plant monitoring protocols.

Eight days field work was executed to establish baseline at Diljabba, Arra and Parerrah Reserve forests, Chakwal from 17-24th October 2018 in connection with Sustainable Forest Management Project. Moreover 30 officers and field staff of Punjab Forests and Wildlife Departments also trained in different animal groups and plant monitoring protocols.

Sixteen days baseline studies of Lakhat Dingano Reserve Forest Nawabshah and Keti shahu Reserve Forests Sukkur were carried out from 10-25th March 2018 in connection with Sustainable Forest Management Project. Moreover 30 staff members of Sindh Forests and Wildlife Departments were trained in different animal groups and plant monitoring protocols. 60% of the project work is completed

Financial / Economic Impact

No public money was spent on this project. The project was funded by UNDEP's Sustainable Forest management Project

International Project

Project Title: UNESCO's Project "Dossier Preparation for Establishment of Indus Blind Dolphin Biosphere Reserve in Pakistan"

Objective

To educate and involve stakeholders and local communities in conservation of Indus Blind Dolphin and reduction of mortalities due to its stranding in canals.

To enhance awareness of local communities and to build their capacity for improved resource management and exploring alternative livelihoods and income generation.

Promotion of Dolphin based ecotourism and other income generation activities for local communities.

To enhance awareness about conservation of Indus Blind Dolphin through electronic media, print media, documentaries and popular literature.

Benefit to Public Industry

The population of Indus Blind Dolphin through proposed Biosphere Reserve will continue to survive along with its ecosystem

The general biodiversity of the proposed biosphere reserve will get protected

The livelihood of the local community will improve and will contribute to the poverty reduction

The cultural values of local community will get highlighted and efforts will be initiated to preserve it

Achievement (Quantified): Dr. Muhammad Rafique DG PMNH, Dr. Khalid Mahmood Curator ZSD, Mr. Asif Khan Associate Curator ZSD, Mr. Mishkat Ullah Associate Curator ZSD attended first project award meeting with Secretary General National Commission for UNESCO at Ministry of Education and Training, Islamabad on 13th July 2018

Local consultative meeting at Peshawar: Peshawar Local consultative meeting has been carried out on 28th November 2017. The meeting delegation was comprised of Dr. Muhammad Rafique, Secretary National MAB Committee/ Director General, Pakistan Museum of Natural History (PMNH); Mr. Ashiq Ahmed Khan, Scientific Advisor, EvK2CNR; Dr. Khalid Mahmood, Director Zoological Sciences Division, PMNH and Mr. Shafqat Abbas, Section Officer/ Focal Person MAB Pakistan, Ministry of Climate Change (MoCC). The Khyber Pakhtunkhwa (KPK) government provincial delegation was comprised of Mr. Syed Nazar Hussain Shah, Secretary Forest, Environment and Wildlife KPK; Mr. Safdar Ali Shah, Chief Conservator KPK Wildlife Department; Mr. Kifayat Ullah Baloch, Section Officer (Technical), Department of Forest Environment and Wildlife KPK. Dr.

Muhammad Rafique elaborated the conception of Establishment of Indus Blind Dolphin Biosphere among meeting participants. The Secretary Forest Environment and Wildlife KPK ask different questions about the importance of the said biosphere reserve and Islamabad delegation answer it in appropriately. The Khyber Pakhtunkhwa government submitted their will to support the establishment of Indus Blind Dolphin Biosphere Reserve. They also ensured to endorse the dossier and management plan.

Local consultative meeting at Lahore:The local consultative meeting Lahore has been carried out 14th November 2017 at Forest, Wildlife & Fisheries Department 38-Ponch House, Multan Road. near Chuburji, Lahore. A delegation comprised of five experts including, Dr. Muhammad Rafique, Secretary National MAB Committee/ Director General, Pakistan Museum of Natural History (PMNH); Mr. Ashiq Ahmed Khan, Scientific Advisor, EvK2CNR; Dr. Khalid Mahmood, Director Zoological Sciences Division, PMNH; Mr. Muhammad Asif Khan, Associate Curator ZSD, PMNH, Mr. Mishkat Ullah, Associate Curator ZSD, PMNH and Mr. Shafqat Abbas, Section Officer/ Focal Person MAB Pakistan, Ministry of Climate Change (MoCC). This meeting was chaired by Mian Waheed-ud-Din, Secretary, Forest, Wildlife and Fisheries Punjab. Dr. Muhammad Rafique Secretary National MAB Committee/ DG, PMNH briefed about MAB programme and need of establishment of Indus Blind Dolphin Biosphere in Pakistan. He also briefed meeting Chair and its members about the importance of provincial endorsement regarding Biosphere Reserve declaration. The secretary highly praised the efforts of the PMNH and MAB programme for declaration of Indus Blind Dolphin Biosphere Reserve and ensured his full cooperation for dossier endorsement.

Local consultative meeting at Sukkur/Karachi:A delegation comprised of three persons including Dr. Muhammad Rafique, DG PMNH/Secretary National MAB Committee; Mr. Ashiq Ahmed Khan, Scientific Advisor EvK2 CNR and Mr. Shafqat Abbas, Section Officer (IC) MoCC attended for consultative meeting at Department of Forest & Wildlife, Government of Sindh, Barrack No. 10, Sindh Secretariat, Karachi on 21st November 2017. The meeting was chaired by Mr. Asif Hyder Shah, Secretary Forest & Wildlife, Government of Sindh and also attended by Mr. Taj

Muhammad Sheikh Conservator Wildlife Sind; Dr. Babar Khan, Regional Head Sindh & Baluchistan WWF and Humera Aisha Manager Wildlife WWF. The meeting was very successful and Secretary Forests Sindh ensured

his cooperation for establishment of the Indus Blind Dolphin Biosphere Reserve in Pakistan. He also added that his team will assist PMNH and MoCC in this regard.

Prepared Lists of fauna and flora along Indus Blind Dolphin Biosphere Reserve for UNESCO project regarding “Dossier Preparation for Establishment of Indus Blind Dolphin Biosphere Reserve in Pakistan” 100% completed and inaugurated and dossier submitted to Secretary General Pakistan National Commission UNESCO in March 2018

Financial / Economic Impact: No public money was spent on this project. The project was funded by UNECO.

3.5 Publications:

National:

Ahmad, N., Siddiqui, P. J. A., Khan, K., Akbar, M. N. U., Rashid, M. and Masroor, R. 2018. The growth performance of juvenile yellow fin seabream (*Acanthopagrus arabicus*) fed at different feeding rates while reared in floating net cages. *The Journal of Animal and Plant Sciences*, 28 (4): 1014-1020.

Naveed, A., Siddiqui, P.J.A., Ali, A., Khan, M.K., Masroor, R., Noor ul Akbar, Amin, M., and Attaullah, M. 2018. Dietary Protein Level in the Practical Diet of Yellowfin Seabream, *Acanthopagrus arabicus*, Juveniles for Optimum Growth Performance, Survival and Carcass Composition. *Pakistan Journal of Zoology* (Accepted).

ii) International:

Amir, S.A., Siddiqui, P.J.A. and Masroor, R. 2018. Finfish diversity and seasonal abundance in the largest arid mangrove forest of the Indus Delta, Northern Arabian Sea. *Marine Biodiversity*, 48 (3): 1369-1380. DOI: 10.1007/s12526-016-0613-z

Shabir Ali Amir, Sher Khan Panhwar, Pirzada J. A. Siddiqui, Fozia Khan, Shehnaz Rashid and Ye Zhenjiang. 2018. Age, growth and reproductive biology of Goldlined seabream *Rhabdosargus sarba* (Pisces: Sparidae) in coastal waters of Pakistan. *Indian Journal of Geo-Marine Sciences*, 47(7):1478-1485.

Technical Reports (13 reports)

Submitted Baseline Reports, in connection with Sustainable Forest Management Programme, Project.

Baseline studies of Kaghan Temperate Coniferous Forest with reference to Small Mammals Fauna

Baseline studies of Kaghan Temperate Coniferous Forest with reference to Ground Beetles Fauna

Baseline studies of Kaghan Temperate Coniferous Forest with reference to Butterflies Fauna

Baseline studies of Kaghan Temperate Coniferous Forest with reference to Amphibians and Reptiles Fauna

Baseline studies of Kaghan Temperate Coniferous Forest with reference to Large Mammals Fauna

Baseline studies of Kaghan Temperate Coniferous Forest with reference to Avi fauna

Baseline studies of Perera, DilJaba and Ara Scrub Forest with reference to Large Mammals Fauna

Baseline studies of Perera, DilJaba and Ara Scrub Forest with reference to Ground Beetles Fauna

Baseline studies of Perera, DilJaba and Ara Scrub Forest with reference to Butterflies Fauna

Baseline studies of Perera, DilJaba and Ara Scrub Forest with reference to Amphibians and Reptiles Fauna

Baseline studies of Perera, DilJaba and Ara Scrub Forest with reference to Avi Fauna

Submitted reports of UNESCO project entitled “Dossier preparation of Indus Blind Dolphin Biosphere Reserve in Pakistan” at Pakistan National Commission for UNESCO Islamabad

Submitted evaluation and complete financial report of Indus Blind Dolphin Biosphere Reserve Project at Pakistan National Commission for UNESCO, Islamabad.

3.6 Seminars/Symposia/ Training/Workshop Organized:

PMNH organized World Pangolin Day on 17th February 2018 joint collaboration of PMAS-Arid Agriculture University Rawalpindi and AJK Wildlife & Fisheries Department.

PMNH and Snow Leopard Foundation jointly organized “National workshop for exchange of information on Snow leopard population in Pakistan” held on April 24, 2018.

PMNH and University of Haripur jointly organized three days training on the Taxidermy in Department of Forestry and Wildlife, University of Haripur on 14-16 May 2018.

PMNH jointly organized a seminar and exhibition on Threatened Wildlife Species with Ministry of Planning, Development and Reforms with Collaborations of PMNH and UNDP on 27 December 2017 at PMNH Audio-Video Hall.

3.7 Seminars/Symposia/ Training/Workshop Attended:

International

Mr. Mishkat Ullah, Associate Curator ZSD attended training workshop on “Managing a Museum Today” held at ICOM’s International Training Centre, Beijing-China from 08th-17th April 2018.

All officers delivered lecture on “Taxonomy, field collection techniques and ecological importance of Animals (mammals, small mammals, fishes, amphibians, reptiles and insects)” to the students of BS (Hons) Forestry and Wildlife Management Department, University of Haripur at Insect Repository PMNH on 28th July 2017.

Mr. Mishkat Ullah got hands on training from Olympus-Pakistan regarding efficient operation Olympus Stereo zoom Microscope and its photographic software at Insect repository, ZSD, PMNH on 31st July 2017.

All ZSD officers attended a lecture entitled “Health Challenges of Modern Life and Treating with functional Foods and Lifestyle” by Dr. Anwar-ul-Haq Chairman PCST on 27th September 2017 at PSF Auditorium.

All ZSD officers delivered lectures on importance of Animals biodiversity and monitoring in Scrub forest environment during training session organized for the staff of Punjab Forest and Punjab Wildlife Protection Force at Lari Shah Nawaz, Chakwal on 17th-18th October 2017 in connection of Sustainable Forest Management Project.

3.8 National/International collaboration /Liaison

MoU between sign Pakistan Museum of Natural History and HaglerBailly Pakistan signed to extend collaboration on biodiversity and environmental research.

3.9 Services Rendered to Other Organizations:

Process a loan of 43 Reduviidae specimens for a PhD Scholar of China Agriculture University, West Campus, Beijing-100193, China

Dr. Shabir Ali Amir, Associate Curator, ZSD collaborated with Dr. Bruce Thompson, Senior Scientist, Australian Museum Sydney for his ichthyology collection from Karachi coast area.

Mr. Muhammad Asif Khan, Associate Curator, ZSD facilitated Islamabad Wildlife Management Board in preservation of common leopard specimen found dead in Margalla Hill National Park.

Mr. Muhammad Asif Khan, Associate Curator, ZSD made contact with Wildlife Department, KPK regarding donation of the dead specimen of Snow Leopard from Peshawar Zoo.

Mr. Muhammad Asif Khan, Associate Curator, ZSD remained in contact with Wildlife Department, Punjab regarding donation of recently died Tiger specimen at Lahore Zoo.

Dr. Shabbir Ali Amir, Associate Curator, ZSD gave a presentation on “Fish and fisheries in Pakistan” for BS student COMSAT university, Islamabad

Participated in the consultative meeting for Advancement of Mathematics & Science Education in Pakistan, held in PSF on 10th May 2018.

Compiled and gave material for Technology Times Supplement on PMNH

Conducted meeting with representative of SLF, Technology Times and ICIMOD for the celebration of Biodiversity Day

Dr. Khalid Mahmood Curator ZSD gave a presentation on importance, diversity and classification of insect to M.Phil students at University of Haripur on 16.05.2018

All ZSD officers attend the celebration of International Museum’s Day held on 18th May 2018 in Lok Virsa Museum

Drafted two type of letters, first one to Tourism Industry and second for Educational Departments to increase and diverse the museum visitor

Dispatched nine letters to different tourism stakeholder in Public and Private sector to foster museum popularization and liaison.

Sent 450 emails to schools of Federal Directorate of Education (FDE), Federal Govt. Educational Institutions Cantts/Garrisons (FGEICG) and Army Public School and Colleges (APS&C) to foster museum popularization and liaison

Dr. Shabir Ali Amir Associate Curator ZSD worked/facilitated Assistant Director, Punjab Fisheries for their research on fish chromosomes.

Dr. Shabir Ali Amir Associate Curator ZSD prepared project proposal entitled “DNA barcoding of commercially important marine fishes of Pakistan” under HEC/NRPU (National Research Program for Universities) as Co-PI with collaboration from Bahria University, Karachi.

Participated in a Medical Camp organized by Bahria University, Karachi for Fishermen at Bhit Island, Karachi on the occasion of celebrating World Fishermen Day”

Researchers of ZSD supervised 05 students of M. Phil. And Ph.D. belonging to different universities by providing assistance in their research work and thesis writing.

Prepared diagnosis, remarks and distribution data of 153 species from 72 subgenera, 61 genera and 17 subfamilies. Morphometric data of all above mentioned species were also taken.

Prepared 17 diagnostic keys (genera and species level) of different Carabid subfamilies.

Sorted, pinned and Identified 290 Carabidae specimens collected during Sharan Reserve Forest, Kaghan and Parerah, Diljabba and Arra Reserve Forest, Chakwal fieldwork in connection with Sustainable Forest Management Project.

Took morphometric data of 276 specimens belonging to 14 species of sub-family Carabinae deposited in Insect Repository of ZSD, PMNH.

Identified 33 species of Carabidae collected through SFM Project.

Identified insect specimens for Dr. Sameera Arshad, Assistant Professor, Quaid-e-Azam University on 22nd February 2018.

Identified and catalogued 1430 specimens of marine fishes collected during different fields works along coastal belt of Sindh and Baluchistan during 2017-18

Received 44 mammal specimens as donation from CDA Marghuzar Zoo Islamabad and Loi Bhair Wildlife Park Rawalpindi that include Indian Hog Deer (8 specimens), Barking Deer (07 specimens), Black Buck (07 specimens), Nilgai or Blue Bull (07 specimens), Lion (02 specimens), Wolf (02 specimens), Mouflon Sheep (02 specimens), Cevit (02 specimens), Spotted Deer (01 specimen), Black Bear (01 specimen), Brown Bear (01 specimen), Fellow Deer (01 specimen), Uriyal (01 specimen). All received specimens study skins were prepared after tanning.

Received 3 bird specimens (House crow, Black kite and *Rufous tree pie*) from the vicinity of PMNH

Acquired an Eagle owl specimen from University of Haripur

Conducted field work for baseline studies of Raverine forests of Sukkur and Sakrand w.e.f 10-25 March 2018 and collected 900 insect, 4 Reptiles, 21 Amphibian and 10 Rodents specimens

Identified 45 butterfly specimens

Catalogued 02 snakes and 10 lizards in herpetology lab

Catalogued and identified 135 specimens of birds

3.10 Design and display:

Bird Diorama: A new stated of the art Diorama was added to PMNH gallery “World of Birds”. It was joint project of ZSD (Dr. Muhammad Rafique, Dr. Khalid Mahmood, Mr. Muhammad Asif Khan and Mishkat Ullah) and PSD (Dr. Syed Lal Shah and Mr. Rahat Saeed). This diorama was comprised of four sections i). Birds evolution along with *Archaeopteryx* of cast fossil specimen ii). Different birds species mounted on wall and ground iii). Tree along with birds and their nests depicting natural environment in background iv). Different birds eggs from largest (Ostrich) to smallest arranged on wavy terraces.

Dr. Shabir Ali Amir Associate Curator ZSD mounted PMNH stalls for participation in “An event for awareness of wildlife at Marghaza Zoo. Islamabad” from 20-21 January 2018.

Mr. Mishkat Ullah facilitated the Museum display visit of delegation DFOs from Gilgit Baltistan

Mr. Mishkat Ullah facilitated the ZSD repository visit of CDA Environment wing

Mr. Mishkat Ullah Associate Curator ZSD supervised a student Mr. Abdur Rehman M.Phil Parasitology, Quaid-i-Azam University regarding identification, morphometry and stereoscopic digital photography of fish ectoparasitoid *Lernaea* sp.

Dr. Khalid Mahmood Curator ZSD guided a PhD student of University of Gujrat on the collection and identification of butterfly specimens.

Dr. Khalid Mahmood Curator ZSD conducted museum visit with Prof. Don Driscoll, Deakin University, Australia

Dr. Khalid Mahmood Curator ZSD worked on revision of Dossier for Establishment of Indus Blind Dolphin Biosphere Reserve in Pakistan.

Submitted the Adjustments of the field work

Mr. Muhammad Asif Khan Associate Curator ZSD facilitated a PhD research scholar, Mr. Muhammad Asad from Lincoln University, New Zealand University working on distribution and taxonomy of Common Leopard in Pakistan.

Prepared and submitted detail scientific equipment required for research activities at ZSD, PMNH

Conducted a visit of PMNH with Diplomatic staff of British High commission

Dr. Khalid Mahmood Curator ZSD, Mr. Muhammad Asif Associate Curator ZSD give inputs in Bird Diorama preparation committee and attended various with other committee members regarding diorama background & roof color scheme, birds and eggs arrangement etc.

Mr. Mishkat Ullah Associate Curator ZSD contacted an American Paleontologist for *Archaeopteryx* fossil cast to be displayed in Bird diorama (August). This meeting actualized and received *Archaeopteryx* fossil cast on 28th September 2017.

