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The Indicators
of the Economic Burdens
of Environmental Policy
Design: Results from the
OECD Questionnaire

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**THE INDICATORS OF THE ECONOMIC BURDENS OF ENVIRONMENTAL POLICY DESIGN –
RESULTS FROM THE OECD QUESTIONNAIRE**

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By Tomasz Koźluk

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ABSTRACT/RÉSUMÉ**The Indicators of the Economic Burdens of Environmental Policy Design – Results from the OECD Questionnaire**

Environmental policies seek to address market failures related to the protection of the environment. However, they may also increase barriers to entry and distort competition. If stringent environmental policies can be designed in a way that minimises such economic burdens, they can facilitate the achievement of economic and environmental goals and a cleaner growth model. This paper reports evidence on selected competition-relevant aspects of environmental policy design from a cross-country questionnaire. Information on administrative burdens related to environmental licenses, differential treatment among incumbents and new entrants and the procedures to evaluate economic effects of environmental policies are summarised in a set of indicators of the Burden on the Economy due to Environmental Policies (BEEP). The indicators allow for a set of tentative conclusions. Firstly, the BEEP captures information on anti-competitive regulations absent from the OECD's product market regulation indicators (PMR). Secondly, though it is not yet possible to evaluate the economic impact of anti-competitive aspects of environmental policies, it is likely they impact well beyond the sectors directly concerned, hampering productivity growth, as shown for other product market regulations. Finally, the burdens of environmental policies are not related to their actual stringency, indicating that ambitious environmental targets can be pursued in ways that are more (or less) friendly to competition.

JEL classification codes: Q58;L50; L59.

Keywords: Environmental policies, environmental regulation, competition, barriers to entry, administrative burdens

Les indicateurs des charges économiques inhérentes à la conception des politiques environnementales – résultats du questionnaire de l'OCDE

Les politiques environnementales s'efforcent de remédier aux défaillances du marché en matière de protection de l'environnement. Il se peut cependant qu'elles renforcent aussi les obstacles à l'entrée et faussent la concurrence. Si des politiques environnementales strictes peuvent être conçues de telle façon que ces charges économiques soient réduites au minimum, elles pourront faciliter la réalisation des objectifs économiques et environnementaux et l'avènement d'un modèle de croissance plus propre. Ce document présente des données tirées d'un questionnaire transnational concernant certains aspects de la conception des politiques environnementales en rapport avec la concurrence. Les informations ayant trait aux charges administratives associées aux systèmes de licences environnementales, au traitement différentiel des acteurs en place et des nouveaux entrants, ainsi qu'aux procédures suivies pour évaluer l'impact économique des politiques d'environnement sont résumées dans un ensemble d'indicateurs BEEP (*Burden on the Economy due to Environmental Policies*). L'examen de ces indicateurs permet de tirer une série de conclusions préliminaires. Premièrement, malgré la montée des préoccupations concernant les aspects anticoncurrentiels de la réglementation des marchés de produits, les problèmes analogues associés aux politiques environnementales n'ont pas retenu la même attention. Deuxièmement, les données disponibles sur la réglementation des marchés de produits en général montrent que les gains procurés par les réglementations respectueuses de la concurrence sont importants, et qu'il en est probablement de même pour les politiques environnementales. Enfin, il n'y a pas de lien entre les charges associées aux politiques de l'environnement et le degré de rigueur de ces politiques, de sorte qu'il est possible de poursuivre d'ambitieux objectifs environnementaux de façon plus (ou moins) favorable à la concurrence.

Classification JEL : Q58 ; L50 ; L59.

Mots-clés : Politiques environnementales, réglementation environnementale, concurrence, obstacles à l'entrée, charges administratives

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THE INDICATORS OF THE ECONOMIC BURDENS OF ENVIRONMENTAL POLICY DESIGN – RESULTS FROM THE OECD QUESTIONNAIRE

By Tomasz Koźluk¹

1. Introduction – why look at the economic burdens of environmental policies?

1. Both environmental and competition policies seek to correct market failures and enhance social welfare (OECD, 2006a). However, environmental laws may also inhibit competition in markets, by increasing barriers to entry and distorting the playing field, thereby shielding incumbents from competitive pressures. While this trade-off may be unavoidable in some cases, adequate design of environmental policies can help minimise the adverse effects on competition.

2. To measure the extent to which policy settings promote or inhibit competition in markets, the OECD, since 1998, conducts a periodic exercise to quantify and compare anti-competitive product market regulation (PMR) (Nicoletti et al., 2000).² These indicators have been used extensively in empirical research and policy advice, including in OECD Country Surveys and Going for Growth. However, the PMR indicators explicitly exclude information on environmental policies, permitting and licensing, largely due to the complexity and the challenge related to quantifying and comparing them. Given the increasing attention to the design of environmental policies, the current exercise seeks to gradually fill this gap, proposing an indicator which could be labelled as the “environmental policy” complement to the PMR.

3. This paper presents the results of a questionnaire annexed to the Product Market Regulation update conducted in 2013. The questionnaire was sent out to countries in January 2013, with 34 countries responding,³ and replies underwent an interactive two-round verification process. The answers represent environmental policies on the 1st of January 2013. The paper starts off by proposing a structure for the aggregation of the information on the economic burdens of environmental policy design. It then summarises the cross-country results of the aggregation, in the context of other regulatory, environmental and macro-economic variables. Next, it presents supplementary information gathered using this questionnaire, which are not included in the indicators themselves – due to missing data, interpretation issues or lack of well-identified best-practice. The paper finishes off summarising the tentative conclusions of this exercise and outlining possible next steps.

1. This paper is part of the joint work of the Economics Department and Environment Directorate on Environmental Policies and Economic Outcomes. The author is a member of the Economics Department/ Environment Directorate of the OECD. He would like to thank Jean-Luc Schneider, Giuseppe Nicoletti, Shardul Agrawala, Nick Johnstone, Nils-Axel Braathen and Ivan Hascic for their useful comments and suggestions. Special thanks go to Catherine Chapuis for statistical assistance and to Ines Gomez Palacio and Sarah Michelson for editorial support. This project has benefited from voluntary contributions from the Danish and Swiss governments.

2. The PMR indicator vintages cover 1998, 2003, 2008 and 2013 and other related indicators (e.g. sectoral) and can be found at www.oecd.org/eco/pmr. The database covers OECD member countries as well as several non-OECD countries.

3. Responses have been received from all OECD member countries except Finland and Luxembourg. Two non-OECD countries have responded – Croatia and South Africa. Throughout this paper, unless otherwise stated, the analysis concerns the 34 countries that responded to the BEEP questionnaire.

2. An area of increasing interest to policymakers

4. A large amount of research has gone into linking environmental policy stringency and productivity growth or innovation, but the evidence so far has been fairly ambiguous and fragile (Koźluk and Zipperer, 2014). The reasons may be partly linked to the fact that most papers focus on stringency *per se*, while neglecting the issues of tool selection and design of environmental policies. At the same time, several aspects of policy design are often claimed to be relevant - among them flexibility (where less prescriptive tools leave firms more options on how to achieve desired environmental outcomes; (see De Serres et al., 2010) and their stance with respect to competition (Heyes, 2009). Practically no empirical evaluation of such claims, in particular the latter, exists.

5. More generally, there is evidence that regulations that impede competition may lead to lower economic growth in the long term. Indeed, competition-friendly regulations can have significant positive impacts on productivity growth, productive capital investment, technology transfer and innovation (Nicoletti and Scarpetta, 2003; Conway et al., 2006; Egert, 2009; Arnold et al., 2009). While the PMR indicators used in these analyses are arguably the most comprehensive measures of anti-competition regulations, they explicitly omit aspects related to environmental policies.

6. Higher barriers to entry and competition, increased market concentration and risks of anti-competitive behaviour may be by-products of environmental policies, but appropriate policy design can minimise these adverse effects. Environment-related red-tape will affect the costs of entry and slow down the process, for instance through additional bureaucratic requirements related to permitting or the need for additional investments in monitoring and measuring of environmental effects. Regulations can discriminate between plants or firms already on the market and new entrants, for example through more stringent environmental performance requirements for new-entrants or through “rewards” provided to incumbents for improving performance. They may also provide direct cost-advantages to incumbents or large firms, for instance through increasing the costs of “learning” to comply with complex regulations (OECD, 2006a; Heyes, 2009). Still, while some of the above may constitute the necessary “cost” of pursuing environmental objectives, the size and effects on entry and growth will depend on the details of policy design and implementation.

7. Over the recent years, the reduction of burdens of environmental policies have been given increasing attention, leading to several programmes and proposals aiming at the simplification of procedures and making them more business friendly. Notable recent examples include the UK (DEFRA, 2012); various initiatives at the national and state level in Australia (2011; 2013) in Italy (2013) and the Netherlands (OECD, 2007). Similarly, the World Bank Group has been undertaking reviews of environmental permit and license related procedures in selected countries (World Bank Group, 2011 and 2014).

3. An indicator to capture the potential burdens posed by the design of environmental policies

8. The OECD has significant experience in collecting cross-country information on policies and comparing the effects of such policies and related reforms to draw advice for policymakers. For instance, the PMR indicators were developed to measure regulations impeding competition for general product markets, as well as specific, usually highly-regulated sectors, such as energy, transport and communication (ETCR), retail (RT) and professional services (PS). The PMRs aggregate a large amount of information on a multitude of different dimensions of regulation – from barriers to entry, through state control to barriers to trade and investment. These indicators have been widely used for policy assessment and recommendations.

9. Other notable attempts to measure business regulation include the Doing Business Indicators.⁴ The Doing Business Project entails a number of indicators, including procedures to start a business – measuring the number, length and cost of related procedures. Environmental regulations are included only when they apply to all businesses conducting general commercial or industrial activities, and “heavy polluting” activities are excluded. Djankov et al. (2002), who provide the conceptual approach for the Doing Business indicators, collect data on the number of “environment-related” procedures firms need to go through to commence operation. In principle, these include procedures for obtaining environmental certificate and approval, zoning and sewer approval and procedures with water management and discharge authorities. However, due to the focus on “general” business activities, most of the observations on environmental procedures in OECD countries take nil values.⁵

10. A somewhat different approach is taken by the World Economic Forum (WEF) in the Executive Opinion Survey.⁶ Executives rate the burden of government regulation (general) and stringency of non-environmental standards and regulations, while for the compilation of the Global Competitiveness Index (GCI), Doing Business data is also used for example on the length of procedures. The survey also asks questions on environmental policy stringency and enforcement, but they are not used in the GCI.

11. The reasons for the lack of a comprehensive analysis of the regulatory burden of environmental policies is likely related to their multi-dimensionality and lack of direct relevance for the “standard” company, around which regulatory indicators are commonly organised. Indeed, in contrast with the more general Product Market Regulations, environmental policies have little direct impact on a large part of the economy – most burdensome procedures and designs are likely to be concentrated in the high-polluting sectors and industries. For example, in almost all countries environmental permit requirements are directly related to activities in designated sectors or dealing with particular substances (Figure 1). The possible exception is the direct and indirect environmental impacts of zoning and land use regulations which can affect a broad range of businesses.

