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Article — Published Version

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JCMS: Journal of Common Market Studies

Provided in Cooperation with:

John Wiley & Sons

Suggested Citation: Pollex, Jan (2021) : Simultaneous Policy Expansion and Reduction? Tracing Dismantling in the Context of Experimentalist Governance in European Union Environmental Policy, JCMS: Journal of Common Market Studies, ISSN 1468-5965, Wiley Periodicals, Inc., Hoboken, USA, Vol. 60, Iss. 3, pp. 604-633,
<https://doi.org/10.1111/jcms.13277>

This Version is available at:

<https://hdl.handle.net/10419/264531>

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Simultaneous Policy Expansion and Reduction? Tracing Dismantling in the Context of Experimentalist Governance in European Union Environmental Policy

JAN POLLEX 

University of Osnabrueck, Osnabrueck

Abstract

Research on EU policy has detected two developments that seem contradictory at first sight. On the one hand, there is evidence of continued rule growth and policy expansion. On the other hand, research points to dismantling, primarily via the backdoor and in comitology. This article investigates how experimentalist governance settings can provide opportunities for policy reduction within an overall expanding policy. Therefore, it focuses on the EU's Ecodesign policy which is characterized by a mix of binding and voluntary measures that qualify as experimentation. Although the voluntary measures contribute to rule growth, they are characterized by lenient standards compared to binding regulation under Ecodesign. In particular, they allow the Commission to follow a strategy of non-adjustment. The article points to simultaneous expansion and dismantling processes not yet fully covered in previous research. Experimentalist governance poses a crucial element in enabling such developments leading to shallow expansion and allowing for dismantling.

Keywords: Ecodesign; environmental policy; EU Commission; experimentalist governance; policy dismantling; policy expansion

Introduction¹

The European Union has taken the role of an environmental policy leader since the 1970s and maintained its role, for example by integrating a commitment to sustainable development in the Amsterdam Treaty in 1999 (Lenschow, 2002; Zito, 2005). However, research – focussing on the aftermath of the economic crisis – has uncovered attempts to roll back environmental policy. Following a 'Better Regulation' and 'REFIT' (Regulatory fitness and performance program) agenda, the European Commission 'has maintained a rhetorical commitment to environmental policy leadership, while seeking to minimise environmental regulations' (Burns and Tobin, 2020, p. 527). Dismantling research investigating the 'cutting [...] or removal of existing policy' (Bauer *et al.*, 2012, p. 203) has contributed to a better understanding of how roll-backs are put in place. Overall, previous research uncovered evidence of dismantling in EU environmental and climate policy via 'the back door' (Burns and Tobin, 2020, p. 527). While a large-scale, active, and visible removal of legislation has not taken place (Gravey and Jordan, 2020), reduced regulatory activity is manifesting in policy stagnation (Steinebach and Knill, 2017, p. 443) and a reduction of standards' strictness, for example in comitology procedures (Pollex and Lenschow, 2020).

¹I want to thank the reviewers for their constructive and helpful comments. I am grateful to Andrea Lenschow, Annette Elisabeth Töller, and my colleagues at Osnabrueck University for their feedback on earlier versions of this article.

At the same time, research also shows long-term trends of rule growth. For instance, Adam *et al.* (2019) point to a process of policy accumulation and highlight a continuous process: The number of instruments, goals pursued, and the overall sum of policies increases over time, also in environmental policy. Thus, accumulation must ‘be considered an almost universal phenomenon’ (Knill *et al.*, 2020, p. 251).

Against this backdrop – evidence of policy growth and (hidden) dismantling attempts – this article aims to investigate whether expansion and reduction (that is, in policy intensity) can be identified at the same time. This simultaneous process might occur in policies allowing for different governance modes. Therefore, the analysis focuses on experimentalist governance (Sabel and Zeitlin, 2010). This approach emerged as a response to ubiquitous uncertainty ‘about the nature of current and emerging problems’ so that policymakers ‘cannot define *ex ante* their precise goals or how to best achieve them’ (Zeitlin, 2016, p. 1074). At its core, experimentalist governance (EG) is characterized by setting framework goals instead of prescribing concrete objectives while leaving freedom to stakeholders to achieve goals as they see fit (Sabel and Zeitlin, 2010).

This contribution seeks to investigate experimentalist governance approaches from a dismantling perspective and asks whether EG provides opportunities for policy cut-backs within the overarching process of policy expansion. Therefore, we focus on the EU’s Ecodesign Directive (EcoD). The EcoD aims at changing products towards more environmentally friendly and less energy-consuming designs. It has been adopted as a framework Directive allowing for both command-and-control regulations and voluntary agreements (VAs), but it prefers voluntary approaches over binding legislation (Directive 2009/125/EC). By combining different regulatory approaches, it is exemplary for a mixture of binding regulation and VAs, which qualify as experimentation. Overall, the number of regulated product groups has increased since the Directive’s introduction.² Nevertheless, this contribution shows that in some cases – and despite policy expansion – there is evidence of dismantling where EG, in this case VAs, are used.

The article relates to previous research, for example on biofuels policy in the EU, where VAs play a crucial role. Overall, scholars arrive at a critical assessment of private self-regulation and VAs in the EU (German and Schoneveld, 2012; Stattman *et al.*, 2018). However, a more systematic assessment of the policy change associated with VAs is still missing. This is mainly relevant as the EU spotlights VAs in recent agendas such as the Circular Economy Action Plan (see SWD 2019/90). Thus, analysing the EU’s Ecodesign policy is a fruitful endeavour since it allows comparing binding and voluntary measures, which are crucial for identifying dismantling. This analysis explicitly addresses the EU and its complex governance structure as a dismantling context (Gravey and Jordan, 2016).

We compare policy strictness in binding regulations and VAs using the Index of Policy Activity (Schaffrin *et al.*, 2015). The analysis shows that EG creates opportunities for dismantling by providing the EU Commission with discretion not to adapt standards and reject calls for stricter provisions in VAs. Furthermore, we argue that the EU Commission has pursued a strategy of non-adjustment hampering policy advances where voluntary self-regulation is used. In contrast, binding regulations under the same Directive follow

²The EcoD stipulates the Commission to issue working plans in which product groups relevant for efficiency gains are named contributing to the growth of rules on this basis. Working plans are issued regularly every three years (EcoD Art. 16).

much stricter objectives. Thus, the article identifies a pattern in which policy expands while, in some instances, dismantling takes place.

I. Experimentalist Governance and Policy Dismantling

The perspective of EG was prominently put forward by Sabél and Zeitlin (2010, 2012) to analyse governance arrangements not fully captured by existing approaches such as network (Kohler-Koch and Eising, 1999) and informal governance (Christiansen and Piattoni, 2003), or in research on new modes of governance (Héritier, 2003). EG provides ‘a new perspective unveiling a mode of coordination or decision-making style that has largely been neglected’ by other analytical approaches (Börzel, 2012, p. 382). It is ‘based on framework rulemaking and revision through recursive review’ of progress in different contexts (Sabél and Zeitlin, 2012, p. 1). Four features characterize EG. First, framework goals – for example energy efficiency – are set jointly by actors. Second, actors are granted freedom to attain these goals ‘as they see fit’ (Sabél and Zeitlin, 2010, p. 3). Third, a distinctive feature of EG is progress reporting and revision of means to achieve agreed-upon goals. Thus, marking the fourth attribute, a constant revision and adaption to new developments is embedded in this approach (Sabél and Zeitlin, 2010, p. 3). Furthermore, EG points to the interaction and cooperation of actors from different spheres and thus helps to understand and analyse EU’s governance architecture that is ‘too multifaceted to be captured by one particular mode’ (Börzel, 2012, p. 380; Eckert and Börzel, 2012).

Importantly, EG in its conceptual understanding is explicitly open to a mix of different modes, for example settings where command-and-control and voluntary approaches are combined. Thus, it reflects the myriad forms of political steering evident in the EU’s multi-level and multi-actor system (Sabél and Zeitlin, 2010, p. 9; Börzel, 2012, p. 379).

