Developing the Next Generation of Engineers for the Energy Industry

A personal perspective

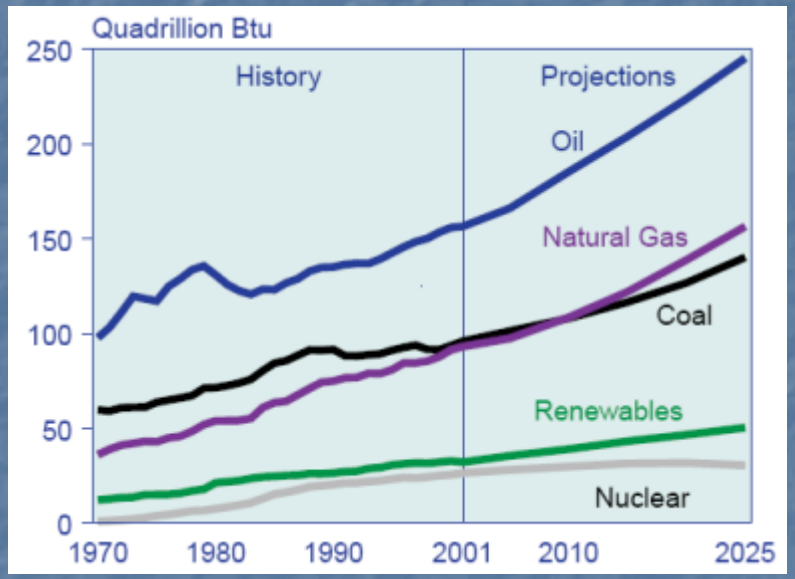
Duncan Stephen

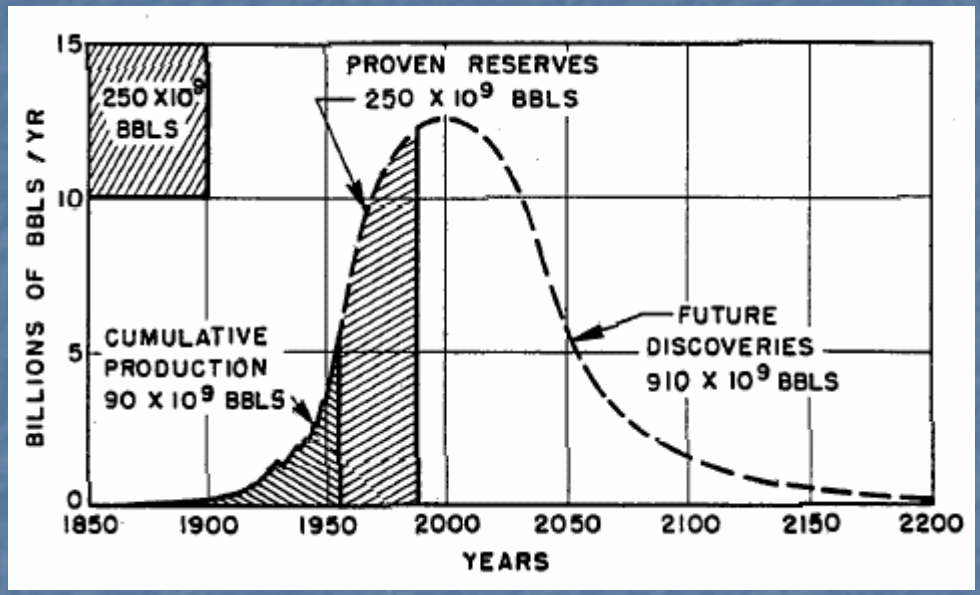
A brief CV

- Aberdeen University BSc
- Schlumberger 1982 - 2005
- Worked in the field for 10 years in Drilling
- Grew with SLB's Drilling Engineering business, UK Drilling Engineering Manager.
- Seconded to SEIC Sakhalin II project.
- Currently RGU Programme Development Leader (Drilling & Well Engineering)

