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Environmental regulation and competitiveness in the mining industry: Permitting processes with special focus on Finland, Sweden and Russia[☆]



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ARTICLE INFO

Article history:

Received 12 October 2014

Received in revised form

28 November 2014

Accepted 28 November 2014

Keywords:

Environmental regulation

Mining industry

Competitiveness

Nordic countries

JEL classification:

D24

K32

L72

ABSTRACT

This paper investigates to what extent and under what circumstances environmental regulation can be designed and implemented to jointly achieve positive environmental outcomes and sustained competitive strength in the mining industry. First the paper provides a conceptual analysis of the impacts of environmental regulations on mining competitiveness, including a discussion of how the environmental-competitiveness trade-off can be affected by various regulatory design and implementation strategies. Methodologically we distinguish between the flexibility, predictability and stringency of the regulations, and in a second step these analytical concepts are illustrated in the empirical context of the environmental permitting processes in Finland, Sweden and Russia. An important result is that in these countries there has been a lack of timeliness and predictability in the environmental regulations (e.g., uncertainty about the interpretation of the legislation, delays due to appeals etc.). These problems can in part be addressed by, for instance: (a) allocating more resources to the regulatory authorities; (b) establishing more consensus-based regulatory interactions between the mining industry and the authorities; and (c) introducing more standardized procedures and road maps for environmental impact assessments, permit applications and not the least for how to interpret specific legal rules in the context of mining.

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Introduction

Background and motivation

This paper addresses the relationship between environmental regulation and competitiveness in the mining industry. Mining poses significant environmental challenges. It generates large volumes of, for instance, waste rock, tailings, acid mine drainage, airborne dust and other contaminants, which are deposited on land and in the air and water. For these reasons mining is the focus of increasingly stringent environmental regulations. Still, while environmental impact assessments and permits are needed to address any negative impacts, and promote the adoption of environmentally benign production

processes, these regulations may also increase the time, costs and risks associated with opening and operating mines. In this sense there appears to exist a trade-off in that while it is important to control pollution from mining operations, such regulations may also lead to less mining investments, pollution leakage (i.e., increased emissions abroad) and lost employment opportunities to the local and regional economy. This paper argues, though, that in many instances this trade-off is complex and highly dependent on the specific design and implementation of the regulations.

Previous research on mining competitiveness and environmental regulations tends to suggest that the geological potential and overall political stability of host countries rank higher than environmental regulations (as well as other mineral policies) when companies are deciding on the location of exploration activities and mining development investment (e.g., Johnson, 1990; Wilkerson, 2010; Tole and Koop, 2011). Still, the majority of this previous work primarily addresses the overall impacts and/or the stringency of the regulations (e.g., comparing specific emission performance standards etc.), while less attention has been paid to the ways in which the environmental permitting processes—and the associated legal rules

[☆]Financial support from the Kolarctic ENPI CBC program (SUMILCERE project), the Swedish Environmental Protection Agency, and LKAB is gratefully acknowledged. The paper has also benefitted greatly from excellent research assistance from Nanna Svahn, as well as from the comments of two anonymous reviewers. Any remaining errors, though, reside solely with the authors.

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—have been designed, interpreted and implemented in practice (see further *Previous research on mining competitiveness and environmental policy*). Other social science research on industrial pollution control has shown that a number of regulatory design issues could significantly influence the companies' prospects for complying with stringent environmental regulations while at the same time avoiding significant negative impacts on the competitiveness of the industry.

These issues concern, for instance, the flexibility granted to the industry in terms of selecting the appropriate compliance measures as well as the time granted to adapt the new requirements (e.g., Bergquist et al., 2013). Different regulatory approaches also differ in the sense that some rely on cooperation and consensus between the relevant authorities and industry, while others tend to be based on more conflict-ridden frameworks (e.g., Lundqvist, 1980; Löfstedt and Vogel, 2001). Environmental permitting processes are typically based on case-by-case assessments of new mines and/or production expansions at existing ones; the outcomes of these processes may therefore be highly dependent on, for instance, interpretations of the legal rules, timely regulatory decisions as well as on the regulators' competence concerning technological solutions and their costs. Such factors will influence the outcomes of the permitting process both in terms of the decision whether or not to allow mine development, and regarding the specific requirements of the granted permit. Any uncertainties associated with the process will in turn affect the risks faced by companies prior to investment.