12. The indirect impacts of regulatory burdens on the economy may, however, be significant. Many inputs into other sectors come from industries and sectors that are associated with high-environmental impacts – energy and transport being prime, but not sole examples. Studies of regulatory impact tend to demonstrate that regulations impacting competition and entry in a specific sector tend to trickle through to the entire economy (Barone and Cingano, 2011; Bourlès et al., 2013). Moreover, a number of the high

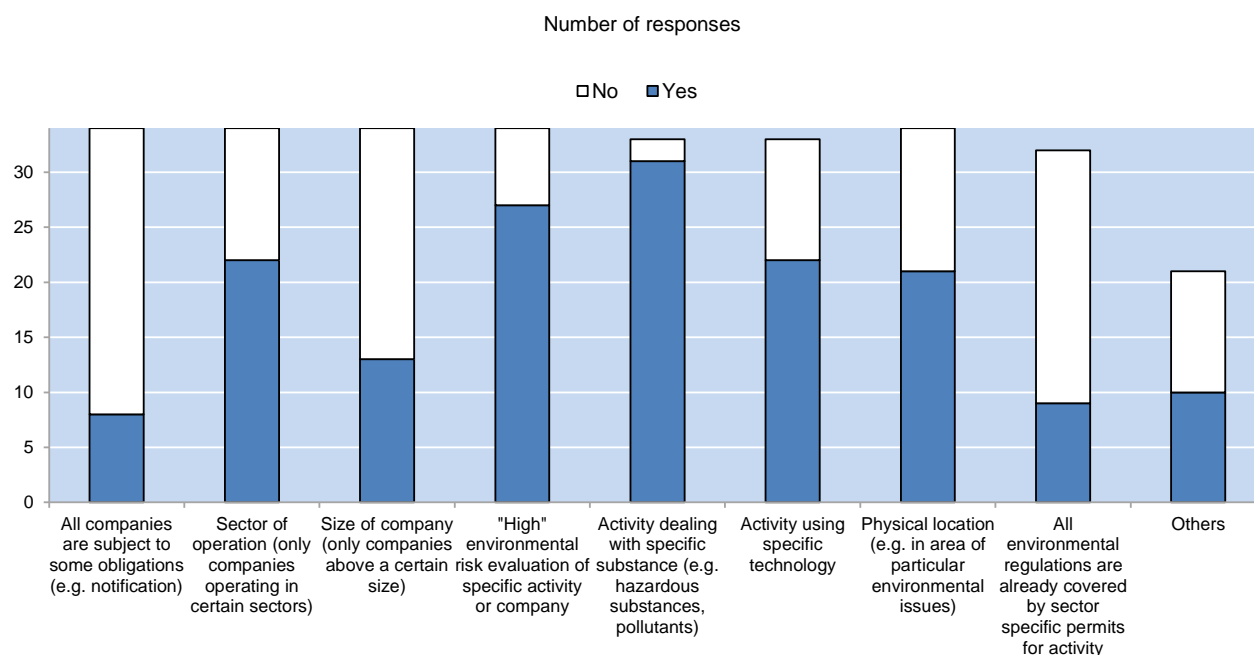
4. The World Bank’s/IFC’s Doing Business Project was launched in 2002, and is conducted annually. It now collects data across 185 countries (as well as a number of cities and regions) on regulations applying to domestic, small and medium-size companies and measures throughout their life cycle. The indicators are based on questionnaire answers and legal sources provided by some 9 600 respondents – primarily lawyers, accountants, judges, businessmen and public officials. Indicators are constructed based on information concerning the Complexity and Costs of Regulatory Processes (broadly related to setting up a business, paying taxes and exports) and Strength of Legal Institutions (regarding enforcement of contracts, obtaining credit, bankruptcy law etc.). More information on <http://www.doingbusiness.org/>

5. The general nature of businesses concerned in this exercise is heavily reflected in the data – for 1999 where Djankov et al. (2002) report the underlying data, the only OECD country with a non-zero value for environmental procedures is Mexico (meaning businesses are subject to some kind of environmental procedure).

6. The WEF’s “Executive Opinion Survey”, conducted annually, asks respondents (business executives) a number of questions, including in areas related to market institutions, rating responses on a 1 to 7 scale. The survey was implemented by the WEF’s partner institutes in over 150 economies. In most years, there were responses from between 8 000 and 15 000 firms (see WEF, 2013; for a description of the sampling strategy). http://www3.weforum.org/docs/WEF_GlobalCompetitivenessReport_2012-13.pdf

environmental impact sectors are sectors open to international trade, hence affected by international competitiveness concerns (OECD, 2006b). On the contrary, shielding these sectors from some of the cost-related impacts of environmental policies can be an argument for making regulation more efficient.⁷ Finally, the objective of transitioning to a greener economy is likely to concern the high environmental impact sectors in particular – lower entry barriers and more competition can facilitate this by levelling the playing field for new technologies, ideas and business models.

Figure 1. What determines whether a certain type of activity is subject to environmental permits/notifications?



Source: Questionnaire responses to "What determines whether a certain type of activity is subject to environmental permitting/licensing/certification or notification in terms of environmental domain? (QA1.1.1)"

13. Environmental policies are complex and multi-dimensional – there are numerous potential and actual tools applied across numerous environmental domains, pollutants and sectors. Environmental policy set up differs across countries with various responsibilities and tools at hand at different levels of administration. The analysis in this paper focuses on one particular aspect of these policies, that is, the potential impediments to competition posed by environmental policies. Inevitably, it requires focusing on selected issues simplifying a more complex reality.

3.1 Proposed indicator structure

14. The indicator of the Burdens on the Economy of Environmental Policies (BEEP) was conceived as a supplement to the information already gathered in the main PMR, hence similar scoring, aggregation

7. Effective, but not anticompetitive environmental policies may however be politically harder to introduce, as incumbents would have the incentive to lobby against them. To the extent that some concessions may be necessitated by the political economy, transparent sunset clauses may be a feasible solution.

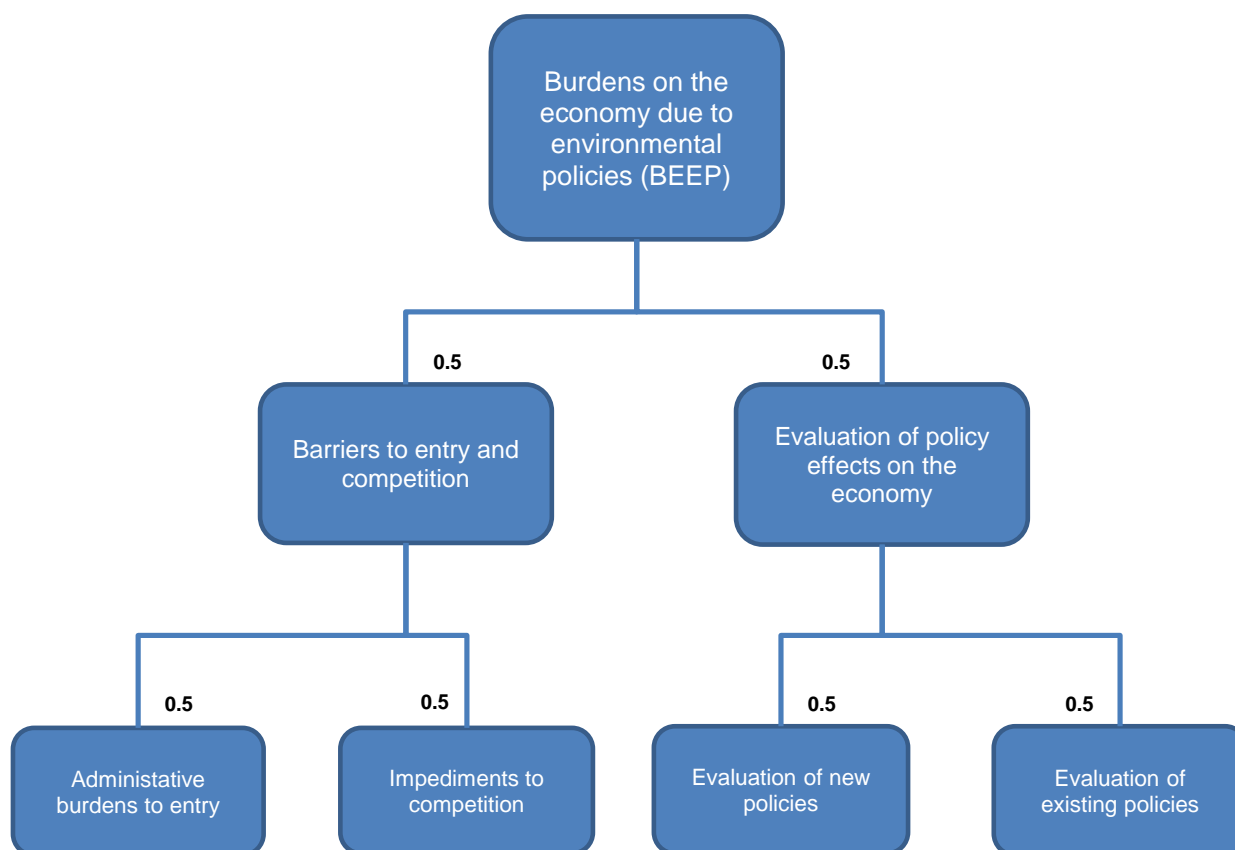
and structure have been adopted (Figure 2 and Box 1). Similar to the PMR, the BEEP indicator runs on a scale from 0 to 6, where 6 represents the highest burdens to entry and competition. The collected information is primarily *de jure*, hence mainly reflecting the legal and procedural requirements rather than actual performance of administration.

Box 2. The procedure for scoring and aggregation of the indicators

The following steps are taken in the construction of the indicator (details in Appendix I):

- Questionnaire responses to feed into the indicator structure are selected based on two criteria: 1) relevance and interpretability with respect to the initial question of interest (burden/market/competition/flexibility) and 2) the response rate and quality for the individual question.
- As is the case for the PMR indicator, the question responses are scored on a scale from 0 to 1, where 0 is the most “friendly” to competition, entry etc.
- The questions are then aggregated into the relevant low-level indicator, with equal weights and some relevant manipulations and rescaled to a 0-6 scale, where 0 indicates least burden.
- The low-level indicators are then aggregated into the indicators of Barriers to entry and competition and Evaluation of effects of environmental policies on the economy and eventually into the final indicator, all with equal weights.

Figure 2. Basic structure of the indicator of the burdens on the economy due to environmental policies (BEEP)



Note: Aggregation uses equal weights of subcomponents.

3.2 *Meaning of individual sub-indicators*

15. Questions selected to form an indicator are grouped according to the following themes:

- Barriers to entry and competition – aiming to capture direct characteristics of environmental policies and permits that may inhibit or slow down entry and provide an advantage to incumbents. These include:
 - *Administrative burdens associated with permitting/licensing procedures*⁸ – this indicator groups questions attempting to capture the administrative complexity related to permitting,

8. As explained in OECD (2013) in EU countries most industrial installations above a certain size fall under the Directive 2008/1/EC concerning integrated pollution prevention and control (“IPPC Directive”) and a series of sectoral directives that establish the conditions for granting environmental permits (this concerns 52 000 regulated installations specified in Annex I of the directive). Starting in January 2014, Directive

which is faced by the entrepreneur when opening a company.⁹ Questions include the legal limit on the administrative response to a request for a permit/license, ease of access to all necessary information, forms to be filled-in, etc.

- *Direct impediments to competition* – this indicator aims at capturing the aspects of environmental policies that can directly discriminate against new entrants. The most common forms are vintage differentiated regulations (VDRs), where new entrants may face stricter environmental norms than incumbent firms and subsidies and tax incentives. Tax and subsidy incentives can be more beneficial for incumbents than for young firms, for instance by being based on past performance or if young firms tend not to have profits. Due to the potentially wide and multidimensional character of such policies, questions for several selected industries are included.
- Evaluation of economic effects of environmental policies in policymaking – focusing on the role of potential effects on competition, entry and more generally economic outcomes in procedures applied in the environmental policy making process, *ex ante* and *ex post*. In the indicator, more lax and less transparent requirements and practise in evaluation of economic effects are considered as “bad”, as potentially leading to higher burdens to economic activity. The two areas include:
 - Evaluation of new policies – this indicator summarises information on the process of environmental policy making. The focus is on requirements to conduct *ex ante* analysis of various economic consequences of new policy proposals and choice of tools to achieve environmental goals.
 - Evaluation of existing policies – this indicator attempts to capture the degree to which economic considerations are taken into account in reviewing the entire setup of existing policies, regarding *ex post* evaluations of policies and policy setups, transparency and the responsiveness to stakeholders.

