**Mandate of the Expert Group on Advanced Fuel Cycle Scenarios (AFCS)**

**Chair**: Brent Dixon, USA

**Members**: All NEA Member countries

**Regular Observers (Non-Members):** European Commission

**Observer (International Organisation):** International Atomic Energy Agency (IAEA) (*By agreement*)

**Date of creation:** 30 June 2010

**Date of expiration:** 30 June 2016

**Mandate:** Approved at the 21st meeting of the Nuclear Science Committee in June 2010

[[NEA/SEN/NSC(2010)3](http://www2.oecd.org/oecdinfo/info.aspx?app=OLIScoteEN&Ref=NEA/SEN/NSC(2010)3)]

Extended at the 11th Meeting of the Working Party on Scientific Issues of the Fuel Cycle in February 2013 [[NEA/SEN/NSC/WPFC(2013)2](http://www2.oecd.org/oecdinfo/info.aspx?app=OLIScoteEN&Ref=NEA/SEN/NSC/WPFC(2013)2)]

Extended at the 12th meeting of the Working Party on Scientific Issues of the Fuel Cycle in February 2014 [[NEA/SEN/NSC/WPFC(2014)2/REV1](http://www2.oecd.org/oecdinfo/info.aspx?app=OLIScoteEN&Ref=NEA/SEN/NSC/WPFC(2014)2/REV1)]

Revised at the 13th meeting of the Working Party on Scientific Issues of the Fuel Cycle in February 2015 [[NEA/SEN/NSC/WPFC(2015)2](http://www2.oecd.org/oecdinfo/info.aspx?app=OLIScoteEN&Ref=NEA/SEN/NSC/WPFC(2015)2)]

**Objective**

Under the guidance of the Nuclear Science Committee (NSC) and the mandate of the Working Party on Scientific Issues of the Fuel Cycle (WPFC), the Expert Group will perform task to study needs associated with the transition from current or future advanced nuclear fuel cycles. The objectives of this Expert Group are:

* To assemble, organise and understand the scientific issues of advanced fuel cycles;
* To provide a framework for assessing specific national needs related to implementation of advanced fuel cycles.

**Scope**

These issues are critical to implementing a sustainable nuclear energy infrastructure and this expert group will:

* Define the key scientific issues by collecting and comparing information available from experts in member states, organise the information in a systematic way, and provide a deep level of understanding of each of them;
* Assemble technical information on the existing and future technologies, including transmutation and storage technologies;
* Develop and assess generic scenarios that are representative of the different strategies envisaged for the member states;
* Evaluate the potential of systems beyond the current thermal and fast technologies;
* Co-operate with other study groups (e.g. EC, IAEA, etc.) and other activities being carried out under the NEA standing technical committees such as NDC and RWMC, particularly with WPRS Expert Group on reactor physics and advanced nuclear systems.

**Activities**

* New fuel cycle simulator tools;
* Scenario studies using advanced light water reactors (high burn-up, high conversion ratio, inert matrix fuel, etc.);
* Investigation of Th fuel cycle and transition with legacy U cycle waste elimination;
* High temperature reactor with transuranics deep burn mission;
* Comparative study among ADS, fission/fusion hybrids with critical, low conversion ratio fast reactors;
* Benchmark on dose rate calculations for irradiated for UOx and MOX spent fuel assembly (taskforce).

**Deliverables**

* Report on the Effects of the Uncertainty of Input Parameters on Nuclear Fuel Cycle Scenario Studies (2015);
* Report on Constant Energy Production Scenario;
* Dose rate calculations for irradiated spent fuel assembly results and analysis.