



2010 APEC
WLN
15th Women Leaders Network Meeting

Fostering Women Leaders in Science & Engineering

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Chair, IEEE Women in Engineering Committee

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The Imperatives for Increasing Gender Diversity

- The importance of women's participation in science and engineering can be seen from a consideration of a range of factors, *all of which enable and enhance the growing role played by these fields in the developed and developing world*
- These factors can be grouped into three broad categories:
 - ❖ *Demography and skills shortfalls*
 - ❖ *Productivity and Human Capital*
 - ❖ *Diversity and Innovation*
- 2009 FASTS report (Federation of Australian Scientific and Technological Societies) recognizes this and *calls for an increased focus on women in science and engineering in Australia*

“ If we begin to see how diversity will benefit the research community, the profession, and our countries, then women will finally take their rightful place in the ranks. We will all be the richer for it. ”

M. Frize, IEEE Women in Engineering Newsletter, Nov'99

Women's Progress, Success and Retention: The Scope of the Problem

- **Continuing Horizontal Segregation** – Women's participation is relatively low in particular disciplines of science as well as all fields of information technology and engineering

Education	% of Women
Health & Education	73
Engineering	15.5
Information Technology	18.9
Natural & Physical Sciences	52

There used to be the "pipeline issue"



In the 70s



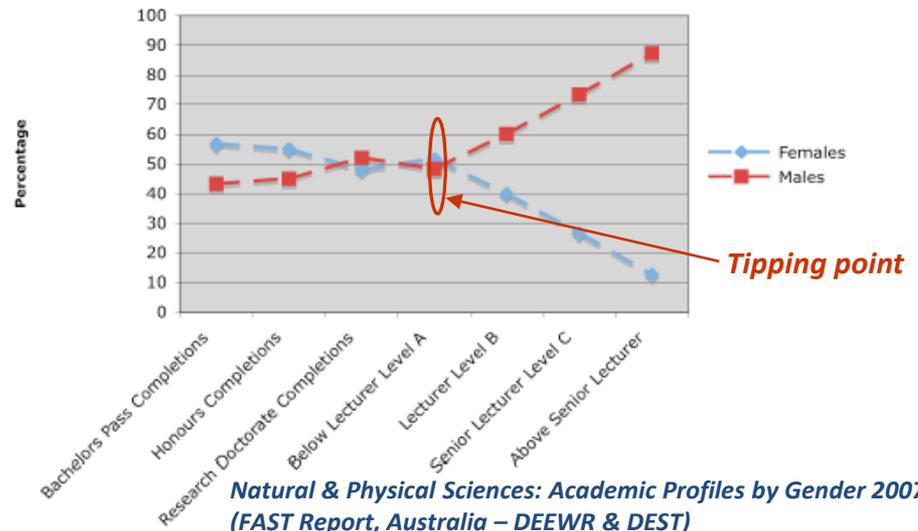
Now

Problem Solved?

* DEEWR Australian Government (2007)
55% of all undergraduate students are women

Engineering: electrical, mechanical and civil have lowest participation (12%)

Sciences: Mathematics, Physics and Astronomy, Earth and Chemical have lower participation (30%) and Biological and Environmental studies have significant participation (>50%)



- **Vertical Segregation** – Women's participation drops substantially at each stage of career progression

Women's Progress, Success and Retention: Around the World



- **Recent major reports from UNESCO, US and Europe are consistent with the Australian story**
- *Women constitute approximately one-quarter or less of engineering students in the majority of countries and regions around the world and **maintaining the already small numbers of women in the workforce is an ongoing problem***
- *In recent years the government organisations, universities and companies have begun working towards understanding and helping to correct the underlying causes of inequality*

Leaky Pipeline

Percentage of All Students Graduating with a Bachelor Degree in Engineering Who Are Women – Regional Averages (Data Source: NSB 2008)

