

## Public support for nuclear power An instructive Europe/World comparison



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Les Entretiens Européens & Eurafricains

The 19th edition of Les Entretiens Européens coincided with an important community agenda, taking place in the run up to COP 26 and the European Council, against the “burning” backdrop of the energy crisis. More than 300 participants listened in on the discussions between 40 speakers from 12 countries in Europe and worldwide and the European Commission on “Promoting on the nuclear projects in Europe, and their financing. Comparison between Member States and with the major regions of the world (China, United States, Russia...)”

We will find in this special issue, some lessons and the recommendations that have been sent to the European Commission so that Europe regains its leadership in this industry which is experiencing a renaissance in the world\*. **The testimonies of the representatives of China, the United States and Russia enabled us to verify that Europe is getting into trouble on its own market and on world markets by refusing to support nuclear energy, which is nevertheless a service of general interest for the continuous supply of electricity at affordable prices, and which will have to face massive investments to renew its fleet.**

Les Entretiens Européens will find their extension during the 20th edition which will take place in mid-October 2022 on “the geopolitics of nuclear power in Europe” (See page 8). The new context of crisis with soaring gas prices and the war in Ukraine reinforces the need for a manageable, stable and sustainable base with nuclear power, and we will examine the conditions for this to be at the heart of relations and cooperation between Member States for the future of our energy independence, peace and sustainable development.

\*This special issue does not include all the excellent interventions of the EEN 2021, but these will be the subject of articles in La Lettre of the 20th edition.



### Les Entretiens Européens - 19<sup>th</sup> edition

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## Promoting nuclear projects in Europe and their financing



## La valorisation des projets nucléaires en Europe et leur financement



**See the twelve videos on YouTube**

with recordings of the debates in the original language

[https://www.youtube.com/watch?v=Ms5yJOaBjrU&list=PLfLpAq6WFg93BvsYY8Pn\\_JAUKI\\_kO4RY3&index=2](https://www.youtube.com/watch?v=Ms5yJOaBjrU&list=PLfLpAq6WFg93BvsYY8Pn_JAUKI_kO4RY3&index=2)

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**Les Entretiens Européens - 19th edition - October 13 & 14, 2021**  
**Promoting nuclear projects in Europe and their financing**  
 Comparison between Member States and with the major regions of the world (China, United States, Russia, etc.)

**Questions for the debate**

**Objective**  
 Les Entretiens Européens 2021 will continue the discussions held in 2019 and 2020, which raised the question of the future of nuclear power in a context of growing electricity consumption and sustainable recovery from the economic and health crisis. We invite you to read the reports of the 19th edition organised in Helsinki: **"A new energy era undriven by nuclear power"** and those of the 18th edition broadcasted by Zoom: **"Can nuclear power and its innovations aid sustainable recovery in Europe?"** [www.entretiens-europeens.org](http://www.entretiens-europeens.org)

  
**Claude Fischer Herzog**  
 Director of IAEA's Nuclear Energy & Sustainable Development

consumption, must be drastically reduced. Several Member States are even prepared to supplement intermittent energy with gas, which emits 40 times more CO<sub>2</sub> than nuclear and methane... This makes no sense from a climatic, economic or even financial point of view since while the cost of capital is high for nuclear power, its advantages in terms of well-being and safety are incalculable. Yet the Budget Commissioner has just declared that nuclear power will not benefit from the Green Bonds aimed at financing the recovery plan, unlike gas, which on the contrary will. By opposing those countries that choose nuclear power, are we not acting in the interests of others, like Germany? A wrong signal given that a decision on whether to include nuclear in the taxonomy is imminent. ASCEP will address these issues head-on. We will discuss the logic of the objectives of the "Green Deal" for energy, the financing of carbon-free energies in the taxonomy, the relevance of the electricity market model and its acquisition for long-term investments, and the necessary


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**UNE NOUVELLE ÈRE ÉLECTRIQUE AVEC LE NOUVEAU NUCLÉAIRE**  
**A NEW ELECTRIC ERA WITH THE NEW NUCLEAR**