Furthermore, this article draws on policy dismantling research. Against the backdrop of deregulation, economic turbulence, and evidence of policy roll-backs, scholars developed an analytical lens to differentiate directions of policy change, namely expansion versus dismantling (Bauer *et al.*, 2012). Bauer and Knill (2012) distinguish policy *density* and *intensity* to measure policy change. A reduction of the number of policies or instruments changes policy *density* and thus qualifies as dismantling. As discussed above, there is rarely evidence of a reduction in policy density. Therefore, this analysis focuses on changes in policy *intensity*, which relates to the strictness of standards (that is, substantial intensity) and the standard’s level of obligation (that is, formal intensity). Additionally, actors’ preferences and dismantling strategies need to be considered to explain why rule growth and policy reduction might be detected contemporaneously. Bauer and Knill (2014) differentiate four types of dismantling based on their visibility and whether actors actively decide on cutting-back policy (see Table 1). Building on this typology, the

Table 1: Types of Policy Dismantling

	<i>High visibility</i>	<i>Low visibility</i>
Dismantling decision	Active dismantling	Dismantling by arena shifting
No dismantling decision	Dismantling by symbolic action	Dismantling by default

Source: Bauer and Knill (2012)

inquiry seeks to ascertain the Commission's actions leading to a dismantling of the Ecodesign policy. While *active dismantling* captures the visible reduction of policy following a deliberate decision to do so, *symbolic action* points to policymakers' (declared) intention to cut-back measures without taking effective action to do so. Both strategies are visible and ensure that politicians are perceived as willing to dismantle. *Arena-shifting* captures the transfer of policies to different venues (for example via decentralization) or changes of organisational features leading to dismantling. Finally, *dismantling by default* is a subtle strategy by which a non-adjustment of, for example, standards, leads to a de-facto dismantling. The latter two types are less visible, allowing policymakers to pursue dismantling somewhat hidden away from public attention (Bauer and Knill, 2014, pp. 37–41). Furthermore, scholars identify *low policy ambition*, which captures the 'suspension of further regulatory improvement' (Steinebach and Knill, 2017, p. 438). It does not qualify as dismantling but highlights policymakers' attempts to slow down policy expansion or put it on hold entirely.

Identifying policy dismantling and efforts to slow down policy expansion seems crucial, particularly in the area of environmental or climate policy. While many policies might be ambitious on paper, their realization is vital to ensure environmental and climate protection.

II. Research Design and Methods

Building on dismantling research, this article compares policy *intensity* in all product-specific Regulations and the three VAs under the EcoD. The investigation uses the Index of Policy Activity (IPA) proposed by Schaffrin *et al.* (2015), which allows for a comparison of policy intensity across numerous policies. The authors describe six indicators: objectives, integration, budget, scope, implementation, and monitoring. Each indicator is graded on a scale ranging from 0 to 1, which allows for a binary as well as a fine-grained coding (Schaffrin *et al.*, 2015). This investigation uses five of the IPA indicators, leaving out *budget* since Ecodesign aims for product-specific standards without discussing budgetary issues. Here, the inquiry follows Schaffrin *et al.* (2015), who explicitly address the secondary relevance of budgets for framework policies like Ecodesign. Table 2 provides a detailed overview of the coding. For the indicator *objective*, we ask whether measures address specific goals – that is, targets for energy efficiency.³ The coding follows Flynn (2018) and his adaption of the IPA to capture *objectives*. To assess the second indicator, *scope*, we need to consider the overall concept of Ecodesign. The policy sets minimum standards for products and seeks to cover all products of a specific product group. Thus, applying *scope* to Ecodesign, this analysis asks whether certain target-groups or sectors are *excluded*.⁴ The indicator *integration* addresses the consistent nature of policy measures, for example the absence of contradictory provisions. Here, the EcoD functions as a yardstick. The Directive's primary focus on energy efficiency is flanked by consumer information on efficient product usage, disposal, or repairability provisions. The indicator *implementation* addresses the efforts to put policies into practice. Thus, analysing this indicator needs to consider implementation statements, for

³For instance, measures might prescribe a reduction of a product's energy consumption by 20 per cent.

⁴Hence, this analysis deviates from previous adaptations of the IPA. However, an area-sensitive application is necessary and asked for by Schaffrin *et al.* (2015).

Table 2: Application of the IPA

<i>Intensity Measure</i>	<i>Coding values</i>	<i>Specific aggregation to final value</i>
Objective	0 = no specific target given 0.5 = unspecific target given, e.g. vague goal of improving energy efficiency 1 = specific target for energy efficiency given	Coding values for each Ecodesign measure represent final value; range: 0–0.5–1
Scope	0 = potentially all products offered can be non-compliant 0.5 = rule allows for some non-compliant products to be offered 1 = all products offered must comply with rules	Coding values for each Ecodesign measure represent final value; range: 0–0.5–1
Integration	0.25 for references to each aspect, i.e. (1) energy efficiency, (2) consumer information, (3) repairability, (4) recycling/disposal,	Additive aggregation; range: 0–0.25–0.5–0.75–1
Implementation	0.25 for statements referring to (1) specific efficiency requirements, (2) product groups or types, (3) functions or modes, (4) calculations or methods for measuring efficiency	Additive aggregation; range: 0–0.25–0.5–0.75–1
Monitoring	0.25 for statements referring to (1) measurements and calculations of efficiency, (2) testing procedures, (3) specific description of surveillance, (4) definition of compliance	Additive aggregation; range: 0–0.25–0.5–0.75–1

example on how to measure efficiency (in standard operation and other modes such as standby or idle modes) or on methods and calculations of overall product performance.⁵ Similarly, *monitoring* statements address how surveillance is guaranteed. Therefore, we investigate whether specifics are provided on, for example testing procedures, definitions of compliance or non-compliance. Overall, the score for Ecodesign measures equals the mean of all five measurements and is displayed as an annual score for the Ecodesign portfolio (Schaffrin *et al.*, 2015, p. 270). In sum, 61 documents were used to apply the IPA, including the 23 product Regulations, the EcoD, the three VAs, and additional documents (for example impact assessments, amendments to Regulations⁶).

After analysing the policy intensity of Ecodesign measures, the article proceeds by investigating the Commission's handling of VAs and identifying dismantling. Here, the inquiry relies on seven interviews with experts from the European Commission, experts involved with the VAs and their drafting procedure, and 33 documents from the drafting of the VAs and their administration (for example VA proposals, preparatory studies, protocols of Ecodesign Consultation Forums and the VAs' steering committees). The relatively low number of experts is due to their status. As there are only a few policy

⁵Ecodesign covers a range of different products. Therefore, some product-specific regulations are more detailed than others. In particular, this is the case for regulations addressing large products groups such as household cooking appliances. Therefore, the analysis focuses on the general categories (efficiency, measuring, product modes, and information) for which implementation statements are provided.

⁶For instance, for some product groups, efficiency and information requirements were added or revised. Furthermore, the impact assessments for each product and the EcoD need to be considered to track and describe each measure's scope and strictness.

experts in the EU Commission familiar with the VAs and the process behind their adoption, the low number is justified by the knowledge the experts possess and were willing to share.

III. The EU's Ecodesign Policy – An Example of Experimentalist Governance

The Ecodesign Directive (2009/125/EC) aims at reducing the environmental impact of products by requiring changes in product design. For instance, product-specific regulations cover precise efficiency goals, such as reducing energy consumption by a certain percentage. Overall, the Directive follows the EU's precautionary principle in environmental policy. It aims at a steady growth of Ecodesign measures by prescribing a process in which new product groups are identified in working plans (WPs), and policy measures are drafted accordingly. Thus, it is by design an expanding policy.