Designed and Display Activities	Progress
New Diorama/Exhibit Developed	02+1 in progress
Maintenance of current displays/Exhibits	08
Installed signage of PMNH at building and road side	05
Information panels/boards	03
Designed facade, background and murals of exhibits	12
Write-up changed (display galleries)	04
New garden lights in front of new and old gates	24
Brouchers/Booklet/Posters	03

Newsletter for PSF	12
Event Backdrops, banners, steamers, invitation cards, souvenirs, shields, yearbook title, certificates.	16
3-D model of Men for Cave Life Display	01
Up-graded showcases in paleo-gallery	24
Prepared Rockery	01
Purchased & Installed Part-II of Interactive Floor System in display gallery.	01
I.T	
Software developed	01
Software development in progress	02

Bird Diorama committee acquired donation of rock plate for *Archaeopteryx* display from M/s Guided the display visit of students from Abdul Hassan Scouts and Girl Guide, Karachi on 27th December 2017.

Dr. Khalid Mahmood and Mr. Mishkat Ullah guided Mr. Akram Awan an amateur entomologist regarding Skipper (a kind of butterfly) identification and dissection. Moreover help him preparing some digital photograph for a possible new species identification on 21-22 December 2017.

4.0 Public Services Division

4.1 Important Visits to PMNH

- Secretary MoST visited PMNH display galleries on 23-11-2017.
- Guided 02 high officials of Chinese delegation and German Ambassador and German official during their visit to the PMNH display galleries.
- Guided 15 students from the University of Punjab 161 students belonging to the various colleges and universities during their visit to the PMNH display galleries.
- Guided 04 member's Sri Lankan delegation during their visit to the PMNH display galleries on September 10, 2017.
- VC, GCU Lahore visited PMNH Display galleries on 28.12.2017.
- Ambassador of Egypt Mr. Ahmad Fadel Yacoub visited display galleries on 15-02-2018.
- Joint Secretary MoST Mr. Hassan Baig visited display galleries on 24-02-2018.
- Member Finance, PSF Mr. Tafakhar Ali Asdi visited PMNH display galleries on 27-03-2018.
- A delegation ECO Science Foundation visited PMNH display galleries on 12-04-2018.

- A group of delegates from the three days International conference on Proteomics conducted at Department of Plant Sciences Quaid-i-Azam University Islamabad, including two delegates from China and one delegate from Brazil visited PMNH display galleries. The delegates were
- facilitated by the officials of WWF. Pakistan including the officer Mr. Amjad from WWF Khanewal office.
- Mr. Ahmad Fadel Yacoub, Ambassador of Egypt in Pakistan visited Pakistan Museum of Natural History, Islamabad on 15th February 2018. The honorable guest visited different galleries and repositories of the Museum.
- Mr. Gary Elliot, Director, Global Human Resources, British Council and James Hampson, British Council Deputy Director, visited PMNH Display galleries on May 08, 2018. They expressed great interest in the displayed natural history specimens, exhibits and dioramas. Senior officials and officers of PMNH provide assistance during their visit.
- Major (Retd) Qaiser Majeed Malik Chairman, PSF visited PMNH display galleries on April 09, 2018. He visited the display galleries and expressed keen interest in the exhibits.
- A delegation of 70 participants of 7th South Asian Conference on Sanitation (SACOSAN-II) along-with officials of Ministry of Climate Change visited PMNH display galleries on 14-04-2018. Delegation comprises on the representatives from Afghanistan, Bangladesh, Bhutan, India, Maldives, Nepal and Sri Lanka.
- Group of teachers participating in national workshop at PASTIC visited PMNH display galleries on May 14, 2018.
- Prof. Maria Eugenia D'Amato from Cape Town South Africa visited PMNH display galleries on 25-06-2018. Senior scientists of PMNH received the honorable guest. Prof. Maria visited different galleries and repositories of PMNH and took keen interest in various displays.

4.2 Educational Services

- Facilitated the visit of staff/students of Punjab University Lahore.
- Guided teachers Educators of Rawalpindi Division of Punjab Education department through display galleries of PMNH.
- Facilitated PhD student from Quaid-e-Azam University, Islamabad.
- Briefed about the PMNH galleries to groups of students from Fatima Jinnah Women University Rawalpindi and University of Gujarat students/staff.

During the year a total of 132256 persons visited the PMNH Display Centre which included 289622 students, 42386 general public and 248 foreigners. Students from various schools, colleges and

universities of many parts of the country visited PMNH. Some of these are Institute of Geology Kashmir University Muzffarabad, Fauji Foundation Model School Abbottabad, Imperial International School & College, Islamabad, Fauji Foundation Model School Kohat, Faran Academy Mardan, New Age Scholars Science College Kotly AJK, Tamir-e-Millat School Peshawar, Balochistan Residential College Khuzdar, Balochistan, Punjab Group of college Haripur, Punjab Group of Colleges Gujar Khan, NFC IEFER Faisalabad, AmnaBint-ul-Huda Educational Institute Murree, Govt. Girls High School SainthaKallarSyedan, The Citizen Foundation School DhokChoudrian Rawalpindi, Holy Family School of Nursing, Rawalpindi, The Lasanians School Rawalpindi, Fauji foundation Model School Kahuta, Fauji Foundation Model School Mang (AJK), Iqra Education Academy Peshawar, Peshawar, Dar-e-Arqam High School Samundri, Faisalabad, PMAS-Arid Agriculture University, Rawalpindi, University of Hiripur, University of Wah, WahCantt., Quaid-i-Azam Public Sec. School Hazro, Attock, Govt. Vocational Training Institute for Women, Daska, Dawah Academy, Unique Educational Academy Rawalakot AJK, Women branch International Islamic University, Islamabad Startwell Education Rawalpindi, GDGC No1 Abbottabad. These students were facilitated with the guided tour and video documentaries shown on a large screen.

4.3 Education through PMNH displays:

PMNH has more than 100 state of art displays, exhibits, dioramas for public awareness about the biodiversity and natural resources of Pakistan. In 2017-18, new diorama “Bird of Pakistan” was been inaugurated and opened for the general public. Another diorama “Botanical Forests Diorama of Pakistan” preparation. In 2017-18, two animated Dinosaurs added to the display galleries. These animated models of T-Rex are center of attraction for the visitors of all ages.

PMNH also facilitate visitors, National and International delegations and groups of students of schools, colleges and universities during their visit to the PMNH display galleries by providing guided tours. Large number of people, students of schools, colleges and universities belonging to the various regions of Pakistan visited PMNH displays galleries. In **2017-18**, a total **2,16,781 people visited museum including 48225 students, 99109 general public, 486 foreigners, and 68961 children** below 5 years of age.

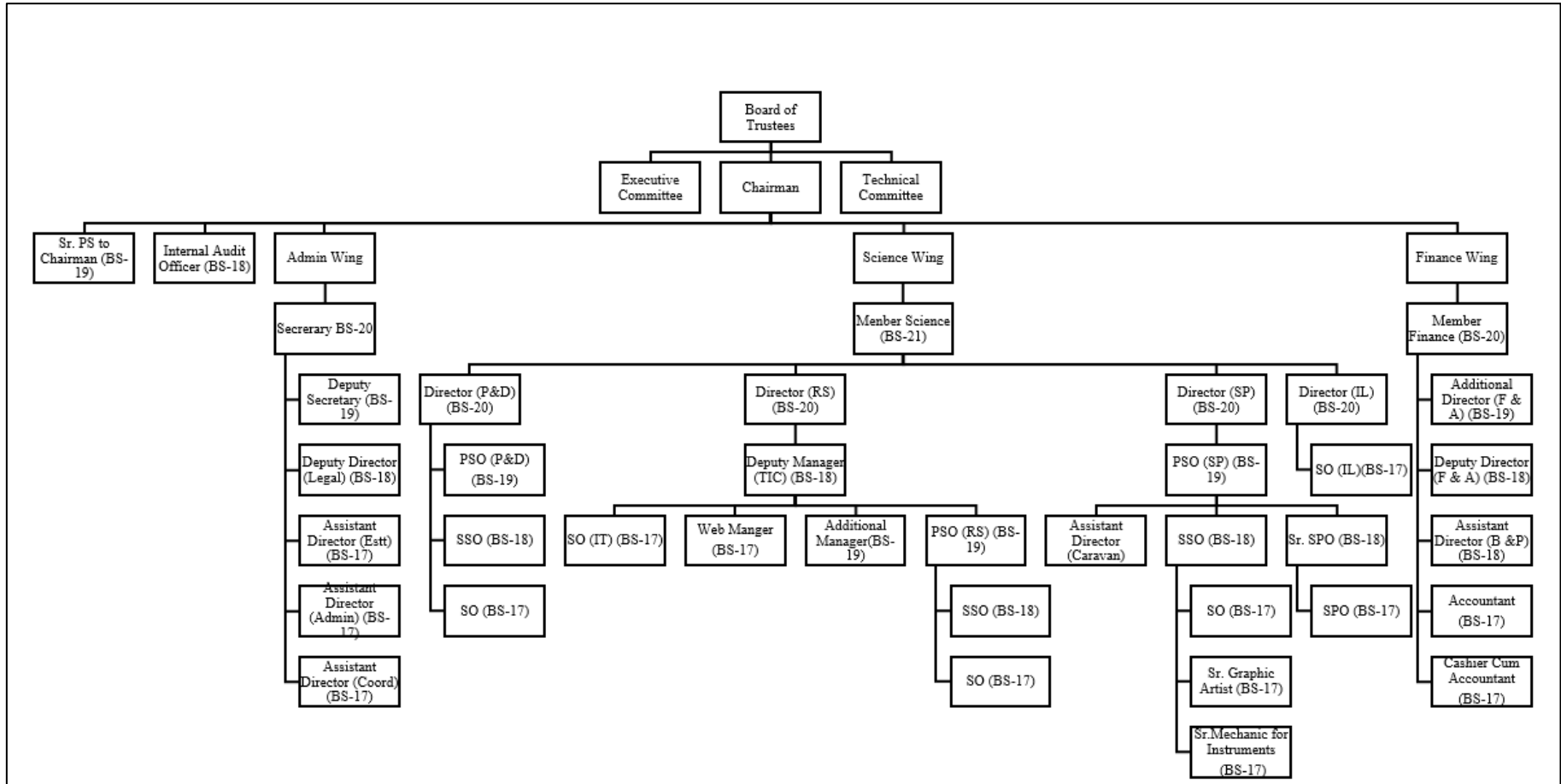
IV. ORGANIZATION AND ADMINISTRATION

1.0 PSF Sanctioned Posts and Organizational Chart

Sr. No	Name of Post	BPS	Sanctioned	Filled	Vacant	By Direct	By Promotion
1.	Chairman	22	1	1	-	1	-
2.	Member Science	21	1	-	1	1	-
3.	Member Finance	20	1	-	1	1	-
4.	Secretary	20	1	-	1	-	1
5.	Director (P&D)	20	1	1	-	-	-
6.	Director (SP)	20	1	-	1	-	1
7.	Director (RS)	20	1	1	-	-	-
8.	Director (IL)	20	1	-	1	1	-
9.	Additional Director (F&A)	19	1	-	1	1	-
10.	Principal Scientific Officer	19	3	2	1	1	-
11.	Deputy Secretary	19	1	-	1	-	1
12.	Sr. Scientific Officer	18	3	2	1	1	-
13.	Deputy Manager (TIC)	18	1	-	1	-	1
14.	Sr. Science Promotion Officer	18	1	1	-	-	-
15.	Dy. Director (F&A)	18	1	1	-	-	-
16.	Dy. Director (Legal)	18	1	-	1	1	-
17.	Internal Audit Officer	18	1	-	1	1	-
18.	Sr. PS to Chairman	19	2	2	-	-	-
19.	Asstt. Director (Budget & Pension)	18	1	1	-	-	-
20.	Assistant Director (Admn)	17	1	-	1	1	-
21.	Scientific Officer	17	8	6	2	-	2
22.	Scientific Officer (IT)	17	1	1	-	-	-
23.	Web Manager	17	1	-	1	1	-
24.	Asstt. Director (Coord/Estt.)	17	1+1	1	1	-	1
25.	Asstt. Director (Caravan)	17	6	5	1	-	1
26.	Accountant	17	3	2	1	1	-
27.	Science Promotion Officer	17	1	-	1	-	1
28.	Sr. Mechanic for Instruments	17	1	1	-	-	-
29.	Sr. Graphic Artist	17	1	1	-	-	-
30.	Cashier-cum-Accountant	17	1	1	-	-	-
31.	Asstt. Scientific Officer	16	11	10	1	1	-

32.	Audit & Accounts Assistant	16	2	-	2	2	-
33.	Superintendent	16	1	-	1	-	1
34.	Graphic Artist	16	1	-	1	1	-
35.	Asstt. Private Secretary	16	10	9	1	1	-
	S. Total (I)		75	49	26	16	10
36.	Photographer	16	1	1	-	-	-
37.	Planetarium Assistant	16	5	5	-	-	-
38.	Assistant	16	5	5	-	-	-
39.	Driver-Cum-Mechanic	16	6	6	-	-	-
40.	Science Assistant	14	5	4	1	1	-
41.	Science Assistant (Caravan)	14	13	10	3	3	-
42.	Technical Assistant (IT)	14	1	1	-	-	-
43.	Assistant	15	2	2	-	-	-
44.	Storekeeper	14	1	-	1	1	-
45.	Stenotypist	14	2	-	2	2	-
46.	Planetarium Assistant	11	4	4	-	-	-
47.	Driver-Cum-Mechanic	11	3	3	-	-	-
48.	Calligrapher	11	1	-	1	1	-
49.	UDC	11	6	6	-	-	-
50.	Carpenter	11	1	1	-	-	-
51.	LDC/Typist	9	8	8	-	-	-
52.	Electrician	11	1	1	-	-	-
53.	Driver/D.R	4/5/7/6/11	18	17	1	1	-
54.	DMO	6	1	1	-	-	-
55.	Naib Qasid	1/2/3/4	19	17	2	2	-
56.	Mali	4	1	1	-	-	-
57.	Mali	1/3	2	2	-	-	-
58.	Caravan Attendant	1/2/3	9	8	1	1	-
59.	Security Guard	1/2/3	16	15	1	1	-
60.	Sanitary Worker	1/2/3	4	4	-	-	-
	S. Total (II):		135	122	13	29	-
	G. Total (I) & (II):-		210	171	39	39	10

Organizational Chart of Pakistan Science Foundation (PSF)



2.0 PMNH Sanctioned Posts and Organizational Chart

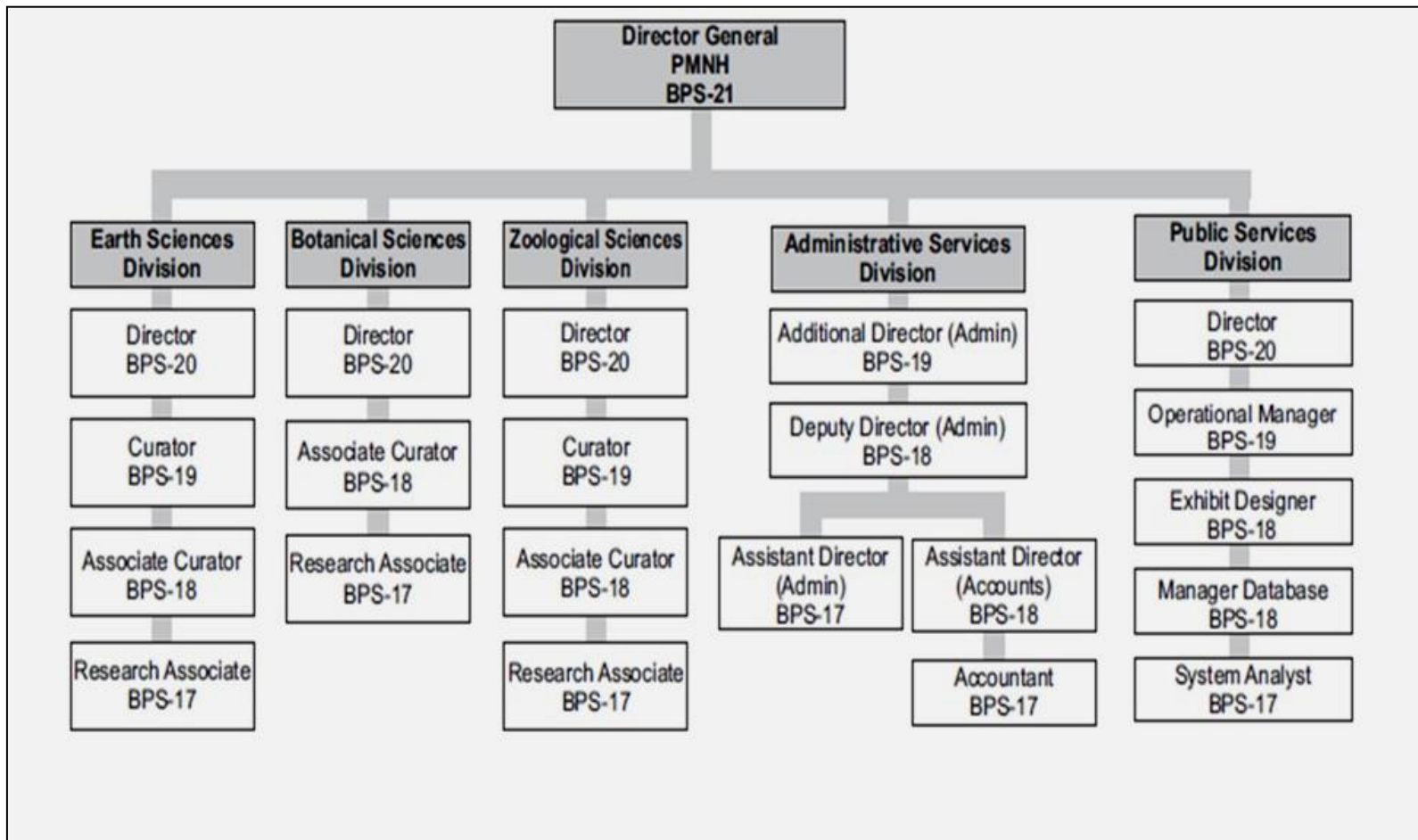
PAKISTAN MUSEUM OF NATURAL HISTORY GRADE WISE ACTUAL SANCTIONED STRENGTH 2018-19

