

# ENVI II

## COMMITTEE ON ENVIRONMENT, PUBLIC HEALTH AND FOOD SAFETY II

*The two-sided coin of nuclear energy: How should the cross-border risks posed by nuclear power plants be regulated within and on Europe's borders whilst ensuring energy security?*

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## 1. Key Terms

**Atoms** are tiny particles of matter that make up every object in the universe, which cannot be broken up by chemical means.

**Nuclear energy** is energy in the nucleus (core) of an atom. Nuclear energy can be used to make electricity, but first the energy must be released. It can be released from atoms in two ways: **Nuclear fusion** is the process where energy is released when atoms are combined or fused together to form a larger atom. This is how the sun produces energy. **Nuclear fission** is the process where atoms are split apart to form smaller atoms, releasing energy.

A **nuclear power plant (NPP)** is a thermal power station in which the heat source is a nuclear reactor. The heat is typically used to generate steam, which drives a steam turbine connected to an electric generator which produces electricity<sup>1</sup>.

## 2. Relevance and explanation of the problem

Every day, the world becomes more dependent on energy. Nuclear power **provides over 11% of the world's electricity** as continuous, reliable base-load power, without carbon dioxide emissions, operating in 56 countries with a total of 240 research reactors. There has been a global debate on the use of nuclear power since its origins, which will continue, as its use projects many costs as well as benefits<sup>2</sup>.

There is a clear **polarisation between EU countries** on the matter, with some countries showing faith in nuclear energy (France, Belgium), whilst others have decided to phase out (Germany, Sweden). Central to the debate are the **cross-border risks**, where the **main concern** is safety and security risks of NPPs. Every country relies on its own self-interest on the matter, and as a result high tensions have arisen between otherwise allied states, especially in cases where **NPPs are close to the country's borders**. Those countries positive to nuclear energy believe in its prospect of sustainable energy supply, whilst those opposed hold a deep-seated fear of nuclear accidents, radiation linkages, and terrorist attacks. Having

1 Pocket Guide: Nuclear Power Reactor Characteristics <http://www.world-nuclear.org/our-association/publications/pocket-guides/pocket-guide-nuclear-power-reactor-characteristics.aspx>

2 What The End Of Nuclear Power Would Actually Mean For The World, Gail E Tverberg, OilPrice.com <http://www.businessinsider.com/what-would-be-the-impact-if-we-discontinued-nuclear-energy-2011-3>

this kind of **imbalanced regional position around nuclear power** also creates political and ideological tensions between states, especially between those phasing out and the others still using and developing nuclear. From a broader perspective, although the EU is **trying to harmonise the range of policies** surrounding nuclear energy, the realisation of a truly European energy policy still depends on the aligned wills of its Member States<sup>3</sup>, which is often a difficult ask.

All the while, as Europe's energy consumption evolves, EU electricity **demand is expected to continue growing faster** than the overall energy supply. Insufficient base-load capacity may endanger the stability of the EU's electricity network unless countermeasures on a large scale are introduced.

### 3. Key Actors

The **United Nations** have a prominent role in nuclear energy management. The UN General Assembly's first resolution established the [UN Atomic Energy Commission](#) to deal with the issues raised by the discovery of atomic energy. The [International Atomic Energy Agency \(IAEA\)](#) works with its member states (all European states are members) and multiple partners worldwide to promote the safe, secure and peaceful use of nuclear technologies<sup>4</sup>.

The **European nuclear policy** is governed by the [Euratom Treaty](#), which was signed in 1957 and remains very much the same since<sup>5</sup>, due to the sensitivity surrounding nuclear power in European public opinion until this day.

The **European Commission** deals with nuclear activities from three angles; safety, safeguards and security<sup>6</sup>. Taking a step further towards safe nuclear initiatives, and building on the Commission's three angles, the [International Framework for Nuclear Energy Cooperation \(IFNEC\)](#) is a smaller partnership, aiming towards the utilisation of nuclear energy for peaceful purposes in a proficient way.

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3 Dave Keating (6/2/2015): Energy ministers clash over nuclear power <http://www.politico.eu/article/energy-ministers-clash-over-nuclear-power/>

4 International Atomic Energy Agency: Mission statement <https://www.iaea.org/about/mission>

5 Fact Sheet of the European Union about Nuclear Energy [http://www.europarl.europa.eu/atyourservice/en/displayFtu.html?ftuid=FTU\\_5.7.5.html](http://www.europarl.europa.eu/atyourservice/en/displayFtu.html?ftuid=FTU_5.7.5.html)

6 European Commission DG Energy: Nuclear Energy <http://ec.europa.eu/energy/en/topics/nuclear-energy>

What is more, **Member States** play a role in forming a policy for nuclear energy, as **energy** falls under the **shared competencies of the EU**, and each national policy can transform EU's energy mix concerning nuclear power.

