



**LEASING OF FUEL ASSEMBLIES FABRICATED IN RUSSIA  
(SQUARE & HEXAGONAL TYPES,  
FOR PWR, BWR AND VVER REACTORS)  
LEGAL & ECONOMIC ASPECTS**

**International Business Relations, LLC  
Department of Nuclear Power & Nuclear Fuel Cycle**

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## Abbreviations and acronyms

FA	Fuel assembly
IFA	Irradiated fuel assembly
FSUE	Federal state unitary enterprise
JSC	Open-type joint-stock company
RepU	Reprocessed uranium
Pu	Plutonium
SC	State corporation
SNF	Spent nuclear fuel
FSUE FC NRS	FSUE Federal Center for Nuclear & Radiation Safety

## Executive summary

An analysis of legal and economic aspects for cross-border leasing of Russian-made nuclear fuel assemblies (FA<sup>1</sup>) is of great importance for utilities using FA including:

- European utilities – consumers of the square-type assemblies for PWR and BWR reactors fabricated at the Machine-Building Plant (Russia) in cooperation with AREVA NP GmbH using reprocessed uranium (RepU) enriched under the mixing and/or direct enrichment technologies;
- Foreign utilities – consumers of 17x17 square-type fuel assemblies of Russian design (by 2015, TVEL intends to complete certification of such FA of own design along with certification of production, and start deliveries of those fuel assemblies to foreign utilities in 2015-16);
- Foreign customers of hexagonal fuel assemblies of the Russian design for VVER reactors.

Russia has the regulatory & legal basis that regulates leasing of Russian-made FA including property rights for products of irradiated fuel assemblies (IFA) reprocessing, viz.:

- Reprocessed uranium (RepU);
- Plutonium (Pu);
- Radioactive waste (radwaste).

The developed normative & legal basis along with competitive leasing conditions can make this business attractive for foreign nuclear utilities – consumers of Russian made FA.

Extension of foreign economic cooperation in the said field is very important for SC Rosatom, as the increased number of orders for handling of IFA irradiated in foreign reactors will greatly improve financial indicators of SC Rosatom enterprises rendering such services – PA Mayak (Ozersk, Chelyabinsk Region) and the Mining & Chemical Combine (Zheleznogorsk, Krasnoyarsk Region). Besides, additional supplies of IFA and relatively high prices for IFA handling for foreign customers would allow maintaining the cost of those operations for the single Russian NPP utility JSC Rosenergoatom at a low level.

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<sup>1</sup> The Russian regulatory & legal documents differently regulate handling with irradiated fuel assemblies (IFA) of Russian and foreign origins irradiated in foreign reactors. Russian origin fuel assembly is the fuel assembly fabricated in Russia. It should be noted that actual design of a FA whether it be a Russian hexagonal or Western square FA and the origin of nuclear materials in FA and components (parts) of which FA is assembled are not important to consider the FA as FA of Russian fabrication. FA should be manufactured (assembled) in Russia to consider FA as FA of Russian fabrication.