Avec le soutien de 

**Les Entretiens Européens**  
 Helsinki - 12, 13 & 14 novembre 2019


**La Lettre des Entretiens Européens**  
 Janvier 2021 - N° 19 - € 10

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**Special Sustainable recovery**  
 Rapprocher - Débattre - Fraterniser

**Edito**  
**Nuclear electricity, a public good at the service of our Europe**  
  
 Claude Fischer Herzog

The signing, on the 18th edition of the Entretiens Européens has shed new light on the debate on the future of nuclear power in Europe. There is an emerging consensus on the need for nuclear power in the energy mix to not only offset climate change but also achieve growth and prosperity objectives. Even the Commission has recognised that without nuclear power it will be impossible for the Union to meet its goal of reducing its carbon footprint and that nuclear power has its rightful place in the energy mix. However, better still, Massimo Cacciari has, in his capacity as President of the public service side played by nuclear power during the health and economic crisis, called for the debate surrounding the nuclear renewables debate to engage deeper more studies leading to prove that our systems would not survive on average the selling of over 40% renewables in Germany. Environmentalists have complained the damaging effects of too many renewables, and aquifers are saying they would rather nuclear power than deeper coal, and in the future gasified power plants.

**Public incentives and guarantees to fund investments**  
 A subject that came up often was the cost of nuclear power. The Commission has received questions on financing for investments and the associated guarantees, with requests for favourable conditions in the European market which, as everyone knows, discourages long-term investments. There is a lot of controversy in the form of the degree to which we should be allowed to finance sustainable growth with subsidies and other public facilities, and as we currently waiting to see the Commission's (or the) nuclear nuclear power. The taxonomy still under discussion (the list of activities for a sustainable economy), taking nuclear as a sector to examine the environmental "safety" of nuclear power must submit its support of the beginning of this year. It is expected that areas from Germany will not engage in the inclusion of waste management, which has not found scientific and ethical arguments for solutions (the worst being to do nothing). Likewise, it is important that the generalisation of the questions on nuclear power, including innovative and flexible technologies including this generation BWR and BWR type reactor (which use MOX, the fuel cooked from waste) in anticipation of the fourth generation reactors which will close the cycle in a safe manner.

**Diverse technologies needed to renew Europe's facilities**  
 The Commission ponders SMRs, and hydrogen but beware of the technological choices those impact SMRs, which need our support over the next 10-15 years. Power plants are built over 10-15 years, and must comply according to requirements and needs, which differ depending on whether we want to replace power plants in France, or in 2021. My generating capacity to replace coal in France, or help close to power the heating networks, or in Finland. As for hydrogen, beware of smoke and mirrors. We are not ready, and hydrogen production from gas (even reformed) will never be a carbon-free source. As for the production of the surplus renewable energy production, it requires battery and storage which will send prices through the roof.

**Continued on page 32**

**Les Entretiens Européens 2020 18th edition**  
**Nuclear and its innovation for a sustainable recovery?**  
  
 Find all the debates on YouTube  
<https://www.youtube.com/watch?v=PiRkPp4gGp8>



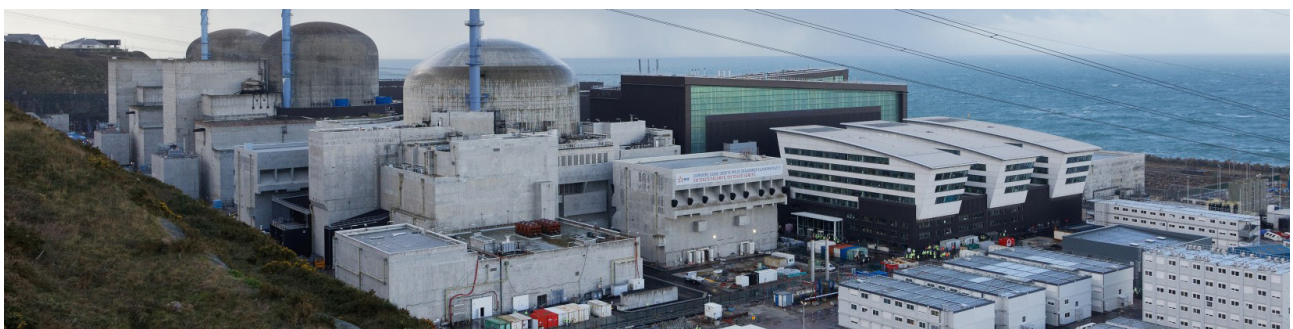
# Nuclear power in Europe's low carbon transition: a difficult deal