## 4. Key Conflicts

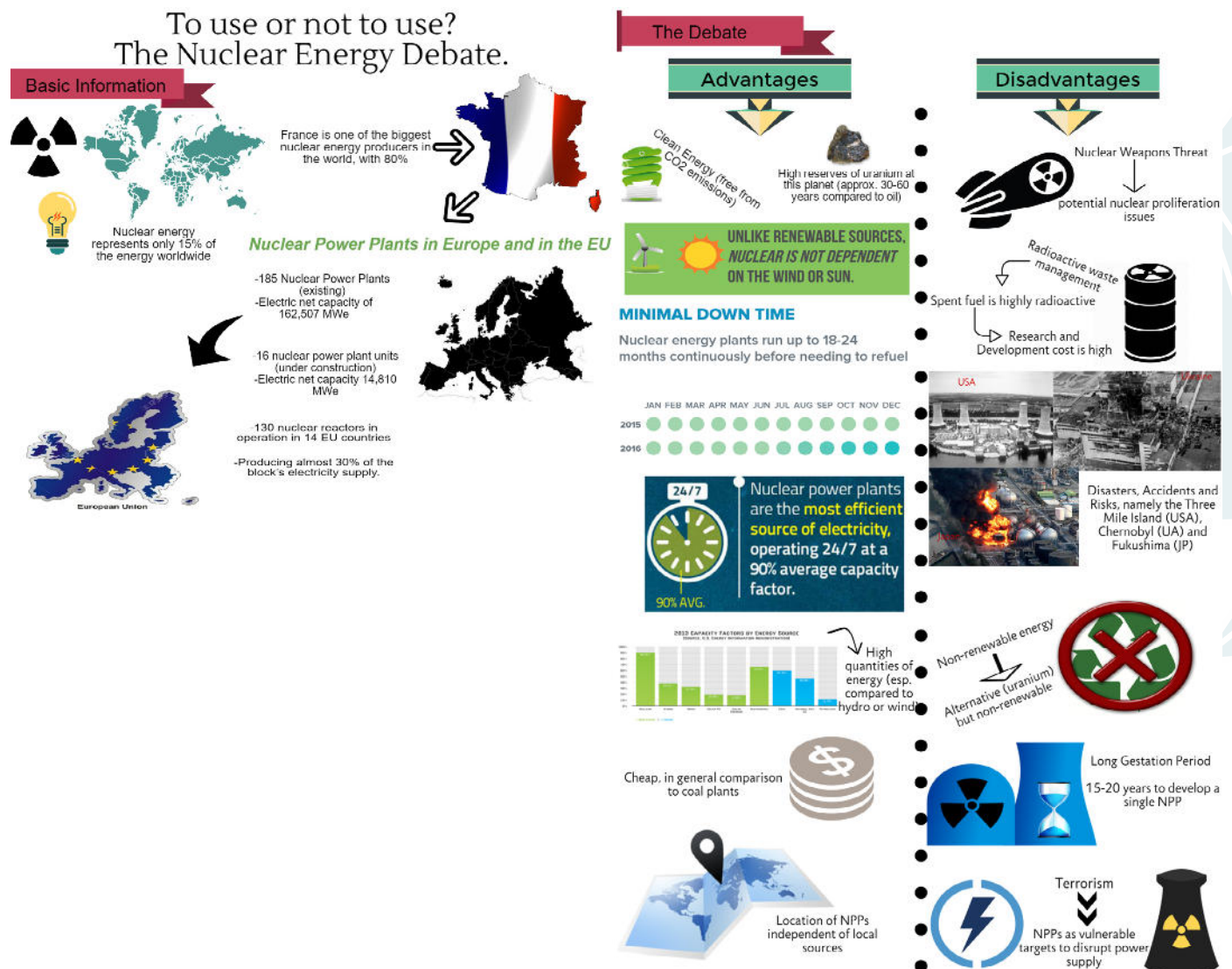
Central to this issue is whether nuclear power and the burden of nuclear waste is **future-worthy**. The situation facing the nuclear industry globally is challenging, especially after the **Fukushima accident**<sup>7</sup>. In several European countries, nuclear power faces public opposition and complacency. There are tough economic conditions for operators, not only in some deregulated energy markets, such as in parts of the USA, but also in European countries, where electricity prices have decreased due to a **growing share of renewable technologies** which are subsidised, regardless of whether their electricity is needed<sup>8</sup>. China continues to grow as a nuclear power hub, taking advantage of its stable and forward-looking policy regime, and Japan, although having the infrastructure, has put its nuclear power potential on halt<sup>9</sup>.