Sr. No.	BPS	Designation	Number of Posts		
			No. of Posts	Filled	Vacant
1.	21	Director General	1	-	1
2.	20	Director	4	2	2
3.	19	Curator	2	1	1
4.	19	Operational Manager	1	1	-
5.	19	Additional Director (Admin)	1	-	1
6.	18	Associate Curator	10	6	4
7.	18	Exhibit Designer	1	1	-
8.	18	Deputy Director (Admin)	1	1	-
9.	18	Assistant Director (Accounts)	1	-	1
10.	18	Manager Data Base	1	1	-
11.	17	Assistant Director (Admin)	1	1	-
12.	17	Accountant	2	1	1
13.	17	Research Associate	18	10	8
14.	17	System Analyst	1	1	-
Sub Total			45	26	19
15.	16	Assistant Librarian	1	-	1
16.	16	PA to D.G	1	1	-
17.	16	Sr. Modeler	1	1	-
18.	16	Superintendent	1	1	-

19.	16	Assistant Research Associate	2	-	2
20.	16	CASTING Staff	1	1	-
21.	16	Teacher Guide	1	1	-
22.	16	Associate Artist	2	2	-
23.	16	Taxidermist	2	-	2
24.	16	Fossil Technician	1	1	-
25.	16	Assistant Private Secretary	3	3	-
26.	16	Accounts Assistant	1	1	-
27.	16	Computer Operator	1	1	-
28.	15	Children Education Programmer	1	1	-
29.	15	Office Assistant	1	1	-
30.	15	Purchase Assistant	1	1	-
31.	15	Data Control Assistant	1	1	-
32.	14	Sr. Skeleton Preparator	1	-	1
33.	14	Sr. Drying & Fumigating Assistant	1	-	1
34.	14	Repository Assistant	2	1	1
35.	14	Sr. Collection Incharge	2	1	1
36.	14	Photographer	1	1	-
37.	14	Store Keeper	1	1	-
38.	12	Calligrapher	1	1	-
39.	12	Sr. Incharge Embalming	1	1	-
40.	12	Drying & Fumigating Assistant	1	1	-
41.	12	Collection Incharge	2	2	-
42.	12	Skelton Preparator	1	1	-
43.	11	U.D.C	2	2	-

44.	9	Carpenter	1	1	-
45.	9	Museum Guide	2	1	1
46.	9	L.D.C	2	2	-
47.	7	Electrician	1	-	1
48.	7	Painter	1	-	1
49.	7	Tracer	1	1	-
50.	7	L.M.O	1	1	-
51.	5	Field Assistant	12	11	1
52.	4	Dispatch Rider	1	1	-
53.	4	D.M.O	1	1	-
54.	4	Driver	5	4	1
55.	1	Security Guard	14	12	2
56.	1	Naib Qasid	7	7	-
57.	1	Sanitary Worker	5	5	-
58.	1	Gardener	1	1	-
59.	1	Helper	5	4	1
		Total Staff (BS-1 to 16)	98	81	17
		Total Officers (BS-17 to 21)	45	26	19
		Total Officers & Staff (BS-1 to 21)	143	107	36

Organizational Chart of Pakistan Museum of Natural History (PMNH)



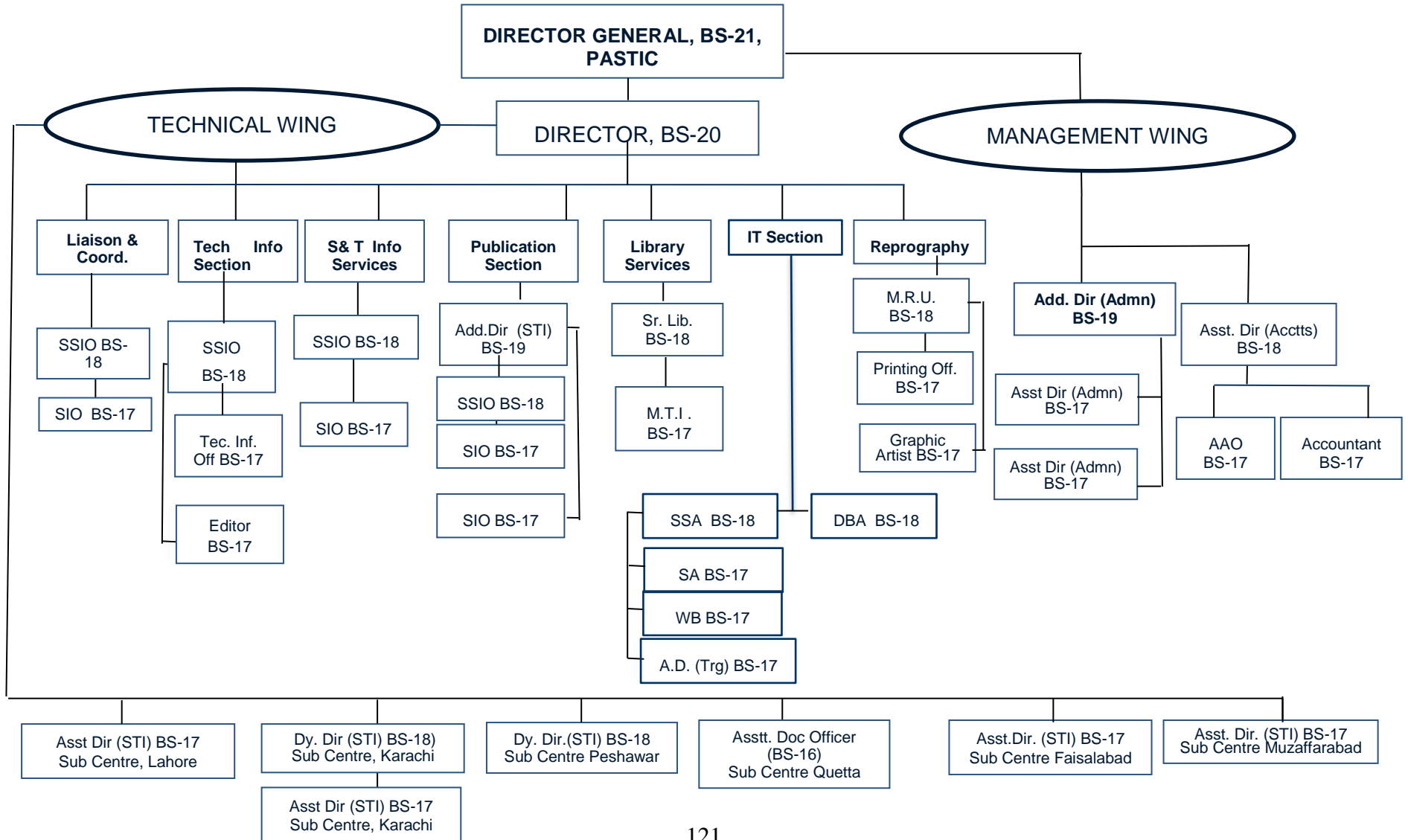
3.0 PASTIC Santioned Posts and Organizational Chart

sr. #	Post	BPS	Sanctioned	Filled	Vacant	By Direct	By Promotion
1	Director General	21	1	1	0	1	-
2	Director	20	1	1	0	-	-
3	Additional Director (A&F)	19	1	1	0	-	-
4	Additional Director (STI)	19	1	1	0	-	-
5	Principal System Analyst	19	1	1	0	-	-
6	Principal Librarian	19	1	1	0	-	-
7	Deputy Director (STI)	18	5	5	0	-	-
8	Manager Reprographic Unit	18	1	1	0	-	-
9	Database Administrator	18	1	0	1	-	1
10	Senior Scientific Information Officer	18	8	7	1	1	-
11	Deputy Director (Admin)	18	1	1	0	-	-
12	Assistant Director (Accounts)	18	1	1	0	-	-
13	PS to D.G	18	1	1	0	-	-
14	Senior Manager Technology Information	18	1	1	0	-	-
15	Assistant Director (Training)	17	1	0	1	1	-
16	Scientific Information Officer	17	2	2	0	-	-
17	System Analyst	17	1	1	0	-	-
18	Web Manager	17	1	1	0	-	-
19	Printing Officer	17	1	0	1	-	1
20	Graphic Designer	17	1	0	1	1	-
21	Assistant Director (Admn)	17	2	2	0	-	-
22	Technology Information Officer (Marketing)	17	1	0	1	1	-
23	Editor	17	1	1	0	-	-
24	Assistant Accounts Officer	17	1	1	0	-	-

25	Accountant	17	1	1	0	-	-
26	Superintendent (Admin)	17	2	2	0	-	-
27	Assistant Scientific Information Officer	16	3	1	2	1	1
28	Assistant Documentation Officer	16	1	1	0	-	-
29	Assistant Programmer	16	2	1	1	-	1
30	Assistant Web Manager	16	1	1	0	-	-
31	Assistant Manager Reprographic Unit	16	1	0	1	1	-
32	Assistant Printing Officer	16	4	3	1	1	-
33	Assistant Private Secretary	16	2	2	0	-	-
34	Assistant (Admn)	16	7	7	0	-	-
35	Assistant Accounts	16	1	1	0	-	-
36	Senior Data Control Assistant	15	2	2	0	-	-
37	Assistant (Admn)	15	1	1	0	-	-
38	Data Control Assistant	14	7	7	0	-	-
39	Layout Artist	14	1	1	0	-	-
40	Marketing/Field Assistant	14	1	0	1	1	-
41	Graphic Assistant	14	1	1	0	-	-
42	Mechanical Supervisor	14	1	0	1	1	-
43	Senior Offset Printer	14	2	1	1	1	-
44	Stenotypist	14	2	2	0	-	-
45	Library Assistant	12	1	1	0	-	-
46	Data Entry Operator	12	2	2	0	-	-
47	Technician	11	1	1	0	-	-
48	Offset Printer	11	1	1	0	-	-
49	Technical Assistant	11	1	1	0	-	-
50	Senior Carpenter	11	1	1	0	-	-
51	Upper Division Clerk	11	9	9	0	-	-
52	Lower Division Clerk	7	10	9	1	-	1
53	Electrician	7	1	1	0	-	-
54	Assistant Offset Printer	7	3	2	1	-	1

55	Driver	7	2	2	0	-	-
56	Bindery Assistant	5	2	2	0	-	-
57	Driver	5	2	2	0	-	-
58	Offset Machine Assistant	5	2	2	0	-	-
59	Drivers	4	4	4	0	-	-
60	Duplicating Machine Operator	4	1	0	1	1	-
61	Dispatch Rider	4	1	1	0	-	-
62	Head Mali	3	1	1	0	-	-
63	Record Sorter	3	1	1	0	-	-
64	Photo Attendant	4	1	1	0	-	-
65	Patent Attendant	4	1	1	0	-	-
66	Security Guard	3	5	5	0	-	-
67	Qasid	3	8	8	0	-	-
68	Qasid	2	1	1	0	-	-
69	Photo Attendant	2	1	1	0	-	-
70	Patent Attendant	2	1	1	0	-	-
71	Library Attendant	2	2	1	1	-	1
72	Bindery Helper	1	1	1	0	-	-
73	Sanitary Workers	1	3	3	0	-	-
74	Mali	1	2	2	0	-	-
75	Security Guard	1	3	3	0	-	-
76	Naib Qasid	1	9	9	0	-	-
GRAND TOTAL		164	145	19	12	7	

Organizational Chart of Pakistan Scientific And Technological Information Centre (PASTIC)



V. PHOTO GALLERY AND NEWS CLIPPING

1.0 PSF PHOTO GALLERY



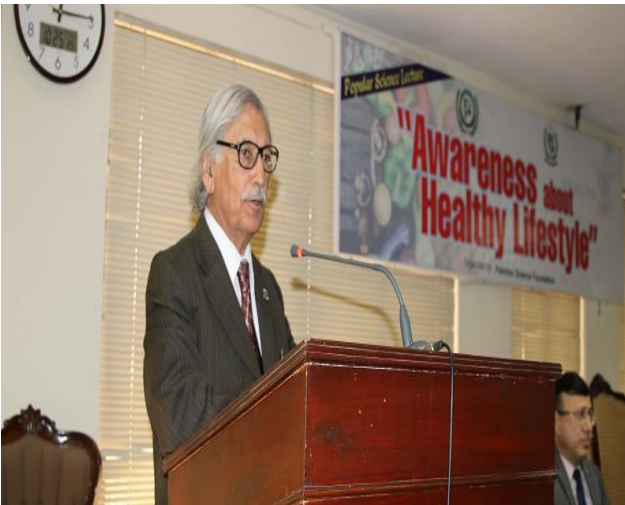
Glimpse of Science Exhibitions



Glimpse of Essay and Poster Competition



Glimpse of World Science Day Celebration



Prof. Dr. Qasim Jan, President Pakistan Academy of Sciences expresses his views on popular science lecture



Little Professor Zidane Hamid setting the Guinness World Record



Participants of the 2nd Belt and Road Teenager Maker Camp & Teacher Workshop with Team Leader

2.0. PASTIC PHOTO GALLERY AND NEWS CLIPPING



DG PASTIC presenting a Book to Honorable Federal Minister for Science & Technology, Prof. Muhammad Yusuf Shaikh, during the visit to the office of Federal Minister for S& and briefed the Minister about the activities and services of PASTIC.



Group photo of the research scholars with Director General Prof. Dr. Muhammad Akram Shaikh at PASTIC National Centre, Islamabad during SPSS workshop.



Mr. Muhammad Usman, Resource Person of the training from PASTIC Islamabad delivering lecture on SPSS to the participants.



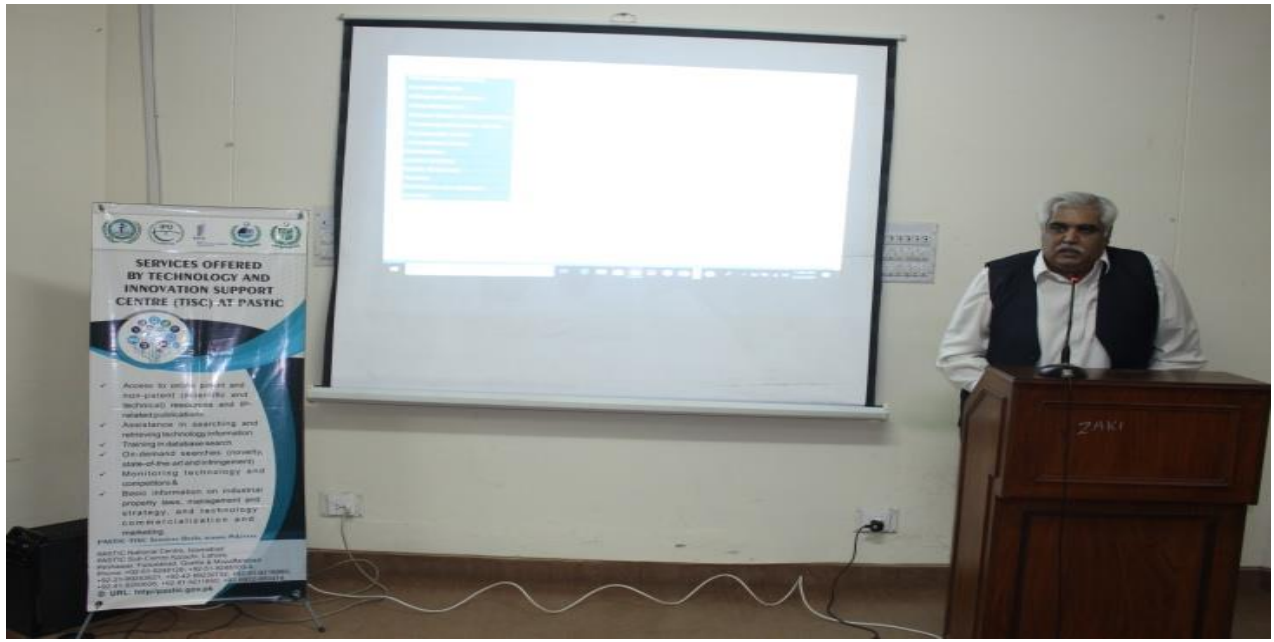
Prof. Dr. Muhammad Akram Shaikh DG PASTIC, Mr Adnan Alam Assistant Director (M&E) SDF, Dr. Saima Tanveer Project Director and Mr. Saifullah Azeem, Project Coordinator, during SDF Project monitoring at PASTIC



Group photo of two-day seminar on "Learning Data Analysis through SPSS" organized by PSC Karachi



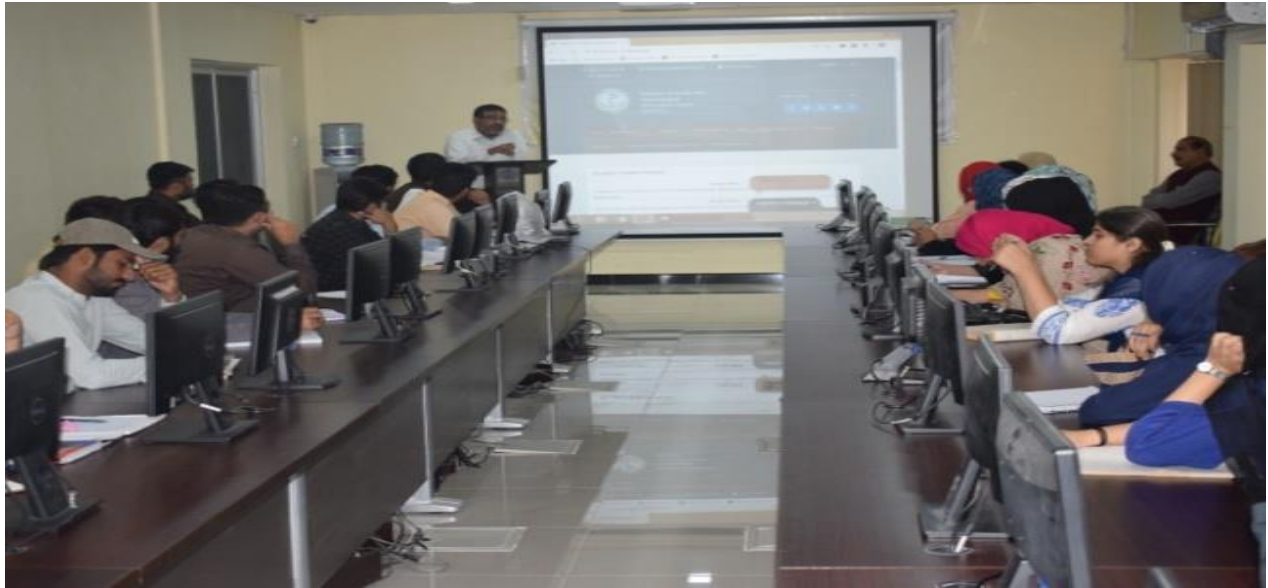
Syed Habib Akhter Jaffri, Project Director, PASTIC National Centre Islamabad, addressing the participants.



