

**Report On  
Participation in Seminar**

**IIWE 2006  
"WOMEN ENGINEERS: PUSHING FOR SUSTAINABILITY"  
June 30th – July 21st, 2006  
Paris, FRANCE**



**Submitted By**

**Samana Zehra  
Assistant Professor  
Department of Software Engineering  
Faculty of Telecommunication and Information Engineering**

**UNIVERSITY OF ENGINEERING AND TECHNOLOGY TAXILA**

**Oct 2006**

## Table of Contents

EXECUTIVE SUMMARY .....	1
INTRODUCTION OF IIWE 2006 .....	2
THE SEMINAR GOAL.....	2
THE SEMINAR PROCEEDINGS .....	2
The Opening Address .....	2
The Daily Schedule.....	3
The Topics in Focus.....	3
1. Promoting Girls in Engineering, Science and Technology.....	3
2. Networking Implications for Women in Engineering .....	3
3. Sustainable Development.....	4
4. Ecological Sustainable Development .....	4
5. Sustainability in Developing Countries .....	5
6. Sustainable International Standards.....	5
7. Ethics in Engineering.....	5
8. Ethics and Sustainable Development.....	5
9. Corporate Social Responsibility .....	5
10. Engineering Practices: Past and Present .....	6
11. Project Management .....	6
12. Professional Engineering Cultures in Different Geographical Areas .....	6
Site Visits .....	7
Schlumberger .....	7
IBM.....	7
EADS .....	8
My Contribution.....	8
My Achievement.....	8
CONCLUSION AND RECOMMENDATIONS .....	9
IIWE 2006 GROUP PHOTO.....	10

## EXECUTIVE SUMMARY

The International Institute of Women in Engineering (IIWE) organized its sixth seminar for women engineers around the world, from June 30th – July 21st 2006 in Paris, France. The three weeks seminar titled “IIWE 2006 - Women Engineers: Pushing for Sustainability” aimed to improve the participants’ abilities to understand and assess international engineering practices, improve their communication skills, indicating how they can balance their professional and family lives, opening views of the vast opportunities and challenges offered in the engineering field and looking into global sustainability issues.

IIWE invited women engineers from all over the world. Sixty five women from twenty one different countries attended IIWE 2006. It was the first time ever that Pakistan was represented in IIWE and I had the honour to represent my country at this international forum. For this, the credit goes to my university - University of Engineering and Technology, Taxila especially our Vice Chancellor, Prof. Dr. Habibullah Jamal who has been promoting women in engineers and facilitating the university to produce quality engineers for the industry for many years.

As a representative of Pakistani women engineers, I discussed the engineering history and current trends, engineering education, efforts of the government towards higher education, and liberty and empowerment of women from women politicians, educationists, philanthropists to women in military and technological fields. It was very interesting to find that the percentage of women engineers in Pakistan is higher than that in USA. IIWE 2006 was a great learning experience for me. It helped me increase my self-esteem and confidence as a woman engineer. I can proudly say that Pakistani women engineers are capable, competent and no less than women engineers in any other part of the world.

## **INTRODUCTION OF IIWE 2006**

The International Institute of Women in Engineering (IIWE) is a non profit body that has been organizing seminars for women engineers around the world for the last five years. This year, the sixth seminar of IIWE took place from June 30<sup>th</sup> – July 21<sup>st</sup> 2006, at EPF Ecole d' Ingénieurs at Sceaux, France. The three weeks seminar titled “IIWE 2006 - Women Engineers: Pushing for Sustainability” encompassed sessions related to women in global engineering with a particular focus on Sustainable Development. It also included industrial visits, panel discussions, individual and team projects, geographical area wise presentations and guest speakers from renowned multinational organizations and universities.

Sixty five women engineers, either studying, graduates or working in industry, from twenty one different countries attended IIWE 2006. These participants represented Austria, Australia, Bolivia, Cameroon, Czech Republic, England, Ghana, Indonesia, Iran, Israel, Norway, Rwanda, South Africa, Sweden, Tunisia, Turkey, Mexico, Palestine, Poland, Pakistan and USA.

There were twenty presenters, eight of which were staff members, coming from countries like Afghanistan, Austria, Australia, Czech Republic, France, Germany, Mexico and United Kingdom.

As a participant, it was a great honour for me to represent Pakistani women engineers at this international forum and I availed this opportunity to clarify misconceptions about the education, women empowerment, liberty and particularly the engineering perspective and history of our region.

## **THE SEMINAR GOAL**

The goal of IIWE as a women engineers' global forum is to present the challenges women face as international engineers and prepare them for the future. This year, the IIWE seminar was designed to achieve this goal by improving the participants' abilities to understand and assess international engineering practices, improving their communication skills, indicating how they can balance their professional and family lives, opening views of the vast opportunities and challenges offered in the engineering field and looking into global sustainability issues.

