Regulation of location specific externalities arising from small scale polluters*

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Abstract

We consider regulation of small scale polluters like farms, vehicles, homes and small firms where the damaging effects of emissions depend on polluters' locations. For such emission problems regulatory authorities often apply a combination of firm level differentiated technology standards, and market level uniform 'dirty' input restrictions. We derive general principles for how such regulations should be designed and combined. We find that optimal regulation design depends crucially on whether the 'cleaner' technologies available to polluters are of 'emission capturing' or 'input displacing' type. In the first case optimal technology standards encourage the use of cleaner technologies in both high and low 'damage areas', while in the second optimal technology regulation encourages cleaner technologies in high damage areas, but discourages their use in low damage areas. Even though input restrictions cannot be differentiated across polluters and technology standards can, optimal regulation always implies that uniform input regulation should be applied and the optimal intensity can be substantial, particularly if the available cleaner technologies are mainly of 'input displacing' type.