



# **Development of the UK Power Station Programme ~ Opportunities & Challenges**

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**‘The UK will have a new nuclear power station built  
.... every year for the next 10 years’**

## Principle nuclear sites in the UK

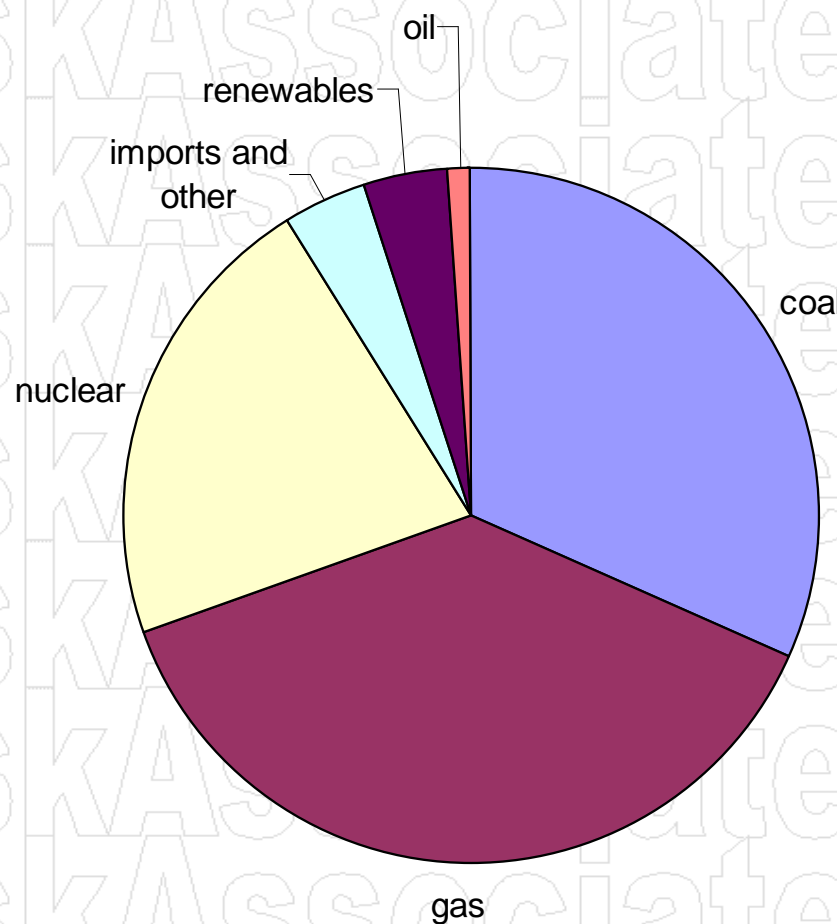
- ◆ Electricity production
- ◆ Hospital radioisotopes
- ◆ Fuel reprocessing