**Is decarbonised energy growth without nuclear power truly a realistic aim for Europe?** This matter can only be settled once we understand what carbon neutrality means and have examined the differences between different European Union countries' electricity mixes. It appears that pursuing nuclear will require some form of concerted organisation. In this article, **Claude Fischer Herzog** proposes an Energy Solidarity Pact that respects the choice of nuclear States and promotes cooperation between them so as to build a European nuclear industry.




**Encyclopédie de l'énergie**

<https://www.entretiens-europeens.org/nuclear-power-in-europes-low-carbon-transition-a-difficult-deal/>



The Flamanville 3 power plant - EPR - Source: EDF



# The recommendations of Les Entretiens Européens For National and European institutions

## Reforming the European energy market Regaining public control over our choices Structuring cooperation between nuclear states

With soaring gas prices and highly volatile spot prices due to the intermittency and massive subsidisation of renewables, **Europe needs to strengthen its baseload in order to continue delivering a continuous and affordable power supply to households and businesses alike.** This is all the more pressing because demand is on the rise due to growing electrification in all areas of social and economic life.

**The continuous, low-carbon baseload comes from nuclear, which, along with hydropower, plays an important public service role – unlike renewables and gas.** But nuclear power is penalised by the European market, which discourages long-term investment at a time when the Member States must replace existing capacity with large third-generation plants. Europe must improve its competitiveness vis-a-vis the biggest world powers, which, as we heard, are supporting their industry and competing very aggressively in European and global markets. However, anti-nuclear states are fiercely opposed to granting the nuclear industry access to finance.

**The producer and consumer companies, local authorities, user associations, trade unions, researchers, economists, jurists,**



**financial organisations and members of European Parliament at the conference put forward numerous proposals.** The representatives of Finland, France, Hungary, Poland, the Czech Republic, Germany and Belgium indicated their willingness to cooperate and, in addition to petitioning the institutions, adopt market reforms that would give them back control of their choices.

- Obtain SGEI (service of general economic interest) status for nuclear electricity in those states that want it, as allowed under the Lisbon Treaty
- Include nuclear power in the taxonomy to obtain labels and guarantees for all investments in the sector without discrimination
- Create strong incentives to mobilise savings, rally institutional investors and build appropriate public-private partnerships to finance projects. One funding option, the RAB (Regulated Asset Base) model, has attracted considerable interest
- Build an alliance of nuclear states and civil societies, forge an energy solidarity pact and develop structured cooperation
- Organise a democratic assessment of public policies and involve European civil society in the decisions that will have long-term social implications.



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The 19th edition  
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# How are other countries in the world doing?

## China, United States, Russia: political strategies in the service of nuclear power

**Jan Bartak**, President of NucAdvisor, interviewed John Kotek, Senior Vice President of the Department of Development and Public Affairs at the US Nuclear Energy Institute (NEI), from Washington; **Zhenhua Zhang**, Technical Director at China Nuclear Power Corporation, from Beijing; and **Iliia Rebrov**, the director of Economy and Finance of Rosatom, from Moscow.