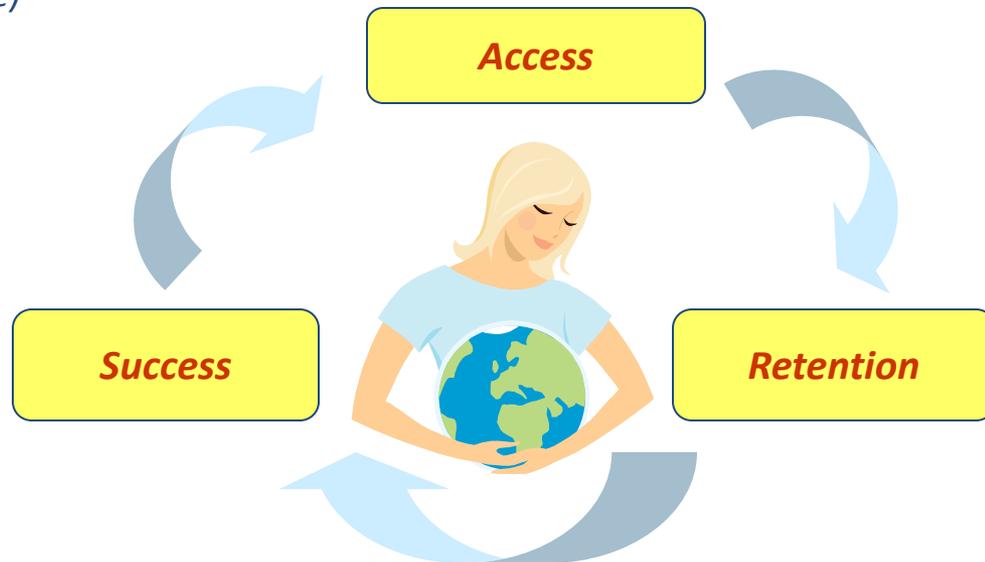
Region	% of Women	Year of Data
Asia	15.9	2004
Middle East	17.6	2004
Africa	14.2	2004
Europe	24.1	2004
Central/Eastern Europe	30.4	2004
Central/North America	22.1	2004
South America	29.4	2004
Oceania	25.3	2004

Percentage of the Professional Engineering Workforce Who are Women

Region & Country	% of Women	Year of Data	Data Source
Americas			
USA	11.1	2007	NSF (2009)
Canada	12.2	2006	CCWESST (2008)
Europe			
UK	8.7	2007	UKRC (2009b)
France	16.8	2007	UKRC (2009b)
Germany	15.4	2007	UKRC (2009b)
Romania	25.3	2007	UKRC (2009b)
Middle East			
Turkey	27.0	2008	Denzig (2008)
Asia & Oceania			
Japan	6.2	2004	Burrowes (2006)
Australia	11.2	2007	NSB (2008)

Strategies and Interventions for Overcoming Barriers

- **A multitude of measures, programs and initiatives are required for all stages of education and career development**
- **Access to Education**
 - ❖ Schools' outreach and recruitment (e.g. IEEE WIE STAR & TryEngineering, SWE, WISE)
 - ❖ Gender inclusive curriculum
 - ❖ University programs to improve retention and success of students (e.g., Women in Engineering Officer)
- **Institutional Cultures (Policies) and Decision-Making**
 - ❖ Build inclusive workplaces and expand opportunities for women (e.g. Aus EOWA, US ADVANCE, Catalyst)
 - ❖ National/Regional policies (e.g. the EU example)
- **Career Support**
 - ❖ Role Models
 - ❖ Mentoring & Career coaching
 - ❖ Awards and Recognition
 - ❖ Professional Networks
- **Leadership**
 - ❖ Empower leaders to address gender equality
- **Evidence and Evaluation**
 - ❖ Gender data collection and indicators
 - ❖ Measure the effects of programs

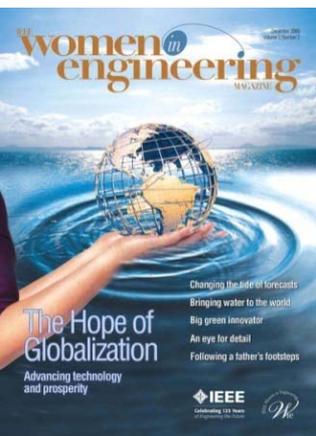


Volunteering – One way to advance the goal of gender equality in SET

IEEE Women in Engineering

Largest international professional organization dedicated to promoting women engineers and scientists

296 Affinity Groups and members in 98 countries



Collaborate with other organizations to develop the best practices and strategies to promote the advancement of women and diversity for all individuals

Thank You

Let's call upon the people of the APEC countries to celebrate the achievements of women and commit themselves to the goal of true gender equality in science and engineering

