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INTRODUCTION

COMSTECH Science, Technology & Innovation (STI) Policy Research & Training Centre was established in 2006 to realize the vision of centre for science and techno-economic studies for the Islamic world approved by the fourth OIC Summit held in 1984 in Morocco. Located at the COMSTECH Secretariat in Islamabad, Pakistan, the Centre has been entrusted with following aims and objectives: (i) act as a think-tank specializing in providing high-quality advisory services on STI to OIC member states; (ii) build capacity in STI by offering training for public policy makers, researchers, entrepreneurs and business managers; (iii) initiate and conduct research on STI policy issues and to assist in the formulation and review of STI policy making in OIC member states; (iv) provide a forum for consultation and collaboration for STI policy makers and implementers, academic and research fraternity and the business community in OIC member states; and (v) develop collaborative linkages between well established STI policy research and STI policy advisory institutions in OIC member states and with world’s best institutions.

KEY ACTIVITIES

1. Capacity building of senior managers, researchers and policy makers of OIC member states in STI policy formulation and implementation strategies through training courses.
2. Consultancy services to member states for review of STI policies and innovation system.

TRAINING COURSES

Since its establishment the STI Policy Research and Training Centre has organized 18 training courses and 2 workshops on the following topics:

1. **Science, Technology and Innovation**: Five intensive training courses on Science, Technology and Innovation Policy have been organized with a focus on key concepts of innovation; economic history of innovation; building of national innovation systems; and best practices of STI policy for meeting challenges of globalization.

2. **Innovation & Entrepreneurship**: Three training courses have been organized so far. Modules covered in these courses include methods of entrepreneurship, strategic and business planning; university-industry partnership; intellectual property rights; role of technology incubators and technology parks for technology entrepreneurship and lastly the policy inputs for creating an ecosystem for entrepreneurship.

3. **Technology Transfer Policy for Developing Countries**: Two training courses were conducted with a focus on: different modes of technology transfer; the role of multinationals; diaspora networks and international training; joint research; international alliances; joint ventures; technology transfer leading to technical change and public policy for technology transfer. Best practices in Japan, South Korea, China, India and Brazil.

4. **Foresight For Innovation Policy**: Six courses on Foresight were organized. The key topics covered included: objectives of foresight; introduction to foresight methods; environmental scanning; forecasting; Delphi and other methods of envisioning future; developing and using scenarios; causal layered analysis (CLA); planning a foresight exercise; future technological prospects; social foresight; and regional and national foresight case studies.

5. **Intellectual Property Rights (IPR)**: Two courses on IPR were offered in 2011. Topics covered in these courses were introduction to IPR; IP practices in OIC states; issues related to IPR; IPRs for
Technology Transfer and Commercialization; Research Organizations and IP Policy; IPRs and Building of Innovation Systems; practical exercises on Patent writing and Trademark registration, and Techniques for enhancing Innovation skills.

Detail information about training courses i.e. course contents and instructors is listed as annexure 1, participants’ comments and suggestion about quality of courses is attached as annexure 2.

Course Structure

Participants of the training courses are provided with online relevant literature for reading at least 2-3 weeks before the scheduled dates of the training course to equip them with relevant knowledge and better understanding of the subject in advance. A detailed programme of the course is also provided a month before the event.

The training courses follow a participatory approach, consisting of interactive lectures followed by intensive discussions, practical exercises, individual and group assignments. Lectures are mostly delivered in the morning session followed by interactive discussions, question and answer sessions. Afternoon sessions are usually devoted to the practical exercises conducted in teams comprising 4-6 participants. At the end of exercise teams share their results with each other. The winning teams are awarded prizes or appreciation certificate.

Contents of the courses in more detail are given in Annex 1.

Some pictures from Training Courses

Prof. Dr. Norman Neureiter, Senior Advisor, American Association for the Advancement of Science (AAAS), USA delivering lecture during the training course on Technology and Innovation Policy (14 - 19 March, 2011).

Ms. Sara E. Farley, Chief Operating Officer, Global Knowledge Initiative, USA and Ex-expert of World Bank conducting an interactive exercise during the training course on Technology and Innovation Policy (14 - 19 March, 2011).
Prof. Reza Mansouri, ex-Minister for Science and Technology, The Islamic Republic of Iran addressing participants of the training course on Science, Technology and Innovation (6-24 April, 2009).

Prof. Sohail Inayatullah, Graduate Institute of Future Studies, Tamkang University, Taiwan addressing participants in the training course on Foresight (29 June-10 July, 2009).

Prof. Nikolaos Tzokas, Professor, Norwich Business School, University of East Anglia, UK lecturing in the training course on Innovation and Entrepreneurship (12-16 November, 2012).

Dr. Fred M. Hayward, Higher Education Consultant, World Bank addressing participants in the training course on Science, Technology and Innovation (21 April - 16 July, 2008).

Mr. Loikkanen Torsti, Senior Research Scientist, VVT, Finland delivering lecture during the training course on Science, Technology and Innovation (21 April - 16 July, 2008).
Prof. Norman P. Clark, Professor University of Sussex delivered several lectures on Science, Technology and Innovation (21 April - 16 July, 2008).