Three VAs were adopted under this Directive (see Figure 1). In 2012, Commission and producers agreed to a VA covering complex set-top boxes (CSTB), for example TV receivers with a hard drive. In 2013, the VA on imaging equipment (IE), for example printers, was introduced, followed by the VA on game consoles (GC) in 2015.⁷

Overall, the Commission continuously added new product groups to the policy by implementing new regulations and agreeing to VAs. Thus, Ecodesign is an example of policy expansion rather than dismantling, considering the growing number – that is, density – of (binding and voluntary) rules.

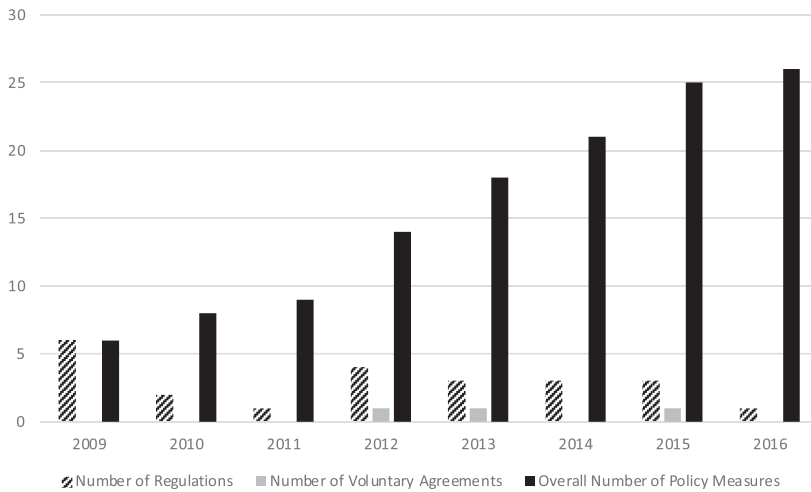
The policy process behind Ecodesign evolves in several steps (see Figure 2). First, preparatory studies investigate product groups with a high potential for energy efficiency and indicate 'priorities for the adoption of implementing measures' to the Commission (EcoD, Art. 16). These product groups then get integrated into WPs that subject them to either binding regulation or a VA. Notably, the EcoD discusses self-regulation options and even prefers them to binding regulation 'where such action is likely to deliver the policy objectives faster [...] than mandatory requirements' (EcoD, cons. 18). The Directive expects the industry to propose such voluntary measures and describes the assessment process of VAs (to be done in cooperation with the Commission) to guarantee that the proposals can deliver EcoD's objectives. Following the WPs and product group-specific impact assessments (IA) to determine, for example the exact objectives,⁸ the Commission drafts implementing measures, which are adopted to detail product group-specific and technical provisions. Since preparatory studies also rely on the industry to provide information, it is usually in this phase that producers propose VAs (Interview 1). Following such a proposal, the Commission conducts an IA of the agreement comparing its measures with a binding regulation and decides on its acceptance.

The EcoD expects a continued involvement of private and public actors as well as civil society to be guaranteed by the VAs and prescribes a scheme of 'a well-design monitoring

⁷Interestingly, other consumer electronics (for example personal computers, televisions) are regulated by binding measures. Whether the industry proposes a VA depends on various factors, for example industry's interest or its ability to convince a crucial number of producers to propose a VA (Interview 1, 2, 6). Binding measures regulate simple set-top-boxes, whereas producers proposed a VA on complex set-top-boxes, which points to the relevance of the industry's interest in VAs. However, this article cannot discuss the industry's actions in detail.

⁸Since EcoD focuses on energy-related products, the devices regulated are very diverse. Therefore, efficiency goals differ depending on product groups or technical feasibility (Interview 1 and 2). Nevertheless, the general process behind Ecodesign measures remains the same.

Figure 1: Policy Density in Ecodesign *Note:* The overall number of policy measures indicates the cumulated number of Ecodesign measures in force in a given year.



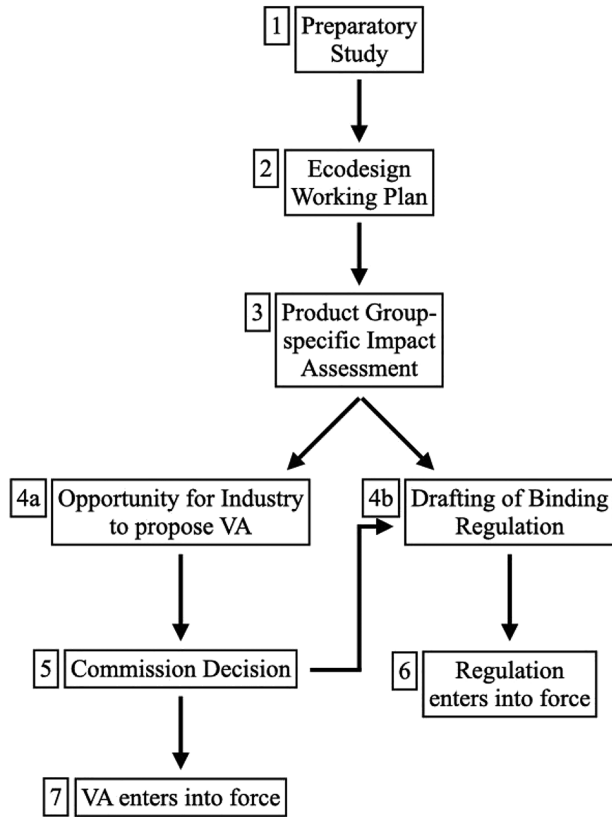
system’ in which the Commission ‘in partnership with the parties’ of each VA engages in an evaluation of the achievements (EcoD, Annex VIII). Overall, the Commission decides whether it accepts a VA proposal based on its IA (step 5, Figure 1). As the Directive states, VAs are supposed to deliver the same results as a binding regulation, which defines a clear threshold for VAs and poses as a guideline for the Commission’s decision. Thus, the Commission can reject VAs and draft binding regulations for the respective product group (step 5 and 4b in Figure 2).⁹ Furthermore, VAs and regulations are subject to comitology procedures, in which the Commission is authorized to adopt acts together with the member states detailing the implementation of policies¹⁰ (Art. 19 EcoD, see also: Annex VIII EcoD).

All VAs under the EcoD match the definition of EG since they are based on framework goals without specifying concrete targets, are characterized by monitoring and revision, and direct competencies to a steering committee, which is the governing body of each VA. It is set up as a legal entity and functions as the VA’s representation. The Commission is a member of the steering committee in each agreement. This committee is integrated into managing the VA and can ‘adjust the stringency of requirements to the situation on the market’ (COM/2013/23, p. 4). In addition, each VA assigns an independent investigator to monitor the agreement and its performance. The investigator’s reports are public and provide opportunities for the Commission to ask for changes or even terminate VAs. In all three cases, constant revision and communication with stakeholders take

⁹As the EcoD states, the Commission is supposed to follow the WPs with implementing measures (EcoD, Art. 16). Therefore, once WPs name product groups, policy measures are to be taken by the Commission. In principle, the Commission could indicate low policy ambition by delaying the drafting procedures. This article lacks reliable information to account for this possibility in the analysis, however.

¹⁰For the role of the Commission in Comitology procedures, see Brandsma and Blom-Hansen (2010).

Figure 2: Policy Process behind Ecodesign Implementing Measures



place, and the VAs' steering committees release yearly compliance reports, minutes of meetings with stakeholders, for example from industry and the Commission.

IV. Comparing Policy Strictness in Voluntary Agreements and Binding Regulations

As outlined above, to inquire policy strictness in Ecodesign measures, the analysis relies on the IPA.¹¹ Looking at the VAs' *objectives*, the agreement on CSTB merely formulates the (unspecific) goal to increase energy efficiency instead of setting targets for energy consumption.¹² Furthermore, the VA provides opportunities to exclude usage modes from the efficiency measuring to 'avoid stifling [...] innovation' (VA_CSTB, 2018, p. 11). The VA on IE aligns standards to the Energy Star label, which is characterized by less ambitious provisions than Ecodesign and only cover the use-phase of products. This is crucial since most devices (for example printers) rest primarily in the standby mode. Thus, the

¹¹Table A1 and A2 in the Appendix provide a detailed overview of the coding.