The Hydrocarbon Age

Our ignorance is not so vast as our failure to use what we know

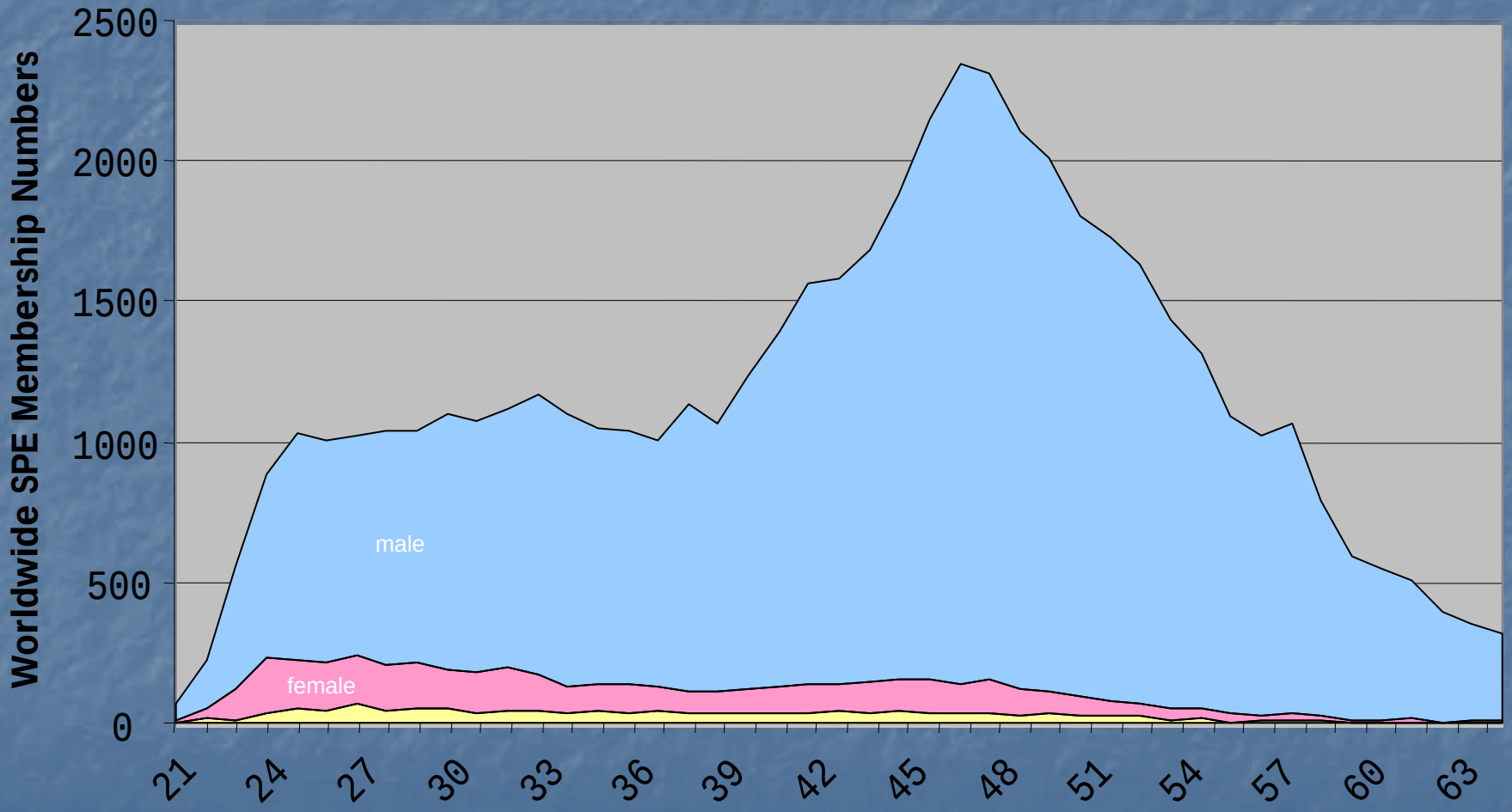




1) World energy consumption, 1970-2025. *Source: International Energy Outlook 2004*