3.3 *Missing areas that can be relevant for entry and competition*

16. The constructed indicator is based on questionnaire answers, and it was not possible to include all competition-related aspects of environmental policies. Two particularly complex policy categories, with potentially important impacts on entry and competition were excluded: voluntary approaches (VAs) and zoning/land use regulations. The reasons are primarily related to the challenge of gathering and interpreting information on these areas, and their often very local or individual and diverse nature within countries.¹⁰

2010/75/EC (the “Industrial Emissions Directive”) replaces all of the abovementioned directives (i.e. the IPPC Directive and the sectoral ones) to provide a more comprehensive framework regulating industrial emissions in the EU. Several environmental aspects are not covered by IPPC (e.g. GHG emissions already covered by the EU-ETS, water permits, specific local permits) and the actual implementation is national. The indicators constructed for this paper focus on implementation aspects and associated burdens rather than specific permits.

9. The idea resembles that of License and permit systems and Administrative burdens in the Barriers to entrepreneurship indicators in the Product Market Regulation Indicator structure – which focuses on regulations increasing the cost of entry.
10. The questionnaire responses indicate that national authorities do not generally to keep track of these policies and their implementation, which often takes place at lower level of governments.

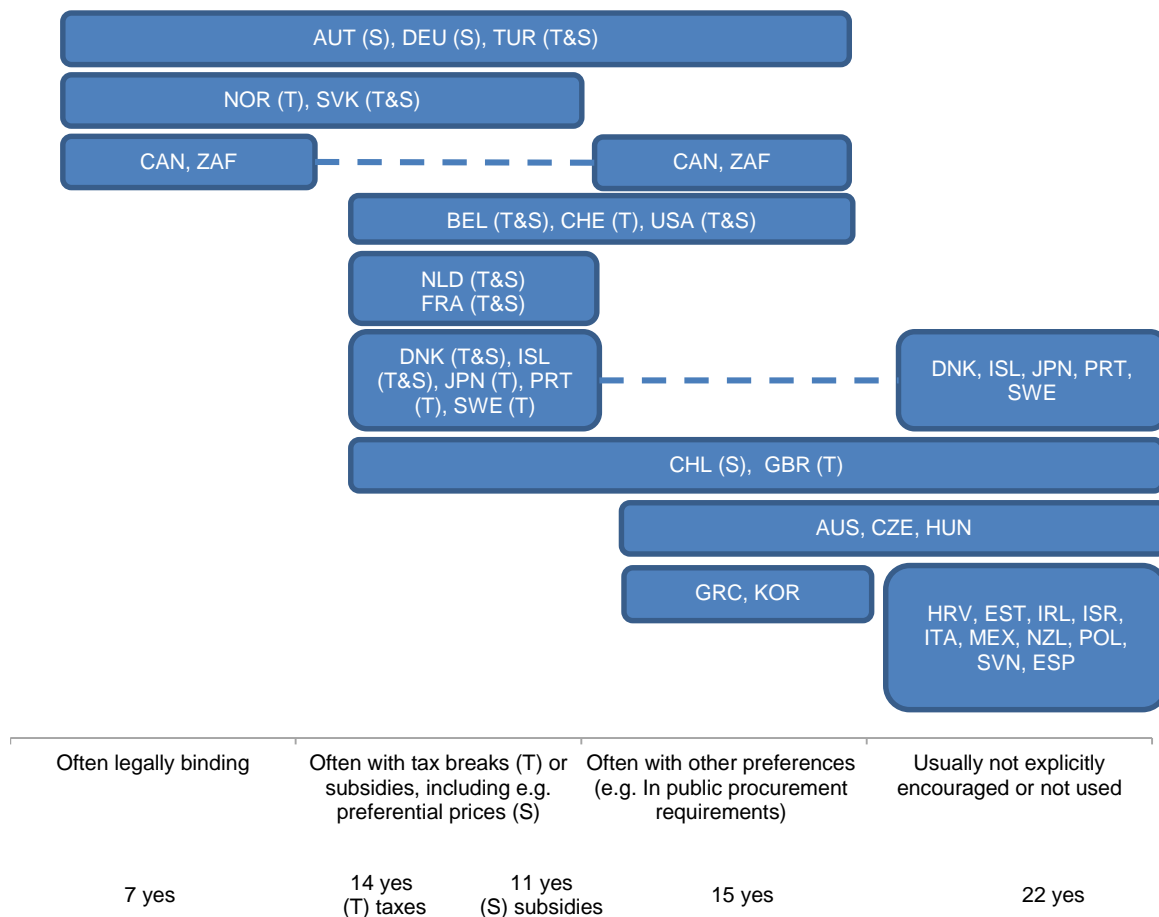
17. Voluntary approaches are used, to a varying extent, as environmental policy instruments in a number of countries. According to the questionnaire responses, they are particularly popular in the areas of climate change/energy efficiency, air pollution and waste management policies – with over 75% of countries confirming the use of VAs in these environmental domains. Such tools may have some advantages, for instance as companies tend to have better information on technologies than regulators, and can be encouraged by governments in various ways (Figure 3). Another incentive that is harder to capture is the fact that by agreeing to a VA, companies may prevent outright regulatory intervention. However, VAs bring about serious concerns in terms of guaranteeing a level playing field – potentially lowering competition, imposing non-tariff trade barriers and increasing the danger of collusion (Carraro and Leveque, 2010). Such issues are of direct concern for competition authorities, but they may find it difficult to assess the risks of regulatory capture, appropriate baselines or counterfactuals and the “rewards” received in return. Moreover, empirical evidence is scarce (OECD, 2006a).

18. Even disregarding the different popularity of VAs across countries, their sheer diverse nature makes it particularly difficult to capture the anti-competitive aspects, which will likely depend on the nature of individual agreements, their scope, time-length, treatment of new entrants, and the government-sponsored incentives they carry.¹¹ Overall, averaging out the anti-competitive aspects of a large amount of VAs may not be very meaningful.¹² Moreover, national authorities may often not have full information on such agreements, particularly as they are often conducted at sub-national levels, and struck with individual firms or plants. More broadly, of the respondent countries, only 4 indicated that municipal governments do have the right to sign (and conduct) VAs – Canada, Slovenia, Spain and Sweden.

11. Interesting examples are reviewed in Tsutsumi (2001) and Welch and Hibiki (2002) for Japan, who claim the majority of VAs are conducted at very decentralised level.

12. OECD (2006a): “As negotiated solutions between a sub-set of polluting firms and the government, the potential competition implications are innumerable. They have captured the attention of government authorities (for example, European Commission (1997), European Environment Agency (1997)) and some theorists but have not been explored in much depth. In particular empirical analysis is almost non-existent.” and “Not enough is known about the precise ways in which voluntary regulatory programmes of one sort or another are likely to interact with product market conduct. In the meantime care by public authorities is needed in the negotiation of agreements, and in determining attitudes towards unilateral schemes.”

Figure 3. Voluntary Approaches are encouraged in various ways and to various degrees



Source: questionnaire responses to “How are VA’s related to environmental goals encouraged? (QA1.2.3.5)”.

19. Another important area omitted altogether from the questionnaire, which could nonetheless have important impacts on competition and the natural environment, is zoning/land regulation. Land use regulations tend to have a strong subnational component, and given the breadth of this field, it was beyond the scope of the current exercise. However, the OECD’s Environment Directorate is currently planning to undertake a dedicated study of such policies, which may shed further light on the role of environment policy related aspects of land use regulations.

4. Burdens of environmental policy design – evidence from the OECD questionnaire

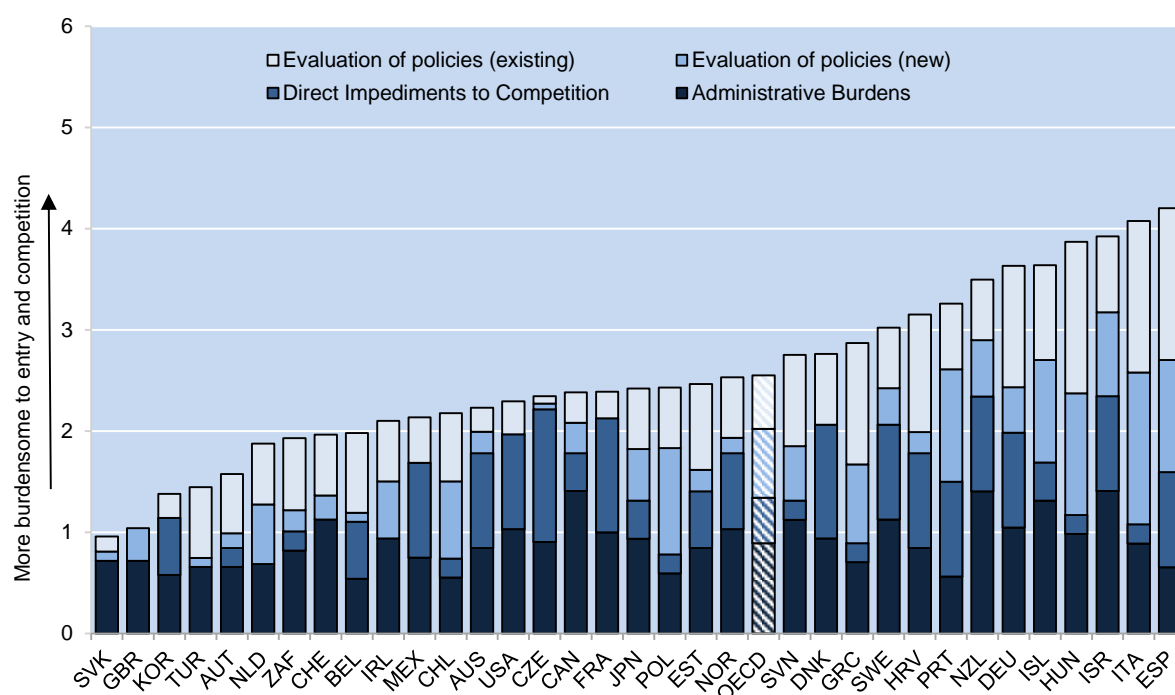
20. The results of the aggregation are presented in Figure 4, together with the OECD average value. As weighting is arbitrary, some simple tests of robustness have been performed. The tests suggest that the indicators are fairly robust to different weighting choices (Figure 5 and Appendix II).

21. Overall, countries exhibit a relatively wide range of scores on the indicators. Slovakia, the United Kingdom, Korea, Turkey, Austria, the Netherlands, South Africa, Switzerland, Belgium, and Ireland appear to adopt a significantly more competition-friendly environmental policy stance than the sample

average. On the other hand, the rankings of Spain, Italy, Israel, Hungary, Iceland, Germany, New Zealand, Portugal, Croatia and Sweden indicate significantly higher burdens to competition.

