

Large-scale penetration of renewables can induce a crowding-out effect on fossil fuel plants and even on nuclear plants. Nuclear energy can behave sometimes as a back-up of renewables and can be a victim of crowding-out effect from renewables. A “nuclear paradox” could be observed if nuclear power serves as a back-up, because the average cost of the nuclear kWh is, until now in France, lower than the average cost of the renewable kWh, even if it is not the case for marginal costs. Thus the “energy-only” market cannot operate with a large proportion of electricity at a zero marginal cost (renewables are largely subsidized by Feed-in Tariffs). This paper will estimate cross-subsidies effects due to a large injection of renewables on the French day-ahead electricity market. It will also suggest some reforms for improving the present situation.