

# FINANCING NUCLEAR POWER PLANTS



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Historically, financing nuclear power plants has benefited from strong state support, in particular in the frame of launching a campaign. This support has materialised through government organisations, government-owned or government-dominated companies and through guarantees of debt provided by government to private entities for the financing of new nuclear power plants.

Lenders (private investors and banks) are interested in stable cash flows and high probability of return of their investment within a reasonable and specified time frame; this applies to nearly all investments and across all sectors. As a consequence, financing packages are focused on quantifying and allocating risks, liabilities and costs in such a manner as to ensure that repayment occurs at the expected due date.

When bidding or making a commercial proposal to their clients, all major infrastructure suppliers and industrial companies include in their offer various forms of financial engineering assistance. The aim is to support the commercial offer and the success of the transaction by helping the client to secure access to relevant financing at a competitive/acceptable cost. In some cases, the proposal for such assistance is a key differentiator; in others it is a critical factor of success and is particularly crucial in the nuclear sector, as the magnitude and length of the project make project financing difficult in any economic environment. It is a fact that all nuclear power plant projects undertaken abroad so far, whether or not successful, have given rise to the financing provided by an export credit agency (ECA).

## **Two components of financing new nuclear power plants: equity and debt**

**Equity**, as reported by the Nuclear Energy Agency (NEA) in 2009<sup>1</sup>, raises capital by selling a share of ownership in the venture; it can be

internal equity – put up by the sponsors in kind or in cash – or external, which raises money by selling shares of stock in financial markets. Equity is more expensive than debt because the investment is more at risk: lenders have priority over owners in access to cash flows of the project during operation and, typically, have a first secured interest in the project's assets in case of project failure. The return on equity expected to be required is linked to the risk perceived by investors. Equity is generally available on capital markets (at some price), but right now most equity investors have no experience with nuclear projects and most nuclear projects cannot pay the yield needed to attract them until experience is gained. One remedy could be for the equity partners to provide equity in kind, or for principal customers to become strategic equity investors. A high equity share can significantly and negatively impact a project's expected return, but this may be needed to establish project credibility. Accordingly, most nuclear power plant projects are driven by industrial and utility producers who have nuclear experience and may derive additional (non-economic) benefits from the development of nuclear power, rather than financial investors purely focused on a project's return profile.

**Debt financing** basically deals with three issues, risk, liquidity and cost.

- Risk is the ability and willingness of lenders to bear the non-payment risk associated with the loan granted to the buyer. As mentioned in an article by Peter Atherton, Citigroup Global Market (New Nuclear Economics & Politics, May 2010), the five risks that nuclear power plant developers face are planning (delays), construction (cost overrun), power price, operational and decommissioning, three of which (construction, power price and operational) are so large and difficult to manage that individually they could bring even the largest utility company to its knees financially; this makes a new nuclear plant a unique investment proposition for utility companies. However, lenders in nuclear power plant projects also face other risks: creditworthiness of the borrower, country risk (political and sovereign) and specific nuclear risks. In determining whether these risks are acceptable to the lenders, liquidity and cost have to be considered.
- Liquidity is the capacity of the market to finance a significant portion of the new-build transaction with a long tenor of credit (at least eight years), taking account of the risk conditions and the cash flow profile associated with a nuclear power plant project (long construction period during which there is no cash revenue).
- Cost refers to the remuneration required by the lenders on the liquidity and risk conditions; when these perceived risks are too high, an excessively high financing cost can obviously jeopardise the economics of the project.

### ***Corporate and sovereign financing structures for new-build nuclear power plants***

Financing for the building of new nuclear power plants has evolved over time but two structures represent the bulk of what is observed today: corporate funding on balance sheet and sovereign financing/involvement.

**Corporate funding on balance sheet:** this source of funds is limited to a very few number of major European utilities that, given their tremendous scale advantages, have access to capital markets and bank funding in quantities sufficiently large to support nuclear new-build. Most US utilities cannot self-finance new-builds due to their small size.

**Sovereign financing/involvement:** in many cases, and in particular in emerging countries, the government of the nuclear power plant purchaser bears all or a significant portion of the financing or the associated risks, to the benefit of the utility. It could be that the government directly invests in equity or provides a guarantee to the lenders. Should the sovereign risk be perceived by the lenders as high in a long-term perspective, which is the case for most emerging countries, the market would face difficulties to provide sufficient funding at a satisfactory cost; financing could in this context require a different kind of support.

While many professionals are brainstorming on alternative debt financing schemes, *e.g.* pure project financing, structured financings, BOT (build own transfer), BOOT (build operate own transfer), it is AREVA's understanding that such structures may be implemented for nuclear power plants in low-risk countries or within the frame of a government-to-government agreement (such as the Turkey Akkuyu contract with the Russian Federation). This kind of agreement reinforces the involvement of the host State and the impact of the project on its budget; this type of financial scheme could only be envisaged when the nuclear power plant new-build is standardised and the constructor is able to demonstrate a significant experience.

### ***Future financing of new-build nuclear power plants***

As a conclusion, it must be stressed that in the coming years the market will not debt-finance on a large scale and at an acceptable cost; most nuclear power plant new-builds will be financed with the benefit of local State support and, as a consequence of the nuclear power plant specifics in the medium- to long-run, ECA-backed financing will remain the cornerstone of such new-builds.

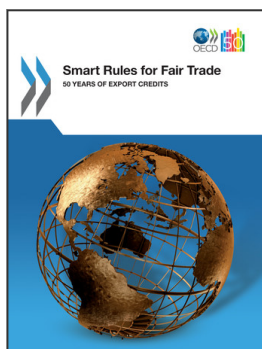
Indeed, ECA-financing, under the umbrella of the OECD Arrangement on Officially Supported Export Credits, is the reliable, funding source widely available thanks to its member governments' support that provides capacity and reliability on a long-term basis.

More generally, we thank the OECD and its capacity to adapt its rules to take into account the evolution of the market, as was the case in June 2009 with the adoption of the revised Sector Understanding on Export Credits for Nuclear Power Plants.

## Note

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1. OECD (2009), *The Financing of Nuclear Power Plants*, OECD, NEA, Paris.



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