One side of the coin, the **pro-nuclear** entities, suggest that this form of power is safe, sustainable, has life expectancy of several years and is one of the least environmentally damaging forms of electricity generation<sup>10</sup>. On the other side, the voices **against nuclear generation** highlight the risks that both humanity and the environment will face in case of a malfunction or a disaster. Nuclear fission can be very hazardous and the resultant **nuclear waste** is notoriously difficult to safely dispose of. Also, safety and security threats are present, with the recent example of one of the suspects in Paris Attack having connections with

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- 7 Sweeney, Dave (2016): Fukushima five years on, and the lessons we failed to learn <https://www.theguardian.com/commentisfree/2016/mar/11/fukushima-five-years-on-and-the-lessons-we-failed-to-learn>
  - 8 Renewable Energy and Electricity (Updated 20 June 2016) <http://www.world-nuclear.org/information-library/energy-and-the-environment/renewable-energy-and-electricity.aspx>
  - 9 BBC News (11/8/2015): Japan restarts first nuclear power plant since Fukushima <http://www.bbc.com/news/world-asia-33858350>
  - 10 Environment and Health in Electricity Generation (updated November 2013) <http://www.world-nuclear.org/information-library/energy-and-the-environment/environment-and-health-in-electricity-generation.aspx>

nuclear power plants<sup>11</sup>. Keeping nuclear on the energy mix of the country is also a debate, since importation and exportation of energy and its costs is a matter concerning all Europe and not just the countries by themselves<sup>12</sup>.

Lastly, although transport is a minor cost in the nuclear fuel cycle, **lack of harmonisation and over-regulation in authorisation create problems for cross-border transport**.



11 Rösberg, Andrea (2016): A nuclear terrorism threat made in Belgium? <http://www.dw.com/en/a-nuclear-terrorism-threat-made-in-belgium/a-19191458>

12 The Economics of Nuclear Power (Updated July 2016) <http://www.world-nuclear.org/information-library/economic-aspects/economics-of-nuclear-power.aspx>

## 5. Measures in place

Worldwide, there is an interest in making nuclear energy safe and secure. Therefore a number of international agreements in the form of conventions have been established, such as the **Joint Convention on Nuclear Safety** and the **Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management**. What is more, the [United Nations Security Council resolution 1540](#) was adopted in 2004 to prevent the proliferation of nuclear weapons, including the establishment of appropriate controls over related material.

The EU lacks a common energy policy, as energy falls under its [shared competencies](#). Trying to ease concerns surrounding the delivery of Russian gas via Ukraine, the EU launched the [energy security strategy](#) in 2014, which laid out measures such as increasing energy efficiency and indigenous energy production. Also, the **European Strategic Energy Technology Plan (SET-Plan)**<sup>13</sup> aims to accelerate the development and deployment of low-carbon technologies. With its [Energy 2050 Roadmap](#) policy paper, the EU tried to set the goals for a secure, competitive and decarbonised energy system, with positive steps taken for nuclear energy as well.

## 6. Outlook and Key Questions

Every form of electricity generation has its strengths and weakness and future electricity generation will need a range of options, in order to meet markets' demands. The two-sided coin for nuclear energy is flipped, and its landing will determine Europe's future energy mix.

In other words, this committee has to **take a stance** on whether nuclear power generation is a viable option for European countries, or if there should be a phase-out period with transitions to alternative power methods.

In addition, in favour or against nuclear power, this committee will also have to **discuss the framework** in which Europe and the EU should start operating, **providing a viable strategic plan**, in order for safe, secure and sustainable power to be met with the needs of every European citizen.

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13 Strategic Energy Technology Plan <https://ec.europa.eu/energy/en/topics/technology-and-innovation/strategic-energy-technology-plan>



## 7. Essential Research Links

Nuclear power faces uncertain future in Europe, Deutsche Welle (article) <http://www.dw.com/en/nuclear-power-faces-uncertain-future-in-europe/a-19215273>

World Nuclear Industry Status Report 2016 - Global Launch in Tokyo, 13 July 2016 (website) <http://www.worldnuclearreport.org/>

World Nuclear Industry Status as of 1 January 2016: Mind the China Effect (update) <http://www.worldnuclearreport.org/UPDATE1-World-Nuclear-Industry-Status-as-of-1-January-2016-Mind-the-China.html>

Partnership for Global Security (website) <https://partnershipforglobalsecurity.org/>

World Energy Outlook, Presentation (2015) (video) <https://www.youtube.com/watch?v=O8ES-BtcS000&feature=youtu.be>

Policies for the future: 2011 Assessment of country energy and climate policies (pdf assessment) [http://www.worldenergy.org/wp-content/uploads/2012/10/PUB\\_wec\\_2011\\_assessment\\_of\\_energy\\_and\\_climate\\_policies\\_executive\\_summary\\_2011\\_WEC.pdf](http://www.worldenergy.org/wp-content/uploads/2012/10/PUB_wec_2011_assessment_of_energy_and_climate_policies_executive_summary_2011_WEC.pdf)

World Energy Needs and Nuclear Power, updated June 2016 (article from the information library) <http://www.world-nuclear.org/information-library/current-and-future-generation/world-energy-needs-and-nuclear-power.aspx>

Nuclear power worldwide - An error or the future? Deutsche Welle (video) <http://www.dw.com/en/nuclear-power-worldwide-an-error-or-the-future/av-19281067>

What people really think about nuclear energy, September 2014, FORATOM (polls pdf) <http://www.foratom.org/public/topical-publications/8596-opinion-poll/file.html>

New nuclear grid connections double - now policy support is needed to deliver more, 2 June 2016, World Nuclear Association (Press Statements) <http://world-nuclear.org/press/press-statements/new-nuclear-grid-connections-double-now-policy-sup.aspx>