## **THE SEMINAR PROCEEDINGS**

### ***The Opening Address***

The opening address was given by Martine Benhaim, director EPF France. She talked about the history of EPF and IIWE, the engineering education in France and EPF efforts towards promoting women in science and technology.

## ***The Daily Schedule***

Aside from site visits, the daily sessions of IIWE 2006 comprised of three to four presentations from different presenters, group discussions, activities, brainstorming and question/answer sessions. The participants were required to keep a daily record of the happenings of the day, reflecting on what they learnt or experienced and how they were affected.

## ***The Topics in Focus***

The following topics were in focus during the IIWE 2006 sessions which spanned over two and a half weeks:

1. Promoting girls in Engineering, Science and Technology
2. Networking Implications for Women in Engineering
3. Sustainable Development
4. Ecological Sustainable Development
5. Sustainability in Developing Countries
6. Sustainable International Standards
7. Ethics in Engineering
8. Ethics and Sustainable Development
9. Corporate Social responsibility (CSR)
10. Engineering Practices: Past and Present
11. Project Management
12. Professional Engineering Cultures in Different Geographical Areas

### **1. Promoting Girls in Engineering, Science and Technology**

The speaker, Marie Noella Barton, represented Women Into Science, Engineering and Construction (WISE). She discussed various social stereotypes about engineering and technology and the ways to remove them. Following are a few important reasons that she discussed, for women not going to science, engineering and technology:

- Parents' way of bringing up their male and female children differently
  - Lack of exposure to opportunities as a female child
  - Lack of confidence developed during childhood
- Lack of women role models in science and technology
- Recruitment preferences
- Lack of support from society
- Colleagues' negative attitude

She emphasized that women need to develop self esteem, learn risk taking and help each other. In the end, she concluded by recommending education of children, parents, teachers, career advisors, employers, media and men about how science, technology and engineering can make women a useful part of this society and enables them contribute for a better future.

### **2. Networking Implications for Women in Engineering**

The speaker, Dr. Ille C. Gebeshuber represented Vienna University of Technology, Austria. She also works as Senior scientist, Project Manager (nanotribology) at Austrian Center of Competence for Tribology, AC2T, Wiener Neustadt, Austria.

Dr. Ille described Networking as - having connections, knowing people, helping them and building relationships with them. A network is about communication, give and take, mutual acceptance and promotion. She explained the art of networking and shared some important guidelines with the audience.

She stated that men have powerful networking world established for a long time while women although working in all fields of life, have powerless non-networking world. The reasons why women have not been successful in networking are

- Lack of experiences, rituals, knowledge about the rules, readiness to build up teams instead of fighting all alone for your goal.
- Women networks are goal oriented instead of person oriented.
- Women networks have loose structures

Dr. Ille emphasized on importance of networking for working women and that they need to develop strong networks in order to help each other grow mentally, socially and professionally. For doing so they should:

- Build stronger links and structure within their networks
- Be person oriented rather than goal oriented, i.e., include persons in the network who have the potential and are helpful
- Build and maintain power within their networks and use this power to conquer male dominated areas especially engineering

### **3. Sustainable Development**

Sustainability was the main theme of the IIWE 2006 seminar. This topic was presented by Prof. Pam Hazelton and Anne Gardner from Australia.

Sustainable development is defined as a development that meets the needs of present without compromising the ability of future generations to meet their own needs. Sustainable development encompasses the ecological, social, cultural and economic aspects of life. The presenters made us realize that our choices of living have impact on the world resources. The case studies presented and discussed by the presenters included:

- Beaver Dams,
- Urban Wild Space,
- Melbourne Cricket Ground,
- Car manufacturing Melbourne,
- The Sea Cliff Bridge (Australia)

### **4. Ecological Sustainable Development**

Dr. Anne Marie Clements from Australia talked about Ecological Sustainable Development. She discussed numerous environmental and botanical consultancy projects which she has done with her team 'Anne Clements Associates Pvt. Ltd.'. The areas of focus in most of her projects are reconstruction and rehabilitation of marshy lands, animal habitats, waste management strategies and management of contaminated sea shores.

## **5. Sustainability in Developing Countries**

Regarding Sustainability in Developing Countries, Dr. Ileana Castillo from ITESM University, Mexico, discussed case studies in context of Costa Rica. She explained the threats to sustainable development in Costa Rica as well as initiatives being taken for Environment conservation and sustainability.

