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## Political Economy of Energy Subsidy - Groundwater Depletion Nexus in Iran: the Role of Irrigation Water

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### Abstract

The depletion of groundwater resources mainly due to the irrigation water pumping in Iran is an obvious problem which threatens rural life and sustainable development. The latest estimates show that 70 % of the groundwater resources are overexploited in the last 15 years. The expansion of groundwater use for irrigation, reaching 450,000 permitted wells and 103,000 non-permitted wells in 2015, is one of the reasons for the quantitative and qualitative deterioration of groundwater resources, but not the only one. The huge subsidies which are given to energy consumption (electricity or gasoline) for pumping irrigation water from aquifers since many years should be considered as the major problem in this area. The cheap energy makes the deep water pumping possible and huge investments in deepening and relocating wells feasible. The latest estimates show that 95 % of provision costs of electricity are subsidy for water pumping and farmers are paying 5 % of these costs. In this study we present the historical trend of energy prices in agriculture and non-agricultural sectors. The number of wells and general groundwater depletion are also presented for the same period. The comparison of the development of agricultural products prices and energy prices shows the distance of this pricing system from full cost recovery for water extraction from groundwater resources. The non-successful attempt of price policy reform by the Iranian government in December 2010 for mild elimination of the tremendous subsidies which were devoted to irrigation water pumping is analysed in this study. The government was more successful with partial elimination of subsidies to domestic and industrial usages than to agriculture. By considering the developments before and after the implementation of the price policy reform in December 2010, our study focuses on the political economy of groundwater irrigation. The results show that without deep understanding of the key institutions and stakeholders for groundwater pumping, this problem can't be urgently solved and the extreme depletion of groundwater resources will continue. By neglecting the political economy, functioning policy for eliminating subsidies in this sector will not be applicable by the future attempts.

**Keywords:** Energy subsidies, groundwater deterioration, irrigation water, political economy, price reform, pumping