22. Looking at sub-indicators, administrative burdens exhibit the least variation across countries, appearing the highest in Canada, New Zealand, Israel and Iceland, which score poorly on most questions regarding single contact points, single applications, integrated permits, etc. Sweden, Switzerland and Slovenia score only slightly better suggesting there may be ways to facilitate business entry through reducing red-tape and improving the “business friendliness” of relevant authorities. Responses for a large number of countries indicate the prevalence of vintage-differentiated regulations and tax/subsidy measures which tend to discriminate between entrants and incumbents – these seem particularly common in the Czech Republic, Denmark and France, but also in Australia, Croatia, Germany, Israel, Mexico, New Zealand, Portugal, Spain, Sweden and the United States. Regarding the procedures and requirements for policy evaluation, practices tend to differ significantly across countries. Responses indicate the most room to improve overall evaluation standards and practices in Italy, Hungary, Portugal, Spain, Poland and Iceland, but also in Israel and Greece. Croatia and Germany score fairly well on evaluation of new policies and policy proposals, while scoring poorly on practices to evaluate effects of existing legislation.

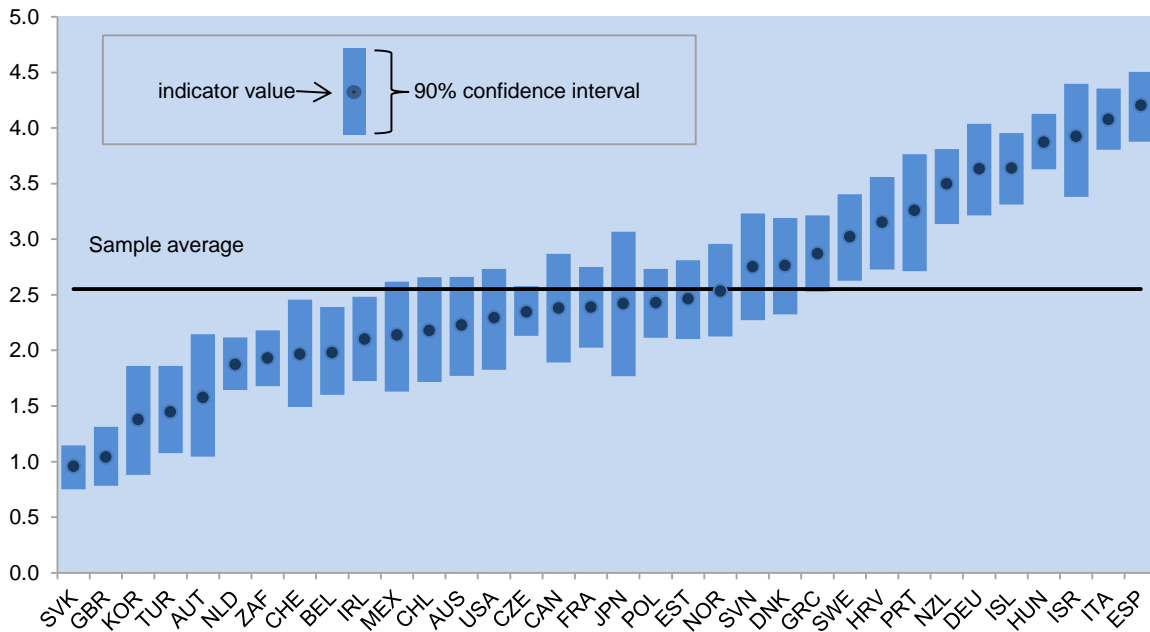
Figure 4. Indicator of the Burdens on the Economy due to Environmental Policies (BEEP)



Note: For the United States, it was not possible to establish a value for the question on the maximum legal length of permitting procedures (QA1.1.10, see Appendix I). For this reason a middle-range value was assumed to enable comparison on overall indicator values.

Source: Responses to the questionnaire.

Figure 5. Random Weights' confidence intervals around the total BEEP indicator



Note: See Appendix II for details on Random Weights methodology and more detailed results.

23. Good performance on the subcomponents summarising the evaluation of new (and existing) policies and proposals in terms of potential economic effects does not necessarily go in line with low administrative barriers and impediments to competition (Figure 6 and Table 1). In fact, for a number of countries, particularly Czech Republic, France, the United States, Australia and the Scandinavian countries, evaluation procedures score among the top in the sample, while environmental policies seem to be particularly burdensome for new entrants. One reason may be that most of these countries tend to score better on the evaluation of new policies, while less so on procedures to look at the existing policy setup. This may also signal that while evaluations are in place, they have limited influence on the actual policy-making decisions or that they do not provide appropriate signals for policymakers.

Figure 6. BEEP - performance across the sub-indicators

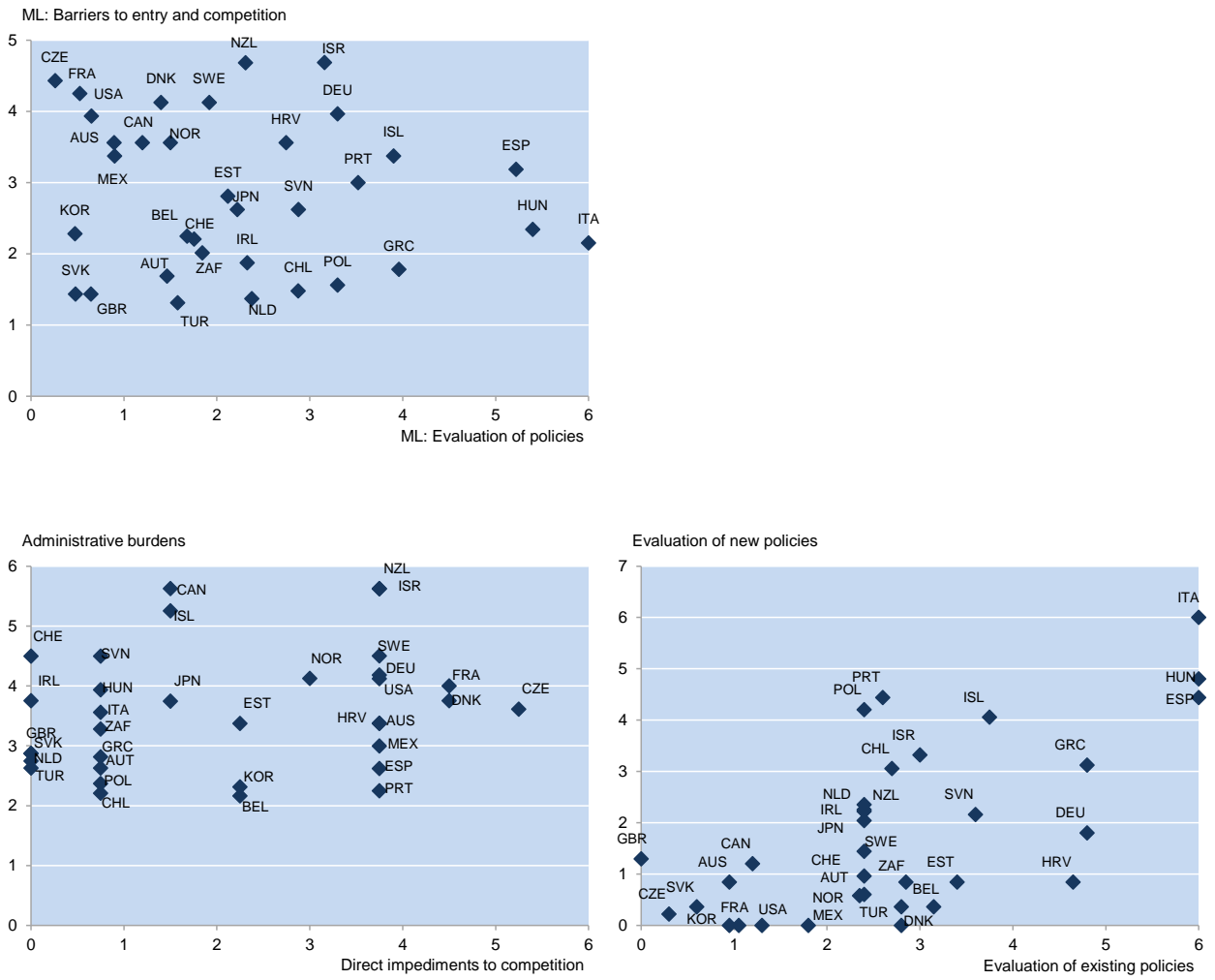


Table 1. Correlations among various BEEP sub-indicators

	TOTAL BEEP	ML: Barriers to entry and competition	ML: Evaluation of economic effects of policies	LL: Admin. barriers	LL: Direct impediments to competition	LL: Evaluation of new policies
TOTAL BEEP – burdens on the economy due to environmental policies	1					
ML: Barriers to entry and competition	0.56***	1				
ML: Evaluation of economic effects of policies	0.71***	-0.11	1			
LL: Administrative barriers	0.42**	0.66***	0.01	1		
LL: Direct impediments to competition	0.47***	0.89***	-0.16	0.25	1	
LL: Evaluation of new policies	0.59***	-0.18	0.89***	0.05	-0.29	1
LL: Evaluation of existing policies	0.67***	-0.03	0.85***	0.02	-0.04	0.57***

Note: *, **, *** indicate significant at 90, 95, and 99% level of confidence respectively.

4.1 Does the BEEP indicator capture information that is not captured by the PMR?

24. The proposed indicator can be compared with other, existing measures of barriers to entry and anticompetitive regulation, such as the Product Market Regulation (PMR) indicators or the Doing Business Indicators of the World Bank. The PMR is a natural starting point, and interestingly, practically no significant correlation is found between the summary, high-level indicators (Table 2) or among the lower level indicators and conceptually similar sub-indicators of the PMR (Table 9 in Appendix II). This may seem counterintuitive, as countries that generally have a large number of obstacles to entry and competition can be expected to have a similar stance in case of environmental policies. On the other hand, if this were the case, there would not be any need to construct an indicator for burdens arising from environmental policies, as the PMR would contain all the necessary information, and be available for a relatively long historical series. Still, there is some evidence that the BEEP indicator actually contains important new information, even in areas where questions may seem fairly similar. For example:

- The questions on procedures to open a business, which focus on single contact points (“one stop shops”). In response to the PMR questionnaire, where any environmental licensing procedures are excluded explicitly in the question, 30 out of 31 countries confirmed they have a single contact point where all information can be obtained, and 14 of them confirmed to have one where all the procedures can be arranged.¹³ However, when asked (in the BEEP questionnaire), whether information on environmental permitting/licensing procedure can be obtained at the single contact point, only 5 of these countries confirmed, 10 stated that all environmental policy related information can be obtained at a single contact point, but not at the same contact point as the one for opening a company, and 15 countries indicated the need to visit several contact points in order to inquire about and complete the necessary environmental procedures.

13. All comparisons with PMR indicator data follow the 2014 update, as described in Koske et al. (2014) reflect the state of the PMR data as of 10/11/2014. Data are available on www.oecd.org/eco/pmr.

- In 6 out of the 7 countries (Austria, Belgium, France, Hungary, Italy and Portugal) that have a silence-is-consent rule regarding the response to applications on opening a business (PMR), this rule does not apply to environmental licensing/permitting (BEEP).
- Due to the complexity and differences in the type of possible environmental effects, the case for asking the question on the ‘typical’ time it takes to arrange the permits is less clear than for the standard procedures measured by the PMR. This was nonetheless attempted in the BEEP questionnaire using “artificial” examples of activity in a specific location and specific environmental effects; however the response rate was unsatisfactory. Hence, the question on the legal limit for the approval body to decide on the application, for both a ‘high environmental risk’ and ‘low environmental risk’ company was used, although it is not directly comparable to the question on ‘typical’ length of the procedure. Notably, 11 of the countries indicated no legal limits for an administrative response to environmental permit procedures.
- The questions on vintage differentiated regulations (VDRs) and discriminatory tax/subsidy treatment, which can have a direct relevance for levelling the playing field, are not directly addressed in the PMR. Arguably, they are more often encountered in the area of environmental policies (see Figure 7 for an example for coal-fired power plants). There may be important reasons for such types of instrument design, among them the political attempts to overcome the resistance to stricter environmental rules. These are also related to the issue of large investment costs in some industries, and are sometimes accompanied by phase-out clauses. Nevertheless, in terms of competition, they do not serve to level the playing field, and as such may even prolong the functioning of “old”, more polluting plants (Stavins, 2006). As a large number of such instruments can be industry specific, the questionnaire took a simplified approach, focusing on a selection of potentially relevant industries.¹⁴
- The sections on evaluation of economic effects of environmental policies cover the policy-making procedures and do not have an equivalent in the PMR.