¹²For instance, Regulation 2009/107 covering simple set-top boxes sets limits for energy consumption at 5 watts.

standard does not address the major operational mode (Interview 2).¹³ Finally, although the VA on GC with its provision on energy consumption limits is similar to the standards in mandatory Ecodesign regulations (VA_GC, 2018, p. 11), these standards only address the navigation (that is, home screen or settings menus) and media playback (that is, playing music or movies) modes. The VA does not cover the actual gaming mode, which is the primary application scenario for these products.

Considering the VAs' *scope*, all agreements allow producers to place products on the market that do not comply with the standards. For instance, the VA on IE asks manufacturers to ensure that 90 per cent of their products comply with standards. Consequently, some models can be excepted. For example, the VA allows products with low market shares (for example high-performance or professional equipment) to be precluded from standards. These provisions fundamentally change the idea of Ecodesign, where binding measures set barriers and exclude products not complying with them from the market. Considering the aspect of *integration*, all VAs address all four aspects contributing to Ecodesign objectives. Therefore, all three were coded with 1. In terms of *implementation* and *monitoring*, all VAs are characterized by poorly determined specifications. For instance, the VAs on CSTB and GC only provide some details on testing procedures (for example the number of devices to be tested), while the agreement on IE does not even that and only refers to the independent inspector. In comparison, regulations cover a range of specifications. Regulation (66/2014) on cooking appliances details product testing and monitoring on five pages. Overall, due to the lack, or leniency, of binding standards, the low number of implementation and monitoring statements, and the reduced scope of agreements, the VA on CSTB scores 0.5; the VA on IE scores 0.55; and the VA on GC scores 0.6 on the index.

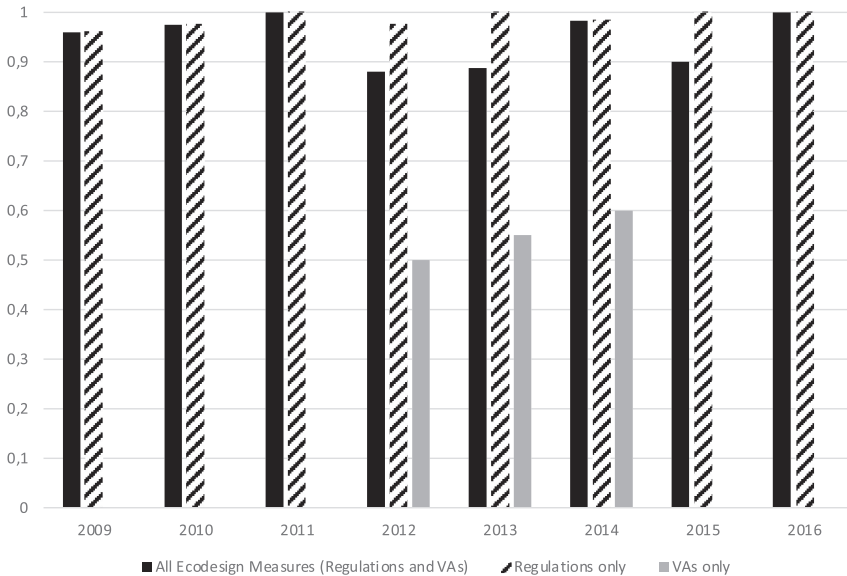
In contrast, the Ecodesign regulations¹⁴ score between 0.95 and 1. Lower scores are due to a lack of *integration*, while all regulations provide detailed accounts regarding *implementation*, *monitoring* and *objectives* (see Appendix). In years where the Commission added VAs to the portfolio, IPA scores decrease, for example to 0.88 in 2012 with the addition of the VA on CSTB or 2015 to 0.9 with the addition of the VA on GC (see Figure 3). This is a slight decrease but shows the effect of the VAs.

The in-depth study clearly shows that the standards set in the VAs are less strict than those in binding regulations. In particular, the main focus of Ecodesign – energy efficiency – is dealt with less rigorously. Furthermore, the VAs crucially change the underlying idea of Ecodesign. While the Directive seeks to set minimum requirements for products to enter the market, the voluntary measures leave room to place devices on the market that do not comply with the objectives set in the VAs. Furthermore, regulations are very exact and detailed in describing implementation and monitoring, while the VAs are rather vague on these issues. Analytically, this pattern indicates low policy ambition rather than dismantling. However, two developments become apparent. On the one hand, the Commission kept agreeing to new measures and even contributed to a policy expansion. On the other hand, the Commission approved VAs and accepted their deficient

¹³The label's standards are set based on the performance of products on the market. When a certain percentage of products fulfils the standards (usually 90 per cent), requirements are revised to create a pull factor for improving efficiency (Interview 2).

¹⁴Regulation 1275/2008 is not a product specific one and was excluded as it addresses energy consumption in standby mode in the whole range of products.

Figure 3: Annual Average IPA Score of Ecodesign Measures *Note:* The figure shows the IPA score of all Ecodesign Measures, Regulations and VAs introduced in that year.



approach to Ecodesign, which signals low policy ambition. Based on the IPA, this analysis could show that in agreeing to VAs, the Commission permitted a watering down of the EU's Ecodesign policy's overall policy intensity. Although the EcoD states that self-regulation is to be preferred where it can deliver policy objectives, the reality of voluntary self-regulation amounted to a reduction of policy strictness.¹⁵

To underline this assessment, the industry's standpoint is illustrative: In all cases, the industry preferred the voluntary option as a way to avoid (stricter) binding rules and higher costs (Interview 1, 2, 7). To the extent that VAs stayed committed to improving products' environmental performance, the industry even shied away from joining. For instance, in the case of CSTB, some companies willing to join the VA withdrew their support when they realized that other Ecodesign provisions would still apply to CSTB even with the VA in place¹⁶ (Interview 1). Since producers are involved in the early stage of the preparatory studies (mainly to provide expertise), they are aware of possible mandatory measures and able to weigh comparative costs. Again, producers' early access and involvement in policymaking highlight the EU's Ecodesign policy's experimentalist nature.

V. Taking a Closer Look at the Commission's Handling of Voluntary Agreements

By comparing VAs and binding regulations under the EcoD, the previous section revealed the low ambition manifested in the VAs. This section provides evidence that the

¹⁵ As WPs dealt with all three product groups, these were subject to preparatory studies, and binding measures would have been drafted according to the process described in the EcoD.

¹⁶ This refers to the standby Regulation addressing stand-by-mode energy consumption, which covers all products disregarding product group-specific provisions.

Commission agreed to lenient objectives in the VAs although stricter avenues had been discussed, both at the stage of initially accepting the VAs and in subsequent revisions.

The first VA to be introduced under the Ecodesign Directive was the one covering complex set-top boxes. Following the industry's proposal of a VA, the Commission's impact assessment (IA) identified advantages of binding measures since they cover all products offered on the market and guarantee a higher level of energy efficiency overall.¹⁷ The IA also compared binding and voluntary options regarding energy savings and clearly showed that a regulation would ensure higher savings in a short- and medium-term scenario. Only in the long-term forecast, the VA offered slightly higher saving potentials (SWD 2012/392, p. 16). Additionally, the IA points to one additional benefit: 'the burden linked to the verification/monitoring is shifted [from the member states] to the industry' (SWD 2012/392, p. 5). The same holds true for the VA on imaging equipment. In this case, the impact assessment concluded that a VA posed a valid option, although binding regulation would ensure stricter standards (SWD 2013/15 final, p. 34). Interestingly, two experts explained that the Commission was eager to get the industry to propose a VA (Interview 3, 6). Another expert, who sceptically assessed the VA's standards, also pointed to the Commission's ambition to foster voluntary options as a viable alternative (Interview 2). Similarly, an IA evaluated the case of games consoles. As in the previous two cases, the IA pointed to the advantages of binding measures regarding market coverage and potential efficiency gains. It only saw the VA's benefits in a short-term prediction of efficiency gains (SWD 2015/88, p. 8).

