**Modelling of uranium supply in WILIAM**

A stylized approach based on maximum supply curves was applied to uranium. Uranium extraction is constrained by a global maximum supply curve which is a curve of maximum energy extraction rate as a function of time (cf. Appendix B in (Capellán-Pérez et al., 2014) for details). This means that eventual uranium scarcity is not feedbacked to economy as done for oil, coal and natural gas, but it is modelled as a hard scarcity feedback which operates in the energy module.

Few estimates of uranium depletion curves exist in the literature, and given the accuracy of former EWG estimates (cf. <https://www.energywatchgroup.org/blog-post/>) we take as reference their works which allow to consider different hypotheses of maximum uranium extraction rate at ~80, 100 and 120 kt Uranium (in primary energy terms) (EWG, 2013, 2006; Zittel, 2012). These curves are obtained applying individual country data from the Nuclear Energy Agency (NEA), derived by mine-by-mine analysis of reserves and production.

The reduction of net energy production of nuclear power plants as a function of the decreasing ore grade of uranium are thus implicitly taken into account in the analysis by the URR level (Van Leeuwen and Smith, 2008; van Leeuwen, 1985).



**Link with energy supply**

Two links: limiting capacity expansion when reached maximum extraction rate, and nuclear power plants utilization adjusted to annual global availability of uranium. For the sake of simplicity, scarcity is allocated proportionally to the installed power to all countries.

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