Dr. Kamal Munir, Reader, University of Cambridge, UK addressing participants in the training course on Technology and Innovation Policy (19 - 30 April, 2010)

Participants engaged in a practical exercise during the training course on Foresight for Innovation (28 November - 2 December, 2011)

Group exercise during the training course on Innovation and Entrepreneurship (12 - 16 November, 2012)

Participants of the training course on Technology and Innovation Policy (19 - 30 April, 2010)
National and International Collaboration for Design and Delivery of Courses

Training courses are planned, designed and delivered in collaboration with universities and relevant international centres working in the field of STI Policies. The following international centres have collaborated with COMSTEC:

United States of America
- American Association for the Advancement of Science (AAAS)
- Global Knowledge Initiative
- Roberts Law Firm
- University Of California, Berkley
- Knowledge Management Group, Myriad Solutions, Incorporated
- Innovative Partners Incorporated (IPI)

United Kingdom
- University of Sussex
- Manchester Business School, University of Manchester
- The Judge Business School, University of Cambridge
- University of East Anglia

Australia
- School of Science at Griffith University
- The Centre for Industry & Innovation Studies, University of Western Sydney
- The Centre for Defence & Strategic Studies, Australian Defence College
- University of the Sunshine Coast

Netherlands
- United Nations University (UNU-MERIT), The Netherlands

Finland
- VTT Technical Research Centre, Finland

Germany
- University of Bielefeld, Germany

Switzerland
- World Intellectual Property Organization (WIPO), Geneva
- Nestle Research Centre

India
- National Institute of Science Technology and Development Studies (NISTADS), India

Thailand
- Center for Technology Foresight, National Science and Technology Development Agency, Thailand
Pakistan

- Business Support Fund, Ministry of Finance, Islamabad
- Centre for Advanced Studies in Engineering (CASE), Islamabad
- IPO-Academy, Islamabad
- GIK Institute of Engineering Sciences and Technology, Topi
- Institute of Business Administration, Karachi
- United Nations Industrial Development Organization, Pakistan
- United Trademark & Patent Services, Lahore
- National University of Science & Technology (NUST), Islamabad
- Pakistan Institute of Development Economics (PIDE), Islamabad
- Pakistan Atomic Energy Commission (PAEC), Head Office, Islamabad
- International Islamic University, Islamabad

Other OIC Member States

- TUBITAK, Ankara, Turkey
- Capstone Consulting, Dubai, UAE
- Sharif University of Technology, Iran

Participation from Member States

So far 603 participants have benefited from COMSTECH training courses. These participants came from 28 OIC member states including Algeria, Bangladesh, Bahrain, Brunei Darussalam, Egypt, Gambia, Indonesia, Iran, Iraq, Jordan, Kazakhstan, Libya, Malaysia, Maldives, Morocco, Nigeria, Oman, Pakistan, Saudi Arabia, Senegal, Sierra Leone, Sudan, Syria, Tajikistan, Tunisia, Turkey, Uzbekistan and Yemen.

<table>
<thead>
<tr>
<th>S.No</th>
<th>Country</th>
<th>Number of Participants</th>
<th>S.No</th>
<th>Country</th>
<th>Number of Participants</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Algeria</td>
<td>3</td>
<td>2.</td>
<td>Bahrain</td>
<td>2</td>
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<tr>
<td>3.</td>
<td>Bangladesh</td>
<td>9</td>
<td>4.</td>
<td>Brunei-Darussalam</td>
<td>1</td>
</tr>
<tr>
<td>5.</td>
<td>Egypt</td>
<td>9</td>
<td>6.</td>
<td>Gambia</td>
<td>3</td>
</tr>
<tr>
<td>7.</td>
<td>Indonesia</td>
<td>10</td>
<td>8.</td>
<td>Iran</td>
<td>40</td>
</tr>
<tr>
<td>11.</td>
<td>Kazakhstan</td>
<td>5</td>
<td>12.</td>
<td>Libya</td>
<td>1</td>
</tr>
<tr>
<td>17.</td>
<td>Oman</td>
<td>12</td>
<td>18.</td>
<td>Pakistan</td>
<td>383</td>
</tr>
<tr>
<td>19.</td>
<td>Saudi Arabia</td>
<td>2</td>
<td>20.</td>
<td>Senegal</td>
<td>1</td>
</tr>
<tr>
<td>21.</td>
<td>Sierra Leone</td>
<td>1</td>
<td>22.</td>
<td>Sudan</td>
<td>25</td>
</tr>
<tr>
<td>23.</td>
<td>Syria</td>
<td>3</td>
<td>24.</td>
<td>Tajikistan</td>
<td>1</td>
</tr>
<tr>
<td>25.</td>
<td>Tunisia</td>
<td>3</td>
<td>26.</td>
<td>Turkey</td>
<td>11</td>
</tr>
<tr>
<td>27.</td>
<td>Uzbekistan</td>
<td>1</td>
<td>28.</td>
<td>Yemen</td>
<td>6</td>
</tr>
</tbody>
</table>

Table: 1 – Number of Participants from Member States
Gender distribution of participants

Most of the participants were policy planners, policy researchers and S&T managers from both public and private sector. However, some of them were department heads, teachers and researchers working on STI or other policy related issues. COMSTECH has encouraged female participation in all its courses, but so far only 14% female participants have attended.

Collaborating Institutions in the Member States

- **Algeria**: Ministry of Higher Education and Scientific Research, University Saad Dahleb
- **Bahrain**: Bahrain Institute or Banking & Finance
- **Bangladesh**: Ministry of Science and Information & Communication Technology, Bangladesh Council of Scientific and Industrial Research, Bangladesh Agriculture University, Bangladesh University of Engineering and Technology, University of Rajshahi
- **Brunei**: Institute of Technology Brunei
- **Egypt**: Academy of Scientific Research and Technology, National Research Center, Helwan University, Tanta University, Sohag University
- **Gambia**: Science Technology Education Directorate
Kazakhstan
- Ministry of Education and Science
- Ministry of New Technologies and Innovations
- National Center for Scientific and Technical Information
- Institute for Human and Animal Physiology

Libya
- National Authority for Scientific Research

Malaysia
- Ministry of Science, Technology and Innovation
- Malaysian Nuclear Agency,
- National University of Malaysia
- Universiti Putra Malaysia,
- Serdang Selangor, Malaysia
- Prima Asia Pacific Consultancy, Malaysia

Maldives
- Ministry of Environment, Energy & Water
- Ministry of Civil Aviation and Communication

Morocco
- Ministry of National Education, Higher Education, Executives Training and Scientific Research

Nigeria
- Federal Ministry of Science & Technology
- Ministry of Science & Technology
- Olabisi Onabanjo University
- Lagos State Ministry of Education
- Lagos State Polytechnic
- Federal College of Fisheries and Marine Technology Victoria Island
- Technology Incubation Centre
- Raw Materials Research and Development Council
- National Office for Technology Acquisition and Promotion