# UK Energy Budget 2004

Consumption - 235.6 mtoe

Production - 238.4 mtoe



mtoe - million tonnes oil equivalent



# Existing & proposed Nuclear Power Station sites



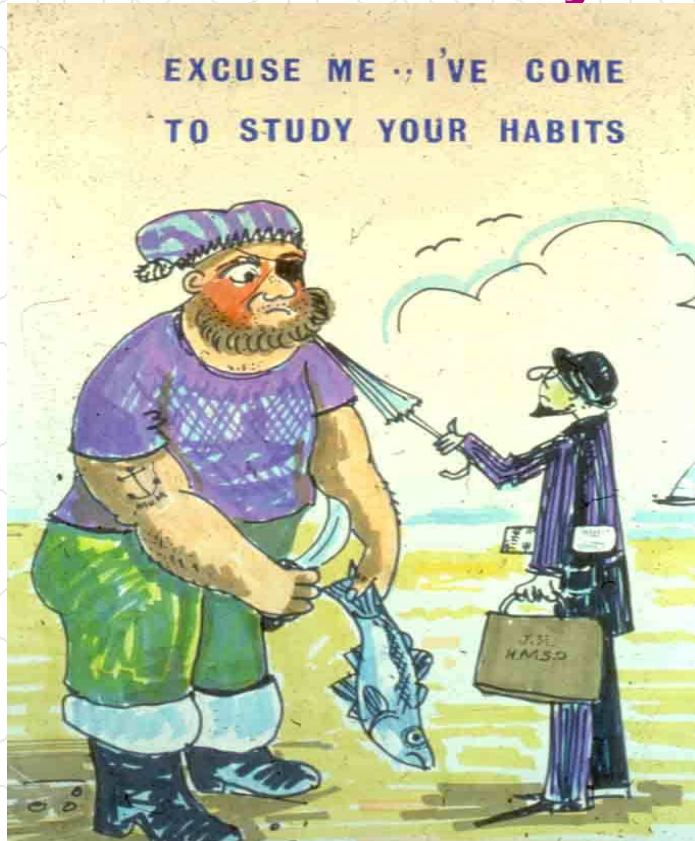
December 2009

## Main Areas of Concern

- ◆ Nuclear Reactor Safety
- ◆ Disposal of nuclear waste
- ◆ Terrorist threat
- ◆ Capacity for competence



# Nuclear Power Station development: Safety & the community



- ◆ Regulation = NII & operator accident sequences
- ◆ PWR technology
- ◆ Manufacture / design
- ◆ EDF Sizewell & Hinkley
- ◆ RWE & EON Wylfa & Cumbria

**Effective communication with the public**

## **CRA Core Business = RISK Assessment**

Probabilistic Risk Analysis, Human Factors Assessments, Safety Case Support, Support to Regulatory Bodies, Environmental Monitoring and assessment, Decommissioning and Waste Management.....Plus:

1. HSEQ management systems development
2. Knowledge management
3. Competence management
4. Business process development
5. Change management

## Radioactivity ~ Symbols & Half lives

- ◆ Caesium  $^{137}\text{Cs}$  30 years &  $^{134}\text{Cs}$  2 years
- ◆ Cobalt  $^{60}\text{Co}$  5.3 years
- ◆ Iodine  $^{131}\text{I}$  8 days
- ◆ Potassium  $^{40}\text{K}$   $1.3 \times 10^9$  years
- ◆ Plutonium  $^{239}\text{Pu}$  24,360 years
- ◆ Polonium  $^{210}\text{Po}$  138 days
- ◆ Strontium  $^{90}\text{Sr}$  28.5 years
- ◆ Technetium  $^{99}\text{Tc}$   $2.1 \times 10^5$  years

# Hinkley Point Environmental Monitoring Programme 2007

Example of results taken & adapted from RIFE 13  
Marine & terrestrial samples Units Bq per Kg (fresh)

Sample	H3	C14	Cs 134	Cs 137
Cod	110	29	0.07	0.74
Porphyra	ND	ND	0.07	0.93
Parsnips		22	0.05	0.04
Milk *	5.1	17	ND	ND
Blackberries *	5.0	12	ND	ND
Rhubarb *	4.0	13	ND	ND

ND = Not Detected \* = Trace amount of S35 also detected

## UK Strategy for radioactive discharges to 2020

Over 100 licensing consents relating to EU & UK Directives for a major development

- ◆ progressive reduction of human exposure to ionising radiation arising from radioactive discharges, as a consequence of reductions in discharges, such that a representative member of a **critical group of the general public will be exposed to an estimated mean dose of no more than 0.02 millisieverts (mSv) a year from liquid radioactive discharges to the marine environment made from 2020 onwards**
- ◆ progressive reduction of concentrations of radionuclides in the marine environment resulting from radioactive discharges, such that by 2020 they add close to zero to historic levels. (The terms "close to zero" and "historic levels" are not defined in the OSPAR Strategy ([The Convention for the Protection of the marine Environment of the North-East Atlantic](#)) and the OSPAR Commission is continuing to work on establishing agreed definitions.)

## Useful web sites

National Skills Academy for Nuclear agenda includes promoting Science, Technology, Engineering and Mathematics (STEM)

[\*www.nuclear.nsap.academy.co.uk/.../NSAN\*](http://www.nuclear.nsap.academy.co.uk/.../NSAN)

Corporate Risk Associates [www.c-risk-a.co.uk](http://www.c-risk-a.co.uk)

Environment Agency [www.environment-agency.gov.uk](http://www.environment-agency.gov.uk)

Food Standards Agency

[www.food.gov.uk/science/surveillance/radiosurv/rife14](http://www.food.gov.uk/science/surveillance/radiosurv/rife14)