A highlight that allowed us to understand why public support for the nuclear sector represents for these countries an investment for their economy internally and for export. (See the video on YouTube: [www.entretiens-europeens.org](http://www.entretiens-europeens.org))



In the Czech Republic, we like to say that repetition is the mother of learning. Yet NucAdvisor Chairman **Jan Bartak** believes that when it comes to nuclear energy we are hearing the same arguments over and over, and have yet to

learn! Europe lacks political will, which is putting our future at risk. Because although decarbonisation is on everyone's lips, there is no alternative to nuclear. Countries around the world are promoting nuclear power as a means of ensuring a satisfactory level of energy and meeting climate change challenges, but the European Union has cut itself off with its reluctance to embrace nuclear energy, despite its great potential for industry, heating, hydrogen production, etc.

Nuclear power is synonymous with public well-being, with enormous societal benefits, but it requires public support and political will because it is an industry that demands long-term capital and this deters private investors, who tend to focus on the short term. We must therefore promote its advantages and benefits and provide guarantees to attract investors. Nuclear power is a "green" source of energy and it is recognised as such in many countries worldwide which are developing their capacity and are interested in Europe's nuclear network as a potential market opportunity. They are often better positioned than European operators, which lack support. Which countries? Below, representatives from China, the United States and Russia explain their countries' strategies. They are doing everything they can to address the challenges of risk sharing, innovation, internal public policy and exports.

### China: unprecedented government-backed nuclear development



China is experiencing strong growth, and according to **Zhenhua Zhang**, Technical Director for China Nuclear Power Corporation, nuclear power will be necessary to improve living conditions. The Chinese government has set itself a target of

zero carbon by 2060 and has chosen to close all its coal-fired power stations to achieve this, which Zhenhua believes marks a "big step forward". Five years from now, China will have 51 operational nuclear reactors and will need to build six nuclear units each year. (Taken from his speech at the 19th edition of the Entretiens Européens).

### Safety, economy and public support at the centre of public policy

Our government and the public share the same concerns about nuclear energy: safety, the economy and public support.

In terms of safety, the Chinese government has multiplied its efforts since Fukushima. It has implemented operating plans in compliance with the rules and standards imposed on nuclear power plants internationally, which China will have to meet. It is focusing particularly on the release of highly radioactive materials and power plant design issues. In addition, China has imposed strict standards for site selection, with the aim of ensuring safety throughout the cycle. Quality requirements for materials and equipment are particularly stringent in construction, and much progress has been made which will improve our performance.

The second concern is of an economic nature. Costs have greatly increased, to ensure site safety. We are working to optimise design. We are trying to shorten the different phases of the nuclear cycle by using modular reactors, for which there will be several technology programmes. Moreover, China will not be using nuclear energy merely to produce electricity, it will serve other purposes too.

When it comes to public support, people like nuclear power but do not want to live next to a power plant. Nuclear managers have a role to play here. Our strategy is to develop good practice. First, through open dialogue on safety, for

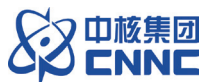
example by allowing local populations to visit sites. We are also developing the notion of clean air, through technological improvements, which local communities are generally very interested in. Mechanisms are in place to fund education through NPPs. And of course, there are communication campaigns. Nuclear acceptance indicators are looking good, meaning the operating plans and efforts are effective.

### **Lower construction costs and more diverse use of nuclear technology**

We aim to reduce the cost of construction. In China, we will be developing commercial reactors, moving towards SMRs, and building high and low temperature reactors to provide heating for local populations.

We will also be making more diverse use of nuclear energy and working for the medical sector. We have developed integrated solutions and this is unique. We will have more sources of energy, such as hydrogen, produced using nuclear energy.

As far as international cooperation is concerned, we want to work more effectively with the entire nuclear industry, in a safe, competitive and cost-effective manner. It will be our contribution to improving the global environment and combating climate change.



### **US recovery aided by federal policies**



**John Kotek**, a researcher at the Nuclear Energy Institute in Washington, believes things have changed in the US over the past 10 years as far as nuclear power is concerned. While it is true that nuclear power plants have been

closed due to low gas prices and environmental pressure, nuclear energy still accounts for 20% of all the electricity produced, and the technology is attracting new interest against a backdrop of nuclear innovations and growing demand for decarbonised electricity.