Oman
- Ministry of Higher Education
- The Research Council
- College of Applied Science
Sudan
• National Centre for Research, Ministry of Science and Technology
• Industrial Research and Consultancy Center
• University of Gezira

Syria
• Atomic Energy Commission of Syria
• Energy Commission of Syria

Tajikistan
• CARE International

Tunisia
• Centre of Biotechnology of Sfax
• Center of Water Research and Technologies

Turkey
• The Scientific and Technological Research Council of Turkey
• University of Ankara

Uzbekistan
• World Language University in Tashkent

Yemen
• Sana’a University
• University Aden
• Thamar University
• IBB University
FUNDING AND FACILITIES

COMSTECH, Islamic Development Bank (IDB), and Higher Education Commission (HEC) of Pakistan jointly fund the training courses.

COMSTECH offers excellent conference and accommodation facilities under the same roof. Thus, it provides an opportunity to engage participants and speakers in informal discussions besides the lecture room talks. In addition to accommodation and meals, the guest house offers free gym and internet connections. Free access to computer lab is also offered to all participants during the working hours. Participants benefit from this facility to complete their assignments.

IMPACT ASSESSMENT AND EVALUATION OF TRAINING COURSES

The philosophy behind course evaluations is that impact is a two-way process, a knowledge-exchange: we are not only accessing, sharing and diffusing the world’s best possible relevant knowledge for our participants but are also learning from participants diverse knowledge and cultural backgrounds. We consider participant’s opinion about training courses extremely valuable for continuous improvements in curriculum and quality of courses. In order to assess whether the objectives of training courses in terms of STI policy capability building in member states is achieved, we assess participant learning through written essays, tests and presentations that participants are required to make at the end of each course. The application and diffusion of knowledge gained from the training courses is assessed by circulation of a survey questionnaire where participants are asked to provide answers to specific questions along with evidence of the activities undertaken.

1. Participants Feedback and Evaluation

At the end of each course participants are asked to anonymously fill out an assessment questionnaire. These questionnaires include both open and close-ended questions designed to assess the participants’ perception about the quality of courses and their absorption of the knowledge imparted through trainings. Besides assessment of quality and organizational aspect of courses and participants’ learning ability, they are also asked to provide suggestions for future improvements. Participants are also asked to provide feedback about lectures delivered by instructors through questions such as (i) background knowledge (ii) presentation skills (iii) interactive learning approach (iv) response to the questions and (v) time management. This helps the centre select the top-rated instructors for future courses. A graphic representation of the evaluation of the course is shown in Figure 4.
Overall about 96% participants were very satisfied with the course structure; they found the course exceedingly useful, the practical exercises exceedingly relevant to the course and excellent facilities and arrangements. Figure 5 represents the overall feedback of the participants.

CONSULTANCY SERVICES

STI Policy Guidelines for Maldives (2005): After a UNESCO sponsored weeklong visit to Maldives and interviews with several Ministries, consultant COMSTECH prepared a report on the prevailing S&T system in Maldives and provided guidelines for a new S&T Policy.


Three members of IAB including Consultant COMSTECH also made a presentation to the Nigerian Cabinet meeting chaired by the President on transformation of Nigerian Economy and improvement in the
quality of lives of People of Nigeria by investing in building scientific capabilities. This led to an allocation of US$5.0 billion as endowment fund to be used for research by Nigerian Science Foundation.

**Technology Audit for Turkey (2007):** Consultant COMSTECH was invited by the S&T secretariat of European Union to conduct Technology Audit for Turkey under the 7th EU Framework Programme on BIS-RTD funding and communication strategies. During her visit to Ankara she conducted several interviews at institutions such as ministry of S&T, universities, technology parks and industry. Based on interviews the Audit report was prepared and submitted to the Scientific and Technological Research Council for Turkey (TUBITAK).

**Establishment of an Institute for South-South Collaboration for G77 Countries (2008):** Prepared feasibility for establishment of an institute for South-South Cooperation for G77 countries. A UNESCO sponsored visit and discussions with Malaysian Minister for S&T and officials of Malaysian Academy of Sciences and Universities led to hosting ISTIC at the Malaysian Academy of Sciences.

**Comments on STI Policy of Gambia (2013):** In response to request from government of Gambia, the new Science, Technology and Innovation Policy of Gambia was reviewed and comments provided for improvements. Consultant COMSTECH was invited to the launch ceremony of the new STI Policy of Gambia where she proposed a strategy for implementation of policy.

**PUBLICATIONS**

COMSTECH Centre for Policy Research and Training has published the following research studies in the form of Reports, Books and Journal Articles:


RESEARCH PAPERS PUBLISHED:


5. “SWOT Analysis of OIC Member States”, published online on COMSTECH website, (2013)


11. OIC Member States – The Road to a Knowledge Economy (Lessons from Contrasting Innovation Systems of 34 Scientifically Lagging OIC Countries with East Asian Countries)” in Virtual Incubator for Science-based Business (VISB) and on COMSTECH website, (2010).


15. The Dynamics of Innovation and Technology Capability in Pakistan” in Science, Technology Policy and the Diffusion of Knowledge” Edited by Tim Turpin and V.V. Krishna published by Edward Elgar, (2007).