The importance of the design and implementation of environmental regulations for the mining industry's costs, risks and profitability is evident when considering the expressed concerns of mining professionals. While the critique sometimes concerns the stringency of the regulations (i.e., permit requirements that are perceived to impose excessive costs following changes in the production process), it is more often pointing towards a lack of timely and predictable decision-making processes. For instance, in Sweden the mining permitting process has been claimed to be unpredictable, subjective, too slow, and in lack of coordination across different regulatory authorities (e.g., Aaro et al., 2012). In the USA and Canada mining managers and professionals have raised concerns that more stringent environmental regulations (e.g., the greenhouse gas regulations in California) in combination with permitting delays could induce the industry to start operations in developing countries (e.g., PwC, 2012; Cervantes et al., 2013; Wyatt and McCurdy, 2013).

The above suggests that there is no simple and straightforward environment-competitiveness trade-off, and that there may be scope for achieving more favorable environmental outcomes without jeopardizing the industry's competitiveness through different policy designs and implementation strategies. In this paper we address this challenge both conceptually but also by examining the permitting processes of mining operations in Finland and Sweden, in part also referring to experiences from the Russian mining sector.

Objectives and scope

The overall objective of this paper is to investigate to what extent and under what circumstances industrial pollution regulations can be designed to jointly achieve positive environmental outcomes as well as sustained competitive strength in the mining industry. Specifically, the paper provides:

- An analytical framework addressing the impacts of environmental regulations on the mining sector's competitiveness, and how the environment-competitiveness trade-off can be affected by various regulatory design and implementation strategies.

- An empirical illustration of how this framework can be employed in the empirical context of the environmental permitting processes—and the resulting pollution control requirements—in Finland, Sweden and Russia.

Mining companies are affected by several types of environmental regulations (Eggert, 1994), but in this paper we primarily focus on the pollution control requirements stipulated under the permitting conditions for new mines and/or for production expansions at existing mines. This also means that little explicit attention is devoted to, for instance, the issuance of concession permits and the regulation of land use issues (see Williams (2012) and Tiess (2011) for recent reviews). In addition, we also do not address the competitiveness impacts of different market-based policy instruments, such as various pollution charges and the European Union's Emissions Trading Scheme (EU ETS).

Tiess (2011) emphasizes the importance of exchange of experiences of mining regulation between different countries, and our choice of case countries should be of interest for several reasons. First, together Finland, Sweden and Russia are important suppliers of both non-ferrous minerals and iron ore, especially in a European context. For instance, over 90% of the European Union's production of iron ore stems from Sweden. In all three countries the interest in continued mining development has been high during the recent decade due to elevated price levels. Second, though, surveys of mining professionals and managers show that these actors' perception of the investment environment—including the uncertainties surrounding the environmental regulations—differ significantly across Sweden and Finland on the one hand and Russia on the other. For instance, both Sweden and Finland are at the top of the Fraser Institute's ranking of mining countries, while Russia is not perceived to offer particularly stable regulatory conditions for mining companies (Wilson and Cervantes, 2014). This is in part illustrated in Fig. 1 showing the impact of environmental regulation uncertainty (e.g., the stability of regulations, the consistency and timeliness of the regulatory processes, and whether regulations appear to be based on scientific knowledge or not) on investment propensity in the three countries.

Third, even though Finland and Sweden both offer relatively stable environmental regulations from the perspective of global mining representatives and also have fairly similar permitting processes, our analyses will show that some design features differ. Some of these features are potentially important from a competitiveness point-of-view. Interesting changes have also occurred in the environmental permitting processes over time, and in the empirical analysis we address a number of important characteristics of the Swedish regulatory approach during the 1970s and 1980s. This approach was in large based on a policy-style seeking cooperation

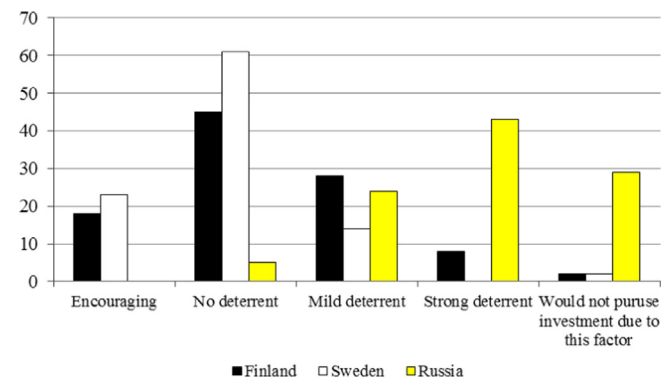


Fig. 1. Mining companies' view on the uncertainty concerning environmental regulation (percentage shares of the respondents). Source: Wilson and Cervantes (2014).

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