VOICES OF NUCLEAR : THE MANIFESTO

We, the Voices of Nuclear, are a collective of citizens who support generating electricity with nuclear power because of the major ecological, economic and societal benefits associated with it, **through the promotion of facts**.

It is a difficult exercise. We know nuclear energy is controversial. We undertake it out of a sense of responsibility, towards the planet as well as towards present and future generations who are faced with **a double threat: restriction of access to energy**, even though sufficient energy is indispensable to human well-being; **and climate change**, the effects of which are already having a severe impact on our civilization and its stability.

Nuclear energy, emitting very low quantities of greenhouse gas, is an essential part of the solution to climate change and the transition to a sustainable society**. As such it would be unfair to deny it to future generations** due to fears whose foundations do not withstand scrutiny. The myths created and maintained around nuclear energy still prevent too much of mankind from resorting to it.

We join the many citizen movements that are currently mobilizing to change rules and mentalities in the name of the scientists' climate alert. We insist that the terms of this alert should not be censored and that the scientists' words should be heard by all, whether or not they correspond to one's personal beliefs.

It is necessary, and legitimate, that close attention be paid to all technologies and to the consequences of their industrial implementation. But this attention must be based on the facts if we want to avoid making mistakes about where the real threats lie.

The *a priori* rejection of nuclear energy is unfounded. It is particularly damaging for three reasons:

- **It prevents the full deployment of nuclear energy, where it is relevant, to the benefit of public good** - whereas the IPCC stresses the need to increase the global nuclear fleet to fight climate change and the United Nations recalls the vital importance of improving access to energy for one-third of the world's population.

- **It diverts considerable public and private resources**, as well as the efforts people individually shoulder, from areas where they would immediately result in effective decarbonization. France has already spent more than 150 billion euros, supposedly to decarbonize an electricity sector that is already low-carbon, while knowingly neglecting all other sectors. This a priori rejection also embarrasses decision-makers who, despite the known facts and need for urgent action, cannot find it in themselves to disavow the positions against nuclear power they so loudly voiced.

- **It opens the door to organizations that nurture mistrust of science and deny or ignore the facts.** Adopting the errors of ideology, they end up going against the goals of environmental protection, social justice and progress that they often claim to achieve.

We share here some little-known realities, representative of the misunderstanding that surrounds nuclear energy. We call on those who want scientific reality and the preeminence of facts to be recognized to join us in restoring them, so that citizens can debate, and decide, with a clear understanding of their options.

10 little-known realities about the use of nuclear energy to produce electricity

1. Of all industrial and household waste, radioactive waste causes **the least concern** to French health and environmental authorities

2. Nuclear energy is **inevitable** in the fight against climate change

3. In France, the price of electricity is **one of the cheapest** and most stable in Europe thanks to its nuclear fleet. France will lose this advantage if it does not renew the nuclear fleet

4. The Fessenheim nuclear power plant is being shut down not for safety or economic reasons, but **solely for political reasons**, imposed by a small number of politicians, without public consultation

5. Radioactive releases due to the accident at the Fukushima nuclear power plant will cause **no death or illness** in people whatever their level of exposition, either now or in the future

6. In the short and medium term, it is technically **impossible** for wind, solar and bio-energies to replace nuclear energy and fossil fuels, no matter how much money and effort are invested

7. Compared to other energies used in France, particularly renewables and fossil fuels, nuclear energy has the **least impact on biodiversity**

8. Radioactive discharges from French nuclear power plants are **harmless** because they are negligible compared to natural background radiation levels

9. The 75% share of nuclear power in France's electricity mix is an essential factor contributing to its high level of **energy independence** and helps protect it from global political and economic disruptions

10. The French nuclear fleet truly acts as **"the lungs of Europe"**

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10 little-known realities
what do you mean exactly?

1. **Of all industrial and household waste, radioactive waste causes the least concern to French environmental and health authorities** because of their limited volume as well as the comprehensive way they are managed in space and in time. While there is no method today to completely eliminate what is known as final waste – dangerous but very compact (one thimbleful per French person per year), it has the advantage of being under complete control. That is very rarely the case for any other category of waste. Today, all kinds of pollution, including anthropogenic greenhouse gas emissions, are, in fact, uncontrolled wastes from human activity.