REPORTS / BRIEFS:


1. **One-Week Training Course on “Technology Transfer Policy and Industry Level Perspectives (12 – 18 July 2006)**

   **Course Contents**
   - Technology and Innovation Policy in Knowledge Economy
   - Building Innovative Organizations
   - International Competitiveness and Technological Change
   - National System of Innovation: Industrialized countries and Newly Industrialized Countries
   - UK Innovation System Review
   - Globalization of Research and Technology
   - Economics of Intellectual Property Rights
   - Korean Economic Miracle
   - Four Decades of S&T and Industrial Policies
   - Mobility of Highly Skilled Human Capital
   - Technology Policy and Industrialization

   **Course Experts**
   - Dr. Khaleel Malik, Lecturer, PREST-Manchester Business School, The University of Manchester, UK
   - Dr. S. T. K Naim, Consultant COMSTECH, Islamabad
   - Dr. Zafar Mueen Nasir, Chief of Research, Pakistan Institute of Development Economics, Islamabad
   - Dr. A. R. Kemal, Ex-Director, Pakistan Institute of Development Economics, Islamabad

2. **Two-Week Training Course on Technology, Innovation and Entrepreneurship (20-30 August, 2007)**

   **Course Contents:**
   - International Competitiveness and Technology Change
   - Building Innovative Organizations
   - Globalization of Research and Technology
   - Mobility of Highly Skilled Human Capital
   - Economics of Intellectual Property Rights (IPR)
   - Technology Policy and Industrialization, Case Study of East Asian Countries

   **Course Experts:**
   - Prof. Tim Turpin, Professorial Fellow, Centre for Industry & Innovation Studies, University of Western Sydney, Australia
3. **Science, Technology and Innovation (21 April – 16 May, 2008)**

**Course contents:**

- History of Technological Innovation
  - (a) Economics of Learning
  - (b) Definitions and Concepts of Innovation Systems:
  - (c) Elements of National Innovation System (NIS)
  - (d) Levels of NIS, Local, Regional, National and Supra National
  - (e) National Innovation System of Finland (Case study)

- Technology Foresight and socio-economic development
  - (a) Role of Foresight in Innovation Policy making
  - (b) Assessment and Conclusions of Technology Foresight Practice

- Higher Education Policy
  - (a) Higher Education Planning and Implementation, Case study of some developing countries
  - (b) Skills, Education and Productivity, Playing catch up
  - (c) Recent development in Innovation system with special reference to MDGs and STI Policy:
  - (d) Public Policy for Technology Development
  - (e) The Role of “Value Chain” approaches to Technology Development for Small vegetable growers in Himachal Pradesh
  - (f) The DFID Research into Use Programme in Sierra Leone

- Technology Policy
  - (a) R&D Policy and its impact on technology development
  - (b) International technology transfer, a conceptual framework
  - (c) Science and Technology Policy guidelines for developing countries

**Instructors:**

- Mr. Loikkanen Torsti, Senior Research Scientist, VTT Technical Research Centre, Finland
- Prof. Norman P. Clark, University of Sussex, UK
- Dr. Mohsin Khan, Scientist, National Institute of Science Technology and Development Studies (NISTADS), India
4. **Foresight (30 June – 11 July, 2008)**

Course contents:

- Thinking about the future, rationales and objectives of Foresight, Introduction to Foresight methods.
- Environmental scanning; forecasting; Delphi; creative methods.
- Developing and using scenarios; fitting things together – the methods ‘jigsaw’.
- Planning a foresight exercise; future technological prospects; social foresight; regional and national foresight case studies.
- Foresight outputs, implementation, and evaluation, forum on the future of Foresight.
- Experience of Thailand about Foresight activities.

Instructors:

- Prof. Ian Miles, Manchester Institute of Innovation Research (MIoIR), Manchester Business School, University of Manchester, UK.
- Prof. Ozcan Saritas, Manchester Institute of Innovation Research (MIoIR), Manchester Business School, University of Manchester, UK.
- Dr. Nares Damrongchai, Executive Director, APEC Center for Technology Foresight, National Science and Technology Development Agency, Thailand.
- Dr. S.T.K Naim, Consultant, COMSTECH Secretariat, Pakistan.

5. **Science, Technology and Innovation (6-24 April, 2009)**

Course content:

- Understanding Innovation and Innovation Systems:
  (a) Building National Innovation Systems Case study: Korea and Pakistan
  (b) Economic theory and Innovation
  (c) Gross root innovation option, practice and theory

- National and International Collaboration in R&D:
  (a) R&D collaboration and cross sector arrangements: Options and lessons
  (b) Emerging trends in South - South Collaboration
  (c) Regional Science networks: mobility, migration and tapping scientific Diaspora

- S&T policy development in Asia:
  (a) Economic theory of science and technology policy
  (b) A comparative study of S&T Policy of developed and developing countries
  (c) S&T policy making institutional infrastructures and development
• Higher Education and Innovation:
  (a) Higher Education, Striving for Excellence
  (b) Case study: Pakistan
  (c) Enhancing Labour Productivity through HRD for SME Competitiveness

Instructors:
• Prof. Tim Turpin, University of Western Sydney, Australia.
• Prof. Reza Mansouri, Sharif University of Technology, Iran.
• Prof. Wing-Yin Yu, University of Bielefeld, Germany.
• Mr. Saquib Mohyddin, CEO, Business Support Fund, Ministry of Finance, Pakistan.
• Dr. S.T.K. Naim, Consultant COMSTECH Secretariat, Pakistan.
• Mr. Ali Shah, Senior Policy Analyst, COMSTECH Secretariat, Pakistan.
• Mr. Umar Sheraz, Senior Policy Analyst, COMSTECH Secretariat, Pakistan.


Course contents:
• Relationship between innovation and entrepreneurship and its challenges
• Public policies to support technology development in enterprises
• Promoting technology entrepreneurship and knowledge based firms
• SME’s role in an innovation economy and Cluster Development
• Legal structures & intellectual property rights for entrepreneurship
• Lessons from Silicon Valley

Instructors:
• Mr. Naeem Zafar, Lecturer, University Of California at Berkley, USA.
• Mr. Amer Qureshi, Managing Director, Capstone Consulting, Dubai, UAE.
• Dr. Abid Pervez Ghuman, Director General, Technology Innovation Centre, National University of Science & Technology (NUST), Pakistan.
• Dr. Arshad Ali, Director General, School of Electrical Engineering and Computer Science (SEECS), National University of Science & Technology (NUST), Pakistan.
• Prof. Khusro P. Malik, Centre for Advanced Studies in Engineering (CASE), Pakistan.
• Mr. Saquib Mohyddin, CEO, Business Support Fund, Ministry of Finance, Pakistan.
• Dr. S.T.K. Naim, Consultant COMSTECH, Pakistan.

