Economic cost of climate policy has attracted considerable debate since the Kyoto Protocol. However, reliable estimation of the marginal abatement cost of green-house gases has proved challenging. In this paper we argue that most empirical studies largely over-estimate the abatement costs at least for three reasons. First, most empirical estimates overlook technical inefficiency in production. Second, limiting attention to only few abatement options typically ignores such possibilities as switch to cleaner fuels. Third, estimating the frontier by deterministic methods ignores the impact of noisy data. To address these three issues, this paper employs a novel data-driven approach based on convex quantile regression. Instead of projecting inefficient units to the frontier, we estimate multiple quantiles in order to locally approximate the shadow prices near the observed data points. This ensures that the shadow prices are evaluated with the actual level of performance by the evaluated units. Compared to the traditional frontier estimation methods, the proposed quantile approach takes into account a broader set of abatement options and is more robust to inefficiency, noise, and heteroscedasticity in empirical data. Using an international panel data of OECD countries, we estimate the marginal abatement costs of CO2 in years 1990-2015. Given the yearly country-specific marginal abatement costs of CO2, we estimate the economic cost of Kyoto Protocol by comparing the groups of ratifying and non-ratifying countries before and after the first commitment period that started in 2008. We find that correcting for the three sources of bias in estimated marginal abatement costs results as to a significantly lower price tag for Kyoto Protocol.