## **6. Sustainable International Standards**

Dr. Zdenka Videcka from University of Brno, Czech Republic discussed different definitions of quality with respect to organizations, processes and individuals. She also explained quality control and various quality related standards and labels like ISO 9001, ISO 9002, ISO 9003, ISO 14000, EAQF, VDA etc.

## **7. Ethics in Engineering**

The speaker, Dr. Petra Schmidt from Germany discussed the importance of ethics and the influences of culture, religion, geography, personal and global history on ethics. She explained the Engineering Ethics Guidelines implemented in Germany, a few of which are:

- In case of conflict, engineers should give priority and value to humanity
- Human rights come first rather than technical and business decisions
- Public welfare must be preferred over private one
- Public safety and security is more important rather than function of products and machines.

Dr. Petra successfully made us aware about the engineering ethics and their importance.

## **8. Ethics and Sustainable Development**

An interesting presentation on Ethics and Sustainable Development was given by Prof. Grazyna Whapshott from Greenwich University, UK. She discussed

- Sustainability vs. Engineering,
- Green Engineering,
- Environment Lifecycle assessment,
- Risk Assessment,
- Restriction of Hazardous Substances (RoHS) and
- Waste from Electrical and electronic Equipment (WEEE) Directives.

She emphasized on the need of clean engineering solutions, intelligent modifications of nature, balance between global risk and safety

## **9. Corporate Social Responsibility**

Prof. M.C. Meyer, from University of Paris XI, discussed Corporate Social Responsibility (CSR) and its importance through an interactive session. CSR can be both internal (corporate employees) and external (corporate customers). According to CSR, corporations need to

- Facilitate their workers (Retirement plans, clean and safe working environment, Day cares for female workers children, etc.)
- Follow environmental regulations (post-project environment care, waste dumping, etc)
- Use renewable energy resources.
- Follow the legalities and ethicalities in their business approach

- Sponsor public welfare activities (charity etc.)
- Help in bridging industry-academia gap (sponsor education activities, student internships, scholarships)

In order to help corporations fulfill their responsibilities, the consumers should help them generate revenue by buying good quality products (higher prices) rather than low quality, cheaper products whose manufacturers do not follow the health and safety standards by using cheap raw materials.

Another presenter, Mr. Matthew Christensen, Executive Director European Sustainable and Responsible Investment Forum (EuroSIF) spoke about Corporate Sustainability and Investment. He discussed the activities of EuroSIF in the financial and investment sector to push companies to accept CSR. EuroSIF is also involved in fund management and investments for research and initiatives towards sustainable development activities.

## **10. Engineering Practices: Past and Present**

Mr. Jean Loius Bernaudin from IBM talked about evolution of engineering. He related the history of engineering to ancient architecture particularly religious worship places. Agriculture/waterways, weapons, transportation, energy production and communication mechanisms have all been the milestones in the engineering evolution. He explained the influences of different historical eras on engineering.

He also discussed the changing trends in engineering approaches; the economic factors, interdependence of innovation, production, customization and improvements in technology, internationalization of projects, and the environmental aspects involved in today's engineering.

## **11. Project Management**

Mr. Gilles Martin, PMP Performance Management Partner, gave an interesting presentation regarding Project Management. He discussed principles of project management, reasons of projects failure, risk management, best practices in project management and role of project managers. He described creativity, adaptivity, connectivity and collaboration as skills of a good project manager.

## **12. Professional Engineering Cultures in Different Geographical Areas**

To discuss specific information on the state of engineering in individual countries, engineering practice and the role of women in this field, the participants were grouped according to the following geographical regions:

- Sub-Saharan African countries,
- Latin America,
- Western Influenced Countries
  - Europe
  - USA
  - Australia
- Asia & Indian Subcontinent,

- Middle East and North Africa

Each of these groups presented the history of engineering, status of women in their society general and particularly in the field of engineering. They shared statistics about male and female students into engineering, popular engineering disciplines among women, drop-out rates, brain-drain issues, employment conditions, problems of working women, and sustainable development work.

It was found that the percentage of registered women engineers in Pakistan is 16% (according to Pakistan Engineering Council statistics) which is more than that in USA (10%).

## **Site Visits**

During the second week at IIWE 2006, we visited three different commercial organizations namely Schlumberger, IBM and EADS.

### **Schlumberger**

Schlumberger is the leading provider of technical services to the oil and gas exploration and production industry. We had the opportunity to meet the General manager Schlumberger, the HR Manager, and a number of other engineers working at that site. Four of these engineers were women who shared their personal experiences and challenges at work and life at home as married women and mothers. Some interesting statistics shared by Schlumberger about their female employees are

- 15% Field engineers
- 7% Executives
- 4% R & D, Global directors
- 7% Secretary Level

### **IBM**

IBM, once a leading giant in mainframe computers business has emerged as a global services company in the recent years. It operates in 175 countries with more than 300,000 employees. At IBM, we had an interactive round-table meeting with some women employees who are working at prestigious positions like Global Technical Services Director, Business-line for South East Europe, Sales and Distribution HR Manager, Project managers and Team-leads in projects.

