

Author's Accepted Manuscript

When starting with the most expensive option makes sense: optimal timing, cost and sectoral allocation of abatement investment

Adrien Vogt-Schilb, Guy Meunier, Stéphane Hallegatte



www.elsevier.com/locate/jeem

PII: S0095-0696(17)30839-2
DOI: <https://doi.org/10.1016/j.jeem.2017.12.001>
Reference: YJEEM2087

To appear in: *Journal of Environmental Economics and Management*

Received date: 29 July 2015

Cite this article as: Adrien Vogt-Schilb, Guy Meunier and Stéphane Hallegatte, When starting with the most expensive option makes sense: optimal timing, cost and sectoral allocation of abatement investment, *Journal of Environmental Economics and Management*, <https://doi.org/10.1016/j.jeem.2017.12.001>

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting galley proof before it is published in its final citable form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

When starting with the most expensive option makes sense: optimal timing, cost and sectoral allocation of abatement investment

Adrien Vogt-Schilb^{a,*}, Guy Meunier^b, Stéphane Hallegatte^c

^a*Inter-American Development Bank, Climate Change Division, Washington D.C., USA*

^b*INRA-UR1303 ALISS, Ivry-Sur-Seine, France.*

^c*The World Bank, Climate Change Group, Washington D.C., USA*

Abstract

This paper finds that it is optimal to start a long-term emission-reduction strategy with significant short-term abatement investment, even if the optimal carbon price starts low and grows progressively over time. Moreover, optimal marginal abatement investment costs differ across sectors of the economy. It may be preferable to spend \$25 to avoid the marginal ton of carbon in a sector where abatement capital is expensive, such as public transportation, or in a sector with large abatement potential, such as the power sector, than \$15 for the marginal ton in a sector with lower cost or lower abatement potential. The reason, distinct from learning spillovers, is that reducing greenhouse gas emissions requires investment in long-lived abatement capital such as clean power plants or public transport infrastructure. The value of abatement investment comes from avoided emissions, but also from the value of abatement capital in the future. The optimal levelized cost of conserved carbon can thus be higher than the optimal carbon price. It is higher in sectors with higher investment needs: those where abatement capital is more expensive or sectors with larger abatement potential. We compare our approach to the traditional abatement-cost-curve model and discuss implications for policy design.

Highlights

The same carbon price translates into different abatement investment costs in different sectors

Sectors with higher emissions and more expensive abatement capital should invest more dollars per abated ton

Abatement cost curves cannot be used to model abatement options that require investment in low-carbon capital

*Corresponding author: Adrien Vogt-Schilb, avogtschilb@iadb.org, +1 202 623 2564
Email addresses: avogtschilb@iadb.org (Adrien Vogt-Schilb),
guy.meunier@ivry.inra.fr (Guy Meunier), shallegatte@worldbank.org (Stéphane Hallegatte)

Download English Version:

<https://daneshyari.com/en/article/7361353>

Download Persian Version:

<https://daneshyari.com/article/7361353>

[Daneshyari.com](https://daneshyari.com)