In all three cases, the Commission agreed to VAs proposed by industry. While all three IAs offered some justification for such an agreement, they emphasised the advantages of binding legislation in medium- or long-term scenarios and in terms of market coverage. To explain the Commission's behaviour, the relevance assigned to VAs in the EcoD is crucial. Although the Directive even ascribes priority to self-regulation, the industry proposed only three VAs, hinting that this option had not gained as much attraction as the Commission had hoped for (Interview 1, 2).¹⁸ Indeed, only one agreement (covering CSTB proposed in 2012) was proposed within three years after the Directive entered into force. In the same period, given the lack of alternatives, the Commission implemented 13 binding regulations following the Ecodesign WPs (see Figure 2). Observers agree that the Commission tried to foster the use of VAs as a true option within the policy and agreed willingly to all proposed agreements (Interview 1, 2, 6). The EcoD allows for this as it emphasises voluntary measures as an alternative to regulations. Here, the Commission's low ambition (see for example Steinebach and Knill, 2017) shows in its approval of lenient VAs.

Second, the VAs are subject to revision. As the Commission takes a key role in the surveillance of the VAs (EcoD Annex VIII), it could prescribe standards matching those of binding regulations. However, 'in reality, this never happened. Basically, because there are some manufactures with dominant positions that [...] keep the ambitions very low' (Interview 2). Another expert points to genuine political considerations in the revision and standard definition of VAs: 'the more we go forward, the more political it gets, both

¹⁷In general, research has arrived at somewhat mixed evaluations of IAs and their role in policymaking (Dunlop *et al.*, 2012).

¹⁸There are several reasons for this. For instance, coordinating and setting-up a VA is costly (Interview 1, 2, 3). However, this article cannot investigate the industry's reasons not to propose VAs.

within the Commission and subsequently in the regulatory committee' (Interview 1). For instance, when the first VA covering CSTB was discussed, the Commission was very eager to propel VAs in general and was welcoming the proposal on CSTB (Interview 6). However, during the VA's drafting and revision process, the Commission remained supportive of the agreement even though criticism was raised by NGOs and within the Commission about lenient standards, vague monitoring provisions, and low thresholds for market coverage (Interview 1, 2 and 6).

When discussing the VA on imaging equipment in the Ecodesign Consultation Forum (ECF), several actors questioned the reliability of compliance reports since they were 'based exclusively on self-reports by manufacturers' (OEKO Institute, ECF, 2014, p. 4). Furthermore, several actors raised concerns in the ECF regarding the absence of audits and product testing. Interestingly, instead of requesting changes from the VA, the Commission only asked the industry 'to reflect on how these [issues] could be addressed' (ECF, 2014, p.8). After only minor changes in reporting were made in the subsequent VA version (for example providing more detailed information on product performance), the Commission refrained from requesting more substantial changes and left industry considerable discretion on answering critique uttered in the ECF (Interview 2).

Similarly, the agreement on games consoles had raised concerns in the ECF. Member states, such as the Netherlands, Denmark or Belgium 'recommended not to endorse the VA because of the disappointingly low ambition level' (ECF, 2014, p. 10). Once more, the Commission pointed to the fact that the EcoD 'indicates that priority should be given to VAs' and held off on demanding stricter standards. In another ECF meeting, member state representatives (for example from Sweden and Austria) took issue with the continued low standards and uttered their doubts regarding the VA (ECF, 2018, p.3).¹⁹ However, the Commission continued its support for the VA and, again, refrained from requesting changes to the VA's content and objectives. In a meeting with the VA's steering committee, the Commission stated: 'the proposals from signatories were acceptable [...] and that the Games Consoles VA is a good case study' for VAs under the EcoD (GC_VA, 2019, p. 5).

In short, in all three cases, the Commission not only agreed to the VAs, although stricter options (that is, binding regulations) were discussed, it refrained from demanding stricter standards, both at the introduction of the agreement and at the reviewing stages. Despite widely noted shortcomings and flaws of the VAs, the Commission chose to pass over the opportunities for revision offered in the policy's experimental design.

VI. Identifying *Dismantling by Default* in the Commission's Actions

While the Commission's handling of the VAs indicates low policy ambition, we want to go one step further and argue that it also qualifies as dismantling. First and foremost, the alternative to VAs in the EU's Ecodesign policy is to introduce binding legislation and not to have no rules at all. Since the product groups were dealt with in Ecodesign WPs, the Commission would have been obliged to drafting binding

¹⁹It is worth noting that the critical member states can all be characterized as environmental frontrunners in the EU. However, this inquiry cannot expand on this issue.

measures (see above). Hence, the Commission in each case agreed to the more lenient voluntary measure instead of opting for a regulation. Thus, while new VAs contribute to rule growth at first, we reason that the Commission's subsequent handling of the VAs amounts to *dismantling by default*. We build this argument on a 'certain degree of counterfactual reasoning' (Burns *et al.*, 2018, p. 211), running the Commission's action past alternative readings.

The Commission did not actively or visibly cut-back existing measures in the Ecodesign policy, hence showing no indication of *active dismantling*. Second, although the VAs are less strict than binding alternatives, they cannot be declared merely *symbolic*. At least, signatories pledged to increase products' energy efficiency and addressed issues such as repairability or consumer information on efficient product use. Furthermore, standard-setting and revisions processes are not visible to the public, which is an essential feature of symbolic action. As the dismantling attempts are characterized by their low visibility, they could qualify as *arena shifting*. However, as the VAs are drafted under the EcoD and incorporate Ecodesign objectives, they are part of this Directive. Therefore, we rule out arena shifting.

In contrast, the Commission's passive role in drafting VAs and subsequent revisions and, therefore, failure to adjust rules to demands correspond to *dismantling by default*. While members of the ECF expressed requests for stricter standards and better monitoring or, altogether, doubted the decision to pursue a VA, the Commission, in all cases, refrained from insisting on stricter standards and instead continually supported all VAs and backed their objectives. Additionally, this type of dismantling is characterized by its low visibility. As shown in this inquiry, the voluntary measures provide opportunities for dismantling in subsequent revision process where the Commission refrained from adjusting standards. In particular, the Commission's actions contribute to a weakening rather than strengthening of Ecodesign when we analyse VAs against binding regulations. This underlines the characterization as *dismantling by default* which is marked by low visibility. Nevertheless, we want to add that measuring visibility, especially in the EU's policymaking process, including comitology procedures, is somewhat tricky. Bauer and Knill (2012) discuss this aspect mainly regarding public attention and actors' interests in either being credited for dismantling, thus providing incentives for visible attempts, or avoiding blame, thus leading to hidden efforts. While agreeing to VAs is visible, the Commission has never advertised this as dismantling but as a different way of achieving Ecodesign objectives.

Two reasons for dismantling by default become evident: First, the evidence gathered points to the Commission's willingness to accept less strict standards to follow the overall goal of pushing self-regulation as an option within its Ecodesign policy. Furthermore, previous research has already uncovered the Commission's low ambitions in environmental policy (Steinebach and Knill, 2017). This low ambition is also evident in the case of VAs and explains not only why the Commission agreed to them but also why it pursued a strategy of non-adjustment. Overall, the cases discussed here mirror what Burns and Tobin (2020) describe as a rhetorical commitment to environmental protection while the Commission is prone to accept lenient standards.

Second, the overall context of Ecodesign functions as an institutional constraint and prevents far-reaching dismantling attempts (Bauer and Knill, 2014). The Commission has to draft measures for all product groups identified as relevant for increasing energy

efficiency in the Ecodesign working plans. Thus, while the overall number of measures under the EcoD increases, VAs pose the only feasible option to lower burdens put on the industry's shoulders.