### **Growing support for nuclear energy**

Civil society and NGOs, which see the need for nuclear power, have carried out studies and concluded that the existing capacity is essential and can play a very important role. This has influenced the still sceptical members of our US Democratic Party. In addition, many leading universities have incorporated studies conducted by these NGOs into their energy programmes and emphasised the importance of nuclear power in achieving decarbonised electricity. All this has changed the situation in the USA, in particular in

states that have opted for renewables. Some are aiming for 100% low-carbon electricity by 2050 or earlier, and they are realising that renewables cannot do the job alone. Their commitment and that of populations to low-carbon electricity has placed a lot of pressure on the federal government and on energy companies to provide decarbonised electricity. But costs can soar. To bring them down, electricity companies are aware that they must be shared, and that nuclear power must be maintained and developed, by extending the life of existing plants while at the same time developing the system.

### **Different types of federal support**

When rates of return on investment in power plants are guaranteed by the state, there are strong commitments to keep them running. Federal support for licence renewal has grown, and several federal programmes have been set up to allow companies to maintain their technical base and operate for many years. Some state governments have even proposed a federal energy pricing policy, which would keep power plants running, generate additional revenue and preserve skilled and well-paid jobs.

Joe Biden's administration is the first since the 1970s to want nuclear in the energy mix. He is seeking a consensus with the most left-wing members of his party. Billions are spent every year on deprogramming polluting energies and on long-term job retraining. Nuclear investments can rebuild a community. Two major pieces of legislation now support nuclear power. First, a bipartisan infrastructure bill negotiated by both parties with a programme to keep existing plants operating. A second law provides for a tax credit to finance new-generation test reactors and a clean electricity plan with long-term programmes for some still extractive activities. We believe that all these measures will help to create new demand for nuclear energy.

Regarding public support, while people do not share the Congress' enthusiasm, it is visible in the communities that host power plants. Many of those who live near a power plant are pro-nuclear. And while there is no question of building them everywhere, we need to find communities prepared to receive them, aware of the value of the jobs they create and of the need to convert mines, with waste burial programmes to cover the entire fuel cycle.

Concerning exports, the US government supports the nuclear industry and understands its importance and value. We have developed systems at the commercial level for funding a whole range of activities to monitor changes in public opinion, here and in Europe. We are reflecting on which countries we could partner with to promote this interest in nuclear energy.







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# Nuclear Power in Russia

## Driving the Economy Through Public Support

Russia is a nuclear power. It is the fourth largest producer after the United States, France and China, and the industry is continuing to grow. Rosatom controls over 400 companies, employs more than 275,000 people and receives much of the financial support allocated by the state for new nuclear power plant construction in Russia. **Deputy Director General of Economy and Finance Iliia Rebrov** tells us why Russia equates this public support with an investment in its internal and export economy.

Over the past 15 years, Russia has commissioned 17 units (the country currently has 38 operational reactors), and has 24 construction projects in nine countries<sup>1</sup>. State support for the industry plays a crucial role in achieving its decarbonisation objectives. From 2012 to 2017, state support exceeded \$28 billion. In the eyes of the government, it is "productive" expenditure<sup>2</sup>, an investment in the country's development and in the globalisation of its economy.

### **BOO: securing returns on investment and mitigating risks**

State support is especially important in financing the initial investments needed for construction and in supporting the industry while waiting for first returns. There are several ways of managing this gap. In Russia, we are our own investors, and the Bank of Russia is very involved in funding-related projects. Export credits are a good solution for the new nuclear countries we negotiate with. We have also adopted an innovative model for attracting new funding, the BOO model, which allows us to involve various financial partners and also rely on contributions from the customers themselves. We have already signed several power purchase agreements and will continue. The BOO model is gaining in popularity as it addresses the financing issues surrounding risk sharing and project sustainability, in a context where "sustainable" financing has become problematic for investors. We deliver turnkey, stable infrastructures on time, which eliminates construction risks, and we offer additional quality guarantees to ensure power plant operation. We commit to balance sheet results in our contracts, and there are also sovereign guarantees. Investors place a high priority on risk assessment,



yet all too often the dedicated agencies lack effective mechanisms for measuring and formalising risk, particularly in Europe.