7. Foresight (29 June – 10 July, 2009)

Course contents:
• Rationales and objectives of foresight, thinking about the future and foresight methodologies
• Future’s Scenario Building, future technological prospects
• Regional and national foresight case studies
• Planning and conducting foresight exercise
• Six Pillars of Foresight

Instructors:
• Dr. Sohail Inayatullah, Professor, Graduate Institute of Future Studies, College of Education, Tamkang University, Taiwan.
• Prof. Ian Miles, Manchester Institute of Innovation Research (MIoIR), Manchester Business School, University of Manchester, UK.
• Prof. Ozcan Saritas, Manchester Institute of Innovation Research (MIoIR), Manchester Business School, University of Manchester, UK.
• Mr. Amer Qureshi, Managing Director, Capstone Consulting, UAE.
• Dr. S.T.K. Naim, Consultant COMSTECH, Pakistan.

8. Technology Transfer Policy for Developing Countries (12 – 17 October, 2009)

Course content:
• Building Capacity for Technology Transfer:
  (a) Technology Innovation Capacity Building - Rationale, Context and Urgency
  (b) Foundations and Fundamentals of Technology and Innovation
  (c) Dynamism of Technology, Business and Economic growth
  (d) Globalization, Trade and Technology Transfer

• Technical Change and Innovation Capacity Building: Lessons Predicaments and Imperatives:
  (a) Lessons: Case studies, South Korea
  (b) Physical, Intellectual, Political and Cultural Capital required for Technology Transfer
  (c) Complementarities of Technology Capabilities and Competencies in Business cycle
  (d) Different Categories of Technological Innovations sought at Firm level
  (e) University Industry R&D collaboration for Technology Transfer
  (f) Technology Innovation Capacity Building for competitive Enterprise Driven Industrialization

• Technology Transfer Policies:
  (a) Realities of international transfer of technological systems
  (b) Modes of Technology Transfer, Policy lessons from China
  (c) Technology Transfer Policies of India, Brazil and South Africa
  (d) Technology Intervention through Networking and Trust Building

Instructors:
• Dr. M. Nawaz Sharif, Principal Consultant, Knowledge Management Group, Myriad Solutions, Inc., USA.
9. Design and Evaluation of Innovation Policy in Developing Countries (7 -12 December, 2009)

Course contents:

- The concept and history of innovation, economic perspective on innovation
- Globalization and public policy
- University, industry linkages as essential component of innovation
- Building innovation systems. Case study: South Korea
- Public policy for innovation, role of government in developing an innovation culture in the public and private sector, the example of Turkey, Malaysia and Pakistan
- Tapping into global technology
- Innovation processes and innovation systems
- Educational policies to foster innovation in developing countries
- Financial instruments to promote innovation
- Challenges for the design of innovation policies: Lessons from Europe
- Globalization and innovation policy: Challenges for developing countries
- Innovation surveys and measurements of innovation activities

Instructors:

- Professor Slavo Radosevic, Professor of Industry and Innovation Studies, United Nations University (UNU-MERIT), The Netherlands.
- Prof. Dr. Adam Szirmai, Professorial Fellow, United Nations University (UNU-MERIT), The Netherlands.
- Prof. Dr. Bart Verspagen, Professorial Fellow, United Nations University (UNU-MERIT), The Netherlands.
- Dr. Micheline Goedhuys, Researcher, United Nations University Institute for New Technologies (UNU-INTECH), The Netherlands.
- Dr. Mulu Gebreeyesus Gebreyohannes, Researcher, United Nations University (UNU-MERIT), The Netherlands.
- Dr. Kamal Munir, Reader in Strategy & Policy, The Judge Business School, University of Cambridge, UK.
- Dr. S.T.K Naim, Consultant, COMSTECH Secretariat, Pakistan.

10. Foresight (22 February – 5 March, 2010)

Course contents:

- Thinking about the future, rationales and objectives of Foresight, Introduction to Foresight methods.
• Developing and using scenarios
• Planning a foresight exercise; future technological prospects; social foresight; regional and national foresight case studies.
• Foresight outputs, implementation, and evaluation, forum on the future of Foresight.
• Six pillars of foresight.

Instructors:
• Dr. Sohail Inayatullah, Professor, Graduate Institute of Future Studies, College of Education, Tamkang University, Taiwan.
• Prof. Ian Miles, Manchester Institute of Innovation Research (MIoIR), Manchester Business School, University of Manchester, UK.
• Prof. Ozcan Saritas, Manchester Institute of Innovation Research (MIoIR), Manchester Business School, University of Manchester, UK.
• Dr. Rafael Popper, Manchester Institute of Innovation Research (MIoIR), Manchester Business School, University of Manchester, UK.
• Dr. S.T.K. Naim, Consultant COMSTECH, Pakistan.


Course Contents:
• Innovation and Technology Policy: Theory and Principles.
• Technology Policy for Developing Countries: Challenges and Opportunities
• The Dynamics of Technology Transfer: The Role of Firms in National Competitiveness
• The Impact of Technology Policy on National Systems of Innovation: Network Clusters, Global Production Networks (GPNs), Foreign Direct Investment (FDI) in North-South Perspective.
• International Trade, Technological Change and Technology Policy.
• Technology Policy, Welfare Policy and Social Policy.

Instructors:
• Dr. David M. Reiner, Senior Lecturer in Technology Policy, The Judge Business School, University of Cambridge, UK.
• Dr. Kamal Munir, Reader in Strategy & Policy, The Judge Business School, University of Cambridge, UK.
• Dr. Asad Zamman, Professor, International Institute of Islamic Economics, International Islamic University, Pakistan.
• Dr. Arshad Ali, Director General, School of Electrical Engineering and Computer Science (SEECS), National University of Science and Technology (NUST), Pakistan.
• Dr. S.T.K Naim, Consultant, COMSTECH Secretariat, Pakistan.
• Mr. Ali Shah, Senior Policy Analyst, COMSTECH Secretariat, Pakistan.
• Mr. Umar Sheraz, Senior Policy Analyst, COMSTECH Secretariat, Pakistan.