Mr. Ali Raza Khan, Deputy Director (STI), PSC Lahore, highlighting the role of PASTIC and its services in September 2018.



Deputy Director STI gave presentation to the participants during Training workshop on “Learning Data Analysis through SPSS” at PSC Karachi in September 2018.



Mr. Syed Habib Akhter Jaffery, Principal Librarian, PASTIC, addressing the participants during Awareness Seminar at Department of Defense & Strategic studies, QAU in October 2018.



Database Manager, PASTIC delivering lecture during Awareness Seminar in Fatima Jinnah Women University Rawalpindi in October 2018.



DD PSC Quetta delivering briefing to students about PASTIC services at the stall in October 2018.



Dr Asmat Naz, Dean Faculty of Life Sciences, The Women University, Multan, distributing certificates among the participants in November 2018.



Group photo of the participants at The Women University Multan in November 2018.



Prof. Dr. Muhammad Akram Shaikh, DG PASTIC, distributing certificates among the participants after training workshop on “Next Generation Sequencing Data Analysis” organized by PASTIC and NGS-Pakistan on November 14-16, 2018 at PASTIC National Centre, Islamabad.



Prof. Dr. Muhammad Akram Sheikh, Director General PASTIC and Prof. Dr. Habib-ur-Rehman (SI) signed MOU during Workshop at Mirpur University of Science & Technology (MUST) Mirpur in November 2018.



Deputy Director PASTIC Peshawar, Additional Director (STI) and Sr. SIO, from PASTIC National Centre Islamabad, at the stall during 5th KP Innovation to invention summit at CECOSE University Peshawar on 22-23 November, 2018.



PASTIC Awareness Seminar at NIAB Faisalabad, in November 2018.



Deputy Director (STI), briefed the Research Scholars regarding the activities and facilities of PASTIC at Polymer & Process Department, University of Engineering & Technology, Lahore in November 2018.



Mr. Abdul Khaliq Sial, In-Charge, PASTIC Sub Centre Quetta, addressing the participants during Training Workshop “ENDNOTE” at CASVAB, University of Balochistan



A view of the meeting with the High Level Committee constituted by the government to evaluate the existing potential of the organizations under the Ministry of Science & Technology



Members of the High Level Committee visiting the PASTIC Reprographic Section in December 2018.



DG PASTIC briefing the delegation about facilities at the PASTIC Library.



Opening Ceremony (L to R): Mr. Pejush Datta (Project Coordinator, BWCCI), Dr. Saima Tanveer (Project Director, NCBWESC), M. Usman (Web Portal Dev. Lead, NCBWESC), Ms. Lipi Khandker (Member Board, BWCCI).



Project Director, NCBWESC presented a shield from PASTIC, Pakistan to Mr. Pejush Datta (Project Coordinator, BWCCI) at the closing ceremony organized by PASTIC under SDF funded Project titled “Networking and Capacity Building of Women Entrepreneurs (SMEs) from SAARC Countries” at Porjoton Motel, Rajshahi, Bangladesh



Group photo of participants with Dr. Saima Tanveer (Project Director, NCBWESC).



Ms. Ghazala Ali Khan (Deputy Director PASTIC Peshawar), during her presentation at Department of Zoology University of Peshawar in December 2018.



Deputy Director PASTIC Sub Centre Karachi Mr. Abdul Fatah Shaikh delivering PASTIC Services presentation to Sr. Vice President FPCCI, during stall at 3rd Invention to innovation Summit, Sindhin December 2018.



In-Charge PSC Quetta delivering briefing to students about PASTIC services at the stall in December 2018.



In-Charge PSC Muzaffarabad delivering briefing to students about PASTIC services at the stall at in December 018.



Mr. Muhammad Altaf, Deputy Director (STI) receiving shield from Prof. Dr. Muhammad Haleem Khan, Vice Chancellor, Women University Bagh, Azad Kashmir.



Dr. Saima H. Tanveer, Project Director, (NCBWESC) Mr. Ali Raza Khan, Deputy Director, (STI) held a meeting with Ms. Faaiza Amjad, President, WCCI., Lahore on January 14, 2019 in the context of data collection and upcoming workshop for Women SMEs in Lahore.



A glimpse of Mrs. Ghazala Ali Khan, Dy. Director (STI), PASTIC Sub-Centre, Peshawar and Dr. Syed Aftab Hussain Shah, Sr. SIO PASTIC, Islamabad, Prof. Dr. Muhammad Hassan Sayyad, Dean, Faculty of Engineering Sciences, GIK, Topi during the 2018 Award Ceremony of Top KP Scientists at University of Engineering & Technology (UET), Peshawar.



Dr. Saima Huma Tanveer, Mr. Saifullah Azeem, Ghazala Ali Khan and Muhammad Usman attended the session. Feb 2019

Glimpses of PASTIC-UAF ICT-EXPO Titled “Innovative Trends in Science and Education” at Expo Centre, UAF on February 20, 2019.







Prof. Dr. M. Akram Shaikh, Director General PASTIC and Prof. Dr. M. Umer, Vice Chancellor, Rawalpindi Medical University signing MOU to share the services of PASTIC.



Group photo of Director PASTIC, Director Institute of Gender Studies & Resource Persons. With faculty and students, Department of Bioinformatics, QAU.



Participants during training Workshop on "KOHA ILS Software as services (SAS)" at Government college University Hyderabad.



Prof Dr. Muhamamd Akram Shaikh, D.G PASTIC, presented PASTIC memento to Vice chancellor Government college University Hyderabad during Three days training Workshop on "KOHA ILS Software as services (SAS)" at Government college University, Hyderabad.



D.G PASTIC, presented PASTIC memento to Vice Chancellor Sindh Agriculture University Tandojam, during one day training Workshop on “HEC Plagiarism policy & Effective usage of Turnitin Service” at Sindh Agriculture University, Tandojam.



Prof. Dr. Muhamamd Akram Shaikh, D.G PASTIC, speaking during training Workshop on “HEC Plagiarism policy & Effective usage of Turnitin Service” at Sindh Agriculture University, Tandojam.



Chaudhary Fawad Hussain, Federal Minister for Science & Technology visiting PSC Faisalabad on May 31, 2019



A view of the participants in the 3-Day training workshop on "Library Automation for College Librarians" organized by PASTIC at PASTIC National Center Islamabad

PASTIC NEWS CLIPPING



جلد 34 | جمعرات 15 جمادی الثانی 1440ھ، 21 فروری 2019ء، 10 پجائون 2075 بام، صفحات 12 قیمت 12 روپے | شمارہ 45

زرعی یونیورسٹی میں آئی ٹی میں آخری امتحان پر سپارٹ ویسرز کی نمائش

لاہور، پشاور، کوئٹہ، کراچی، سکھر، کے پی کے میں بھی اسی طرح کی نمائشوں کا انعقاد کیا جائے گا تاکہ لوگوں کو آگاہی فراہم ہو سکے

اس طرح کی نمائشوں کے انعقاد کا مقصد طلباء و طالبات کی تیار کردہ پراڈکٹ کو ایک پلیٹ فارم مہیا کرنا ہے، آکرم شیخ، نصاب علمدار کا خطاب

فیصل آباد (چیف رپورٹر) زرعی یونیورسٹی فیصل آباد کے ایکسپو سنٹر میں انٹرنیشنل اینڈ کیوٹیشن ٹیکنالوجی میں امتحانات پر مبنی پراجیکٹ اور موبائل ایپس پر مشتمل بارڈر ویسرز و سافٹ ویئرز کی نمائش کا انعقاد کیا گیا جس کا اہتمام پاکستان سائنٹفک اینڈ ٹیکنالوجیکل انفارمیشن سینٹر (پاسٹک) اور زرعی یونیورسٹی فیصل آباد کے اشتراک سے کیا گیا تھا۔ اس موقع پر منصفانہ تقریب سے ڈائریکٹر جنرل پاسٹک ڈاکٹر محمد اکرم شیخ نے سائنس و ایجوکیشن کے شعبوں میں ابھرتے ہوئے انٹرنیشنل رجحانات پر روشنی ڈالتے ہوئے کہا کہ اس طرح کی نمائشوں کے انعقاد کا مقصد طلباء و طالبات کی تیار کردہ پراڈکٹ کو ایک پلیٹ



فیصل آباد زرعی یونیورسٹی اور پاسٹک کے اشتراک سے سیمینار سے نصاب علمدار اکرم شیخ کو دیگر خطاب کر رہے ہیں

بقیہ 166

پر شیورسپ کے تحت گھریلو معیار پر مختلف اشیاء کو تیار کر کے مارکیٹ تک لانا ہے۔ انہوں نے کہا کہ طلباء و طالبات اپنی پڑھائی کے دوران بھی کسی قسم کی اشیاء تیار کر کے ہوم ڈیوری کے ذریعے لوگوں تک پہنچا سکتے ہیں۔ انہوں نے کہا کہ دنیا بھر کی طرح پاکستان میں بھی مختلف شعبہ جات میں ہوم ڈیوری کا رجحان بڑھ رہا ہے جس سے جہاں مصنوعات فروخت کرنے والوں کے کاروبار کو فروغ حاصل ہو رہا ہے وہیں صارفین کو گھر بیٹھے مطلوبہ اشیاء کی فراہمی ممکن ہو رہی ہے جس سے انہیں سفر کے اضافی اخراجات سے نجات مل رہی ہے۔ انہوں نے مذکورہ کہا کہ زرعی یونیورسٹی فیصل آباد میں یہ پہلا پروگرام ہے جس کے بعد لاہور، پشاور، کوئٹہ، کراچی، سکھر، کے پی کے اور آزاد کشمیر میں بھی اسی طرح کی نمائشوں کا انعقاد کیا جائے گا تاکہ طالب علموں کی تیار کردہ اشیاء اور نئی نئی موبائل ایپس کی نمائش کے بارے میں لوگوں کو آگاہی فراہم ہو سکے۔

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فیصل آباد

ایڈیٹر: محمد شہود

جلد جمعرات 21 فروری 2019ء پاجن 9، پاجن 2075 ب.م. 15 عادی الٹا نی 1440ء قیمت رجسٹرڈ نمبر | شمارہ نمبر



فیصل آباد: جامحہ رحیمہ کے ایکسپونشنز پانسک اور یو اے ایف کے زیر اہتمام آئی سی ٹی ایکسپو کا افتتاح مہمان خصوصی صدر چیئرمین آف کامرس اینڈ انڈسٹری سید فیاض آباد، جامحہ رحیمہ، ڈائریکٹر جنرل پانسک شیخ محمد اکرم، ڈپٹی ڈائریکٹر پانسک محمد حسین و دیگر کے ہمراہ رہن کاٹ کر رہے ہیں

اختراعاتی رجحانات پر روشنی ڈالنے ہوئے کہا کہ اس طرح کی نمائشوں کے انعقاد کا مقصد طلباء و طالبات کی تیار کردہ پراڈکٹ کو ایک پلیٹ فارم مہیا کرنا ہے۔ انہوں نے کہا کہ ایک سو کے ذریعے آئی سی ٹی کے شعبہ میں سامنے آنے والے نئے مسائل اور موضوعوں کے تناظر میں نوجوانوں کو آگاہ کرنے کے ساتھ ساتھ آئی سی ٹی سے وابستہ نوجوانوں کو ایک محرک پلیٹ فارم بھی مہیا کرنے کی راہ ہموار کی جارہی ہے۔ انہوں نے کہا کہ انٹر پرائیور شپ کے تحت گھریلو سطح پر مختلف اشیاء کو تیار کر کے مارکیٹ تک لانا ہے۔ انہوں نے کہا کہ طلباء و طالبات اپنی پڑھائی کے دوران بھی کئی قسم کی اشیاء تیار کر کے ہوم ڈیورٹی کے ذریعے لوگوں تک پہنچا سکتے ہیں۔ انہوں نے کہا کہ دنیا بھر کی طرح پاکستان میں بھی مختلف شعبہ جات میں ہوم ڈیورٹی کا رجحان بڑھ رہا ہے جس سے جہاں مصنوعات فروخت کرنے والوں کے کاروبار کو فروغ حاصل ہو رہا ہے وہیں صارفین کو گھریلو سطح پر مہیا کی اشیاء کی فراہمی ممکن ہو رہی ہے جس سے انہیں سڑک کے اضافی اخراجات سے نجات مل رہی ہے۔ انہوں نے مذہب کہا کہ زری پونٹورٹی فیصل آباد میں یہ پہلا پروگرام ہے جس کے بعد لاہور، پشاور، کوئٹہ، کراچی، سکس، کے ٹی کے اور آزاد کشمیر میں بھی اسی طرح کی نمائشوں کا انعقاد کیا جائے گا تاکہ طالب علموں کی تیار کردہ اشیاء اور نئی نئی موبائل ایپلیکیشن کے بارے میں لوگوں کو آگاہی فراہم ہو سکے۔ اس موقع پر چیئر آف کامرس ایڈوائزٹری فیصل آباد کے صدر سید ضیاء عابد رحمان، پونٹورٹی کے دفتر تحقیقات، اختراع و کھلائی تزیین (اورک) کے ماہرین، قاسم کے ڈاکٹر معروف آفتاب، چیئر مین کپیوٹرسائنس ڈیپارٹمنٹ زری پونٹورٹی ڈاکٹر احسن لطیف، ڈاکٹر عبدالرشید، مختلف شعبہ جات کے محققین و دیگر سٹیک ہولڈرز کے علاوہ طلباء و طالبات کی بڑی تعداد بھی موجود تھی۔ نوجوان طلباء و طالبات کی حوصلہ افزائی کیلئے چوبہترین پریزنٹیشنس کو دس ہزار روپے کی پیش پرائز دئے گئے۔ مذکورہ نمائش کے مختلف کاموں میں معاونت کرنے والے باسکٹ اور پوائے ایف کی سٹیجمنٹ میں ایک سو کی شیلڈ تقسیم کی گئیں اس نمائش میں فیصل آباد کی تمام مقامی پونٹورٹیوں کے علاوہ پونٹورٹی آف رجم پارخان اور سرگودھا پونٹورٹی کے طلباء و طالبات نے بھی شرکت کی۔

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CPL NO- 73

جلد نمبر 42 جمعرات 15 جمادی الثانی 1440ھ 21 فروری 2019ء 10 بجان 2075 پ قیمت ڈ

زرعی یونیورسٹی فیصل آباد میں ہارڈ ویئر و سافٹ ویئر کی نمائش کا انعقاد

نمائش کا اہتمام پاکستان سائنٹفک ایڈمیٹینا لوجیکل انفارمیشن سینٹر (پاسک) اور زری پونٹورٹی فیصل آباد کے اشتراک سے کیا گیا

ڈائریکٹر جنرل پاسک ڈاکٹر محمد اکرم شیخ نے سائنس و ایجوکیشن کے شعبوں میں اُبھرتے ہوئے اختراعاتی رجحانات پر روشنی ڈالی

صدر فیصل آباد چیئر آف کامرس سید ضیاء عابد رحمان، پونٹورٹی کے دفتر تحقیقات، اختراع و کھلائی تزیین (اورک) کے ماہرین کی بڑی تعداد نے شرکت کی

فیصل آباد (سٹاف رپورٹر) زری پونٹورٹی فیصل آباد کے ہارڈ ویئر و سافٹ ویئر کی نمائش کا انعقاد کیا گیا جس کا اہتمام پاکستان سائنٹفک ایڈمیٹینا لوجیکل انفارمیشن سینٹر (پاسک) ڈاکٹر محمد اکرم شیخ نے سائنس و ایجوکیشن کے شعبوں میں اُبھرتے ہوئے (باقی صفحہ اندرونی نمبر 41)

ہوئے لیا ابھوں نے لہا لہ ہمارے امیدوار کامیابی حاصل کر کے دکلا برادری کے حقوق کا تحفظ اور اسکے مسائل کا حل

سرفیق عامر حنیف ہام حنیف ملک عبدالرؤف سوئی حماد کھوکھر سمیت دکلاء کی بڑی تعداد موجود تھی۔

ٹیکنالوجی انفارمیشن سنٹر کے تعاون سے ریسرچ سیمینار کا انعقاد

رحیم یارخان (ٹائف رپورٹر) خواجہ فرید یونیورسٹی آف انجینئرنگ اینڈ انفارمیشن ٹیکنالوجی رحیم یارخان کے ڈائریکٹر (ORIC) ڈاکٹر ابو بکر صدیق نے پاکستان سائنسیٹک ٹیکنالوجی انفارمیشن سنٹر (PASTIC) کے تعاون سے (Research Techniques) سے متعلق سیمینار کا انعقاد کراہا جس میں مہمان خصوصی ندیم سہیل نے ریسرچ ٹیکنیکس، ریسرچ کا طریقہ کار، ٹیکنیکل ریسرچ پر طلباء و طالبات کو لیکچر دیا۔ اس موقع پر یونیورسٹی کے وائس چانسلر پروفیسر ڈاکٹر انجینئر اطہر محبوب نے خصوصی شرکت کی، سیمینار میں طلباء و طالبات کی کثیر تعداد نے حصہ لیا۔ جدید اور ٹیکنیکل ریسرچ پریزنٹنگ حاصل کر کے طلباء و طالبات بہت زیادہ مستفید ہوئے۔ اس کے بعد ڈپٹی ڈائریکٹر پائلنگ فیصل آباد محمد حسین نے ٹیکنیکی سمیت تمام طلباء و طالبات کو پاکستان سائنسیٹک ٹیکنالوجی انفارمیشن سنٹر (PASTIC) پر بریفنگ بھی دی، ڈاکٹر سلیم اللہ (ہیڈ آف کمپیوٹر سائنس ڈیپارٹمنٹ)، ڈاکٹر سید ORIC ڈاکٹر محمد ابو بکر صدیق، ڈاکٹر محمد ناظم، انجینئر غیاث محمود، ڈاکٹر عبدالرؤف، ڈاکٹر محمد منور، میڈم ثناء مثل بھی موجود تھیں۔



رحیم یارخان: خواجہ فرید یونیورسٹی آف انجینئرنگ اینڈ انفارمیشن ٹیکنالوجی میں جدید ٹیکنیکل ریسرچ کے حوالے سے منعقدہ سیمینار سے ندیم سہیل، محمد حسین لیکچر دے رہے ہیں

حضرت غلام فرید کے عرس کی تقریبات جمعرات سے شروع ہونگی

سجادہ نشین حضرت خواجہ معین الدین کوریچو دیگر عمائدین مزار کو غسل دینگے

رحیم یارخان (ٹائف رپورٹر) معروف بزرگ صوفی | زمر صدارت | 13 دسمبر کو خواجہ فرید تصوف سیمینار جبکہ 14

3.0 PHOTO GALLERY OF PMNH



Visit of M.Sc and BS students from Quaid-i-Azam University Islamabad and COMSATS University Islamabad at Botanical and Zoological Sciences Division PMNH



Scientist of BSD briefing the M.Sc. and B.Sc. students of Quaid-i-Azam University and COMSATS University, Islamabad during their visit to the Botanical Sciences Division herbarium of PMNH



Researchers of Earth Sciences Division conducting field with their foreign collaborators under the project of “Zhub Dinosaurs Track Way Reconstruction”



Prof. Dr. Muhammad Ashraf, Chairman conducting meeting with Mr. Nicholas Allan, Researcher from Factum Foundation for Zhub Dinosaurs Track Way Reconstruction Project.