Table 2. Correlation with various indicators of regulatory burdens

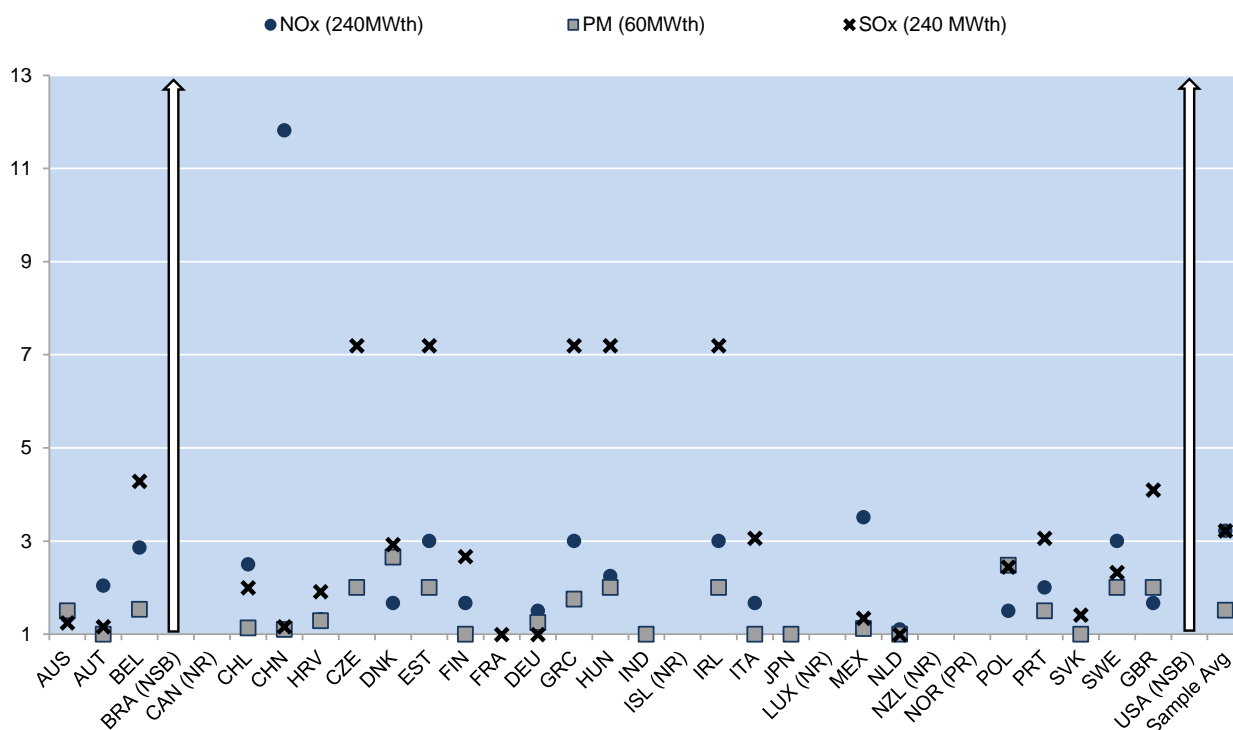
	WB Doing Business – Ease of Doing Business (2013)	WB DB – Starting a Business	WB DB – Construction Permits	PMR 2013	PMR 1998
BEEP total indicator	0.10	0.13	-0.04	-0.04	0.07

Note: All indicators scaled so that higher level indicates higher burden. None of the correlations is significant. Spearman rank correlations. PMR Indicators data from Koske et al. (2014), available at www.oecd.org/eco/pmr/ (Accessed 10/11/2014).

14. Mining and quarrying (B in ISIC rev. 4.0); Manufacture of chemicals and chemical products (C20 in ISIC rev. 4.0); Manufacture of rubber and plastic products (C22 in ISIC rev. 4.0); Manufacture of basic metals (C24 in ISIC rev. 4.0); Electricity, gas, steam and air conditioning supply (D in ISIC rev. 4.0).

Figure 7. Vintage differentiation in environmental policies - an example

Emission limit values: ratio of values for new and existing coal-fired power plants, (selected pollutants and plant sizes)¹



1. The observations indicate the relative strictness of ELVs for new and existing plants – i.e. a value of 3 for SOx limit means the limit is 3 times stricter (lower) for a new plant than for an existing plant the same size.
2. NSB and arrows in graph denote New Source Bias – countries with no regulation for old plants, only new plants.
3. PR denotes plant-level regulation (at level of individual plant), NR denotes no regulation – either related to lack of plants or no national regulation...

Source: Hascic et al. (2014) “Environmental policy, innovation and efficiency gains in energy supply: Analysis based on patent data and DEA”, OECD forthcoming.

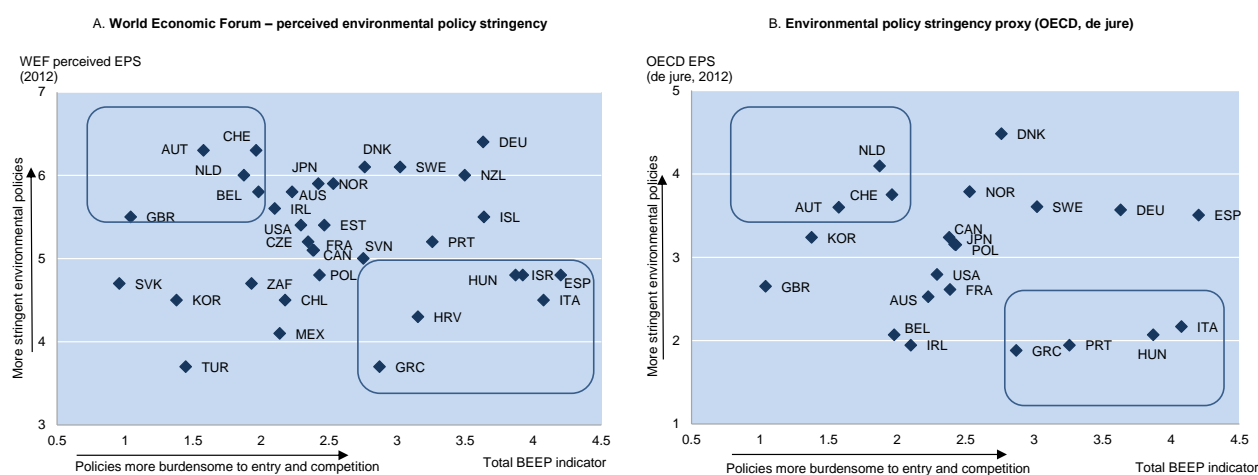
4.2 Can stringent environmental policy be pursued at low burdens to entry and competition?

25. Comparison of the indicator values with measures of environmental policy stringency and environmental performance suggests high burdens to competition are not a necessary feature of stringent environmental policies and achieving ambitious environmental goals.

26. None of the two existing international measures - the WEF perceived environmental policy stringency/enforcement and the indices of (*de jure*) environmental policy stringency constructed recently at the OECD (Botta and Koźluk, 2014) - show any significant correlation with the BEEP indicator or its subcomponents (Figure 7 and Table 3). Taken at face value, this suggests that stringent environmental policies can be pursued in a way that does not necessarily impose high burdens to entry and competition. Countries like Austria, the Netherlands, Switzerland and the United Kingdom are perceived as having relatively stringent environmental policies but record low values of the BEEP indicator, while there seem to be a number of countries (Hungary, Israel, Italy, as well as Greece, Portugal and Spain) where environmental policies do not appear particularly stringent, but record high values of the BEEP indicator (Figure 8, Panel A). Comparisons with *de jure* measures of stringency tend to give similar conclusions

(Panel B). Perceived environmental policy stringency appears weakly correlated with the BEEP low-level sub-indicator of direct impediments to competition (positive) and the mid-level indicator of evaluation of effects of environmental policies (negative). Interestingly, all correlations disappear with respect to the *de jure* measures. While the weakness and low level of the coefficients warrant a careful interpretation, they may also point to more discriminatory environmental policies being linked to perceptions of higher stringency and more strict enforcement.

Figure 8. The BEEP indicator and measures of environmental policy stringency



Source: World Economic Forum Executive Opinion Survey for Panel A. Annex 2 for Panel B.

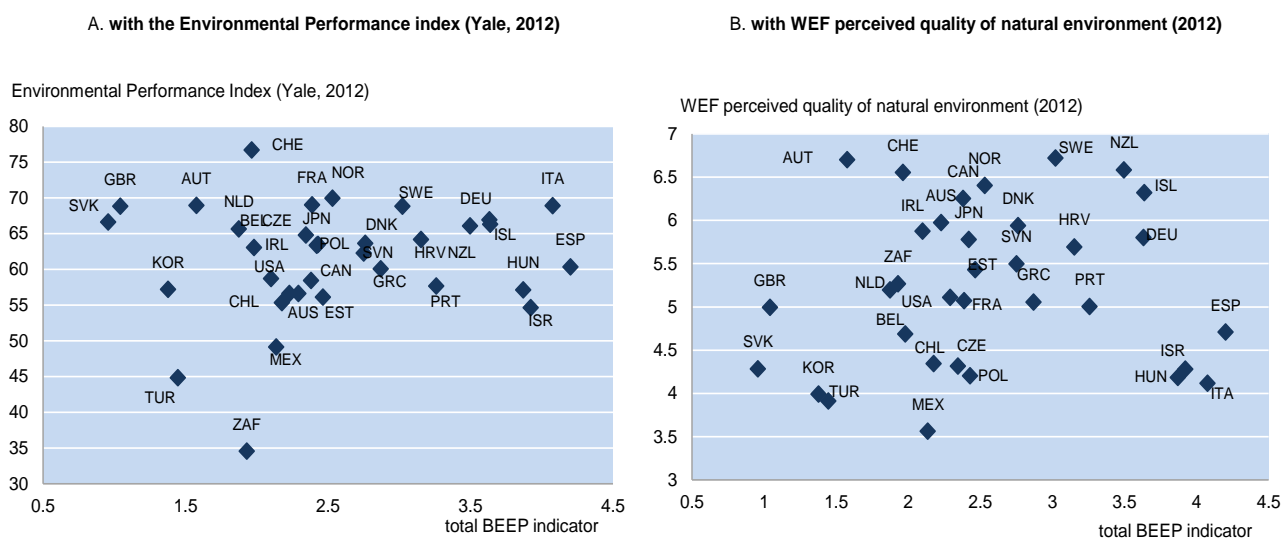
Table 3. BEEP and selected measures of environmental policy stringency

	WEF perceived environmental policy stringency	WEF perceived enforcement of environmental policies	OECD environmental policy stringency index
BEEP total indicator	-0.13	-0.20	-0.14
ML Barriers to entry and competition	0.26	0.30	0.17
ML Evaluation of policies	-0.09	-0.22	-0.25
LL: Administrative barriers to entry	0.36*	0.40*	0.30
LL: Direct impediments to competition	0.14	0.17	0.09
LL: Evaluation of new policies	-0.25	-0.36*	-0.33
LL: Evaluation of existing policies	-0.02	-0.11	-0.13

Note: *,** indicate significance at 90% and 95% confidence respectively. Spearman rank correlations. Most recent values for EPS measures (2011/2012).