Discussion and Conclusion

This analysis was inspired by existing research highlighting two developments: On the one hand, scholars identify continued rule growth (Adam *et al.*, 2019). At the same time, they also trace policy dismantling, mainly in a hidden fashion (Burns and Tobin, 2020). However, research so far has rarely examined whether expansion and dismantling can be simultaneous processes. This article sought to uncover opportunity structures enabling these two coinciding developments. To provide an answer, we focused on experimentalist governance settings in the EU's EcoD. This governance mode captures flexible approaches, characterized by public and private cooperation, regular revision processes, and freedom for private actors to attain jointly drafted framework objectives. Furthermore, EG is open to a combination of different modes of governance (Sabel and Zeitlin, 2010, p. 16). The EcoD, with its combination of voluntary modes of governance and binding measures, poses an exemplary case of EG. Moreover, the number of product groups subject to Ecodesign provisions has continuously increased. Thus, the policy follows an expansive logic (see Figure 2). However, the analysis of binding regulations and VAs under the Directive shows that EG provides opportunities to reduce standard strictness and overall policy intensity. The close examination of the three VAs introduced under the EcoD highlights the Commission's low policy ambition and its refraining from policy adjustment, which qualifies as dismantling by default.

Overall, this article provides three takeaways. First, it shows that policy expansion and dismantling can be simultaneous processes. As Gravey and Jordan (2016) have shown with regard to the overall environmental acquis, rule growth can be accompanied by dismantling. However, this article detects this simultaneous process in policy measures under one framework Directive where expansion is paralleled by dismantling when opportunities arise to reduce policy intensity. Although this article focused only on one particular EU framework Directive and the subsequent implementing measures, it, nevertheless, crucially spotlights opportunity structures for policy dismantling provided by the EG mode. On the one hand, this mode contributes to rule growth; on the other hand, it enables dismantling attempts. Thus, cut-backs might occur in an overall context of policy expansion when new rules are not only added via binding legislation but when policy-makers pursue more flexible approaches, like EG. Furthermore, this inquiry shows that policy reduction is likely to present itself as dismantling by default in these contexts of policy expansion. Thus, this article's contribution lies in analysing both processes not as separate developments but as – sometimes – interconnected. As the case of the EU's Ecodesign policy illustrates, an overall expansion of policy measures can be accompanied by low-visibility dismantling. Based on this analysis, future research should not only focus on detecting *either* policy dismantling *or* expansion but concentrate on opportunity structures enabling both developments at the same time.

Second, the analysis shows that the Commission could resist requests for more stringent objectives and refrain from demanding stricter standards in VAs. This points

to the Commission's crucial role, especially when it is free to realize different policy approaches. In this context, the Commission is key to investigating dismantling. Previous research already shows how it influences policy strictness (Burns and Tobin, 2020) and, in the past decade, dialled back its activities leading to policy stasis in environmental policy (Steinebach and Knill, 2017). However, this article sheds some light on when and how the Commission's low policy ambition might lead to dismantling. When governance modes provide the Commission with room to manoeuvre, its low ambition might take effect: With its consent to VAs and their lenient standards, as well as its refusal to demand stricter objectives, the Commission pursued policy dismantling without changing the overall course of Ecodesign. Neither did it stop the policy expansion – that is, adding new product groups to the policy – nor did it cut back existing rules. However, it did reduce burdens put on the industry's shoulders when VAs were proposed and in the VAs' management – that is, in revision processes. Thus, this article confirms insights from previous research showing that the Commissions may use its position to hollow out expansion in the post-legislative stage, especially in comitology procedures (see Burns and Tobin, 2020). Besides, this analysis included the Commission's impact assessments on binding and voluntary measures. This article cannot provide a comprehensive account of their use and relevance. Though, there is some preliminary evidence that the Commission construes assessments depending on its preferences, for example its liking of VAs, since the IAs leave room for different decisions. Future research might advance on this topic, consulting previous (sceptical) evaluations of IAs (Dunlop *et al.*, 2012).

Third, by taking an in-depth look at EG settings, this paper shows the relevance of EU governance arrangements for policy change and (less visible forms of) dismantling not fully captured in existing research. Gravey and Jordan (2016) already pointed to the supranational level for analysing dismantling. Answering their challenge to investigate avenues and reasons for dismantling at the supranational level, this article highlights the relevance of governance approaches as opportunity structures for cutting-back policy. While the use of VAs, at first sight, contributes to rule growth, it also offers openings for policy reduction. In particular, this is relevant as flexible governance arrangements like EG are prominent in many EU policy areas (Sabel and Zeitlin, 2012). However, the Commission's low ambition needs to be considered. While, in theory, EG might lead to goal attainment, in practice, this hinges on actors' willingness to revise and adapt objectives. In the three cases discussed, the Commission was simply not willing to move the goal post for industry and thus contribute to a successful implementation of EG. Existing research on EG often highlights the mode's opportunities and successful applications (Zeitlin and Overdevest, 2020). However, this article also signposts risks associated with EG when central actors, in this case, the EU Commission, do not fully commit to the experimentalist mechanisms and keep requirements low instead of revising demands to achieve agreed-upon objectives. Against the backdrop of a continued emphasis on voluntary approaches, for example in the EU's Circular Economy Agenda, dismantling research should keep an eye on hybrid forms of governance. For instance, a combination of binding regulations and voluntary self-regulation might pose future opportunities for policy cut-backs. This also holds true considering the continued importance of new policy instruments, especially in supranational environmental policy (Jordan *et al.*, 2013).

To conclude: This contribution highlights dismantling by default in instances where the Commission is granted freedom to refrain from adjusting policy intensity in EG settings. The three cases investigated are part of the EcoD, which is characterized by its experimentalist nature and allows for a combination of binding regulation and VAs. Due to the limited number of cases discussed, the conclusion needs to be tentative. However, flexible governance arrangements are characteristic of EU policy, especially in areas such as environmental or sustainability policy. The EU's Ecodesign policy is a textbook example of EG and, therefore, indicates the relevance of these approaches for investigating policy dismantling. Recent research (Gravey and Jordan, 2020) points to attempts to build dismantling coalitions, the effects of environmental movements and their anti-dismantling campaigning, as well as blame-avoidance strategies by the Commission and member state governments. Considering this mixture of aspects, low-visibility dismantling might seem particularly attractive to EU policy-makers to avoid public backlash. Hence, dismantling attempts may be concealed by overall rule growth. On the surface, such rule growth could turn out to be merely shallow due to its link to hidden forms of dismantling. Whether shallow expansion in combination with hidden dismantling adds up to mere policy stasis should be addressed in future research. Nevertheless, it casts doubts on the advancement of EU environmental policy (Zito *et al.*, 2019).