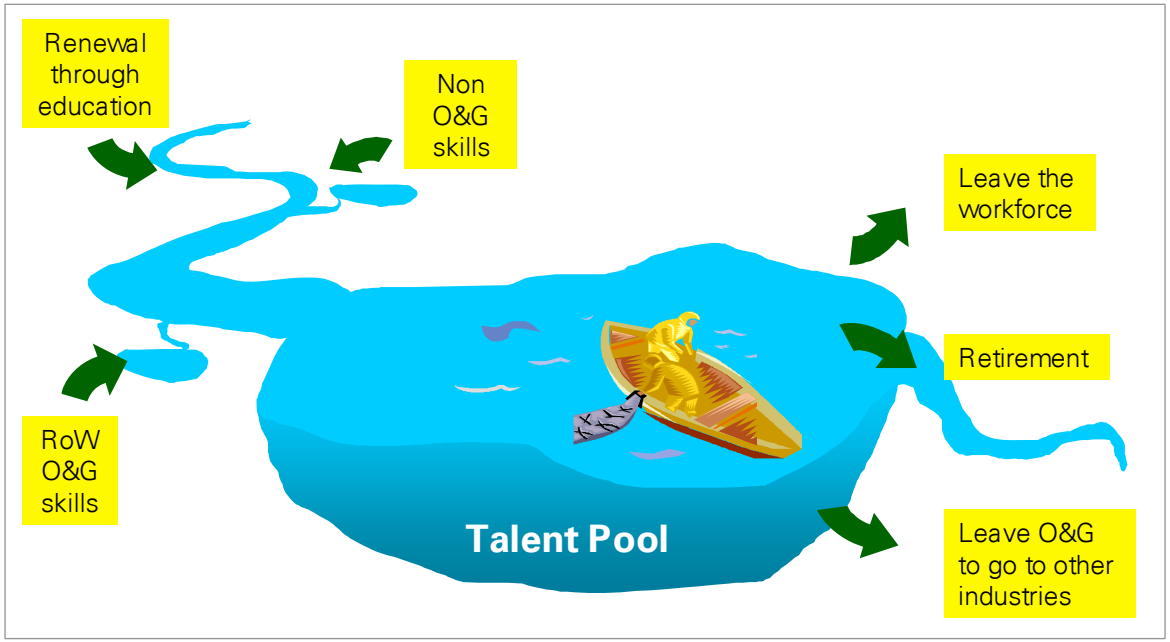
2) Nuclear Energy and the Fossil Fuels. *M. King Hubbert 1956*

The Demographics



The Talent Pool

Industry Talent Pool



Offshore Training Foundation Workshop 2005. *Rosy Wood, BP*

Barriers to Inflow
Societal

"While the academic rigours of engineering will not, and should not change, we must find a way to inspire the next generation of British engineers to choose relevant degrees and nurture them as students to ensure they go on to realise a fulfilling and rewarding engineering career……."

The perception of engineering and technology has long been recognised as a barrier to recruiting people to the sector. The most frequent reasons identified for the poor image of the sector are:

- A poor understanding of what engineering and technology involves;
- The perception has been that the needs of the engineering sector are in decline and that it is a dirty, low skilled sector.
- Less than 40% of typical recruitment gaps are filled by new entrants.

Barriers to Inflow School

- At School: STEM Subjects – 20% decline in 10 years
  - A number of studies illustrate the negative perception of the sector by young people and show that engineering is only likely to be considered as a career by 16% of young people (and by only 5% of young women).
  - Decisions about jobs are made at an early age. By late primary school many pupils have rejected jobs on the basis of their perceptions. These are highly individual and the product of images of jobs they see for themselves, those passed from parents and friends and those from the media. There is limited data on how these 'informal' influences relate specifically to future career choices in specific sectors, with the focus of much of the work being on gender role models and the influence of social class/job status of the parents.