Mr. Ahmad Fadel Yacoub, Ambassador of Egypt is visiting Museum on 15th February 2018. Dr. Muhammad Rafique is briefing the honorable guest about the exhibit.



PMNH celebrated international Museum on 18th of May, 2018 in association with Lok Virsa. Dr. Muhammad Rafique, Director General PMNH presented on stage as chief guest.



Scientists of ZSD, PMNH delivering lectures during capacity building of Forest and Wildlife staff at Srcub Forest Chakwal



Demonstrating traps operation during field work at Phareera Reserve Forests to Forest Department staff during Sustainable Forest Management Project



Consultative meeting Lahore chaired by Mr. Waheed-ud-Din, Secretary Forest Wildlife and Fisheries Punjab on 14th November 2017. DG PMNH/Secretary National MAB Committee briefing participants about Establishment of Indus Blind Dolphin Biosphere Reserve in Pakistan



Two animated T-Rex Dinosaurs Models added to the PMNH Display Galleries



A delegation of 70 participants of 7th South Asian Conference on Sanitation (SACOSAN-II) along-with officials of Ministry of Climate Change visited PMNH display galleries.



Six latest interactive Computer Systems (Kiosiks) have been installed in the VOG Gallery of PMNH



New Birds Diorama opened for the general public in PMNH



New Botanical Forest Diorama is under construction

VI. AUDITOR'S REPORTS

1.0 PSF Financial Statements

S U M M A R Y

SUMMARIZED BUDGET / REVISED ALLOCATION, ACTUAL EXPENDITURE OF 2018-19 (NON-DEVELOPMENT) UNDER BUDGET ID-1700 PAKISTAN SCIENCE FOUNDATION (PSF).

		Budget Position & Actual Expenditure <u>2018-19</u>					
Object Code.	Heads/Classification	Budget Allocation <u>2018-19</u>	Revised Budget Allocation After Re-appropriation <u>2018-19</u>	% age of Allocation	Actual Expenditure <u>2018-19</u>	% age of Expenditure	
1	2	3	4	5	6	7	
	TOTAL BUDGET ALLOCATION	277.001 (M)	272.383 (M)		272.383 (M)		
A01	EMPLOYEE RELATED EXPENSES (A + B)	110,000,000	115,222,953	42.3%	115,222,953	42.3%	
A011-1	A). Pay (a + b)	73,440,000	73,362,059	26.9%	73,362,048	26.9%	
A01101	a). Pay of Officers	50,140,000	50,140,000	18.4%	50,062,048	18.4%	

A01151	b). Pay of other Staff	23,300,000	23,222,059	8.53%	23,300,000	8.55%
A012	B). Allowances (c + d)	36,560,000	41,860,894	15.4%	41,860,905	15.4%
A012-1	c). Regular Allowances	29,060,000	28,860,894	10.6%	28,860,905	10.6%
A012-2	d). Other Allowances	7,500,000	13,000,000	4.77%	13,000,000	4.77%
A02	PROJECT PRE-INVESTMENT ANALYSIS (STATUTORY FUNCTIONS) (a + b)	90,000,000	83,701,000	30.7%	83,701,000	30.7%
A02201	a). Grant for Research & Institution Support	72,000,000	65,841,102	24.2%	71,685,174	26.3%
A02201	b). Science Promotion Activities	18,000,000	17,859,898	6.56%	12,015,826	4.41%
A03	OPERATING EXPENSES	37,000,000	33,535,068	12.3%	33,535,068	12.3%
A04	EMPLOYEES RETIREMENT BENEFITS	35,000,000	35,000,000	12.8%	35,000,000	12.8%

A05	GRANTS SUBSIDIZE & LOAN ADVANCES/OTHERS	1,000	800,000	0.29%	800,000	0.29%
A06	TRANSFERS	1,000,000	830,089	0.30%	830,089	0.30%
A09	EXPENDITURE ON ACQUIRING OF PHYSICAL ASSETS	1,000,000	699,560	0.26%	699,965	0.26%
A13	REPAIR & MAINTENANCE	3,000,000	2,594,426	0.95%	2,594,021	0.95%
-	Grand Total :-	277,001,000	272,383,096	100%	272,383,096	100%

Re-appropriated of **Rs.7.129 million** during F.Y 2018-19 under different Budgetary Head of accounts, from A-02-Project Pre-Investment Analysis to A01-Employees Related Expenses & and A03-Operating Expenses", (**Re-appropriations order of MoST is enclosed**).

During the year 2018-19 funds of **Rs.4.618 million** have been Surrender under Budgetary head "A01-Employees Related Expenses & and A03-Operating Expenses.(**Orders enclosed**).

2.0 PASTIC Financial Statements

**SUMMARIZED POSITION OF BUDGET ALLOCATION / REVISED ALLOCATION, ACTUAL EXPENDITURE
2017-18 & BUDGET ALLOCATION AS PER NIS / BUDGET ESTIMATES 2018-19 AS PER NIS (PROPOSED)
IN RESPECT OF PASTIC CURRENT EXPENDITURE (NON-DEVELOPMENT)**

Code No.	Heads/Classification	Budget Position & Actual Expenditure <u>2017-18</u>					Budget Estimates Proposed <u>2018-19</u>		
		Budget Allocation As Per NIS 2017-18	Revised Budget Allocation 2017-18 after Additional Grant	of age Allocation %	Actual Expenditure <u>2017-18</u>	of age Expenditure %	Budget Allocation <u>2018-19</u> (As Per NIS)	of age Allocation %	Budget Estimates <u>2018-19</u> (Proposed)
1	2	3	4	5	7	8	9	10	11
	TOTAL BUDGET ALLOCATION	135.450(M)	148.521 (M)	-	138.521 (M)	-	192.801(M)	-	192.801(M)

A01	Employee Related Expenses	76,696,000	89,767,000	60.44 %	89,767,000	64.80 %	96,000,000	49.79 %	96,000,000
A011-1	Pay	46,000,000	59,071,000	39.77 %	58,681,629	42.36 %	63,200,000	32.78 %	63,200,000
A01101	Pay of Officers	30,000,000	39,770,000	26.78 %	39,481,528	28.50 %	44,000,000	22.82 %	44,000,000
A01151	Pay of other Staff	16,000,000	19,301,000	13.00 %	19,200,101	13.86 %	19,200,000	9.96 %	19,200,000
A012	Allowances	30,696,000	30,696,000	20.67 %	31,085,371	22.44 %	32,800,000	17.01 %	32,800,000
A012-1	Regular Allowances	26,346,000	26,346,000	17.74 %	26,735,340	19.30 %	26,950,000	13.98 %	26,950,000
A012-2	Other Allowances	4,350,000	4,350,000	2.93 %	4,350,031	3.14 %	5,850,000	3.03 %	5,850,000
A02	Project Pre-investment Analystis/ PASTIC Functions	12,000,000	12,000,000	8.08 %	1,981,748	1.43 %	12,000,000	6.22 %	12,000,000

A03	Operating Expenses	20,902,000	20,902,000	14.07 %	20,935,880	15.11 %	31,092,000	16.13 %	31,092,000
A04	Employees Retirement Benefits	23,000,000	23,000,000	15.49 %	23,000,000	16.60 %	48,000,000	24.90 %	48,000,000
A05	Grants Subsidies and Write off Loans/Advances/Others	1,000	1,000	0.00 %	-	0.00 %	1,000	0.00 %	1,000
A06	Transfers	1,300,000	1,300,000	0.88 %	1,285,304	0.93 %	1,300,000	0.67 %	1,300,000
A09	Expenditure on Acquiring of Physical Assets	501,000	501,000	0.34 %	501,000	0.36 %	2,000,000	1.04 %	2,000,000
A13	Repair & Maintenance	1,050,000	1,050,000	0.71 %	1,050,068	0.76 %	2,408,000	1.25 %	2,408,000
-	Grand Total	135,450,000	148,521,000		138,521,000		192,801,000		192,801,000

3.0 PMNH Financial Statements

S U M M A R Y

**SUMMARIZED POSITION OF BUDGET ALLOCATION / REVISED ALLOCATION, SURRENDER AND ACTUAL EXPENDITURE
2018-19 AND BUDGET ALLOCATION AS PER NIS/BUDGET ESTIMATES 2019-20 AND PROPOSED AS PER NIS
IN RESPECT OF PMNH CURRENT EXPENDITURE (NON-DEVELOPMENT)**

Code No.	Heads/Classification	Budget Position & Actual Expenditure <u>2018-19</u>						Budget Estimates Proposed <u>2019-20</u>		
		Budget Allocation <u>2018-19</u>	Revised Budget Allocation <u>2018-19</u>	% age of Allocation	SURRENDER AMOUNT	Actual Expenditure <u>2018-19</u>	% age of Expenditure	Budget Allocation <u>2019-20</u> (As Per NIS)	% age of Allocation	Budget Estimates <u>2019-20</u> (Proposed)
1	2	3	4	5		6	7	8	9	10
	TOTAL BUDGET ALLOCATION	167.196 (M)	159.249 (M)		8.223 (M)	158.973 (M)		155.600 (M)		155.600 (M)
A01	Employee Related Expenses	90,500,000	81,738,000	51.33 %	5,436,738	81,463,262	51.24 %	86,586,000	#### ##	86,586,000

A011-1	Pay	61,520,000	54,362,000	34.14%	1,553,933	54,123,067	34.05%	51,536,000	#### ##	51,536,000
A01101	Pay of Officers	45,550,000	38,440,000	24.14%	1,505,933	38,201,067	24.03%	35,836,000	23.03%	35,836,000
A01151	Pay of other Staff	15,970,000	15,922,000	10.00%	48,000	15,922,000	10.02%	15,700,000	10.09%	15,700,000
A012	Allowances	28,980,000	27,376,000	17.19%	3,882,805	27,340,195	17.20%	35,050,000	#### ##	35,050,000
A012-1	Regular Allowances	23,256,000	19,409,000	12.19%	3,882,805	19,373,195	12.19%	27,800,000	17.87%	27,800,000
A012-2	Other Allowances	5,724,000	7,967,000	5.00%	-	7,967,000	5.01%	7,250,000	4.66%	7,250,000
A02	Project Pre-investment Analysis	22,000,000	22,000,000	13.81%	-	22,000,000	13.84%	9,000,000	5.78%	9,000,000
A03	Operating Expenses	24,834,000	22,350,000	14.03%	2,484,000	22,350,000	14.06%	28,727,000	#### ##	28,727,000

A04	Employees Retirement Benefits	26,000,000	29,600,000	18.59 %	-	29,600,000	18.62 %	22,000,000	#### ##	22,000,000
A05	Grants Subsidieze & Loan Advances/Others	1,000	1,000	0%	1,000	-	0%	1,000	0%	1,000
A06	Transfers	850,000	850,000	0.53 %	-	850,000	0.53 %	901,000	0.58 %	901,000
A09	Expenditure on Acquiring of Physical Assets	750,000	675,000	0.42 %	75,000	675,000	0.42 %	5,815,000	3.74 %	5,815,000
A13	Repair & Maintenance	2,261,000	2,035,000	1.28 %	226,000	2,035,000	1.28 %	2,570,000	1.65 %	2,570,000
-	Grand Total :-	167,196,000	159,249,000	100%	8,222,738	158,973,262	100%	155,600,000	100 %	155,600,000

An amount of Rs.8.961 million was provided as Technical Supplementary grant under the head of Accounts 01-Employees Related Funds during the financial year 2017-18

An amount of Rs.138.808 million was incurred against Revised Budget Allocation Rs.138.951 million during the financial year 2017-18 and Rs.0.143 million surrendered.

ANNEXURES

Pakistan Science Foundation Act 1973
National Assembly of Pakistan

Islamabad, the 2nd February, 1973

The following Acts of the National Assembly received the assent of the President on the 31st January, 1973, and are hereby published for general information:-

ACT NO. III OF 1973

An Act to provide for the establishment of the Pakistan Science Foundation

WHEREAS it is expedient to provide for the establishment of the Pakistan Science Foundation and for matters ancillary thereto;

It is hereby enacted as follows:-

1. Short title, extent and commencement.--(1) This Act may be called the Pakistan Science Foundation Act, 1973.

(2) It extends to the whole of Pakistan.

(3) It shall come into force at once.

2. **Definitions** – In this Act, unless there is anything repugnant in the subject or context,-

a). “Board” means the Board of Trustees of the Foundation;

(b). “Chairman” means the Chairman of the Foundation; and

(c) “Foundation” means the Pakistan Science Foundation established under this Act.

THE GAZETTE OF PAKISTAN, EXTRA., FEB. 2, 1973 [PART 1

3. **Establishment of the Foundation.**-- (1) As soon as may be after the commencement of this Act, the Federal Government may, by notification in the official Gazette, establish a Pakistan Science Foundation to promote and finance scientific activities having a bearing on the socio-economic needs of the country.

(2) The Foundation shall be a body corporate by the name of the Pakistan Science Foundation, having perpetual succession and a common seal, with power, subject to the provisions of this Act, to acquire, hold and dispose of property, both movable and immovable, and shall by the said name sue and be sued.

(3) The head office of the Foundation shall be at Islamabad.

4. **Functions of the Foundation.**-(1) The Foundation shall function as a financing agency for –

(i) the establishment of comprehensive scientific and technological information and dissemination centres;

(ii) the promotion of basic and fundamental research in the universities and other institutions on scientific problems relevant to the socio-economic development of the

- country;
- (iii) the utilization of the results of scientific and technological research including pilot plant studies to prove the technical and economic feasibility of processes found to be promising on a laboratory scale;
 - (iv) the establishment of science centres, clubs, museums, herbaria and planetaria;
 - (v) the promotion of scientific societies, associations and academies engaged in spreading the cause of scientific knowledge in general or in the pursuit of a specific scientific discipline or technology in particular;
 - (vi) the organization of periodical science conferences, symposia and seminars;
 - (vii) the exchange of visits of scientists and technologists with other countries;
 - (viii) the grant of awards, prizes and fellowships to individuals engaged in developing processes, products and inventions of consequence to the economy of the country ; and
 - (ix) special scientific surveys not undertaken by any other organization and collection of scientific statistics related to the scientific effort of the country.

(2) The Foundation shall also—

- (i) review the progress of scientific research sponsored by it and evaluate the results of such research;
- (ii) maintain a National Register of highly qualified and talented scientists of Pakistan, including engineers and doctors, in or outside the country and to assist them, in collaboration with the concerned agencies in finding appropriate employment; and
- (ii) establish liaison with similar bodies in other countries.

(3) In the performance of its functions, the Foundation shall be guided on questions of policy by the instructions, if any, given to it by the Federal Government which shall be the sole judge as to whether a question is a question of policy.

5. Board of Trustees.- (1) The general direction, conduct and management of the affairs of the Foundation, including administration of its funds, shall vest in a Board of Trustees consisting of the following members, namely:-

Whole-time members

the Chairman;
one eminent scientist;
the Director of Finance;

to be appointed by the President;

Part-time members

the Chairman of the National Science Council;
four scientists to be nominated by the National Science Council; and
eleven eminent scientists to be nominated by the President.

(2) The remuneration and other terms and conditions of service of Chairman and the two other whole-time members of the Board shall be such as may be determined by the President.

6. Chairman of the Foundation.- (1) The Chairman of the Board shall be the Chairman of the Foundation and shall be appointed from amongst eminent scientists of the country having experience of research and scientific administration

(2) The Chairman shall, subject to sub-section (3), hold office for a term not exceeding three years and shall be eligible for re-appointment.

(3) The President may at any time terminate the appointment of the Chairman without notice and without assigning any reason.

7. Members of the Board.- (1) The members of the Board, other than the ex-officio member shall, subject to sub-section (3), hold office for a term not exceeding three years and shall be eligible for re-appointment or re-nomination, as the case may be.

(2) A member, other than an ex-officio member, may at any time resign his office by writing under his hand addressed to the President but shall continue to perform his functions until his resignation has been accepted.

(3) The President may at any time terminate the appointment or, as the case may be, nomination of any member of the Board without notice and with out assigning any reason

(As amended vide Ordinance No XIII of 1979, published in the Gazette of Pakistan, Extra, Feb, 24, 1979) Part I,

8. Meetings of the Board.---(1) The meetings of the Board shall be held at least twice a year and shall be presided over by the Chairman or, in his absence by its whole-time scientist member.

(2) All decisions at a meeting of the Board shall be taken by a majority of the votes of the members present and voting.

9. Quorum at the meeting of the Board.—To constitute a quorum at a meeting of the Board not less than nine members shall be present.

10. Executive Committee.- There shall be an Executive Committee consisting of the Chairman and the two other whole-time members of the Board.

11. Delegation of powers.—The Board may, from time to time, delegates to the Chairman or the Executive Committee such of its powers and functions as it may consider necessary.

12. Adhoc Committees.—The Foundation may set up ad hoc committees consisting of university professors and other leading scientists and experts to scrutinize applications for financial assistance for carrying out scientific research submitted to the Foundation by the universities or other institutions or by individual scientific workers or groups of scientific workers and to review ;and evaluate the results of research sponsored by the Foundation.

13. Funds.—The funds of the Foundation shall consist of—

(a) grants made by the Federal Government and the Provincial Government donations and endowments ; and income from other sources.

14. Budget.—The Foundation shall cause to be prepared and approve a statement of its receipt and expenditure for each financial year.

15. Accounts and audit.—(1) The funds of the Foundation shall be kept in a personal ledger account of the Foundation with the State Bank of Pakistan or with any Branch of the National Bank of Pakistan acting as an agent of the State Bank.