Correspondence:

Jan Pollex, University of Osnabrueck, Osnabrueck.
email: jan.pollex@uni-osnabrueck.de

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Interview 2. 06.06.2019, policy expert, interviewer: author

Interview 3. representative of a voluntary agreement, written answers to a questionnaire

Interview 4. representative of a voluntary agreement, written answers to a questionnaire

Interview 5. 30.10.2019, representative of a voluntary agreement, interviewer: author

Interview 6. 06.06.2019, policy expert, interviewer: author

Interview 7. 23.02.2021, policy expert, interviewer: author

Appendix

Table A1: Overview of the Coding Following the IPA for Each Product-Specific Regulation

<i>Product Group</i>		<i>IPA</i>			
	<i>Objective</i>	<i>Scope</i>	<i>Integration</i>	<i>Implementation</i>	<i>Monitoring</i>
Air conditioning and ventilation systems	Two-tier Requirements for minimum energy efficiency, maximum power consumption, and sound power levels Score: 1	Regulation addresses all products of the product-group, no exceptions defined Score: 1	Efficiency standards are complemented by consumer information requirements, e.g. several statements on efficient usage but none on recycling or disposal Score: 0.75	Statements on, e.g. required energy efficiency in operational, stand-by, and off-modes; statements detailing information requirement, e.g. for different heating/cooling functions Score: 1	Statements on standard measurements, e.g. on measurement standards, corrections for seasonal effects; statements on testing procedures, e.g. number of products that should be tested, testing periods Score: 1
					Score: 1
Air heating and cooling products	Two-tier requirements for energy efficiency and other emissions, e.g. nitrogen oxide Score: 1	Regulation addresses all products of the product-group, no exceptions defined Score: 1	Efficiency standards are complemented by consumer information requirements, recycling and disposal Score: 1	Statements on exact objectives for different products; statements on efficiency requirements for different modes or additional functions, e.g. a thermostat-off mode Score: 1	Statements on measurements, compliance definition, and testing procedures, e.g. testing quantities for different appliances Score: 1
					Score: 1
					Overall Score
					0,95
					1

Table A1: (Continued)

IPA					
Product Group	Objective	Scope	Integration	Implementation	Monitoring
Circulators	Two-tier requirements for energy efficiency Score: 1	Regulation addresses all products of the product-group, no exceptions defined Score: 1	Efficiency standards are complemented by consumer information requirements, recycling and disposal Score: 1	Statements on required energy efficiency in different modes and benchmarks; statements on provision of information, e.g. on freely accessible website Score: 1	Statements on measurements, compliance definition, and testing procedures, e.g. testing in maximum settings of the respective product Score: 1
	Detailed requirements for energy efficiency (single-tier), e.g. on four different categories of computers Score: 1	Regulation addresses all products of the product-group, no exceptions defined Score: 1	Efficiency standards are complemented by consumer information requirements, recycling and disposal Score: 1	Statements on required energy efficiency in different modes (e.g. stand-by, off and sleep mode); statements on required efficiency for integrated graphic or memory units; statements on information and recycling requirements Score: 1	Statements on measurements, compliance definition, and testing procedures, e.g. testing in use mode and lowest power state Score: 1
Directional lamps and others	Six-tier requirements for energy efficiency Score: 1	Regulation addresses all products of the product-group, no exceptions defined Score: 1	Efficiency standards are complemented by consumer information requirements, recycling and disposal Score: 1	Statement on required energy efficiency for different modes and application scenarios, e.g. dimming mode, automatic light adaption Score: 1	Statements on measurements, compliance definition, and testing procedures, e.g. testing of a minimum of 20 lamps of the same model Score: 1

Table A1: (Continued)

IPA					
Product Group	Objective	Scope	Integration	Implementation	Monitoring
Domestic cooking appliances	Three-tier requirements for energy efficiency Score: 1	Regulation addresses all products of the product-group, no exceptions defined Score: 1	Efficiency standards are complemented by consumer information requirements, recycling and disposal Score: 1	Statements on required energy efficiency in different modes (stand-by and off mode) and for different products (electric or gas fired); requirements for power management functions and additional features, e.g. light functions Score: 1	Statements on measurements, compliance definition, and testing procedures, e.g. for gas or electric ovens, measurement of energy consumption in one standardised cycle and one additional cycle Score: 1
Electric motors	Three-tier requirements for energy efficiency Score: 1	Regulation addresses all products of the product-group, no exceptions defined Score: 1	Efficiency standards are complemented by consumer information requirements, recycling and disposal Score: 1	Statements on required energy efficiency in different modes, e.g. full, 75% and 50% rated load; detailed requirements for different motors (2-, 4-, and 6-pole appliances) Score: 1	Statements on measurements, compliance definition, and testing procedures, e.g. testing of one single unit, and three additional units of requirements were not achieved Score: 1
External Power Supplies	Two-tier requirements for energy efficiency Score: 1	Regulation addresses all products of the product-group, no exceptions defined Score: 1	Efficiency standards are complemented by consumer information requirements, e.g. several	Statements on different power supplies (direct and alternating current, low voltage supplies) and statements on efficiency requirements, e.g. on	Statements on measurements, compliance definition, and verification procedures, e.g. on two-step testing Score: 1

Table A1: (Continued)

IPA				
Product Group	Objective	Scope	Integration	Implementation
				Monitoring
				Overall Score
Heaters and water heaters	Three-tier requirements for energy efficiency	Regulation addresses all products of the product-group, no exceptions defined	statements on efficient usage but none on recycling or disposal Score: 0.75 Efficiency standards are complemented by consumer information requirements, recycling and disposal Score: 1	average efficiency and no-load efficiency Score: 1
	Score: 1	Score: 1	Score: 1	procedure with different testing units Score: 1
Household dishwashers	Three-tier requirements for energy efficiency	Regulation addresses all products of the product-group, no exceptions defined	Efficiency standards are complemented by consumer information requirements, e.g. on different modes and efficient usage but none on disposal or recycling Score: 0.75	Statements on measurement, compliance definition, and verification procedure, e.g. detailed timetable for testing duration Score: 1
	Score: 1	Score: 1	Score: 1	Statements on measurement, compliance definition, and verification procedure, e.g. detailed description on the calculation of cleaning efficiency and energy efficiency; statements on testing procedures, e.g. number of devices used for testing Score: 1
				0,95

Table A1: (Continued)

IPA					
Product Group	Objective	Scope	Integration	Implementation	Monitoring
Household tumble dryers	Two-tier requirements for energy efficiency Score: 1	Regulation addresses all products of the product-group, no exceptions defined Score: 1	Efficiency standards are complemented by consumer information requirements, e.g. on different modes and efficient usage but none on disposal or recycling Score: 0.75	Statements on product specifics, e.g. calculation of energy efficiency and weighted condensation efficiency; statements on different modes, e.g. full or partial load; statements on required sound emission levels Score: 1	Statements on measurement, compliance definition, and verification procedure, e.g. detailed description on six measurement parameters; statements on testing procedure, e.g. number of devices used for testing Score: 1
	Two-tier requirements for energy efficiency Score: 1	Regulation addresses all products of the product-group, no exceptions defined Score: 1	Efficiency standards are complemented by consumer information requirements, recycling and disposal Score: 1	Statements on different modes and reference programs, e.g. energy consumption in a 'standard 60°C and 40°C program; statements on provision of information to consumers, power consumption in off-mode and left-on mode Score: 1	Statements on measurement, compliance definition, and verification procedure, e.g. testing for different machine capacities, calculation of washing efficiency Score: 1
Household washing machines	Two-tier requirements for energy efficiency Score: 1	Regulation addresses all products of the product-group, no exceptions defined Score: 1	Efficiency standards are complemented by consumer information requirements, recycling and disposal Score: 1	Statements on different modes and reference programs, e.g. energy consumption in a 'standard 60°C and 40°C program; statements on provision of information to consumers, power consumption in off-mode and left-on mode Score: 1	Statements on measurement, compliance definition, and verification procedure, e.g. testing for different machine capacities, calculation of washing efficiency Score: 1
Industrial fans	Two-tier requirements for energy efficiency Score: 1	Regulation addresses all products of the product-group, no exceptions defined Score: 1	Efficiency standards are complemented by consumer information requirements, recycling and disposal Score: 1	Statements on different modes and reference programs, e.g. energy consumption in a 'standard 60°C and 40°C program; statements on provision of information to consumers, power consumption in off-mode and left-on mode Score: 1	Statements on measurement, compliance definition, and verification procedure, e.g. testing for different machine capacities, calculation of washing efficiency Score: 1

Table A1: (Continued)