27. In a similar vein, comparisons of BEEP indicators with selected measures of environmental outcomes show a lack of significant relationship between them (Figure 9 and Table 4). Measuring environmental outcomes is not straightforward – again largely due to the multitude of environmental dimensions and national (e.g. geographical or level of development) conditions, hence a number of measures have been selected. Furthermore, environmental outcomes are often the result of long-trends, and not necessarily environmental policies, complicating drawing conclusions on their relationship with an indicator of policies for 2013.

Figure 9. The BEEP indicator and selected measures of environmental outcomes



Note: For both indicators of environmental performance higher values indicate better state of natural environment.

Table 4. Correlations of BEEP indicators and selected measures of environmental outcomes

	Environmental Performance Index (EPI Yale)	WEF quality of environment
Total BEEP index	0.07	0.11
Barriers to entry and competition (ML)	0.08	0.34**
Evaluation of economic effects of environmental policies (ML)	-0.06	-0.04

Note: ** indicates significant at 95% confidence level. Spearman rank correlations.

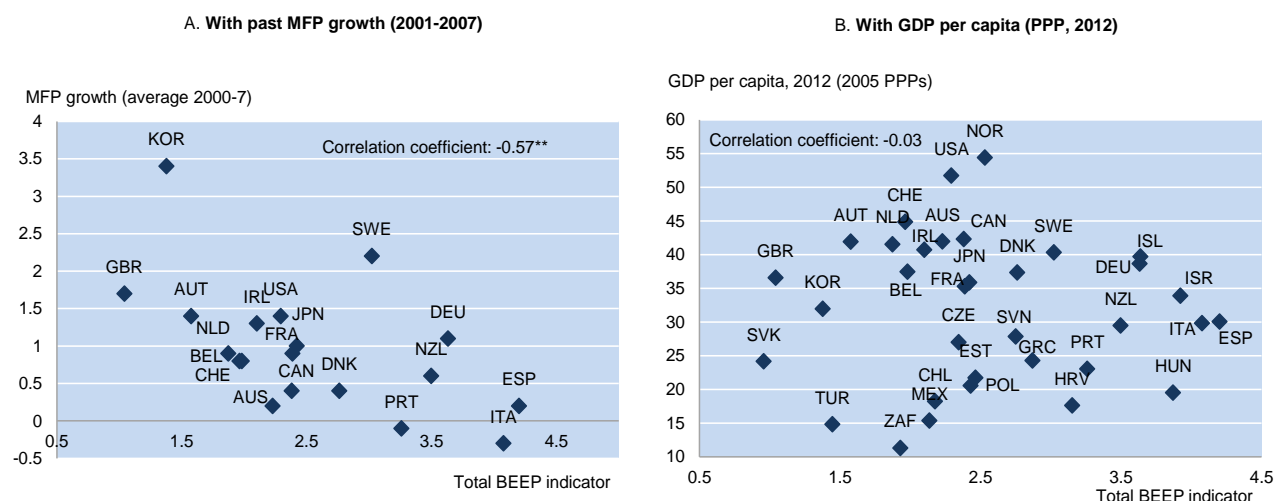
4.3 Can something be said about the link between BEEP and economic outcomes?

28. Whether the dimensions assessed in the BEEP indicators actually matter for economic performance is a crucial question, one which would motivate any attempts for reform. Unfortunately, the currently gathered data does not allow any robust conclusions, at least at this point in time:

- Firstly, the data provides only a snapshot of reality. Cross-country comparison would require some kind of time series in order to identify effects, distinguishing them from numerous other drivers.
- Secondly, the data is relatively new, as responses to the questionnaire concern the state of reality on the 1st of January 2013. Assessing the influence of such states would require at least several years of economic performance data after this period.

29. More generally, the effects can be hard to capture – while there is a good case for each of the components of the indicators to matter for economic performance, they are unlikely to be the main determinant of GDP or productivity growth across the economy. As discussed above, most economic activity is unlikely to be directly affected by environmental permits and more generally by many of the most common environmental policies. While no causality conclusions can be drawn from such correlations, they are shown in Figure 10 – pre-crisis productivity exhibits a negative correlation with BEEP (0.57, significant at 95% level), while per capita GDP is completely uncorrelated.

Figure 10. BEEP - comparisons with economic outcomes



Source: MFP – OECD Productivity Database. GDP per capita (PPP) – IMF World Economic Outlook Database.

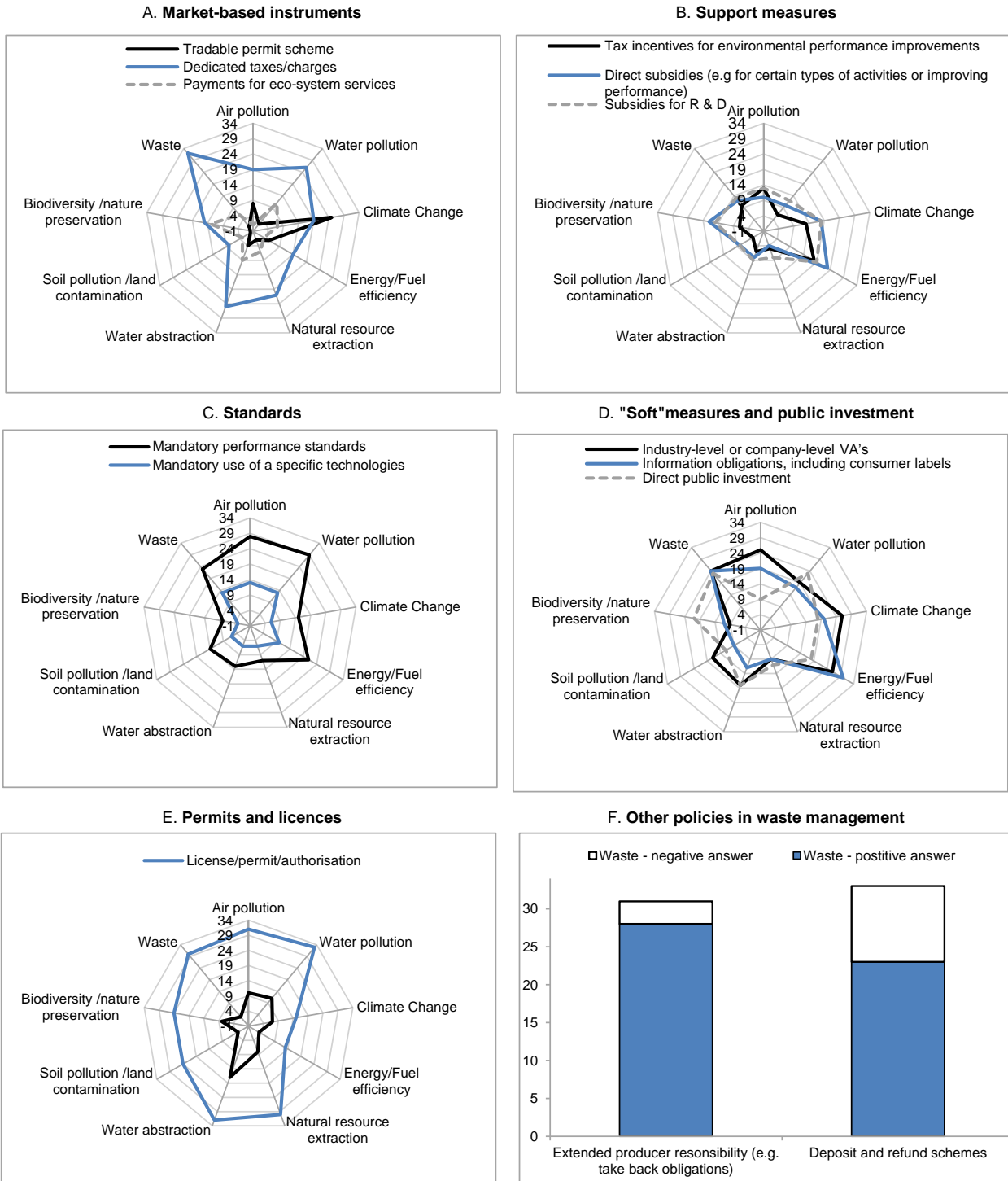
5. Division of powers, overlapping competencies and other aspects of environmental policy design

30. A large amount of cross-country information gathered using the questionnaire has not been used in the construction of the indicator, but can yield interesting insights on the way environmental policies are conducted. The main reason for not using this information directly in the proposed indicator is the fact that the interpretation of the individual questions/responses is not straightforward in terms of effects on competition, with no clearly identified “best-practice” response. A second reason is the insufficient response rate for a number of questions.

31. Still, the questionnaire responses allow for the comparison of the different policies tools used in OECD countries and selected non-member states across environmental domains (Figure 11). For instance, dedicated permits are commonly used in practically all countries, particularly in domains such as water (abstraction and pollution), air pollution, waste and natural resource extraction. Market-based instruments are fairly common, with taxes and charges being used particularly often in water, waste and natural resource extraction. Trading schemes tend to be used in the climate change domain (reflecting primarily the EU ETS and green energy certificate schemes) and air pollution, as well as, in a handful of countries in areas of water abstraction and energy efficiency. Performance standards are fairly common across a number of environmental domains, while technology standards less so. Voluntary approaches are also relatively widespread.

Figure 11. Use of different environmental tools across environmental policy areas

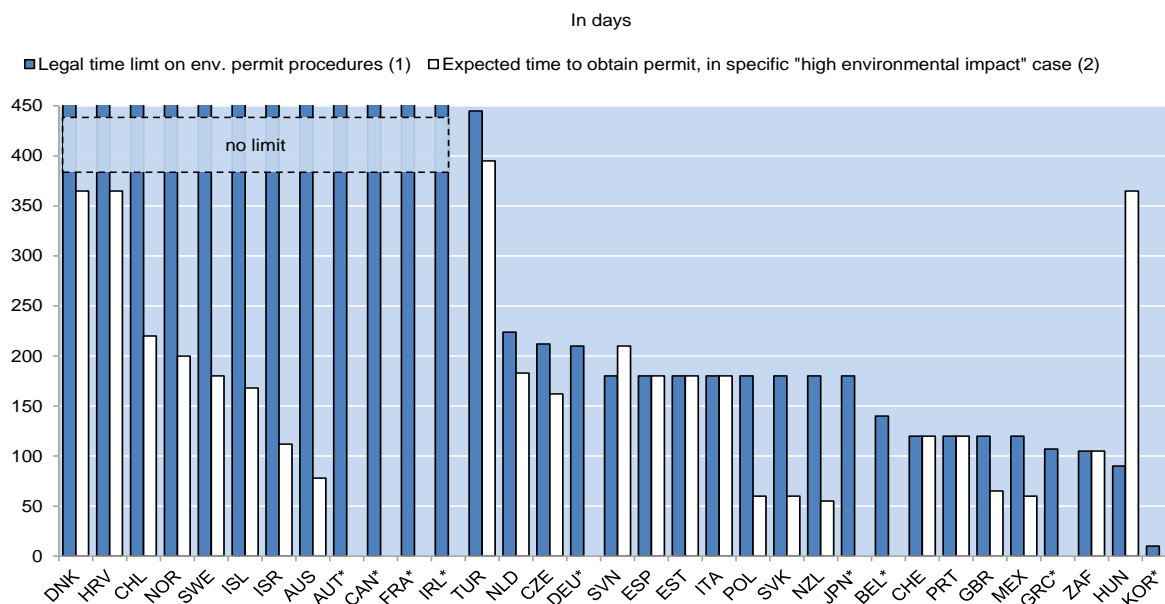
Number of countries using this instrument in given environmental policy area (out of 29)



Source: Based on questionnaire responses.

