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Multi-basket approaches to climate and environmental policies

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Short-lived climate pollutants (SLCPs) such as methane (CH4) and black carbon (BC) receive increasing attention because emission abatements of most of these substances not only reduce air pollution but also slow down the global warming. Cutting the emissions of carbon dioxide (CO_2), a long-lived gas in contrast, is of primary importance to mitigate the global climate change as well as to stop ocean acidification. To keep abreast of such multiple challenges in a flexible and cost-effective manner, emission caps can be specified in terms of a reference gas (e.g., CO_2) and emissions of different components can be converted according to emission metrics. However, under a current one-basket approach (used continuously in the Kyoto Protocol), which allows trading for all the components, any emission metrics may not be scientifically acceptable due to their diverse atmospheric lifetimes among many other reasons. Here we question whether an emerging multi-basket approach, which groups substances based on their atmospheric lifetimes and permits trading for components within each basket, is more robust in guiding us to achieve multiple policy targets and more useful to maintain the balance between SLCP and CO_2 abatements with relatively small additional costs. In a wider context a multi-basket approach may simplify the dialogue among stakeholders and underpin a parallel pursuit of multiple climate and environmental challenges that our society faces.