IPA					
Product Group	Objective	Scope	Integration	Implementation	Monitoring
Local space heaters	Two-tier requirements for energy efficiency Score: 1	Regulation addresses all products of the product-group, no exceptions defined Score: 1	recycling and disposal Score: 1	in different modes, e.g. variable drive speed mode Score: 1	calculation efficiency and number of devices used for testing Score: 1
			Efficiency standards are complemented by consumer information requirements, recycling and disposal Score: 1	Statements on different products and related specific requirements, e.g. for heaters with different heat output or different energy sources (electric power, liquid fuels), statements in emission requirements, e.g. NO _x emissions Score: 1	Statements on measurement, compliance definition, and verification procedure, e.g. on conditions for testing and number of devices used for testing Score: 1
Power transformers	Two-tier requirements for energy efficiency Score: 1	Regulation addresses all products of the product-group, no exceptions defined Score: 1	Efficiency standards are complemented by consumer information requirements and requirements on technical documentation Score: 0,75	Statements on different product modes, e.g. maximum and no-load modes; statements on different products, e.g. liquid-immersed or dry-type transformers Score: 1	Statements on measurement, compliance definition, and verification procedure, e.g. number of devices used for testing and calculation methods Score: 1
			Efficiency standards are complemented by consumer information requirements and requirements on technical documentation Score: 0,75	Statements on different products, e.g. light-duty and heavy-duty devices; detailed	Statements on measurement, compliance definition, and verification
Professional refrigerators	Three-tier requirements for energy efficiency Score: 1	Regulation addresses all products of the	Efficiency standards are complemented by consumer		1

Table A1: (Continued)

IPA						
Product Group	Objective	Scope	Integration	Implementation	Monitoring	Overall Score
Refrigerators and freezers	Two-tier requirements for energy efficiency Score: 1	product-group, no exceptions defined Score: 1	information requirements, recycling and disposal Score: 1	statements on consumer information, e.g. on presentation of information on intended use Score: 1	procedure, e.g. number of devices used for testing, calculation methods, and testing conditions, e.g. humidity during testing Score: 1	0,95
		Regulation addresses all products of the product-group, no exceptions defined Score: 1	Efficiency standards are complemented by consumer information requirements, e.g. on different modes and efficient usage but none on disposal or recycling Score: 0.75	Statements on different products, e.g. fast freezers and refrigerator-freezer devices; statements on different product characteristic, e.g. nominal freezing temperature Score: 1	Statements on measurement, compliance definition, and verification procedure, e.g. on technical parameters for testing like storage volumes; statements on calculation procedures, e.g. for energy efficiency Score: 1	
Simple Set-top boxes	Two-tier requirements for energy efficiency Score: 1	Regulation addresses all products of the product-group Score: 1	Efficiency standards are complemented by consumer information requirements, e.g. on different modes and efficient usage but none on disposal or recycling Score: 0.75	Statements on different modes, e.g. standby and automatic power down, different functions, and specifics, e.g. when a hard disk is included; statements on consumer information Score: 1	Statements on measurement and compliance definition, e.g. benchmarks for power consumption, statements on testing parameters and procedures, e.g. number of devices used for testing Score: 1	0,95

Table A1: (Continued)

<i>IPA</i>					
<i>Product Group</i>	<i>Objective</i>	<i>Scope</i>	<i>Integration</i>	<i>Implementation</i>	<i>Monitoring</i>
Solid fuel boilers	Single-tier energy efficiency for energy efficiency	Regulation addresses all products of the product-group	Efficiency standards are complemented by consumer information, recycling and disposal	Statements on different types of devices, e.g. for different outputs; statements on emission standards for some devices (due to energy sources); statements on consumer information, e.g. on the correct installation and usage, free-access websites for further information	Statements on measurement and compliance definition, e.g. benchmarks for power consumption, statements on testing parameters and procedures, e.g. number of devices used for testing
	Score: 1	Score: 1	Score: 1	Score: 1	Score: 1
Televisions	Two-tier requirements for energy efficiency	Regulation addresses all products of the product-group	Efficiency standards are complemented by consumer information, requirements, e.g. on different modes and efficient usage but none on disposal or recycling	Statements on different types of devices, e.g. full hd and other resolutions; statements on different modes and functions, e.g. included receivers; statements on consumer information	Statements on measurement and compliance definition; statements on testing procedures, e.g. temperature during testing, luminance set during testing; statements on calculations of energy efficiency, e.g. in different modes
	Score: 1	Score: 1	Score: 0.75	Score: 1	Score: 1
					0,95

Table A1: (Continued)

<i>IPA</i>					
<i>Product Group</i>	<i>Objective</i>	<i>Scope</i>	<i>Integration</i>	<i>Implementation</i>	<i>Monitoring</i>
Vacuum cleaners	Two-tier requirements for energy efficiency Score: 1	Regulation addresses all products of the product-group Score: 1	Efficiency standards are complemented by consumer information requirements, recycling and disposal Score: 1	Statements on different efficiency measures, e.g. energy and dust pick up; statements on durability of parts, e.g. hoses; statements on consumer information, e.g. on disassembling and repairing Score: 1	Statements on measurements, e.g. on energy and cleaning efficiency; statements on calculations and testing, e.g. different tests on hard floor and carpets; statements on compliance and non-compliance Score: 1
					Score: 1
Ventilation units	Two-tier requirements for energy efficiency Score: 1	Regulation addresses all products of the product-group Score: 1	Efficiency standards are complemented by consumer information requirements, recycling and disposal Score: 1	Statements on different product types, e.g. ventilation units with (out) filters; statements on energy and thermal efficiency; statements on information requirements, e.g. information to be provided on free-access websites Score: 1	Statements on measurements and compliance, e.g. different measurement parameters; statements on energy and thermal efficiency, sound power levels; statements on testing procedures, e.g. number of devices tested Score: 1

Table A1: (Continued)

IPA				
Product Group	Objective	Scope	Integration	Implementation
Water pumps	Two-tier requirements for energy efficiency Score: 1	Regulation addresses all products of the product-group Score: 1	Efficiency standards are complemented by consumer information requirements, recycling and disposal Score: 1	Statements on energy efficiency in different modes, e.g. full and part load; statements on information requirements, e.g. information relevant for recycling and disposal Score: 1
				Statements on measurement and compliance definition; statements on testing procedures, e.g. number of devices tested; statements on calculations, e.g. on energy and pump efficiency, minimum efficiency and best efficiency point Score: 1
				Overall Score: 1

Note: The Regulations follow a similar pattern in how they describe Ecodesign requirements. Therefore, there are some redundancies in the description of, for example, implementation and monitoring statements. Examples are used to illustrate the coding of IPA's different aspects.

Table A2: Overview of the Coding Following the IPA for Each Voluntary Agreement

<i>Product Group</i>	<i>IPA</i>				
	<i>Objective</i>	<i>Scope</i>	<i>Integration</i>	<i>Implementation</i>	<i>Monitoring</i>
VA complex set-top boxes	No specific standard for energy efficiency defined Score: 0	Up to 10% of products not complying with provisions can be placed on the market Score: 0.5	Efficiency objective (even if unspecific) is complemented by consumer information requirements, recycling and disposal Score: 1	Statement on different product modes and detailed statement on consumer information, e.g. on correct usage Score: 0.5	Statements on measurement and testing procedure, e.g. number devices used for testing Score: 0.5
	Some specific targets (e.g. default setting of automatic duplex printing), but no specific energy efficiency requirement defined Score: 0.5	Up to 30% (10% in a later stage) of products not complying with provisions can be placed on the market Score: 0.5	Efficiency objective (even if unspecific) is complemented by consumer information requirements, recycling and disposal Score: 1	Statement on adaption of Energy Star provisions, statement on consumer information Score: 0.5	Statement on the engagement of an independent inspector Score: 0.25
VA games consoles	Some specific targets (e.g. on energy efficiency in media play back mode), but exclusion of main use mode Score: 0.5	Up to 10% of products not complying with provisions can be placed on the market Score: 0.5	Efficiency standards are complemented by consumer information requirements, recycling and disposal Score: 1	Statement on required energy efficiency in non-essential modes, statement on information requirements Score: 0.5	Statements on testing procedures, e.g. condition and number of devices Score: 0.5