2. **Nuclear energy is inevitable in the fight against climate change.** The six European countries with the lowest-carbon energy, including France (3rd lowest), enjoy that status thanks to hydro- and nuclear power which produce very little greenhouse gas. In fact, the scientists of the Intergovernmental Panel on Climate Change (IPCC) advocate multiplying the global nuclear fleet by a factor of 2 to 6 in the scenarios able to stabilize the climate.

3. **In France, the price of electricity is one of the cheapest and most stable in Europe thanks to its nuclear fleet.** France will lose this advantage if it does not renew its nuclear fleet. The very low generating costs of nuclear energy in France represent only a third of the final price of electricity, the rest being network costs and taxes, half of which subsidize renewable energies. The cost of building a fleet of new EPR nuclear power plants to replace existing reactors would add only a few cents per kilowatt-hour. In France, nuclear power is, moreover, the only energy whose price includes the full and final cost of waste management and decommissioning.

4. **The Fessenheim nuclear power plant is being shut down not for safety or economic reasons, but solely for political reasons, imposed by a small number of politicians, without public consultation.** The decree closing Fessenheim was promulgated in the final days of the mandate of former Environment Minister Ségolène Royal. In October 2018 the chairman of the Nuclear Safety Authority declared that "Fessenheim is the [EDF] power station with the best results in terms of safety." Because the closure is being imposed politically, Fessenheim shareholders will receive compensation that could amount to several billion euros and local authorities will receive several million euros, all from the national budget. This profitable site today provides employment to more than 5,000 people, half of them directly, and generates millions of euros in revenue for the companies and workers around the site who depend on it economically.

5. **Radioactive releases due to the accident at the Fukushima nuclear power plant will cause no death or illness in people whatever their level of exposure, either now or in the future.** The 18,500 dead and missing persons attributed to “Fukushima” are the result of the huge earthquake (4th largest in recorded history) and tsunami that hit Japan on March 11, 2011. According to the definitive conclusions of the United Nations Scientific Committee on the Effects of Atomic Radiation (UNSCEAR), the radioactivity released from the Fukushima power station accident has not had, and will not have, health consequences for workers or the general population. In fact, it is widely acknowledged that evacuation undertaken after the accident was unwarranted on such a scale. The evacuation itself led to more health damage to evacuees than did the nuclear accident. The low environmental and health impact of the nuclear accident – despite its severity – also led several environmental activists to take a stance in favor of nuclear energy, some of them even reversing their previous opposition.

6. **In the short and medium term, it is technically impossible for wind, solar and bio-energies to replace nuclear energy and fossil fuels, no matter how much money and effort are invested.** Solar and wind power cannot substitute for nuclear energy without the complementary use of fossil fuels, unless one assumes a very high probability of prolonged blackouts for which our western societies are not technically and psychologically prepared. There is indeed no technology available today or in the foreseeable future permitting the massive storage of electricity except the use of many additional dams.

7. **Compared to other energies used in France, particularly renewables and fossil fuels, nuclear energy has the least impact on biodiversity.** Sixty-five of the world's leading experts in conservation biology took a stand in 2014 to explain that of all types of energy production, nuclear energy is the most respectful of biodiversity. This advantage stems in particular from the facts that nuclear energy is so dense that, per kilowatt-hour produced, it requires very little space, water, air or natural resources, that the waste it generates is recovered and managed, and that it does not cause atmospheric or aquatic pollution.

8. **Radioactive discharges from nuclear power plants are not dangerous, being negligible compared to natural background radiation levels.** Radioactivity is a natural physical phenomenon to which any living body is exposed, just as to oxygen or carbon in the air. The French population is exposed, on average, to 4.5 millisievert (mSv) per year of radioactivity (of natural and medical origin). Nuclear facilities add only +0.01 mSv, a negligible increase. More generally, the risks associated with the production of nuclear electricity are considered much lower than those from other forms of energy, including in the event of an accident. The atmospheric pollution in France due to the use of fossil fuels (gas, oil, coal) causes, for example, more than 1,400 deaths per year.