(2). The accounts of the Foundation shall be maintained in such form and manner as the Auditor-General of Pakistan may determine in consultation with the Federal Government.

(3) The accounts of the Foundation shall be audited by one or more auditors who are chartered accountants within the meaning of the Chartered Accountants Ordinance, 1961 (X of 1961), and are appointed by the Foundation in consultation with the Auditor-General of Pakistan.

16. Appointment of officers and servants.—(1) The Foundation may appoint such officers and servants, and engage such consultants or experts, as it may consider necessary for the efficient performance of its functions, on such terms and conditions as it may deem fit.

(2) In fixing the terms and conditions of service of its officers and servants, the Foundation shall as nearly as may be conform to the scales of pay, allowances and conditions of service applicable to the corresponding class of employees of the Federal Government.

17. Annual report.—(1) The annual report of the Foundation, which shall, among other things, clearly bring out the benefits accruing to the nation as a result of the activities sponsored by the Foundation, shall be prepared by the Chairman and submitted, through the Board, to the Federal Government alongwith the audited accounts of the Foundation.

(2) The annual report alongwith the audited accounts of the Foundation shall be laid before the National Assembly.

18. Regulations.—The Foundation may make Regulations for the efficient conduct of its affairs.

19. Repeal.—The Pakistan Science Foundation Ordinance, 1972 (LII of 1972), is hereby repealed.

LIST OF PROJECTS APPROVED By EXECUTIVE COMMITTEE DURING 2018-19

S. #	Project Title & No.	P.I. Name, Designation & Address	Total Cost in Pak. Rs.
1.	PSF/Res/C-RIU/Chem (583) Design, Synthesis and Pharmacological Screening of Novel 2-mercapto Benzimidazole Derivatives as Potential anti Ulcer Agents	Dr. Humaira Nadeem Associate Professor Riphah Institute of Pharmaceutical Sciences Riphah International University Islamabad	2,431,680
2.	PSF/Res/P-MNS-UET/Chem (587) Titanium Dioxide Based Self-Cleaning Textiles: Comparative study of Degradation of Different Dyes using Visible-light active Self-Cleaning Cotton, Wool and Polyester"	Dr. Shabana Afzal Assistant Professor GCT College Mian Nawaz Sharif University of Engineering and Technology Multan	2,523,480
3.	PSF/Res/S-ICCBS/Chem (596) Structural and Function Study of Metabolites of Fluorinated Drugs Produced by Fungal Transformation of Fluorinated Steroids	Dr. Sammer Yousuf Associate Professor H.E.J. Research Institute of Chemistry, International Center for Chemical and Biological Sciences, University of Karachi, Karachi	1,617,516
4.	PSF/Res/KPK-PU/Earth (96) Shale Gas Potential of the Kohat Sub-basin, Indus Basin, Pakistan	Dr. Muhammad Hanif Associate Professor National Centre of Excellence in Geology University of Peshawar Peshawar	6,342,870/-
5.	PSF/Res/KPK-IBMS/Med (493) The Role of Circulating Tumor DNA in Monitoring Treatment Response in Patients with Breast Cancer	Dr. Asif Ali Assistant Professor Institute of Basic Medical Sciences Khyber Medical University Peshawar	4,145,280/-

6.	PSF/Res/P-GCU/Med (485) Exploration of Medicinal Plants Against Hepatitis C Virus	Dr. Nosheen Aslam Assistant Professor Department of Biochemistry Government College University Faisalabad	1,977,780/-
7.	PSF/Res/C-QU/Med (516) Identification of Molecular Determinants of Breast Cancer in Pakistan	Dr. Wasim Ahmad Department of Biochemistry Faculty of Biological Sciences Quaid-i-Azam University Islamabad	7,566,360/-
8.	PSF/Res/P-AMC/Med (519) Genomic Landscape of Myelodysplastic Syndrome Patients in Pakistan	Maj. General Prof. Dr. Saleem Ahmed Khan Principal Army Medical College Rawalpindi	2,120,580/-
9.	PSF/Res/S-AKU/Med (506) Development of Mouse Model of Heart Fibrosis after Myocardial Infarction to Study the Molecular Contributions of Wnt-signaling Proteins and Galectin-3	Dr. Satwat Hashmi Assistant Professor Department of Biological and Biomedical Sciences The Aga Khan University Karachi	3,314,693/-
10.	PSF/Res/S-ICCBS/Med (514) Functional Single Nucleotide Polymorphisms (SNPs), +936C/T and -2578A/C, in Vascular Endothelial Growth Factor (VEGF) Gene: Role in Susceptibility, Clinical Parameters and Response to Treatment in Breast Cancer Patients from Pakistan	Dr. Sadia Ajaz Assistant Professor Dr. Panjwani Center for Molecular Medicines and Drug Research International Center for Chemical and Biological Sciences University of Karachi Karachi	1,474,818/-
11.	PSF/Res/P-IUB/Med (481) Development of Optimized Dry Injectable Product of Docetaxel via Freeze Drying Method to Enhance the Solubility and Stability	Dr. Muhammad Akhtar Assistant Professor Department of Pharmacy The Islamia University of Bahawalpur Bahawalpur	642,396/-

Second Annual Technical Reports

S #	Project No.	Project title	Report
1.	PSF/Res/B-ARI/Agr (492)	Screening of Indeterminate Tomatoes hybrids/varieties under the High Tunnels in Balochistan	1 st
2.	PSF/Res/KPK-PU/Bio (661)	Molecular Characterization of Clostridium perfringens and development of Toxide Vaccine	1 st
3.	PSF/Res/KPK-GIKI/Engg (170)	Development of Natural Fiber (wool/cane fiber) Reinforced Polymer Matrix Composites	1 st
4.	PSF/Res/P-CIIT/Engg (124)	Synthesis of Chemically Modified Polymeric Membranes for Biogas Purification and Natural Gas Sweetening	1 st
5.	PSF/Res/S-MUET/Engg (155)	Dyeing of Synthetic Polyester Fabric with Natural Dye using Radcure Techniques	1 st
6.	PSF/Res/P-FCC/Phys (202)	Quasilinear Theory of Electromagnetic Instabilities with Non-Maxwellian Distribution Functions	1 st
7.	PSF/Res/P-GCUF/Phys (203)	Fabrication of Metal Semiconductor Diodes by Home Developed Thermal Evaporation System	1 st
8.	PSF/Res/P-CIIT/Engg (159)	Evaluating the performance and Power Effectiveness of Asynchronous Processors Customized for many Core Systems	2 nd

First Annual Technical Report

	Project No.	Project title
1.	PSF/Res/P-AU/Agr (467)	Bio management of Alligator weed through its utilization as compost and organic mulch
2.	PSF/Res/C-NESCOM/Agr (497)	Wild Olive (OleaCuspedata) utilization as Root Stock for Oil Plants through Different Topworking Techniques
3.	PSF/Res/P-CIIT/Chem (570)	Development of Mechanically Reinforced Silica Based Bioactive Glass (SiO ₂ CaO-P ₂ O ₅) Polymer Composites for Potential Application in Osteochondral Defect Site
4.	PSF/Res/S-MUET/Engg (155)	Dyeing of Synthetic Polyester Fabric with Natural Dye using Radcure Techniques
5.	PSF/Res/P-CIIT/Engg (159)	Evaluating the performance and Power Effectiveness of Asynchronous Processors Customized for many Core Systems

6.	PSF/Res/C-SEECs/Engg (164)	iDOC: A Portable, Cost Effective Diagnostic Screening Device for Early Dengue Fever Detection
7.	PSF/Res/S-AKU/Med (479)	Understanding the Association of SIRT1 Genetic Variants with Microenvironment of the Oocyte in Infertile Female
8.	PSF/Res/KPK-IBMS/Med (487)	Status of Iron balance and Thalassaemia trait in District Peshawar, Khyber Pakhtunkhwa
9.	PSF/Res/C-NUST/Med (453)	EMG Powered Active Ankle Lower Limb Prosthetic Foot
10.	PSF/Res/S-ICCBS/Med (431)	A Data Base Development of the Unique Metabolic Pathways of the Infectious Pathogens
11.	PSF/Res/P-CIIT/Med (477)	Label Free, non Invasive Biomimetic Sensor for Detecting Oral Cancer
12.	PSF/Res/C-NUST/Med (453)	EMG Powered Active Ankle Lower Limb Prosthetic Foot
13.	PSF/Res/P-GCUF/Phys (203)	Fabrication of Metal Semiconductor Diodes by Home Developed Thermal Evaporation System

c. Second Annual Technical Report

S.#	Project No.	Project Title
1.	PSF/Res/S-SU/Chem (465)	Metal Ion Imprinted Polymers (MIIPs): Novel Material for Pre-Concentration and Separation of Total Arsenic in Aqueous Systems
2.	PSF/Res/S-PCSIR/Chem (478)	Synthesis of Heterocyclic Organic Compounds for Drug Development
3.	PSF/Res/C-PIMS/Med (450)	Identification of Molecular Determinants of Hereditary Deafness

d. Final Technical Reports

Sr. No.	Project No.	Project Title
1.	PSF/Res/S-KU/Bio (456)	Genetic Diversity of Some Ocypodoid Crabs with Special Reference to Gnera Uca and Macrophthalmus along the Coast of Pakistan
2.	PSF/Res/ P-UA/ Bio (478)	Exploitation of Wild Edible Plant Diversity of the Punjab
3.	PSF/Res/S-ICCBS/Chem (516)	Identification of Small Molecular Agonists against G-Protein Coupled Receptors (GPCRs): Opportunities for Cancer Prevention and Treatment
4.	PSF/Res/C-NUST/Engg (136)	Plasmons Effects in Nano-Structures of Inorganic Polycrystalline Materials (ZnS, CdTe, CdS) by Embedding Different Metallic NanoParticles (Ag, Au,Cu) for Improving Photovoltaic Efficiency in Photovoltaic Industry

5.	PSF/Res/KPK-KUST/Med (283)	Identification of Risk Factors for Hepatitis C Virus Infection and HCV Genotyping in Hemophiliac Patients of KPK
6.	PSF/Res/C-NILOP/ Phys (183)	Development of Fluorosensor for In vivo Tissue Characterization

Technical Reports Adopted by Technical Committee

Sr. No.	Project No.	Project Title	Reports
1.	P-UVAS/Bio (416)	Estimation of Aflatoxins in Milk and its Control Measures	Final
2.	P-AU/Bio (478)	Exploitation of Wild Edible Plant Diversity of the Punjab	Final
3.	S-KU/Bio (456)	Genetic Diversity of Some Ocypodoid Crabs with Special Reference to GneraUca and <i>Macrophthalmus</i> along the Coast of Pakistan	Final
4.	S-KU/Bio(454)	Study of Cysts of Dinoflagellates, Causing Harmful Algal Bloom (Red Tide) in Sediments of Coastal Areas of Pakistan, North Arabian Sea	Final
5.	PSF/Res/S-ICCBS/Chem (516)	Identification of Small Molecular Agonists against G-Protein Coupled Receptors (GPCRs): Opportunities for Cancer Prevention and Treatment	Final
6.	PSF/Res/C-NILOP/Med (330)	Development of Optical Control Switch Gene Interference Technique as a New Therapeutic Approach for Lung Cancer	Final
7.	PSF/Res/C-NUST/Med (374)	Development and Commercialization of Intelligent Functional Stent for the Treatment of Lung Cancer	Final
8.	PSF/Res/KPK-KUST/Med (283)	Identification of Risk Factors for Hepatitis C Virus Infection and HCV Genotyping in Hemophiliac Patients of KPK	Final
9.	PSF/Res/S-SU/Chem (465)	Metal Ion Imprinted Polymers (MIIPs): Novel Material for Pre-Concentration and Separation of Total Arsenic in Aqueous Systems	3 rd Semi annual
10.	PSF/Res/S-PCSIR/Chem (478)	Synthesis of Heterocyclic Organic Compounds for Drug Development	3 rd Semi annual

**SCIENTIFIC PULICATIONS PRODUCED THROUGH PSF SUPPORTED
COMPLETED PROJECTS DURING 2018-19**

S.No.	Project No.	Publications
1.	PSF/Res/P-PMAS-AAU/Bio (418)	<p>Qureshi, R. M. Maqsood, M. Arshad and A.K. Chaudhry. 2011. Ethnomedicinal uses of plants by the people of Kadhi areas of Khushab, Punjab, Pakistan. <i>Pakistan Journal of Botany</i>, 43(1): 121-133 (Impact factor = 0.87).</p> <p>Shaheen, H., R. Qureshi, A. Akram and M. Gulfranz. 2012. Some important medicinal flora of Noorpur Thal, Khushab, Pakistan. <i>Archives Des Sciences</i>, 65(2): 57-73. (Impact factor = 0.474).</p> <p>Shaheen, H., R. Qureshi, A. Akram and M. Gulfranz. 2014. Inventory of medicinal flora from Thal Desert, Punjab, Pakistan. <i>African Journal of Traditional, Complementsry and Alternative Medicine</i>, 11(3): 282-290 (Impact Factor: 0.56).</p> <p>Kouser, R. and R. Qureshi. 2013. Antimicrobial activity of <i>Fagonia indica</i> from Thal Desert, Punjab, Pakistan. <i>International Journal of Phytomedicine</i>, 5(1): 113-118.</p> <p>Shaheen, H., R. Qureshi, A. Akram, M. Gulfranz and D. Potter. 2014. A preliminary floristic checklist of Thal Desert Punjab, Pakistan. <i>Pakistan Journal of Botany</i>, 46(1): 13-18 (Impact Factor: 1.207).</p> <p>Abstract published</p> <p>Qureshi, R., H. Shaheen, M. Maqsood, A. Akram and Gulfranz. 2012. Survey of Medicinal Plants From Arid Land of Khushab, Punjab, Pakistan. In: <i>The 3rd International Symposium on medicinal plants, their cultivation and aspects of uses</i>, Beit Zaman Hotel & Resort, Petra – Jordan, November 21-23/ 2012.</p> <p>Qureshi, R. 2016. Plant diversity and livelihood of in arid environment: A case study from Thal Desert, Pakistan. Three days International Conference on “Asia-Pacific Policy Dialogue on Water, Energy and Food Security for Poverty Alleviation in Dryland Regions Co-Organized by UNESCO & PMAS Arid Agriculture University Rawalpindi-Pakistan dated November 23 - 25, 2016.</p>
2.	PSF/Res/S-KU/Bio (456)	<p>Sahir Odhano, Noor Us Saher and Mustafa Kamal (2018). Studies on Isozyme Variations and Morphometric Relationship among three Populations of <i>Austruca sindensis</i> (Alcock 1900) from Pakistan, Thallasas: An International Journal of Marine Sciences.</p> <p>2. Odhano Sahir, Noor Us Saher and Mustafa Kamal (2015). An Over clawed (with two</p>

		<p>enlarge chela) male crab of <i>Uca urvillei</i> (Ocypodidae: <i>Tubuca: Uca</i>) along the coast of Karachi, Pakistan. Biharean biologist,9 (2): 170-172.</p> <p>3. Noor Us Saher, Sahir Odhano and Mustafa Kamal (2018). Electrophoretic analysis for the separation of muscle protein of fiddler crabs of Pakistan. International Journal of Biology Research, (Accepted).</p> <p>4. Uroj Aziz and Noor Us Saher (2016). Morphological Diversity Of Setae And Chela In Accordance To Habitat Within Crabs of Genus <i>Macrophthalmus</i> (Decapoda, Brachyura, Macrophthalmidae) From Intertidal Flats Of Pakistan, Pakistan Journal of Marine Sciences, Vol. 25 (1&2), 83-91.</p> <p>5. Noor Us Saher, Odhano Sahir, Te Shih Hsi, Kamal M, Naureen Aziz Qureshi, 2014 One New Record of Fiddler Crab <i>Uca iranica</i> along the coast of Karachi. Crustaceana 87 (6): 666-673</p> <p>Submission of obtained sequences to the international gene bank (Patents) and all sequences now available online for reference and records on the website(www.ncbi.nlm.nih.gov).</p> <p>1. Total submissions49</p> <p>2. 16S sequences..... 21</p> <p>3. COI sequences.....20</p> <p>4. 12S sequences.....08</p>
3.	PSF/Res/P-AU/Bio (478)	Abstracts published in abstract book of 1st International conference titled as <i>Current Scenario of Research in Plant Sciences: Challenges and Opportunities</i> 2018 held at University of Sargodha dated 9 to 11-May-2018
4.	PSF/Res/C-NILOP/Med (330)	<p>U Awan, S Ali, N Zia, SS Naz, M Ovais, A Raza. 2018, Stable and reproducible synthesis of gold nanorods for biomedical applications: A comprehensive study. IET Nanobiotechnology. DOI: 10.1049/iet-nbt.2016.0220</p> <p>Uzma Azeem Awan, Mostafa El Sayed. Steven Hira, Shaukat Ali, Abida Raza, Optically Triggered Localized COX-2 Gene Silencing via GNRs-Oligos Conjugate in hepatocellular Carcinoma (in process)</p> <p>Uzma Azeem Awan, Steven Hira, Shaukat Ali, Mostafa El Sayed, Abida Raza,. Remote Optical Switch for Selective Control of COX-2 Gene Interference in Highly Malignant Triple Negative Breast Cancer Cells (in process)</p> <p>Uzma Azeem Awan, Shaukat Ali, Abida Raza. Fabrication of Doxorubicin functionalized gold</p>

		nanorods for combined chemo-photothermal therapy
5.	PSF/Res/C-NUST/Med (374)	5-Fluorouracil loaded poly(caprolactone)-poly(vinyl alcohol) and poly(lactic acid)-poly(vinyl alcohol) hybrid films: Potential polymeric chemotherapeutic formulation Hafsa Akhtar, Murtaza Najabat Ali, Faiza Bukhari, Mariam Mir, Bakhtawar Ghafoor, Hafsa Inam Submitted in Biomedical Physics & Engineering Express
6.	PSF/Res/ Biotech /P-NIBGE/ Med (58)	Tehmina Siddique, Fazli Rabbi Awan, Syeda Sadia Najam, Abdul Rehman Khan, Javed Anver Qureshi, Mohsin Khurshid, Mehboob Islam, Maryam Zain. Amplification, Cloning and Expression of the Reg3 delta Gene from Mouse Pancreas. Pak. J. Biotechnol. 2015; 12 (1) 55-61. Tehmina Siddique, Fazli Rabbi Awan. Effects of Reg3 delta bioactive peptide on blood glucose levels and pancreatic gene expression in alloxan induced diabetic mice. ("Canadian Journal of Diabetes" 2016; 40(3): 198-203. doi: 10.1016/j.jcjd.2015.09.096. Epub 2016 Feb 26.).