32. Finally, vignette questions were included, seeking to provide closer insight on the *de facto*, rather than *de jure*, extent of burdens. These questions were designed around an example of a specific plant, emitting specific pollutants and in a specific location in the country (see Appendix I for a description), to reduce the multidimensionality and provide more “real-life” insight on how policies are implemented. The downside is the potential loss of generality by focusing on a specific case. The questions collected information such as the actual time that it is expected to take for obtaining environmental permits/licenses (Figure 12), controls the plant can be expected to undergo (Table 5 and Figure 13) and statistical obligations. The response rate to this section of the questionnaire was significantly poorer than to the remainder of the questions. The main reasons are likely related to the design of the questions themselves and the specific situation described but also the choice of respondents. In fact, respondents in the government ministries or environmental agencies may not be able to answer such questions, and much more cross-cutting and relevant information might be obtained through a questionnaire oriented towards firms.

Figure 12. Time required to obtain environmental permits



1. Responses to QA1.1.10 “What is the legal time limit on responsible bodies to issue environment related permits or licenses (in days, longest procedures)? Large, “high-environment risk” companies”.
2. Responses to question (QA1.6.1.4) “How many days does it take, on average, to obtain the permit (in days, longest of the permitting procedures)?” for a specific type of activity – see Appendix I for a detailed description.

Source: Questionnaire responses

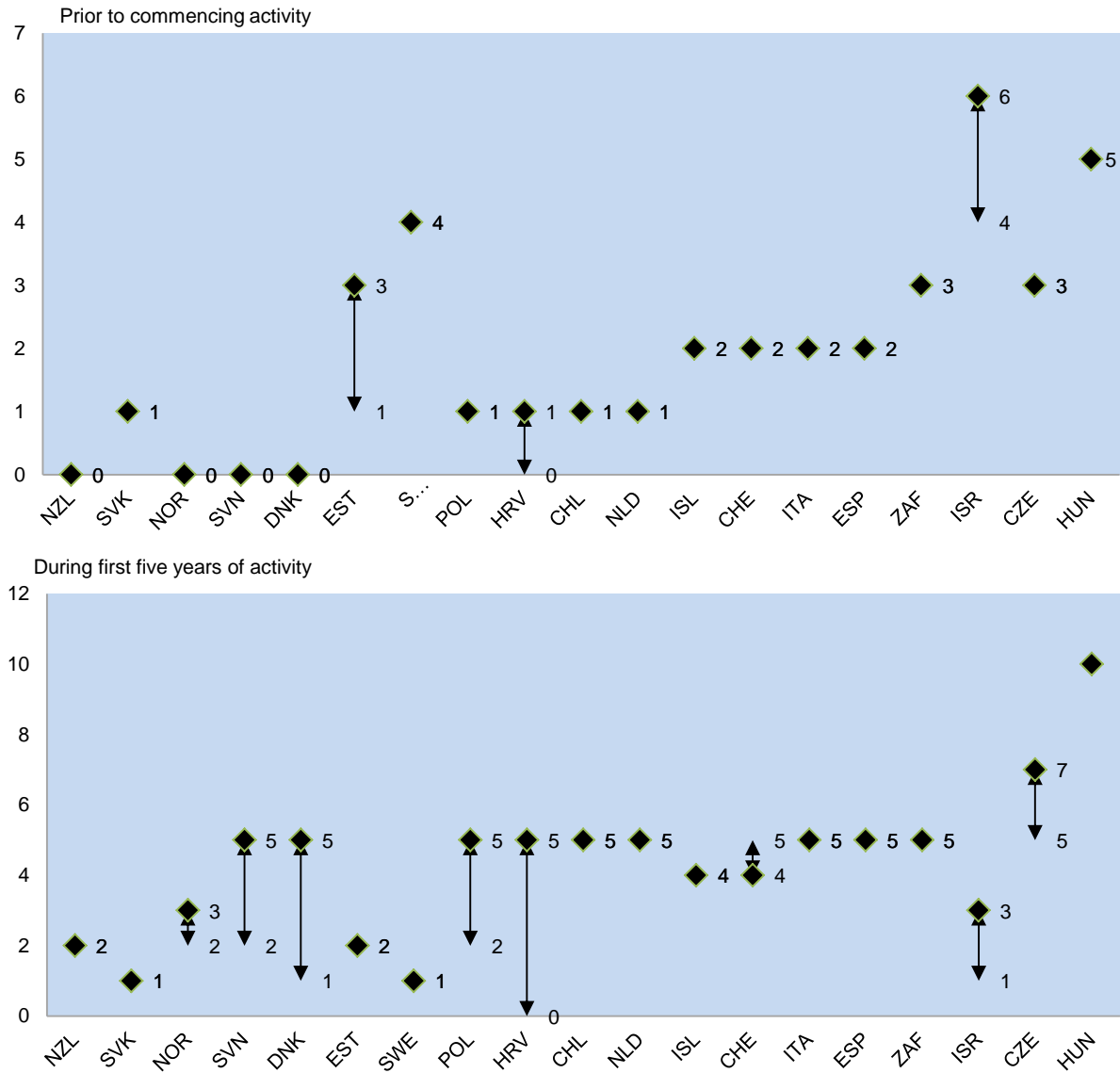
Table 5. Number of bodies responsible for environment-related controls

Case of specific plant, see Appendix I for details

	One single body	Two to three different bodies	More than three different bodies
Will the plant be (potentially) subject to environment-related controls/inspections from multiple institutions? (QA1.6.2.13)	CHL, HRV, MEX, NOR, POL, PRT, SVK, SVN, TUR, GBR	AUS, CZE, DNK, EST, HUN, IRL, ISR, ITA, NLD, NZL, SWE, CHE, ZAF	ESP, JPN

Figure 13. Expected number of environment-related inspections and controls

Case of specific plant, see Appendix I



Note: In case of ranges, minimum and maximum values are presented depending on size of plant, magnitude of assumed environmental impact or risks etc. Countries sorted on sum of inspections.

6. Some tentative conclusions

33. The competition-friendliness of environmental policies merits attention – high barriers to entry and competition do not seem a necessary condition for implementing stringent environmental policies. In fact, such barriers may hurt economic performance, actually slowing the progress towards a greener economy. In particular, by protecting incumbents, such barriers can impede innovation, new and more environmentally-friendly technology adoption and entry of firms with new business models. They may also lower the effectiveness of market-based environmental policy instruments, raising the economic cost of achieving environmental objectives. In effect, unnecessary barriers to competition can lower international competitiveness, particularly of heavily polluting industries and hence cause stronger incentives to lobby against environmental policies or migrate towards pollution havens.

34. No comprehensive cross-country analysis of this sort has been conducted to this date. The BEEP indicators, by definition, represent only very selected aspects of the extremely complex set of environmental policies. Still, they point to areas where environmental policies can be improved, without jeopardising environmental objectives – based on experiences across countries. The BEEP indicators capture a number of the most relevant aspects for entry and competition and can inspire efforts to streamline environmental policies and make them more competition-friendly, benefiting economic performance and with no negative consequences for environmental goals, policies or enforcement.

35. The analysis of the data collected via the OECD questionnaire suggests some tentative conclusions and potential areas of further research:

- The lack of correlation of BEEP with environmental policy stringency and environmental outcomes tends to indicate that some types of burdens on competition are likely to be unnecessary – effective environmental policies can be implemented while minimising the distortions to entry and competition.
- While it is not possible to pin-down the economic impacts of environmental policy design at this point, due to data issues, there is strong evidence on the relevance of general anti-competitive regulation for growth. The channels through which the burdens of environmental regulations work can be expected to be similar, though the distribution of direct effects across economic agents may differ in size and scope. Indirect “knock-on” effects are potentially much broader, due to the role of “environmentally-burdensome” sectors for the economy as a whole. Still, a proper empirical analysis of economic effects related to the competition friendliness of environmental regulation requires more systematic data collection, and possibly the deepening of selected aspects.
- The BEEP indicators capture information absent from the PMR, as suggested by the lack of correlations among these indicators. In this respect, the exercise may be of particular value to the countries that already score well on the PMR, indicating other policy areas that they may wish to address to improve economic performance.
- Insights on the competition aspects of two types of instruments related to environmental policies - voluntary approaches and land use regulations - have been explicitly excluded but may be of economic significance. Further work in this area could enhance the understanding of the linkages between environmental policies and competition.

36. The information collected but not included in the BEEP indicators, can allow the comparisons of different policy approaches across countries and environmental policy domains, potentially laying the ground for a deeper analysis of a number of aspects of environmental policy design.

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APPENDIX I. DETAILED RESPONSE SCORING AND AGGREGATION

Table A1.1 Low level indicator on administrative burdens associated with permitting/licensing procedures

Scoring and aggregation

Questions	Scoring of answers	
(A) How can an entrepreneur about to set up a company find out whether the company will be subject to specific environmental licensing? (QA1.1.2)	There is a website containing detailed information on requirements about environmental permitting	0
	The entrepreneur will be informed during the company registration process about need for environmental permits (general or activity specific)	0.5
	The entrepreneur is responsible for finding this information on her/his own	1
(B) Is there a single contact point where the entrepreneur can obtain all necessary environment-related permits/licenses and/or submit all necessary environment-related notifications? (QA1.1.3)	There is such a single contact point and it is the same contact point as for other necessary registration/start-up procedures (full one stop shop)	0
	There is such a single contact point, but it is not the same contact point as for other necessary registration/start-up procedures (environmental one stop shop)	0.5
	There is no single contact point for environmental procedures and firms must contact more than one entity	1
(C) Can the application/notification regarding environmental licenses be done with a single application form? (QA1.1.4)	Yes, online or manually	0
	Yes, but only manually	0.5
	It can be done with multiple forms (e.g. regarding different environmental permits or different institutions, such as national and local), but all can be arranged online	0.5
	It can be done with multiple forms, but not online	1
(D) Is there an integrated environmental permit/license for all environmental effects? (QA1.1.5)	Yes, always	0
	Yes, for most standard business activity	0
	No	1
(E) Does the silence is consent rule apply to environmental permits/licenses? (QA1.1.11)	Yes	0
	No	1
What is the legal time limit on responsible bodies to issue environment related permits or licenses (in days, longest procedures)? (QA1.1.10)		
(F) Procedures for large/"high environmental impact" companies	Minimum (each time limit; 365) / 365, or 1 if no legal time limit for approval	
(G) Procedures for SME's/"low environmental impact" companies	Minimum (each time limit; 180) / 180, or 1 if no legal time limit for approval	
(H) Is there a simplified permitting/notification procedure for SME's or activities with low environmental risks? (QA1.1.7)	Yes	0
	No	1
(I) Does the simplified procedure for SME's/low-environmental risks involve only one single contact point, application form etc.? (QA1.1.8)	Yes	0
	No	1
Aggregation formula		
Indicator of administrative burdens = 6*[A + B + C + D + E + F + G + H*(0.5 + 0.5*I)]/8		

Table A1.2 Low level indicator on direct impediments to competition resulting from environmental policies