Barriers to Inflow Higher Education

"The Government and the professional science and education communities need to strengthen their commitments to encouraging more pupils and students to study science, engineering and technology. The plummeting popularity of science, engineering and technology among pupils and students threatens the prosperity and quality of life of the whole nation and its progress during the twenty-first century." (Sir Alistair MacFarlane, chair of the Royal Society Education Committee, December 2003).

- 45% of universities report a drop in course applications over the past three years
- Two out of five engineering students have no intention of becoming engineers when they graduate.
- Drop outs:
  - demanding course content (66%)
  - heavy mathematical content (62%)
  - course is boring (46%)
  - 'put off' since beginning the course (44%).

Higher Education Survey November 2006

The Globalisation of Engineering

- Engineering is a global business
- Overseas companies compete for our best graduates, and engineers (N.O.C.s)
- UK companies must recruit non-UK engineers.
- SEGS (England)
- Fresh Talent Initiative (Scotland)

Developing Young UK Engineers: The problem is societal

- The Sam Ryan effect: Who wants to be a forensic chemist?

- The Kevin Syndrome: Its SO unfair!

How do we mitigate in the real world?

How can we make Energy Attractive?

- Primary - Emphasise the technology – (forget being a train driver, if its big kit you want to play with, this is the place to be!)
- Secondary – Keep kids motivated in STEM subjects in the critical years 13-14. Parents are still a major influence at this stage. Image of the industry.
- Higher Education – Offer an integrated qualification portfolio – from SVQ to MSc. Courses must have a pragmatic curriculum.

Retention of Graduates

- CPD / accelerated competency should be win/win for Employer and Employee. Chartered accreditation / MSc should be incorporated.
- Reassure prospective employees of the transferability of their skills. (Professional mobility)
- Offer lifestyle options.

Industry Initiatives

ABOI

BCECA
British Chemical Engineering Contractors Association

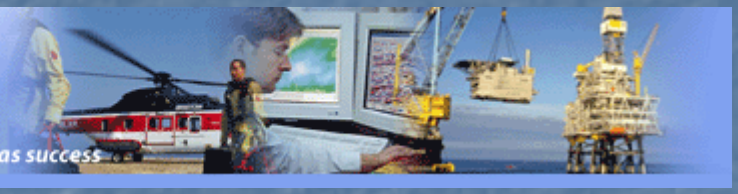
BRINDEX

ECITB

IMCA

FEA

pilot
the right course for oil and gas success



dti

EIC

The Sector Skills Council for Chemicals, Nuclear, Oil and Gas, Petroleum and Polymers
cogent