### **Labels for projects, guarantees for investors**

We know the advantages of nuclear power, and must support its development in the years to come. The absence of a nuclear taxonomy would be a disadvantage for Rosatom, and more significantly for all other suppliers considering participating in projects. It is important that both Euratom and our partners provide a certain amount of information, we need labels and guarantees. High-speed turbine and geothermal projects are underway in the UK, Turkey and elsewhere, and for every nuclear project implemented we need to secure a certain level of revenue. We know we can count on the support of the export credit agency. The market must now turn its attention to the adoption of solid criteria.

We all want to decarbonise our economies, and it is essential that we cooperate and close ranks. Nuclear power is a long-term business: ten years of construction, 50 years of operation with the extension of the life of power plants, then dismantling. This requires partnerships, to obtain the necessary funds to carry projects through to completion.



<sup>1</sup> Four in Turkey (Akkuyu project, 4,800 MW), two in Belarus (Astravets project, 2,400 MW), two in Hungary (Paks-2, 2,400 MW) and two in Bangladesh (Rooppur 1&2, 2,400 MW). There are also five in pre-construction: one in Finland (Hanhikivi, 1,200 MW) and four in Egypt (El-Dabaa, 4,800 MW). Rosatom also has a total of 35 new nuclear power plant projects in various stages of development, including in China, India, Iran and Saudi Arabia.

<sup>2</sup> An expense that enabled Rosatom to pay back the equivalent of about €3 billion into the budget in 2019.

# The 20th edition of Les Entretiens Européens – Mid-October, 2022 - Brussels

## Geopolitics and the future of nuclear power



**T**he purpose of this new edition is to put the history of nuclear power in Europe back into perspective, in a context that calls for its revival: the energy security of a crisis-stricken EU impacted by the war in Ukraine and geopolitical tensions, and the challenge of reconciling the peace and climate agendas with the development of a new type of electrification.

This 20th edition will take place on the eve of COP 27 (7-18 November 2022 in Egypt) and the ENEF (European Nuclear Energy Forum) in Prague, and at the end of the Czech Republic's presidency of the EU.

It will be held either in The Hague or Brussels and will be attended by nuclear stakeholders from across Europe and the world, who will have the chance to connect with each other, the European Commission and the international institutions.

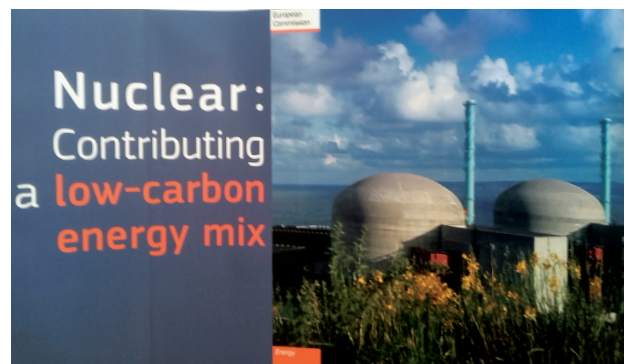
The IAEA will be a partner in the conference, and its director will give the opening address.

### The Entretiens will cover three key areas:

1. Global investment trends since the post-war period, and against the new backdrop of crisis and change
2. The strategy of the European Member States in this new context. Competition and cooper-

ation? Pursuit of new, bilateral alliances across the world or of closer cooperation within the EU?

3. Can Europe achieve industrial independence and build a nuclear investment capacity? The industrial, technological, economic and financial challenges of nuclear power call for cooperation to share costs and resources, and new market regulations. Are the Member States and the Commission ready to make that commitment? Governance issues are at stake.



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