DEGREE EARNED THROUGH PSF SUPPORTED PROJECTS

S. No.	Project No.	Name of the Researcher	Degree awarded
1.	PSF/Res/P-PMAS-AAU/Bio (418)	Ms Humaira Shaheen (RA)	PhD
		Rehana Kousar	M.Phil
		Munazza Shahzad	M.Phil
		Muhammad Maqsood	M.Phil
		Shahida Perveen	M.Phil
		Sadaf Anwaar	M.Phil
		Kaleem Ullah	M.Phil
	PSF/Res/S-KU/Bio (456)	Sahir Odhano	PhD
		Uroj Aziz	PhD
3.	PSF/Res/P- /Bio (478)	Hina Batool	PhD
		Ammara Fatima	M.Phil
		Zunaira Khalid	M.Phil
		Rohi Naz	M.Phil
		Nasira Sadiq	M.Phil
		Hijab Fatima	M.Phil
		Hafiza Barira	M.Phil
		Asifa Arooj	M.Phil
		Tayyaba Idrees	M.Phil
		Uzma Fazal	M.Phil
		Maria Azhar	M.Phil
		Rabia Tariq	M.Phil
		Amina Riaz	M.Phil
		Sara Hussain	M.Phil
Yasmin Akhtar	PhD		
Ayesha Siddiqui	PhD		
4.	PSF/Res/C-NILOP/Med (330)	Uzma Azeem Awan	Ph.D
		Mehreen Rahman	Ph.D
5.	PSF/Res/C-NUST/Med (374)	Hafsah Akhtar	MS
6.	PSF/Res/ Biotech /P-NIBGE/ Med (58)	Tehmina Siddique	Ph.D

**LIST OF CONFERENCES/SYMPOSIA/WORKSHOPS/JOURNALS FUNDED DURING
THE YEAR 2018-2019**

S. No.	Title of Event	Organizer	Amount (million)
	Seminar on “Present Status of Vector Borne Disease in Livestock and Their Economic Impact” on 5 th September, 2018 at Faculty of Veterinary and Animal Sciences Gomal University, DI Khan	Dr. Muhammad Kamal Shah Chairman/Assistant Professor Faculty of Veterinary and Animal Sciences	0.1
	1 st National Conference on “Medicinal Plants Research” (1 st NCMPR) on 29-31 August, 2018 at Karakoram International University, Gilgit	Dr. Sajjad Ali Chairperson Department of Chemistry Karakoram International University, Gilgit	0.1
	International Fisheries and Aquaculture Conference & Expo-2019 “Emerging Trends for Sustainable Exploitation of Aquatic Resources” on 30-31 January, 2019 at UVAS Lahore	Dr. Noor Khan Associate Professor/Chairman Department of Fisheries and Aquaculture, UVAS Lahore	0.2
	Agriculture Problems and Food Security in the Changing Climate” on 28-31 August, 2018 at Bara Gali (Summer Campus) University of Peshawar	Prof. Dr. Zahir Shah Dean Faculty of Crop Production Sciences University of Agriculture, Peshawar	0.1
	IEEE ICE Cube 2018 International Conference on “Computing Electronics and Electrical Engineering” on 12-13 November, 2018 at BUITEMS Quetta	Dr. Faisal Ahmad Khan Dean/Associate Professor Faculty of Information and Communication Technology, Balochistan University of IT, Engineering and Management Sciences, Quetta	0.2
	Sino-Pak International Conference on “Innovation in Cotton Breeding Biotechnology, 2018 on 26-27 November, 2018 at MNS University of Agriculture, Multan	Dr. Zulifqar Ali Director (ORIC) Professor/Chairman Institute of Plant Breeding and Biotechnology, MNS University of Agriculture, Multan	0.2
	2018 International Conference on “Applied and Engineering Mathematics” on 4-5 September, 2018 at HITEC University of Technology, Taxila	Prof. Dr. Muhammad Tahir Chairman, Department of Mathematics HITEC University of Technology, Taxila	0.2
	International Conference on “Communication Technology” (ComTech-2019) on 20-21 March,	Col. Dr. Adnan Ahmed Khan, HoD (Computer Software Engineering Department)	0.125

	2019 at Military College of Signals, Rawalpindi	Military College of Signals, NUST Humayun Road, Rawalpindi	
	3 rd international Conference on “Emerging Trends in Engineering, Management and Sciences (3 rd ICETEMS-2018) on 10-11 November, 2018 at Karakoram International University, Gilgit.	Dr. Ifzal ahmad Conference Secretary Additional Director, ORIC/ Chairperson Department of Management Sciences Karakoram International University, Gilgit	0.2
	International Conference on “Biochemistry, Biotechnology and Biomaterials (ICBBB-18) on 11-13 November, 2018 at University of Agriculture, Faisalabad	Prof. Amer Jamil Principal Organizer Department of Biochemistry University of Agriculture, Faisalabad	0.2
	International Conference on Innovation in material Sciences and Nanotechnology on 18-19 Dec, 2018 at Lahore Garrison University, Lahore	Dr. Farzana Siddique, Chairperson, Department of Physics, Lahore Garrison University, Lahore	0.2
	1 st International Conference on Agricultural and biological Sciences focusing food security and climate change on 27-30 March, 2019 at University of Haripur, Haripur	Dr. Abdul Qayyum, Asstt. Professor, Department of Agronomy, University of Haripur, Haripur	0.2
	International School on Physics and Allied Disciplines on 11-15 March, 2019 at National Centre for Physics, Islamabad	Dr. Hafeez R. Hoorani, Director General, National Centre for Physics, Islamabad	0.2
	9 th ANRAP International Seminar entitled “From Plant to Patient: Identification of New Drugs for Metabolic Disorders on 25-27 Jan, 2019 at International Centre for Chemical and Biological; Sciences-ICCBS, University of Karachi, Karachi	Prof. Dr. M. Iqbal Choudhary, Director, ICCBS University of Karachi, Karachi	0.2
	International Conference on Microbes for Sustainable Agriculture on 25-28 March, 2019 at Forman Christian College University, Lahore	Dr. Kauser A. Malik, Dean Post Graduate Studies, FCCU, Lahore	0.2
	1 st International Public Health Conference Khyber Medical University 27-28 th February, 2019, Khyber Medical University, Peshawar	Prof. Dr. Zia ul Haq, Dean Faculty of Public Health, Institute of Public Health & Social Sciences, Khyber Medical University, Phase V, Hayatabad, Peshawar, Pakistan	0.2
	International Conference on Water Saving and Plant Production Strategies: Constraints and Implications for Sustainable Agriculture	Prof. Dr. Muhammad Iqbal, Government College University Faisalabad, Pakistan	0.2

	March 26-28, 2019, Government College University Faisalabad, Pakistan		
	International Conference entitled: Advancement in Biotechnology and Bio-computing (AB ²) 7-9 February, 2019, International Islamic University, Faisal Mosque Campus, Islamabad.	Dr. Asma Gul, Chairperson, Department of Biological Sciences, International Islamic University, Islamabad.	0.2
	Organic Farming in Mountain Areas and quality standards Principles and Practices, 3 days workshop, on 13-15, April, 2019 at Agriculture Complex Skardu, Gilgit-Baltistan	Dr. Ishtiaq Hussain, Deputy Director Agriculture Kharmon, Department of Agriculture Gilgit Baltistan	0.2
	2 nd International Conference on Communication, Computing and Digital System (C-CODE 2019) on 6-7 March, 2019 at Bahria University, Islamabad	Engr. Prof. Dr. M. Najam Ul Islam, Bahria University, Islamabad	0.2
	2 nd International Salinity Conference on 4-6 March, 2019 at Islamia University Bahawalpur	Prof. Dr. Moazzam Jamil, Deptt. of Soil Sciences Islamia University Bahawalpur	0.2
	1 st Aus Pak International Conference on Wheat for Food Security on 24-25 March, 2019 at Muhammad Nawaz Sharif University of Agriculture, Multan	Prof. Dr. Zulfiqar Ali, Director ORIC, Muhammad Nawaz Sharif University of Agriculture, Multan	0.2
	International Conference on Information Science and Communication Technology, on 9-10 March, 2019 at University of Karachi, Karachi	Dr. M. Sadiq Ali Khan, Chairman, Department of Computer Science, University of Karachi, Karachi	0.2
	International Conference on Chemistry (ICC) 2019 on 26-27 April, 2019 Lahore Garrison University, Lahore	Dr. Syeda Shaista Gillani, Assistant Professor of Chemistry, Lahore Garrison University, Lahore	0.2
	International Symposium on Sunflower and Forage Crop Production Challenges and Opportunities on 25-27 March, 2019 at College of Agriculture, University of Sargodha, Sargodha	Dr. Saeed Rauf, Assistant Professor, Department of Plant Breeding & Genetics, College of Agriculture, University of Sargodha, Sargodha	0.2
	1st International Conference on Recent Trends in Physics and Material Sciences on 25-27 March, 2019 at University of Science and Technology, Bannu	Dr. Abdul Manan, Assistant Professor, Department of Physics, University of Science and Technology, Bannu	0.160
	6 th International Conference on Sustainable Agriculture in Changing Climate: Strategies and Management on 19-21 June, 2019 at University of	Prof. Dr. Abdul Hamid, Dean, Faculty of Agriculture, University of Poonch, Rawalakot	0.2

	Poonch, Rawalakot		
	Sixth International Conference on Aerospace Science & Engineering (ICASE) on 12-14 November, 2019 at Institute of Space Technology, Islamabad	Dr. Najam Abbas Naqvi Secretary Conference (ICASE-2019) IST, Islamabad	0.2
	Joint Workshop on Understanding Mathematics with Artificial Intelligence and Information Security on 18-20 June, 2019 at University of Baltistan, Skardu	Dr. Munawer Ali Abbas, Assistant Professor, Department of Mathematics, University of Baltistan, Skardu	0.1
	Workshop on Evaluation of Indigenous Feed Stuff, Agro-Industrial wastes and Feed Formulation Skill Development for Improved Farm Productivity in Indigenous Animals on 17-18 October, 2019 at College of Veterinary and Animal Sciences, Jhang	Dr. Abdur Rahman, Assistant Professor, College of Veterinary and Animal Sciences, Jhang	0.160
	Workshop on Reproductive Ultrasonography in Small Ruminants: Basic Techniques and Field Applications in Hilly areas on 10-11 July, 2019 at Department of Veterinary Clinical Sciences, University of Poonch, Rawalakot	Dr. Muhammad Zubair Assistant Professor, Department of Veterinary Clinical Sciences, University of Poonch Rawalakot	0.064
	Ten Days IST-KIU Workshop Titled: Climate & Hydrological Modeling for Climate Change Impact Assessment on Water Resources on 22-31 July, 2019 at Institute of Space Technology, Islamabad	Dr. Mujtaba Hassan, Assistant Professor, Institute of Space Technology, Islamabad	0.160
	2019 International Symposium on Recent Advances in Electrical Engineering (RAEE-19) on 28-29 August, 2019 at	Prof. Dr. Naeem Iqbal (DCE), PIEAS, Islamabad	0.160
		Total:	6.205

LIST OF JOURNALS

S.No.	Title of Event	Organizer
	Farming Outlook Magazine	Dr. Tahir Saleem F-7/3, Islamabad (0.1)

RESEARCH PROJECTS RECOMMENDED BY THE PSF-NSLP TECHNICAL COMMITTEE DURING 2018-2019

Sr. #.	Project No. and Title	Name, Designation & Address of PI
	Commercial Scale Production of High Quality DNA Extraction Kits for Plant and Blood Samples PSF/NSLP/C-QAU(720)	Prof. Dr. Bushra Mirza Department of Biochemistry Quaid-i-Azam University Islamabad
	A Rapid Method for the Isolation of Bioactive Phytochemicals from <i>PartheniumHysterophorus</i> for New Pharmaceutical Products Development PSF/NSLP/KP-UoS (737)	Prof. Dr. Imtaiz Ali Khan Vice Chancellor University of Swabi, KPK
	Functional Analysis of Rice NAC Transcriptional Factor in Transgenic Wheat against Drought and Salt Stress PSF/NSLP/C-QU (706)	Dr. Tariq Mahmood Associate Professor/ Chairman Department of Plant Sciences Quaid-i-Azam University, Islamabad
	Studies on Instrumentally Inseminated, Naturally Mated Honey Bee Queens Artificially Reared By Cup Grafting Techniques and from Supercedure Cells and Factors Affecting their Performance PSF/NSLP/C-NARC (731)	Dr. Muhammad Aasif Shahzad Assistant Professor Institute of Animal Nutrition and Feed Technology University of Agriculture, Faisalabad
	Phage Based Biocontrol of Bacterial Wilt Disease in Tomato and Chillies for Sustainable Production PSF/NSLP/C-CIIT (743)	Dr. Saadia Naseem Assistant Professor (TTS) Department of Biosciences COMSATS University Islamabad
	Design and Development of A Multipurpose Agrirobot for Smart Farming PSF/NSLP/C-NUST (746)	Dr. Anas Bin Aqeel Assistant Professor Department of Mechanical Engineering, College of EME National University of Science & Technology, Islamabad
	Improving Dry Land Agriculture Productivity through Innovative Rain-harvesting Farming System in Rain-fed Areas of Pothohar Region PSF/NSLP/P-US (702)	Dr. Aneela Yasmin Assistant Professor Department of Biotechnology Sindh Agriculture University, Tandojam

LIST OF PROGRESS REPORTS RECEIVED DURING 2018-2019**A. Semi annual reports**

Sr. No.	Project No.	Project Title	Reports
1.	PSF/NSLP/KP-CIIT(666)	Improvement of Carotenoid Contents and Herbicide Tolerance in Transgenic Potato for Commercial Cultivation	1 st
2.	PSF/NSLP/KP-AWKUM (646)	Improvement in anti-tick vaccine efficacy against Pakistani strain <i>Rhipicephalus (Boophilus) microplus</i>	1 st
3.	PSF/NSLP/P-UVAS (689)	Use of Indigenous Fruit Extracts as Nutraceuticals and Their Therapeutic Efficacy Against <i>Clostridium perfringens</i> in Broiler Chicken	1 st
4.	PSF/NSLP/P-UAAR (695)	Molecular Cloning and Heterologous Expression of Endopolygalacturonase gene in <i>E. coli</i> as a Promising Application for Food Industry	1 st
5.	PSF/NSLP/P-UVAS (697)	Evaluation of Biological and Trans-Placental Potentials of Tick-Borne Diseases in Cattle	1 st
6.	PSF/NSLP/P-FCCU(699)	Evaluation of Selected Phytase Transgenic Wheat Lines in Soil under Contained Environment	1 st
7.	PSF/NSLP/P-UVAS(701)	Isolation, Molecular Characterization of Pathogenic Bacteria and Development of Fish Vaccine for Culturable Fish Species of Pakistan	1 st
8.	PSF/NSLP/KP-NIFA (705)	Pilot scale production and popularization of compost tea as organic fertilizer nutrient source	1 st
9.	PSF/NSLP/P-GCUF(710)	A Comparative Assessment of Allopathic Drugs and Selected Medicinal Plants Potential against Infertility using Animals Model	1 st
10.	PSF/NSLP/C-QU (568)	Isolation of <i>Brucella</i> Species from Cattle and Buffaloes and Construction of a Gene Knock out Vaccine against Bovine Brucellosis	2 nd
11.	PSF/NSLP/C-NARC (595)	DNA Based Identification of Adulteration in Meat and its Products	2 nd
12.	PSF/NSLP/AJK-MUST (620)	Effect of Non-Catalytic Domain on Characteristics of Endoglucanase (Ce19A) from Locally Isolated <i>Bacillus licheniformis</i>	2 nd
13.	PSF/NSLP/P-FCCU (655)	Insect Resistance Management by Vegetative Insecticidal Protein (VIP) Based Biopesticide	2 nd
14.	PSF/NSLP/P-NIAB(658)	Control of Excessive Fruit Drop in Citrus	2 nd

		and Improvement in Yield and Quality through Plant Nutrients and Growth Regulators Management	
15.	PSF/NSLP/KP-UAP (691)	Physico-chemical and Hormonal Effects of Acupuncture Combined with Clonidine and Morphine Drug to Provide Analgesia in Goats	2 nd
16.	PSF/NSLP/P-UVAS (689)	Use of Indigenous Fruit Extracts as Nutraceuticals and Their Therapeutic Efficacy Against <i>Clostridium perfringens</i> in Broiler Chicken	2 nd
17.	PSF/NSLP/P-FCCU(699)	Evaluation of Selected Phytase Transgenic Wheat Lines in Soil under Contained Environment	2 nd
18.	PSF/NSLP/GB-KU (449)	Assessment of function composition and development of value added products from mulberry fruits of GilgitBaltistan.	3 rd
19.	PSF/NSLP/KP-NIFA(492)	Breeding high Yielding Mungbean (<i>VignaRadiata</i>) <i>L.Wilczek</i> genotypes for the agroclimatic conditions of Kuram Agency”	3 rd
20.	PSF/NSLP/S-PARC (603)	Evaluation Of Chili Varieties For Qualities Production, High Yield And Disease Resistance In Lower Sindh	3 rd
21.	PSF/NSLP/P-UAAR (543)	Developing Various Dimensions of Indigenous Hydroponics System	3 rd
22.	PSF/NSLP/GB-KU(478)	Assessment of Maize Legume Multiple Intercropping System for Sustainable Production in GilgitBaltistan	3 rd
23.	PSF/NSLP/B-BUITEMS (488)	Assessment of Yeast Species Efficacy for the Biological Control of Post Harvest Fungal Diseases of Fresh Fruits of Balochistan	3 rd

B: First Annual Reports

Sr. No.	Project No.	Project Title
	PSF/NSLP/C-QU (568)	Isolation of Brucella Species from Cattle and Buffaloes and Construction of a Gene Knock out Vaccine against Bovine Brucellosis
	PSF/NSLP/C-NARC (595)	DNA Based Identification of Adulteration in Meat and its Products
	PSF/NSLP/AJK-MUST (620)	Effect of Non-Catalytic Domain on Characteristics of Endoglucanase (Ce19A) from Locally Isolated <i>Bacillus licheniformis</i>
	PSF/NSLP/P-FCCU (655)	Insect Resistance Management by Vegetative Insecticidal Protein (VIP) Based Biopesticide
	PSF/NSLP/P-NIAB(658)	Control of Excessive Fruit Drop in Citrus and Improvement in Yield and Quality through Plant Nutrients and Growth Regulators Management