Scoring and aggregation

Question	Weights	Scoring of answers	
		Yes	No
Are there any subsidies/tax breaks for improving environmental performance/outcomes based on past performance? (QA1.2.3.1)			
If subsidies/tax breaks for improving performance, based on historical outcomes exist in the area of climate change (GHG emissions, energy efficiency etc.) can they be viewed as discriminating against new entrants? (QA1.2.3.1a)	1	1	0
If subsidies/tax breaks for improving performance, based on historical outcomes exist in the area of air pollution can they be viewed as discriminating against new entrants? (QA1.2.3.1b)	1	1	0
If subsidies/tax breaks for improving performance, based on historical outcomes exist in the area of water management (use efficiency and pollution) can they be viewed as discriminating against new entrants? QA1.2.3.1c)	1	1	0
Vintage-Differentiated Regulation - for a new firm planning to enter one of the industries below, can it face any type of stricter environmental standards/regulation (e.g. regarding air pollutant or water pollutant emissions, waste, water abstraction, energy efficiency) than an existing firm of similar size and activity? (QA1.2.3.2)			
Mining and quarrying (B in ISIC rev. 4.0)	1	1	0
Manufacture of chemicals and chemical products (C20 in ISIC rev. 4.0)	1	1	0
Manufacture of rubber and plastic products (C22 in ISIC rev. 4.0)	1	1	0
Manufacture of basic metals (C24 in ISIC rev. 4.0)	1	1	0
Electricity, gas, steam and air conditioning supply (D in ISIC rev. 4.0)	1	1	0
Aggregation formula			
Indicator of direct impediments to competition = 6* Σ all answers/8			

Table A1.3 Low level indicator on the evaluation of the effects of new policies

Scoring and aggregation

Question	Scoring of answers	
(A) Is there a legal obligation to evaluate the impact of newly proposed environmental policies on economic activity? (QA1.2.1.1)	Yes	0
	Yes, for "major" changes in policy instruments	0.3
	It is a practice, but not legally binding	0.5
	No	1
(B) What criteria are taken into account when evaluating the economic effects of a policy proposal? (QA1.2.1.2) Competition Entry/exit barriers Trade competitiveness Specific effects on SME's Employment Innovation Administrative burden imposed by the regulation/policy Statistical obligations imposed by the regulation/policy Others (please specify in comments field)	Score of 1/9 for each "No"	
(C) Are there clear rules or guidelines on how such analysis should be conducted? (QA1.2.1.3)	Yes, national	0
	Yes, state level	0
	No	1
(D) Are the existing rules/guidelines for such an analysis legally binding? (QA1.2.1.4)	Yes	0
	No	1
(E) Are any of the below explicitly required when evaluating new policy proposals? (QA1.2.1.5) Interactions and overlaps with existing policies Benchmarking against alternative policy instruments to achieve the environmental goal Comparison of marginal abatement costs across sectors/activities Evaluation of costs and benefits with respect to using a pricing instrument (e.g. emission tax)? Evaluation of costs and benefits of pursuing the goal at a particular level of administration (e.g. national, state, local)	Score of 1/5 for each "No"	
(F) Is there a stakeholder consultation process (i.e. with companies) preceding the selection of a given environmental policy tool? (QA1.2.1.6)	Yes, mandatory	0
	This is a practice, but not legally binding	0.3
	This is sometimes done	0.7
	No	1
(G) Is there a website where all new environment-related regulation is announced? (QA1.1.12)	There is one website	0
	At the state/province level, all regulations are announced on one site	0
	The main policies are announced on a single site	0.3
	All regulations are announced, but on a number of different sites	0.7
	No	1
Aggregation formula		
Indicator of evaluation of new policies = 6* [A*(0.5 + 0.5*B) + (C + D)* (0.5 + 0.5*E) + F + G]/5		

Table A1.4 Low level indicator on the evaluation of the effects of existing policies
Scoring and aggregation

Questions	Scoring of answers	
(A) Is there a programme to evaluate the costs and benefits of introduced environmental policies ex post? (QA1.2.2.1)	Yes, evaluating both the achievement of environmental goals and the economic costs of environmental policies/regulation	0
	Yes, but focusing on evaluation with respect to the achievement of environmental goals	0.5
	No	1
(B) Is there a regular review of existing environmental policy setup in light of whether they are achieving their stated objective? (QA1.2.2.2)	Regular programme	0
	No regular programme, but ad-hoc reviews have taken place	0.5
	No	1
(C) Does such an evaluation explicitly look at the following aspects? (QA1.2.2.3) Economic costs at which the goals are being pursued, relative to alternative tools (benchmarking) Equalisation of abatement costs across sectors, activities or companies The overall administrative burden imposed on companies Ways to streamline the administrative procedures Overlaps in different areas of responsibilities among administration levels/bodies Possibilities of reducing the amount of requested statistical information (e.g. not asking the same information twice)	Score of 1/6 for each "No"	
(D) Are such reports publicly available? (QA1.2.2.4)	Yes	0
	No	1
(E) Is there a database of all (national, state, local) environmental policy instruments addressing specific environmental issues? (QA1.2.2.6)	Yes, all	0
	Only state and/or national level policies	0.5
	Only "major" policy instruments in place	0.5
	No	1
(F) Are businesses or stakeholders explicitly encouraged to propose simplifications or flag particularly burdensome regulations? (QA1.2.2.7)	Yes, on a continuous basis	0
	Regularly	0
	Ad-hoc	0.5
	No	1
Aggregation formula		
Indicator of evaluation of existing policies = 6*[(A + B)*(0.5 + 0.5*C) + D + E + F]/5		

Description of vignette question

1. An investor wants to open a company in the basic chemical sector (ISIC rev 4.0 C201: manufacture of basic chemicals, fertilizers and nitrogen compounds, plastics and synthetic rubber in primary forms) located outside the largest city in the country. The investor expects that the plant will emit CO₂, NO_x, SO_x and PM_x (from fuel combustion and industrial processes). The investor plans to abstract water and expects to release wastewater into the sewage system and/or local river. The investor does not expect to deal with hazardous substances or hazardous waste. The land plans allow for such an investment. Two cases “small” and “large” plant.

APPENDIX II. SOME STATISTICS AND SENSITIVITY TESTS

Basic statistics

PMR Indicators data from Koske et al. (2014), available at www.oecd.org/eco/pmr (10/11/2014)

Table A2.1 Correlations among conceptually similar BEEP and PMR elements

	Total BEEP indicator	ML: Barriers to entry and competition	LL: Administrative barriers
PMR Barriers to Entrepreneurship 2013	-0.05	-0.04	-0.17
PMR Barriers to Entrepreneurship 1998	0.14	-0.15	-0.29

Note: Spearman rank correlations. None of the values are significant.

Table A2.2 Correlations among conceptually similar BEEP and PMR elements

	Total BEEP indicator	ML: Barriers to entry and competition	LL: Administrative barriers
PMR Administrative Barriers 2013	0.04	-0.27	-0.41*
PMR Administrative Barriers 1998	0.37*	-0.09	-0.20
PMR Licenses and Permits 2013	-0.28	-0.13	-0.02
PMR Licenses and Permits 1998	-0.27	-0.05	-0.08

Note: Spearman rank correlations. ***, **, * denote significance at 99%, 95%, 90% levels respectively.

Table A2.3 Correlations among conceptually similar BEEP and PMR elements

	Total BEEP indicator	ML: Evaluation of policy economic effects of policies	LL: Evaluation of new policies	LL: Evaluation of existing policies
PMR Communication and Simplification of Rules 2013	0.41**	0.24	0.16	0.33*
PMR Communication and Simplification of Rules 1998	0.34*	0.22	0.04	0.41**

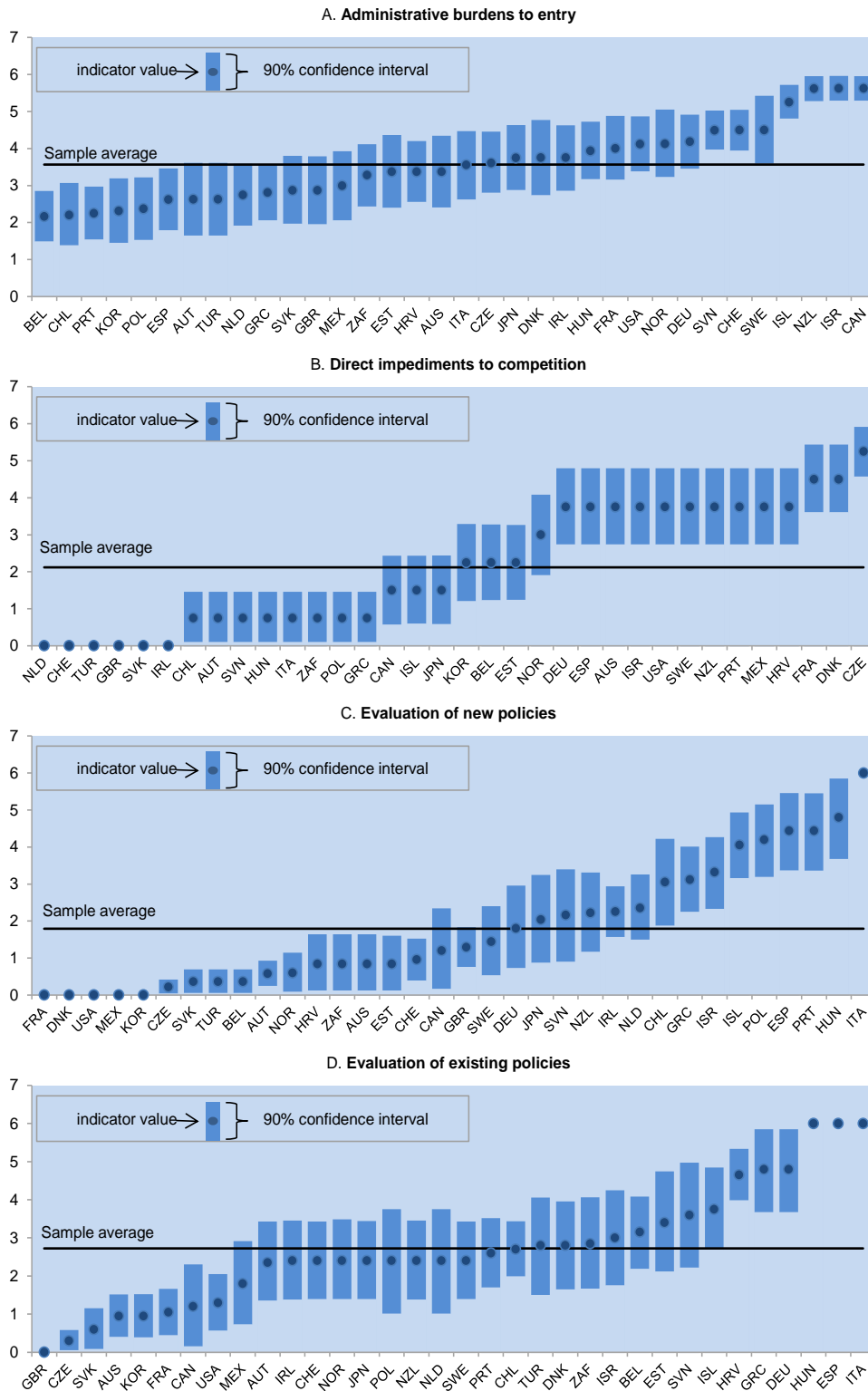
Note: Spearman rank correlations. ***, **, * denote significance at 99%, 95%, 90% levels respectively.

Sensitivity to weighting

1. Some very basic tests of the sensitivity of the indicator values to the choice of weights have been conducted. The random-weights (RW) methodology chosen follows the approach taken for the Product Market Regulation indicator in Woelfl et al. (2008).¹⁵ This has been repeated for aggregating each of the individual question responses into the four low-level indicators (Administrative burdens, etc., results presented in Figure 14) and then again to aggregate the latter into the high-level index (Figure 5).

15. The RW procedure is as follows: 1) Draw weights for the low level indicators from a random uniform [0,1] distribution. 2) Aggregate using the obtained weights and rescale dividing by the sum of weights. 3) Repeat 10 000 times, and 4) drop lowest and highest 5% of values.

Figure A2.1 Random-weights' generated 90% confidence intervals around the low-level indicators



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