9. **The 75% share of nuclear power in France's electricity mix is an essential factor contributing to its high level of energy independence and helps protect it from global political and economic disruptions**. France has full control of its nuclear energy, from science and academia through the complete industry sector, so it depends only on itself. 95% of the industry's value is localized in France and could hardly be outsourced, including all of its strategic inputs. The same is true of hydropower but not of fossil, wind or solar energy.

10. **The French nuclear fleet truly acts as "the lungs of Europe".** In 2018, France was Europe's largest net exporter of electricity. Thanks to its 71.7% share of nuclear power and 12.4% share of hydropower, French electricity was not only more than 90% low-carbon, but also less costly than power from fossil fuels. That low cost allows French nuclear to help neighboring countries to reduce the air pollution that would otherwise come from their coal and gas power plants. Pollution from coal and gas power plants is responsible for a large share of the 500,000 premature deaths per year in Europe.

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10 little-known realities
How dare do you say that?

1. **Of all industrial and household waste, radioactive waste causes the least concern to French health and environmental authorities**
   - *Agence Nationale pour la gestion des Déchets Radioactifs – gestion complète et définitive https://inventaire.andra.fr/sites/default/files/documents/pdf/fr/andra-les_essentiels-2018.pdf*
   - *ADEME Déchets chiffre clés - https://www.ademe.fr/sites/default/files/assets/documents/dechets-chiffres-cles-edition-2016-8813.pdf: p 20, 26, 48, 88*
   - *https://www.ademe.fr/sites/default/files/assets/documents/enquete-representations-sociales-changement-climatique-19-vague.pdf p14-15*
   - *https://www.ipcp.ch/ipcp-declaration*

2. **Nuclear energy is inevitable in the fight against climate change**
   - *European Commission Science Hub http://edgar.jrc.ec.europa.eu/overview.php?v=CO2andGHG1970-2016&sort=des8*
   - *Figure SPM.3b, p16 - Rapport SR15 du Groupe d'experts Intergouvernemental sur l'Evolution du Climat - https://report.ipcc.ch/sr15/pdf/sr15_spm_final.pdf*

3. **In France, the price of electricity is one of the cheapest and most stable in Europe thanks to its nuclear fleet. France will lose this advantage if it does not renew the nuclear fleet**
   - *Eurostat 2018 sur le comparatif des prix de l'électricité en Europe https://ec.europa.eu/eurostat/statistics-explained/index.php/Electricity_price_statistics/fr*
   - *Constitution du prix de l'électricité https://www.connaissancedesenergies.org/fiche-pedagogique/tarification-de-l-electricite*
   - *Condition sine qua none posée par le gouvernement à la décision qui doit être prise en 2021 de renouvellement du parc nucléaire français : https://www.ecologique-solidaire.gouv.fr/sites/default/files/Synth%C3%A8se%20finale%20Projet%20de%20PPE.pdf*
   - *Le coût de production de l'électricité nucléaire, Cour des comptes (2014)*
   - *OCDE/NEA – p17, 20 - The Costs of Decarbonisation: System Costs with High Shares of Nuclear and Renewables http://www.oecd-nea.org/ndd/pubs/2019/7299-system-costs.pdf?utm_source=mnb&utm_medium=email&utm_campaign=pressrelease*

4. **The Fessenheim nuclear power plant is being shut down not for safety or economic reasons, but solely for political reasons, imposed by a small number of politicians, without public consultation**
   - *Interview de Pierre-Franck Chevet http://www.lefigaro.fr/societes/2018/10/25/20005-20181025ARTFIG00311-pierre-franck-chevet-fessenheim-presente-les-meilleurs-resultats-en-termes-de-surete.php*
   - *https://www.edf.fr/groupe-edf/espaces-dedies/journalistes/tous-les-communiques-de-presse/protocole-d-indemnisation-relatif-a-la-fermeture-de-fessenheim*
   - *Une inscription territoriale diffuse pour la centrale nucléaire de Fessenheim – INSEE-2014*