	PSF/NSLP/KP-UAP (691)	Physico-chemical and Hormonal Effects of Acupuncture Combined with Clonidine and Morphine Drug to Provide Analgesia in Goats
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C: Second Annual Reports

Sr. No.	Project No.	Project Title
	PSF/NSLP/GB-KU (449)	Assessment of function composition and development of value added products from mulberry fruits of GilgitBaltistan.
	PSF/NSLP/KP-NIFA(492)	Breeding high Yielding Mungbean (<i>VignaRadiata</i>) <i>L.Wilczek</i> genotypes for the agroclimatic conditions of Kuram Agency”
	PSF/NSLP/S-PARC (603)	Evaluation Of Chili Varieties For Qualities Production, High Yield And Disease Resistance In Lower Sindh

D: Final Reports

Sr. No.	Project No.	Project Title
	PSF/NSLP/S-SAU (231)	Screening of Cotton Germplasm for Viral Resistance Using DNA Molecular Markers
	PSF/NSLP/P-UAAR (268)	Development of Breed Identification Marker for Pakistani Dairy Cattle Breeds
	PSF/NSLP/P-NIAB (277)	Development of Cost Effective and Potential Biocontrol Agents for Area Wide Management of Sucking Pests in Bt Cotton
	PSF/NSLP/P-AU (296)	Development of Conditioned (Omega-3 rich) Meat and Eggs through Modifications in Feed Ingredients
	PSF/NSLP/P-UAAR (308)	Development of Genetic Evaluation Model for Dhanni Cattle as Potential Beef Cattle in Potohar Region of Punjab
	PSF/NSLP/P-AU (357)	Diagnosis of Acaricide Resistance in Ticks of Cattle and Management of Acaricide Resistant Ticks by Using Medicinal Plant Extracts
	PSF/NSLP/GB-KU(478)	Assessment of Maize Legume Multiple Intercropping System for Sustainable Production in GilgitBaltistan
	PSF/NSLP/B-BUIITEMS (488)	Assessment of Yeast Species Efficacy for the Biological Control of Post Harvest Fungal Diseases of Fresh Fruits of Balochistan
	PSF/NSLP/P-UAAR (543)	Developing Various Dimensions of Indigenous Hydroponics System
	PSF/NSLP/P-US (382)	Detection and Innovative Management of Postharvest Disease Incursions in Citrus
	PSF/NSLP/KP-AU (281)	Genetic Engineering of Sugarcane with the Rice Tonoplast H ⁺ PPase Gene to Improve Sucrose Content and Salt Tolerance

LIST OF PSF NSLP FUNDED PROJECTS MONITORED DURING FY 2018-19

Sr. #	Project No. and Title	Name and Address of P.I
	PSF/NSLP/P-BZU (130) Breeding for Impact Of Different Temperatures on Bt Cruciferous Crops and Development of Resistance to Insecticides in PlutellaXylostella	Dr. Syed Muhammad Zaka Assistant Professor Department of Entomology Faculty of Agricultural Sciences & Technology, BZU, Multan
	PSF/NSLP/P-BZU(246) Role of Nucleopolyhedrovirus in Management of Cotton Bollworm (HelicoverpaarmigeraHubner	Prof. Dr. Muhammad Ali Shah Director, Institute of Biotechnology BahauddinZakariya University, Multan
3.	PSF/NSLP/P-BZU (394) Nutritional Profiling and Antioxidant Potential of Selected Vegetables Waste and its Utilization for the Production of Value Added Foods	Dr. Saeed Akhtar Associate Professor Department of Food Sciences, BZU, Multan
4.	PSF/NSLP/P-BZU (713) Formulation, Fabrication and Characterization of Self Assembling Bioreducible Chitosan Based Nanoparticles for Biomedical Applications	Dr. Furqan Muhammad Iqbal Assistant Professor Department of Pharmacy BahauddinZakria University, Multan
5.	PSF/NSLP/P-CIIT (664) Evaluating the Potential of Zero Energy Cool Chambers (ZEEC) for Horticultural Crops	Dr. Samina Khalid Assistant Professor COMSATS Institute of Information Technology (CIIT) Vehari
	PSF/Res/P-IUB/Phys (189) Synthesis and Characterization of Nano-ferrities for Thermoelectric Power Generation	Dr. Muhammad Azhar Khan Assistant Professor, Department of Physics The Islamia University of Bahawalpur
	PSF/NSLP/P-US (382) Detection and Innovative Management of Postharvest Disease Incursions in Citrus	Dr. Zafar Iqbal Principal & Chairman Plant Pathology Department University College of Agriculture University of Sarghoda
	PSF/NSLP/P-UAAR (543) Developing Various Dimensions Of Indigenous Hydroponics System	Prof. Dr. RaiNiaz Ahmad Vice Chancellor, PMAS Arid Agriculture University Rawalpindi.
	PSF/Res/P-CIIT/Chem (570) Development of Mechanically Reinforced Silica Based Bioactive Glass (SiO ₂ CaO-P ₂ O ₅) Polymer Composites for Potential Application in Osteochondral Defect Site	Dr. Farasat Iqbal Assistant Professor Interdisciplinary Research Centre in Biomedical Materials (IRCBM) COMSATS Institute of Information Technology Lahore
	PSF/Res/P-CIIT/Med (477) Label Free, non Invasive Biomimetic	Dr. Usman Latif Assistant Professor

	Sensor for Detecting Oral Cancer	IRCBM, COMSATS Institute of Information Technology Lahore
	PSF/Res/C-CIIT/Med(297) Next Generation Granular Biomedical Ceramics for Rapid Bone Defect Repair	Dr. Aqif Anwar Chaudhry Assistant Professor Interdisciplinary Research Center in Biomedical Materials COMSATS, Lahore
	PSF/NSLP/P-PU (510) Employing Chitinolytic Bacteria for Biological Control of Termites	Prof. Dr. Javed Iqbal Qazi Department of Zoology, University of the Punjab
	PSF/NSLP/P-FCCU (655) Insect Resistance Management by Vegetative Insecticidal Protein (VIP) Based Biopesticide	Dr. Deeba Noreen Baig Assistant Professor Biological Science Department FCCU, Lahore
	PSF/Res/ P-UVAS/Bio (544) The Development and Evaluation of Thermostable Vaccine against Peste des Petits Ruminants	Prof. Dr. Tahir Yaqub Director Institute of Biochemistry and Biotechnology, UVAS Lahore
	PSF/ILP/P-PCSIR/Envr (083) Development of Indigenous Technology to Produce High Energy from RDF Gasifier for Zero Waste	Dr. M. Khalid Iqbal Senior Scientific Officer CEPS, Pakistan Council of Scientific & Industrial Research, Lahore.
	NSLP/P-PU (196) Development of Gluten Free Flour from Indegenous Sources and its Biological Evaluation on Celiec Patients”	Prof. Dr. Saeed Nagra, Professor, Institute of Chemistry, University of the Punjab, Lahore Dr. Samra Imran, Govt College of Home Economics, Lahore

Annexure -X

Sr. No.	Project No	Publications
1.	PSF/NSLP/KP-AU(281)	Mohammad Sayyar Khan, Ayesha Gul, MazharUllah, Shahen Shah, Asad Jan and Iqbal Munir (2018) Polyethylene glycol (PEG) mediated in vitro characterization of sugarcane (CP-77/400) calli and regenerated plantlets. Submitted to Pakistan Journal of Botany.
2.	PSF/NSLP/KP-AU(281)	Mohammad Sayyar Khan, Waqar Ahmad, MazharUllah and Asad Jan (2018). Optimization of tissue culture and transformation of the sugarcane variety (cp 77/400) with the promoter of <i>OsC₃H₅₂</i> gene. Submitted to Pakistan Journal of Botany.
3.	PSF/NSLP/P-AU(296)	Shakoor, H., M. I. Khan, and AmnaSahar. 2018. Modulation of serum lipids profile in metabolic syndrome through consumption of Omega-3 rich eggs. J. Food Nutr. Res.
4.	PSF/NSLP/P-AU (489)	Afzal, I., T. Javed, U. Nawaz and S.M.A. Basra. 2019. Development of coating technology for improving seed quality of direct seeded rice under submergence conditions. Acta Sci. Pol. HortorumCultus
5.	PSF/NSLP/P-AU (489)	Afzal, I., T. Javed, U. Nawaz and S.M.A. Basra. 2019. Does seed coating influence emergence, growth and yield of spring maize under cool conditions. International Journal of Agriculture and Biology

LIST OF APPROVED PROJECTS UNDER PSF-TUBITAK JOINT INITIATIVE
(2nd CALL)

Sr. No	Project Title	Name, Designation, Department and Organisation of Pakistani PI	Turkish PI name and Address
	Fabric based soft actuators for wearable applications	Dr. Muhammad Dawood Hussain Assistant professor Textile engineering department NED university of engineering and technology Karachi	Atalayozgur Faculty of textile technology and design Istanbul technical university
	Development of high efficiency bifacial passivated emitter rear totally ion implanted crystalline silicon solar cell	Dr. M Usman National center of physics NCP QAU campus , Shahdra Valley Road Islamabad	Prof. Dr. Turan, Raşit Physics and The Center for Solar Energy Research and Application (GÜNAM) Middle East Technical University (METU) GÜNAM, METU, Çankaya,
	Reservoir Property of Middle-Upper Cretaceous platform-slope carbonates/clastics and source rock potential of Cretaceous pelagic successions in Indus basin (Pakistan) and Turkey (Pontides)	Dr. Muhammad Hanif Associate Prof. National Centre of Excellence in Geology National Centre of Excellence in Geology, University of Peshawar near Shaikh Zaid Islamic Centre, Peshawar	Yılmaz, İsmail Ömer Prof. Dr. Geological Engineering Middle East Technical University Department of Geological Engineering, Middle East Technical University, Ankara
	A new and combined approach for the diagnosis of cutaneous leishmaniasis, a neglected vector-borne disease	Dr. Shumaila Naz, Assistant Professor Biogenetic National University of Medical Sciences National University of Medical Sciences, AbidMajeed Rd, Rawalpindi	OZBEL, Yusuf Full Professor Parasitology Ege University Faculty of of Medicine Ege University Faculty of of Medicine, Department of Parasitology, Bornova 35100, Izmir, TURKEY
	Earth quake performance of substandard members and use of new materials for enhancement of structural performance	Prof. Dr. Muhammad Masood Rafi Department of earthquake engineering NED university of engineering and technology, Karachi	Prof. Alperiiki Istanbul technical university, civil engineering faculty, turkey

	Investigation the effect of different plasmonic structure geometries on upconversion efficiency enhancement of RE activated metallic nanoparticles (RE-UCNPs)	Dr. Muhammad Junaid Amjad, Asst. Prof. Dr. Department of Physics COMSATS Institute of Information Technology COMSATS Institute of Information Technology, Department of Physics, 54000, Lahore, Pakistan	ÇelikbilekErsundu, Miray Asst. Prof. Dr. Department of Metallurgical and Materials Science Engineering Yildiz Technical University, 34220 Esenler, Istanbul, Turkey
	Design of a robust double lumen cannula with optimum hemodynamic performance	Dr. Taqi Ahmad Cheema Assistant Professor Mechanical Engineering GIK Institute of Engineering Sciences and Technology Faculty of Mechanical Engineering, GIK Institute, Topi-23460, District Swabi, KP, Pakistan	Kerem Pekkan Associate Professor Mechanical Engineering KoC University RumelifeneriMahallesi, RumelifeneriYolu, 34450 Sarıyer/İstanbul Koc University,
	Formal Analysis of Protection Systems in Smart Grids using Probabilistic Model Checking	Dr. Osman Hasan Assistant Professor School of Electrical Engineering and Computer Science National University of Sciences and Technology (NUST) NUST SEECS, H-12, Islamabad,Pakistan	Selamogullari, UgurSavas Associate Professor Electrical Engineering Yildiz Technical University (YTU) Davutpaşa Campus EEf Building C-323 34220 Esenler – Istanbul Turkey
	Investigation of selected Persistent Organic Pollutants (POPs) and heavy metals pollution from E-waste processing facilities	Dr. Jabir Hussain Syed Assistant Professor Department of Meteorology COMSATS Institute of Information Technology (COMSATS) Park Road Islamabad,	PerihanB.Kurt-Karakus Associate Professor Environmental Engineering Bursa Technical University (BTU) MimarSinanMahallesi MimarSinanBulvarıEflak
	Specific designing of β -glucosidase for modification of natural products with the aim to enhance their cancer	Dr. Samiullah Khan Assistant Professor Microbiology Department of	BELDUZ, Ali Osman Professor Dr. Biology Karadeniz Technical

	preventing potential	Microbiology, Faculty of Biological Sciences, Islamabad Quaid-i-Azam University	University Karadeniz Technical University, Faculty of Sciences, Department of Biology, 61080 TRABZON/TURKEY
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**LIST OF APPROVED PROJECTS UNDER PSF-MSRT-IRAN JOINT INITIATIVE
(2nd CALL)**

Sr.	Project Title	Name, designation, department and organisation of Pakistani PI	Name, designation, department and organisation of Iranian PI
	Portable paper-based nanostructured sensor for nonenzymatic detection of pesticides in agricultural products	Dr. Akhtar Hayat Assistant Professor Interdisciplinary Research Centre in Biomedical Materials COMSATS Institute of Information Technology (CIIT),Lahore	Dr. Marjan Majdinasab Assistant Professor Department of Food Science & Technology Shiraz University Shiraz, Iran
	Explorations of bacterial extremozymes from Iran and Northern areas of Pakistan: characterization and pilot scale production	Dr. Nawab Ali Assistant Professor Department of Biotechnology and Genetic Engineering, Kohat University of Science and Technology Kohat	Prof. Dr. M. A. Amoozegar Professor/Dean School of Biology Extremophiles Lab, School of Biology, University of Tehran, Iran
	Development of protocol for long reads haplotyping in hexaploid wheat using PacBio circular consensus sequencing	Dr. Muhammad Sajjad Assistant Professor Environmental Sciences, COMSATS Institute of Information Technology Vahari	Prof. Dr. Reza Dervaihzadeh Dept. of Plant Breeding and Biotechnology, Faculty of Agriculture, Urmia University. Iran
	Developing environmental friendly mg-matrix based composite technology for present and future generations	Dr. Muhammad Sohail Assistant Professor Institute of Chemical Sciences, University of Swat	Dr. Ali Reza Badiei Professor School of Chemistry College of Science University of Tehran
	Fabrication of highly sensitive and selective electrochemiluminescence biosensor for precise monitoring of dopamine from nerve cells	Dr. Naeem Akhtar Assistant Professor IRCBM, COMSATS Institute of Information Technology, Lahore Pakistan	Dr. Behzad Rezaei Professor Isfahan University of Technology(IUT), Isfahan 8415683111 Iran
	Improving the seismic performance of steel moment frames using an efficient delayed wire-rope bracing system	Dr. Naveed Ahmad Assistant Professor Earthquake Engineering Center, Civil Engineering Department, UET Peshawar.	Dr. Babak Dizangian Assistant Professor Velayat university, Iranshahr, Iran.

	Introducing an automatic and economic surface-cleaning set-up to optimize the electricity production of PV panels based on the study of dusty/polluted atmosphere impact on the electricity production.	Dr. Adeel Waqas Assistant Professor, NUST-H-12 Campus- Islamabad	Dr. Maziar Dehghan Assistant Professor Materials and Energy Research Center (MERC), Karaj, Iran
	CO ₂ capture and utilization from thermal power plants using nanomaterials	Romana Khan Assistant Professor COMSATS Institute of Information Technology Abbottabad	Alireza Noorpoor Associate Professor Graduate Faculty of Environment, University of Tehran, Tehran, IRAN
	Development of drought tolerant sunflower (<i>Helianthus Annuus</i> L.) hybrid for sustainable yield	Dr. Saeed Rauf Assistant Professor College of Agriculture, University of Sargodha	Dr. Mehdi Ghaffari Assistant Professor Seed and Plant Improvement Institute, Agricultural Research Education and Extension Organization (AREEO), Karaj, Iran
	Electrospinning of continuous poly (L lactide) yarns as implantable medical devices.	Dr. Ahsan Nazir Assistant Professor National Textile University, Sheikhpura Road, Faisalabad	Homa Maleki Assistant Professor University of Birjand, Birjand, Iran

FINANCIAL SUPPORT TO SCIENTIFIC SOCIETIES IN PAKISTAN (PHASE-II)

Sr. No	Topic	Nature of the Event
	14 th Biennial Conference of PSBMB	Conference
	16 th Biennial International Conference “Enhancing Research Collaboration in South Asia”	Conference
	17 th International Conference on Statistical Sciences “Sustainable Development Goals (SDGs) and data Group Challenges”	Conference
	Our Mineral Resources-The Most Neglected Sector	Symposium
	Water Stress	Symposium
	Technology Assessment for Organizations	Workshop
	Bioeconomy & Engineering Nexus	Symposium
	15 th National Nematological Event “Significance of Nematode Identification for proper Management”	Conference
	4 th International Conference on Biosciences	Conference
	Water Problems in Pakistan	Conference
	Industrial Minerals and Coal	Symposium
	39 th Pakistan Congress of Zoology	Conference
	Vacuum Technology for Industry (WVTI)	Workshop
	Impact of Thalassaemia	Seminar
	Weeds Interference, Sprayer Calibration, Herbicide calculations and Herbicidal Safety	Workshop
	Threats to Soil: Changing Climate and Rapid Urbanization	Seminar
	Emerging Significance of Medicinal Plants	Symposium

LIST OF JOURNAL FUNDED
FINANCIAL SUPPORT TO SCIENTIFIC SOCIETIES IN PAKISTAN (PHASE-II)

Sr. No	Name of the Journal	Name of the Society
	Soil & Environment	Soil Science Society of Pakistan
	Pakistan Journal of Zoology	The Zoological Society of Pakistan
	Pakistan Journal of Biochemistry & Molecular Biology	Pakistan Society for Biochemistry and Molecular Biology
	Pakistan Journal of Science	Pakistan Association for the Advancement of Science
	Pakistan Journal of Nematology	Pakistan Society of Nematologists
	Biologia	The Biological Society of Pakistan
	Journal of the Chemical Society of Pakistan	Chemical Society of Pakistan
	Pakistan Journal of Botany	Pakistan Botanical Society
	Pakistan Journal of Statistics	Islamic Society of Statistical Sciences
	Pakistan Journal of Weed Science	Weed Science Society of Pakistan
	International Journal of Economic and Environmental Geology	Society of Economic Geologists & Mineral Technologists (SEGMITE)