Course Contents:

- Concepts of Innovation and Innovation Systems, an introduction and overview.
- Setting the Stage: OIC Innovation Challenges.
- OIC challenge mapping and challenge framing.
- New innovation systems models: introducing the THICK methodology.
- Value chains & the THICK methodology.
- Getting innovation from the firm: an analysis of technological innovation in the private sector.
- The Role of IPR in Innovation.
- Analysis of collaborative innovation: Case Studies from South Africa and Finland.
- Innovation and Catch up.
- Designing and implementing innovation funds: case studies in agriculture, lessons from competitive research and matching grant projects.
- Setting STI Policy for OIC Countries.

Instructors:

- Dr. Norman P. Neureiter, Senior Advisor, Center for Science Diplomacy, American Association for the Advancement of Science (AAAS), USA
- Dr. Syeda Tanveer Kausar Naim, Consultant, COMSTECH, Islamabad
- Sara E. Farley, Chief Operating Officer, Global Knowledge Initiative, USA
- Amanda L. Rose, Program Officer, The Global Knowledge Initiative, USA
- Ali Shah, Policy Analyst, COMSTECH, Islamabad
- Umar Sheraz, Policy Analyst, COMSTECH, Islamabad


Course Contents:

- Role of IP in Promoting Innovation and Development
- Legislative/Regulatory Framework for Innovation: The case of the Bayh Dole Act
- IP laws Enforcement and Adjudication
- Modes of technology transfer and policy lessons from China
- IP System in Turkey and TUBITAK’s IP related Practices
- Overview of international patent (PCT) filing
- Overview of Patent Drafting and Formulation of Claims
- IPR in the Pharmaceutical Sector
- IP and technology management for universities and R&D institutions-key issues
- Technology transfer offices (different models of TTOs and their roles
- Trade related aspects of IPR and Implication for Agriculture
Commercialization of university research results (licensing, spin-off)
Collaboration with industry (contracts and agreements)
National and International legal frameworks for IP Protection
WIPO Support (capacity building, WIPO University Initiative Program)
Technology Information Support Centre (TISC)
Hands-on Session on Claim Writing and Patent Drafting

Instructors:

- Mr. Shabbir Khan, Visiting Foreign Faculty, National University of Science and Technology, Islamabad, Pakistan
- Mr. Murat Baybali, Expert/Patent and Trademark Attorney Chemical Engineer, TUBITAK, Ankara, Turkey
- Dr. Syeda Tanveer Kausar Naim, Consultant, COMSTECH, Islamabad, Pakistan
- Judge Muhammad Majid Bashir, Visiting faculty member of Punjab Law College, Rawalpindi, International Islamic University, Bahria University, Federal Judicial Academy and IPO-Academy, Islamabad.
- Dr. Shaukat Hameed Khan, Ex-Member Planning Commission, Islamabad
- Dr. Arshad Ali, Director General, NUST School of Electrical Engineering and Computer Science (SEECs), Islamabad
- Dr. Shafqat Farooq, Director Technical, Pakistan Atomic Energy Commission (PAEC), Head Office, Islamabad, Pakistan
- Mr. Umar Sheraz, Senior Policy Analyst, COMSTECH, Islamabad, Pakistan
- Yumiko Hamano, Senior Program Officer, WIPO University Initiative Program, Patents and Innovation Division, WIPO
- Mr. Mansur Raza, Deputy Director, WIPO
- Dr. Beat Mollet, IP Manager, Nestlé Research Center, Switzerland
- Natalia Giovannini, Licensing Officer,
- Takashi Yamashita, Director, PCT International Cooperation Division
- S. M. Bilal Ahsan, Attorney at Law, United Trademark & Patent Services, Lahore, Pakistan


Course Contents:

- Introduction to Intellectual Property Rights
- Role of IP in promoting innovation and development
- Legislative/regulatory framework for innovation
- Role of IPR in innovation
- OIC innovation challenges
- Setting STI policy for OIC countries
- Overview of international patent filing, patent drafting and formulation of claims
IPR in the pharmaceutical sector
Institutional IP Policy
IP and technology management for universities and R&D institutions—key issues
commercialization of university research results
national and international legal frameworks for IP Protection.

**Course Experts and Facilitators:**

- Mr. Shabbir Khan, Visiting Foreign Faculty, National University of Science and Technology, Islamabad, Pakistan
- Mr. Murat Baybali, Expert/Patent and Trademark Attorney, Chemical Engineer, M.Sc. TUBITAK, Ankara, Turkey
- Dr. Syeda Tanveer Kausar Naim, Consultant, COMSTECH, Islamabad, Pakistan
- Judge Muhammad Majid Bashir, Visiting faculty member of Punjab Law College, Rawalpindi, International Islamic University, Bahria University, Federal Judicial Academy and IPO-Academy, Islamabad.
- Dr. Shaukat Hameed Khan, Ex-Member Planning Commission, Islamabad
- Dr. Arshad Ali, Director General, NUST School of Electrical Engineering and Computer Science (SEECS) Sector H-12, Islamabad
- Dr. Shafqat Farooq, Director Technical, Pakistan Atomic Energy Commission (PAEC), Head Office, Islamabad, Pakistan
- Mr. Umar Sheraz, Senior Policy Analyst, COMSTECH, Islamabad, Pakistan
- Yumiko Hamano, Senior Program Officer, WIPO University Initiative Program, Patents and Innovation Division, WIPO
- Mr. Mansur Raza, Deputy Director, WIPO
- Dr. Beat Mollet, IP Manager, Nestlé Research Center, Vers-chez-les-Blanc, CH-1000 Lausanne, Switzerland
- Natalia Giovannini, Licensing Officer, Ph.D.
- Takashi Yamashita, Director, PCT International Cooperation Division
- S. M. Bilal Ahsan, Attorney at Law, United Trademark & Patent Services, Lahore, Pakistan

15. **Foresight for Innovation (28 November - 2 December, 2011)**

**Course Contents:**

- Introduction to foresight
- Sohail Inayatullah’s foundational concepts
- Environmental scanning models; causal layered analysis;
- Future tools, techniques, and methods;
- Six pillars of foresight;
- Applying tools techniques and methods to your pressing issues;
- Developing models of social change;
• Barriers and enablers for foresight in organizations;
• Using action learning and action research approaches for building enhanced foresight capacity and organizational readiness.