energy INSTITUTE

eeegr
EAST OF ENGLAND ENERGY GROUP

IMAREST
The Institute of Marine Engineering, Science and Technology

itf

oilcareers.com

Scottish Enterprise

SPE International
Society of Petroleum Engineers

IOM academy

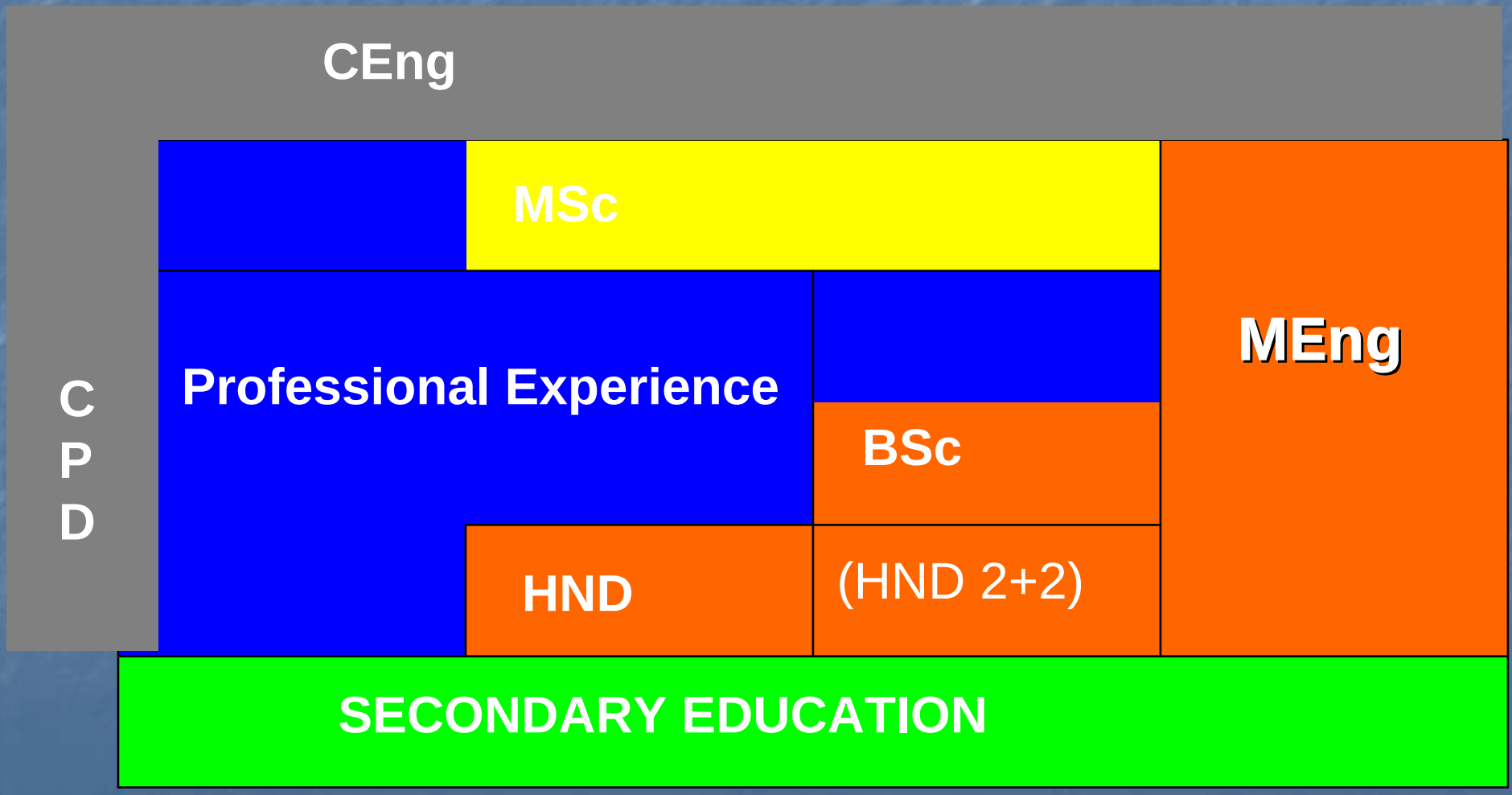
Marketing a Career in Energy

- A partnership between Education and Industry
- Key stakeholders:
  - Major operator and service companies
  - Colleges and Universities
  - Professional Institutions

Stakeholder Roles

- Industry
  - Participate with Academia – Energy education is an expensive business! Quality costs, courses must be competitive. An investment.
- Education
  - Marketing – integration, not competition.
  - Product – State of the art, relevant, attractive.
- Institutions
  - Provide vision, leadership, lobbying, facilitation.

An Integrated Development Plan



A personal perspective

We cannot ourselves realistically influence society to ‘switch on’ to engineering, but there is evidence that a corner is being turned.

There is a move back towards STEM subjects in school.

Engineering applications are up 35% at RGU.

We need to maximise our attractiveness to a finite resource.

Meantime, we must think and act globally to address our current challenges.