5. **Radioactive releases due to the accident at the Fukushima nuclear power plant will cause no death or illness in people whatever their level of exposition, either now or in the future**
   - *https://earthquake.usgs.gov/earthquakes/browse/largest-world.php*
   - *UNSCEAR 2013 Report to the General Assembly - Sources, effects and risks of ionizing radiation http://www.unscear.org/docs/reports/2013/14-06336_Report_2013_Annex_A_Ebook_website.pdf, p10*
   - *https://www.monbiot.com/2011/03/21/going-critical/*

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6. **In the short and medium term, it is technically impossible for wind, solar and bio-energies to replace nuclear energy and fossil fuels, no matter how much money and effort are invested**
   - *https://www.strategie.gouv.fr/publications/transition-energetique-allemande-fin-ambitions*
   - *https://www.connaissancedesenergies.org/peut-on-stocker-l-electricite*
   - *https://www.energie-nederland.nl/app/uploads/2018/10/scan-signed-appeal-181010.pdf*

7. **Compared to other energies used in France, particularly renewables and fossil fuels, nuclear energy has the least impact on biodiversity**
   - *Key role for nuclear energy in global diversity conservation – 2014 https://www.sciencedirect.com/science/article/pii/S0360544214002035 - fig.6 p9*
   - *Nuclear power & sustainable development, AIEA (2016) https://www-pub.iaea.org/MTCD/Publications/PDF/Pub1754web-26894285.pdf*

8. **Radioactive discharges from French nuclear power plants are harmless because they are negligible compared to natural background radiation levels**
   - *mSv: milli-Sievert*
   - *IRSN – exposition de la population française et seuils autorisés d'exposition : https://www.irsn.fr/FR/connaissances/Sante/exposition-population/exposition-population-france-metropole/Pages/1-Exposition-population-France-moyenne-et-variabilite.aspx#.XHf3PohKjD4*
   - *UNSCEAR dose classification p54 https://wedocs.unep.org/bitstream/handle/20.500.11822/7790/-Radiation_Effects_and_sources-2016Radiation_-_Effects_and_Sources.pdg.pdf.pdf?sequence=1&isAllowed=y*
   - *Fukushima' radioactivity release impact on health: p10-11 of UNSCEAR 2013 Report to the General Assembly - Sources, effects and risks of ionizing radiation). Cf. point 5*
   - *Electricity generation and health*
   - *https://www.thelancet.com/journals/lancet/article/PIIS0140-6736(07)61253-7/fulltext*
   - *Europe's dark cloud, June 2016 by WWF European Policy Office, Sandbag, CAN Europe and HEAL in Brussels, Belgium, p9 of full report*
   - *Santé publique France (2016)*

9. **The 75% share of nuclear power in France's electricity mix is an essential factor contributing to its high level of energy independence and helps protect it from global political and economic disruptions**
   - *Le poids socio-économique de l'électronucléaire en France – PwC-2011, (potentiel de délocalisation très faible des emplois de la filière)*
   - *Uranium : Ressources, production et demande - AEN/OCDE (2014)*
   - *Rapport sur les coûts du nucléaire – Cour des Comptes (2014)*
   - *Ministère de la Transition écologique et solidaire - CGDD (2018)*
   - *https://www.ccomptes.fr/sites/default/files/EzPublish/20140527_rapport_cout_production_electricite_nucleaire.pdf*
   - *https://www.iea.org/newsroom/news/2018/november/crunching-the-numbers-are-we-heading-for-an-oil-supply-shock.html*

10. **The French nuclear fleet truly acts as "the lungs of Europe"**
    - *Bilan électrique 2018 - RTE France, https://bilan-electrique-2018.rte-france.com/production-totale/*
    - *« Qualité de l'air en Europe », Rapport 2018, Agence européenne de l'environnement https://www.eea.europa.eu//publications/air-quality-in-europe-2018 p63-64*
    - *https://academic.oup.com/eurheartj/advance-article/doi/10.1093/eurheartj/ehz135/5372326*