Course Experts and Facilitators:
• Mr. Marcus Barber, Director, Looking up Feeling Good Pty Ltd / Founder, Australian Strategic Planning Institute / Visiting Fellow, The Centre for Defence & Strategic Studies /Australian Defence College, Canberra, Australia
• Dr. Jose Maria Ramos, CEO Action Foresight / Senior Consulting Editor, Journal of Future Studies / Member Executive Board, World Future Studies Federation
• Ali Shah, Senior Policy Analyst, COMSTECH, Islamabad
• Mr. Umar Sheraz, Senior Policy Analyst, COMSTECH, Islamabad, Pakistan


Course Contents:
• Introduction to future thinking
• Different methods of future studies
• Causal Layered Analysis
• Creating the preferred future and backcasting
• Principles of sustainable development
• The innovation process
• Public policy for science and innovation
• The key issues: water, food, energy
• Innovation for sustainable futures
• Four generations of innovation policy
• Pro poor innovation policy
• Strategies for innovation and growth

Course Experts and Facilitators:
• Dr. Sohail Inayatullah, Graduate Institute of Future Studies, Tamkang University, Taiwan /Adjunct Professor at the University of the Sunshine Coast, Australia
• Professor Ian Lowe, Emeritus Professor in the School of Science at Griffith University, Australia / President of the Australian Conservation Foundation
• Dr. S.T.K Naim, Consultant COMSTECH Secretariat, Islamabad, Pakistan
• Bilal Mirza, Doctoral Fellow, United Nations University-MERIT, Maastricht University, the Netherlands / Research Associate, GIK Institute of Engineering Sciences and Technology, Topi, Pakistan
• Baseer A. Qazi, PhD Fellow, United Nations University-MERIT, Maastricht University, the Netherlands
• Prof. Dr. Muhammad Mansoor Khan, University of Engineering and Technology, Peshawar

17. Innovation and Entrepreneurship (November 12-16, 2012)

Course Contents:
• Innovation, Entrepreneurship and OIC Challenges.
• The role of innovation, entrepreneurship and institutional branding in contemporary economies.
• Innovations, firms and the state: critical success factors.
• A policy framework for corporate, social and state entrepreneurship.
• Developing a joint understanding of contextual issues affecting corporate, social and state entrepreneurship.
• Capabilities for entrepreneurship and value creation, organizing capabilities and entrepreneurial strategy.
• Reflection on experience: what blocks the development and implementation of an entrepreneurial culture in my country/institution where I work?
• Corporate, social and country branding for innovation and entrepreneurship.
• Branding the culture for innovation and entrepreneurship/internal Branding.
• Creating new knowledge through knowledge integration and dialogue.
• What blocks knowledge creation?
• Leadership and learning for change, forms of leadership and fit for change.
• The role of Higher Education Institutions and the entrepreneurial university.

Course Experts and Facilitators:
• Professor Nikolaos Tzokas, Professor in Marketing, Norwich Business School, University of East Anglia, United Kingdom
• Dr. Hammad Akbar, Lecturer in Management and Director MSc in Human Resource Management, Norwich Business School, University of East Anglia, United Kingdom
• Ms. Debra Gaw Josephson, Partner, Roberts Law Firm, USA
• Dr. Tanveer Kausar Naim, Consultant, COMSTECH
• Dr. Abdulbasit Shaikh, Visiting Faculty at Institute of Business Administration, Karachi, Pakistan

18. Foresight for Innovation Policy (August 26-30, 2013)

Course Contents:
• Introduction to futures thinking
• Case Studies in Foresight
• Method of Future Studies
• Causal Layered Analysis
- Creating the preferred future and backcasting
- The Viable Systems Model and Seven Strategies for Anticipatory Governance
- The Futures Action Model
- Developing an Environmental Scanning Process and Framework
- Scenario Creation: Double Variable Method
- Paradigmatic Social Change and Analyzing Social Change Using Five Dimensions
- Emerging Structural Synergies of Power and Analyzing the Community of the Initiative
- Exploring Value Exchange Systems and Designing Seeds of Change
- The Experiential Basis of Futures Research: 1st, 2nd and 3rd Person Perspectives
- Building Clarity, Strategy and Intention to Build-in Futures into Your Organization

**Course Experts and Facilitators:**

- Dr. S.T.K Naim, Consultant at COMSTECH, Islamabad, Pakistan
- Professor Sohail Inayatullah, Graduate Institute of Future Studies, Tamkang University, Taiwan and Adjunct Professor at the University of the Sunshine Coast, Australia
- Dr. Jose Maria Ramos, Senior Consulting Editor, Journal of Futures Studies, Tamkang University, Taiwan and Director, Action Foresight, Freelance Consulting and Facilitation, Australia
Selected comments and suggestions of participants of COMSTECH Training Courses are reproduced below:

- “The Course was thought provoking. It will help me in the systematic analysis and implementation of R&D activities in science and technology”.

- “This course explored so many fields and hidden knowledge about which I did not even think. Really an excellent course. I got the full action plan on how I will correlate my lab work with industry. So this course makes me able to give guidelines to young researchers”.

- “The training was worthwhile. I give Kudos to the organization, Dr. Atta-ur-Rehman and his team, and all other resource persons. I do hope to immediately make a presentation to my colleagues and top echelons of my organization on new things I have learnt”.

