

# Overview of the Workshop:

## Modelling Employment in the Nuclear Power Sector

**Nuclear Energy Agency Expert Workshop on the  
“Modelling Employment in the Nuclear Power Sector”  
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**Geoffrey ROTHWELL**  
OECD Nuclear Energy Agency  
Nuclear Development Division

# Background: Social and Economic Impacts

The production of nuclear energy entails macro-economic impacts, as well as both positive and negative social-environmental and micro-economic impacts.

## **Macro-Economic Impacts include (but are not limited to):**

- (1.1) Contributions to national value added and gross domestic product
- (1.2) Creation of employment

## **Positive impacts include (but are not limited to):**

- (2.1) More stable electricity prices: NEA (2012) “System Effects”
- (2.2) Increased energy security: NEA (2010) “Security of Energy Supply”
- (2.3) Limited carbon emissions: NEA (2011) “Carbon Pricing,” & NEA (2012) “Low-Carbon Future”
- (2.4) Development of spin-off industries: NEA (2011) “Medical Radioisotope Reliability.”

## **Negative impacts include (but are not limited to):**

- (3.1) Reactor accidents: NDD PoW 2013-2014
- (3.2) Radioactive waste: NEA “Economics of the Back-End” (2013)
- (3.3) Nuclear weapons technology proliferation: IAEA reports.

**Many of these positive and negative impacts have been addressed by the NEA, but not the macroeconomic impacts, including levels of expenditures and employment**

## Objectives and Tasks: Expenditures

**Sub-Task 4.1.1: Verify Parameters and Assumptions regarding the Nuclear Power Industry Expenditures in current Input-Output models:**

Regarding representations of the nuclear power sector, because I-O parameters are assumed to be fixed, it is essential to verify that they correspond to a country's actual nuclear power sector.

We have been working with the OCED Statistical Department to verify current NEA Member Country I-O representations of their economies.

This process could lead to guidelines for representing the nuclear power industry with I-O models.

## Objectives and Tasks: **Employment**

### **Sub-Task 4.1.2: Verify Assumptions regarding the Nuclear Power Industry **Employment** in current Input-Output models:**

The second subtask would be to verify whether independent assessments of levels of **employment** in the nuclear industry (which then use I-O multipliers to determine induced nuclear sector employment) are compatible with the expenditures on labour in the I-O models that are used to calculate induced nuclear sector employment.

This process could lead to guidelines for estimating **employment** in nuclear power industries with I-O models.

## Objectives and Tasks: **Education/Training**

**Sub-Task 4.1.3: Determine aggregate **education/training** implied by employment levels in I-O models of the nuclear power sector:**

Building on NEA, *Nuclear Education and Training: From Concern to Capability*, OECD (2012), we could estimate the **education/training** requirements implied by employment levels in I-O models.

While we have estimates of the **education/training** required at operating nuclear power plants, there are fewer studies of the **education/training** requirements in the construction, fuelling, decommissioning, and waste management sectors of the nuclear power sector. Relying on this literature could lead to an estimate of **education/training** requirements by nuclear power sector in I-O models.

## Objectives and Tasks: **Other Generators**

**Sub-Task 4.1.4: Compare employment and education and training requirements in the nuclear power sector with estimates of employment and education and training requirements in other electricity generating industries:**

Employment levels have been estimated for **other electricity generating industries**, such as the level of employment by the windmill industry conducted by the German Ministry of Environment. See Persem, “Wind in Germany: More than Three Employees per MW Installed,” presented at “L’Éolien : Une opportunité industrielle pour les territoires,” Reims, France (4-5 June 2013).

Generally, these estimates have relied on I-O models (as indicated by references to direct, indirect, or induced employment). To the extent that these studies have also estimated education and training requirements, we could also compare employment quality between (among) electricity generating sectors.

## Work Plan:

To help accomplish the first two of these subtasks, in this workshop we hope to

- (1) establish clear definitions of direct and indirect effects that are consistent with the I-O models used to calculate induced effects, and
- (2) Establish guidelines for using I-O (and other) models in estimating direct, indirect, and induced employment in the nuclear power sector.

In the next workshop, we hope to address

- (1) the education and training requirements (e.g., the number of engineers) required in each sector of the nuclear power industry, and
- (2) compare guidelines and results with studies of other sectors in electricity generation.

## Welcome to the NEA—

