

Article

Impact of the Taxes on Used Nuclear Fuel on the Fuel Cycle Economics in Spain

B. Yolanda Moratilla Soria *, Rosario Ruiz-Sánchez †, Mathilde Estadieu †, Borja Belda-Sánchez †, Cristina Cordón-Peralta †, Paula Martín-Cañas †, Laura Rodríguez-Penalonga †, M. del Mar Cledera-Castro, M. Ana Sáenz-Nuño and Carlos Morales-Polo †

Cátedra Rafael Mariño de Nuevas Tecnologías Energéticas, Escuela Técnica Superior de Ingenieros Industriales—ICAI, Universidad P. Comillas, Alberto Aguilera 25, 28015 Madrid, Spain; E-Mails: charo.ruizsan@gmail.com (R.R.-S.); mathilde.estadieu@gmail.com (M.E.); borja218@hotmail.com (B.B.-S.); cordonperalta@gmail.com (C.C.-P.); paula.martin.c@gmail.com (P.M.-C.); laura.ro.p23@gmail.com (L.R.-P.); mcledera@upcomillas.es (M.M.C.-C.); msaez@upcomillas.es (M.A.S.-N.); cmorales@upcomillas.es (C.M.-P.)

† These authors contributed equally to this work.

* Author to whom correspondence should be addressed; E-Mail: ymoratilla@upcomillas.es; Tel.: +34-915-422-800 (ext. 2363); Fax: +34-915-596-569.

Academic Editor: Erich Schneider

Received: 7 November 2014 / Accepted: 6 February 2015 / Published: 13 February 2015

Abstract: In 2013, the Spanish government created two new taxes on used nuclear fuel. This article aims to present the results of an economic study carried out to compare the costs of long-term storage of used nuclear fuel—*open cycle strategy*—, with the cost of the strategy of reprocessing and recycling used fuel—*closed cycle strategy*— taking into account the impact of the new taxes on the global cost of the fuel cycle. The results show that the costs of open-cycle and closed-cycle spent fuel management, evaluated in Spain after the introduction of the taxes, are sufficiently similar (within the bounds of uncertainty), that the choice between both is predicated on other than purely economic criteria.

Keywords: reprocessing; deep geological repository (DGR); mixed oxide (MOX) fuel; nuclear fuel cycle; high level waste; spent fuel management; once-through