- “Management and Innovation and commercialization will be more visualized after this course”.

- “An excellent effort. All presenters were up to mark and were experts in their fields”.

- “The course gave me a wonderful opportunity to learn by interacting with people from different backgrounds”.

- “I am really delighted to attend such a valuable, fruitful and organized training course. It will help OIC scientists in shaping the future of their countries. It will help in developing deep and systematic thinking”.

- “I was very impressed by this course. It is unique in many dimensions, the subject, the experts and the participants”.

- “It was indeed a profound experience and privilege to attend a training course once again in COMSTECH. I must confess that the standard and quality of the training exists nowhere else. It is world class and very realistic. I have attended several policy making forums and conferences around the world particularly in Africa. I must say that I have been able to participate much more effectively because of the knowledge I gain from COMSTECH.

- “We all are indebted for COMSTECH for their extraordinary hospitality and very peculiar course and distinguished organization for the course. So my congratulation for Dr. Naim and her team. I hope that all of us have benefited from the course and gained the fruits of it which we can apply in different levels particularly at OIC countries level and come out with applicable plans and ideas that will play a role in the daily life of every citizen in our Islamic Ummah and humanity at large”.

- “This course was timely organized and in future such events may also be organized, so that researchers can know the different practices in Science and Technology. I am also happy to see the scientific community from other Muslim countries, who have shared their policies, programs and challenges”.

Annexure – 2
• “It was great to meet colleagues from many different countries of OIC here in Pakistan. Credit goes to COMSTECH for organizing the training so well with meticulous care. More importantly Dr. Naim remained the most eloquent and inspiring among all the so well versed and accomplished speakers.

The tender sapling of STI Centre is taking shape and making its presence felt not only among the OIC countries but at so many places like the UNU-MERIT, Netherlands and the Kennedy School of Government, Harvard University where I happened to have the first hand reference cited for the excellent work done by COMSTECH.

• “It is a good course which can mobilize all the actors of an innovation system... information about a process leads to execution of it”.

• “The course was very good, but the facility of internet was weak … there is also need of Digital Library”.

• “There should be a visit to any industry which is working in collaboration with university”.

• “This sort of courses should be arranged in other OIC countries so that a good number of participants may participate from other countries”.

• “The best part was that it was a one month course. As usually the courses are for few days or a week or two so you don’t get enough out of those courses from the learning point of view”.

• “I would like to recommend that we should focus on the consultancy from local institutes, as I feel that the tutors within the society has better understanding of the issues that have been discussed”.

• “Overall, the course was very good and the hospitality was excellent. The course has successfully and completely changed my understanding on the subject of Science, Technology and Innovation. As a member of national STI committee, I will be able to contribute more significantly than ever before to develop an STI policy for my country. Future training courses should be more comprehensive leading to some form of degree certification like Diploma, M.Sc. or PhD”.

• “The Course was thought provoking. It will help me in the systematic analysis and implementation of R&D activities in science and technology”.

• “Excellent training course! This sort of training courses should be arranged in different Islamic countries alternatively. This course made me able to explain the importance of having an STI Policy institute and the development of the STI policies”.

• “Such courses should be held outside the COMSTECH in other OIC countries. I will recommend my institute back in my country to organize conference about STI policy development. I will also recommend to my Institute to introduce STI as a subject”.

• “I would like to challenge and urge both the OIC and COMSTECH to put up a vigorous advocacy campaign to raise awareness of the importance of S&T for the socio economic
development in OIC member countries, particularly the leadership. I will develop an STI policy for my country which we do not have now”.

• “The course was innovative. It gave us know how about the importance of scientific publications and patents. It introduced clear ideas about the R&D. After this course, I am able to recognize the demands for the socio-economic development and how can we fulfill these demands. The only way is the Innovation. The idea of innovation in research will not only helpful for me but also for my colleagues in my country”.

• “I am really delightful to attend such a valuable, fruitful and organized training course. It will help OIC scientists in shaping the future of their countries. Practical sessions should be demonstrated and instructed by giving an example. It will help in developing deep and systematic thinking”.

• “Course was no doubt excellent. Please increase its circulation in the form of newsletter. Increase the number of participants. Provide more time for interaction and understanding among the participants to understand their cultures better. More resource persons and video lectures should be arranged. Invite resource persons from OIC countries to provide insight about their countries and experience”.

• “A collaboration network should be created for sharing foresight knowledge and research among OIC countries. The course should have course credits such as PDU’s from COMSTECH and participating institutions like PREST. Course participants should join and become member of alumni group, say Fellows of COMSTECH. Try to gauge participants views on best practices instituted at their premises and gain knowledge from them. The course will make me able to conduct a foresight exercise within my work and interest areas like innovation and S&T”.

• “I must confess that the standard and quality of the training exists nowhere else. It is world class and very realistic. I have attended several policy making forums and conferences around the world particularly in Africa. I must say that I have been able to participate much more effectively because of the knowledge I gained from COMSTECH.

• “Expanded my horizon and given me a new tool to re-examine myself, organization and Nigeria”.

• “I think very useful recommendations emerged in relation to Sudan, will be transferred”.

• “My inputs for the national policy formulation will be more structured and resourced”.

• “The course will help me design and conduct my and institutions studies in a manner to have patents and copyrights. The course motivated me to pursue for novel ideas in research.”

• “I will try to get a membership of WIPO UIP for my university. I will help my colleagues and students in filing patents and give lectures to the faculty/students on IPR.”

• “It will help me a lot in future in term of making innovation and getting them patented.”
• Sharing of corporate scenarios that generated implemented and measured innovator and best innovation practices. The last session was quite relevant as it was highly focused on “innovation” in practice. But the whole workshop should be geared towards that pragmatic orientation.

• Branding is the most important thing, I can now develop my own company (Idea Padded Institute) concentrating on commercialization & technology transfer.

• Turning into a better philosophy / rationale for developing entrepreneurs business.

• I am going back with a basic objective “Branding of my organization” and the second thing I will surely do is the creation of awareness and technology transfer.