It was very interesting to find that *one-third* of IBM employees are women. In 1943, IBM had the first woman Vice President for Europe Middle-East and Africa (EMEA). IBM has had its Women Country General Managers (CGMs) for France and Spain. Women at IBM have established a forum named Women in Technology (WiT) since 1997. This forum has 112 chapters in different educational institutions. The IBM women enjoy flexible working options (e.g. remote working from home), dependents care, and rotations (change of job role) within departments. IBM encourages women in technology by arranging summer camps, engineering weeks, computer clubs, and sponsorships to conferences, awards and scholarships.

## **EADS**

EADS is European Aeronautic Defense and Space Company. EADS is into manufacturing of airbus, military and private helicopters and systems for space explorations and defense purposes.

After a brief overview of EADS by one of their representatives, a meeting was arranged between the EADS women employees and the seminar participants. Women are working in marketing, human resources, research, design and development and other technical positions. The women shared their technical work experiences and answered our queries regarding the work conditions, benefits and challenges of being women employees and work/life balance. EADS encourages recruitment of women and provides them a conducive work environment. EADS believes in Corporate Social Responsibility (CSR), Sustainable development and Business Ethics. EADS also arranged a small workshop for the participants about CSR and employee-rights awareness.

Things that I found common in all the three organizations are that they believe in diversity of gender, skills, culture and nationality, and encourage women in science and technology.

## ***My Contribution***

I represented my country Pakistan in the Asia and Indian Subcontinent group to discuss the professional engineering culture in our geographic region. The presentation was delivered in the following sequence

- I began with introduction of our rich historical background of arts and architecture (Harrappa civilization, Mauryans-Era/Taxila civilization, Mohanjedaro, Arts and architecture of Subcontinent, etc.).
- I told the participants about the types of engineering in our country and the ones preferred by women and why.
- I used statistics from Pakistan Engineering Council to show the number of registered engineers and the ratio of women in different engineering fields.
- I explained to them the efforts done at government level for the promotion of higher education and the steps being taken for brain-drain problem.
- I also talked about the liberty and empowerment of women from women politicians, educationists, philanthropists to women in military and technological fields.
- I discussed working women, how they balance their work and personal life, their problems and why some women do not pursue careers.
- The presentation ended with conclusions and recommendations on how women engineers can be promoted and facilitated.

## ***My Achievement***

It was a great moment of pride for me when I won the first prize among all the participants in the 'Poster Competition'. This competition took place in the first week of seminar and its aim was to help us learn poster-making for future conferences and seminars.

## CONCLUSION AND RECOMMENDATIONS

The IIWE 2006 Seminar was an enriching experience for me - full of ideas exchanges, interesting discoveries and new avenues of learning and friendships. It gave me the opportunity to know about the social and cultural trends of other parts of the world. I was also able to observe some aspects of the Western Education System. A few important things worth mentioning are:

1. The universities have a few days open-house for the students who are still in school and at the verge of deciding their future careers. This helps spread awareness and inspiration for the engineering education.

### **Recommendation**

The Pakistani universities need to play their role in proper student counseling through seminars and open-houses because a lot of students end up in engineering careers without having any aptitude for it.

2. In most of the foreign universities, there are “student exchange programs” at both national and international level. This is important for their mental growth, competency, cross-country and international experience.

### **Recommendation**

We can also introduce student exchange programs in our country (initially at national level and later on international level).

3. Students abroad participate in internship programs at both national and international level to have practical industrial experience besides theoretical studies.

### **Recommendation**

We should introduce the concept of mandatory internships at our universities.

4. Students are given education on sustainable development and environmental engineering as part of their engineering courses. These multidisciplinary subjects provide broad-based capability for the solution, implementation and management of engineering activities in an environmental context.

### **Recommendation**

These subjects are covered only in Civil Engineering curriculum. We need to educate students in other engineering disciplines about environment and sustainability issues as well. For this we should introduce workshops and seminars during their engineering education.

About women in engineering – women have great potential in them and if given opportunities, they can excel in the field of engineering and technology. Women engineers in Pakistan need support from family members and from government to have policies that facilitate them to pursue their careers and be the ones to contribute to the welfare of their homes, society and above all their country.

As a general conclusion of IIWE 2006, for women to progress in the field of engineering, they need to move forward together with men and not against them.

## IIWE 2006 GROUP PHOTO

