Speeding up adopting ecodesign and energy labelling measures – analysis, challenges and solutions

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Abstract

Ecodesign and energy labelling measures are a cornerstone of EU energy efficiency policy. In principle the process to prepare and adopt these measures is straightforward. Then, why does it take so long to get measures adopted and why is there such a large variation in process time? Delays in the adoption of measures result in less savings. Uncertainty in the process and in the time measures will be adopted makes it more difficult for industry and Member States to participate in the process and to prepare for implementation.

This paper analyses each of the steps of the preparation and adoption process of ecodesign and energy labelling measures in force and in preparation. The duration of the process has increased from 34 months for the first measure published in 2008 to an average of 76 months for the three measures published in 2012. Apart from constraints in staffing at the European Commission, Member States and stakeholders, total process time is mainly challenged by the technical complexity and the contentiousness, including political sensitivity, of the products to be regulated. Distinguishing between low and high complexity and contentiousness, four typical processes can be identified. For each of these processes a planning is suggested that improves the policy process and reduces total process time if possible. Comparison with the US DOE rulemaking process for appliance standards shows that backlog is not a typical EU problem. Using the results from this paper and DOE analysis, as a benchmark, a 3 year process from the start of the study phase to the final publication is suggested.

Introduction

Ecodesign minimum efficiency and energy labeling measures are a cornerstone of EU energy efficiency policy; see e.g. the Energy Efficiency Plan 2011 (European Commission 2011). Ecodesign and energy labelling measures are published or in preparation for a wide range of products, including household appliances, consumer electronics and industrial products; see Annex. It is important that not only these measures are ambitious and of a high quality, but also that their implementation is not unduly delayed. While other papers have dealt with the ambition level of ecodesign and energy labelling measures (e.g. Ballu and Toulouse 2010, Toulouse et al. 2012) this paper will focus on the process of adopting these measures. In principle the process to prepare and adopt ecodesign and energy labelling measures is straightforward; see Figure 1 for the ecodesign process which with two changes is also applicable to energy labelling. According to Figure 1 the Commission estimates the total process time to be 55 months, about 4.6 years. The process as such is in principle (well) suited to deal with the technical preparation for the implementing measures, stakeholder consultations, the (political) negotiation process within the Commission and between Member States and the Commission, and democratic legitimacy. However, as we will see in the next section, in reality, since 2010 none of the adopted implementing measures have met this planning, nor will probably any of the implementing measures that are now in the process. Besides the quality of the adopted implementing measures, the total process time is the main performance parameter of this process. Not only the total process time as such is important, but also the uncertainty in the process time is. Uncertainty in the process and in when the measure will be adopted makes it more difficult for industry and Member State experts to participate in the process and to prepare for implementation of the measure. Examples of these difficulties

are allocation of specialist's time and the planning of investments to meet the requirements. Therefore both process time and uncertainty affect the ability to achieve timely savings.

The aim of this paper is to provide data on the process time of preparation and adoption of ecodesign and energy labelling implementing measures, to analyze causes for delays in this process (compared to Figure 1) and to provide suggestions to decrease or eliminate these delays. This paper is organized as follows. In the next section data on the process time is presented and analyzed, including finding delay factors and explanations for these delays. Then opportunities to improve the process are presented. This will include a restricted qualitative comparison with process in the US (DOE appliance standards) and Japan (Top Runner) in order to learn from these processes and trying to establish a benchmark.

Process time of ecodesign implementing measures

INTRODUCTION

The first work on ecodesign measures started in 2005. For the first measures the process was more simple than the process depicted in Figure 1, e.g. the impact assessment procedure and ISC were less heavy and the WTO notification (step 7) ran in parallel with the ISC (step 6) and the preparation of the Regulatory Committee (step 8). Furthermore, some of the steps were shorter in duration, e.g. the preparatory study (step 3) and the scrutiny by EP and Council (step 9). Altogether, the process of the first measures (adopted in 2008 and 2009) should not be compared with the process in Figure 1, but with a process that is about 18 month shorter, so in total 37 months. More in general, although the process for preparing and adopting ecodesign and energy labelling measures is prescribed in framework directives, internal Commission procedures, the EU treaty and international treaties, this process has developed and will further develop over time.

The following data has been available for the analysis, all of which can been found in publicly available documents (see http://ec.europa.eu/energy/efficiency/labelling/household_en.htm and http://eur-lex.europa.eu/en/index.htm for the text of published regulations):

- Start and end date (in months) of the preparatory study (d3b[1], d3e).
- Date of the Consultation Forum (CF) meeting(s) (d4m1/2/3).
- Date of the vote in the Regulatory Committee (RC) (d8m).
- Date of adoption by the European Commission (d10).
- Date of publication in de Official Journal (d11).

The start and end of the impact assessment (step 5), the interservice consultation (step 6) and the WTO notification (step 7) are not generally known. Only recently the Commission started to inform Member State experts and other stakeholders about the start of these activities, but for the majority of the measures these dates are not available. This means that for the analysis Figure 1 will be simplified as follows (see Figure 2). In this way also the process in the earlier years (2005–2009) can be accommodated for.

From the dates the following time periods can be calculated:

- Total duration: D_T = d11 - d3b.
- Duration since (first) Consultation Forum meeting: D_{CF} = d11 - d4m1.
- Duration since Regulatory Committee meeting: D_{RC} = d11 - d8m.
- Duration of the preparatory study (step 3): D_3 = d3e - d3b.
- Duration of the Consultation Forum phase (step 4): D_4 = d4e - d4b, where d4e is assumed to be two months after the (last) Consultation Forum meeting and d4b is assumed to be two months before the (first) Consultation Forum meeting.
- Time between the end of the preparatory study and the start of step 4: D_{3-4} = d4b - d3e.
- Time between the end of step 4 and the Regulatory Committee meeting: D_{4-8} = d8m - d4e.

The analysis is based upon the situation as of 31 December 2012. At that time 16 ecodesign and 7 energy labelling regulations had been published and for 25 product groups ecodesign measures were in preparation, meaning that for these measures at least the preparatory study had started. The time for the ecodesign working plan and the tendering for the preparatory studies is not taken into account. The working plan which is produced[2] every three years provides an indication of the product groups for which an ecodesign measure could be prepared; it is the preparatory study that provides the detailed analysis. The tendering process is mostly done for several product groups at once; also framework contracts are used so that for individual products it is not clear which time should be allocated. Although the ecodesign directive also refers to self-regulation measures, including voluntary agreements, as means to achieve the goals of the directive these will not be included in the analysis. Up to now only three self-regulatory measures have been proposed. The limited experience with self-regulatory measures shows that the total process time is not very different from implementing measures and that apart from steps 8 and 9 the other steps of Figure 1 appear in some form or the other in the process.

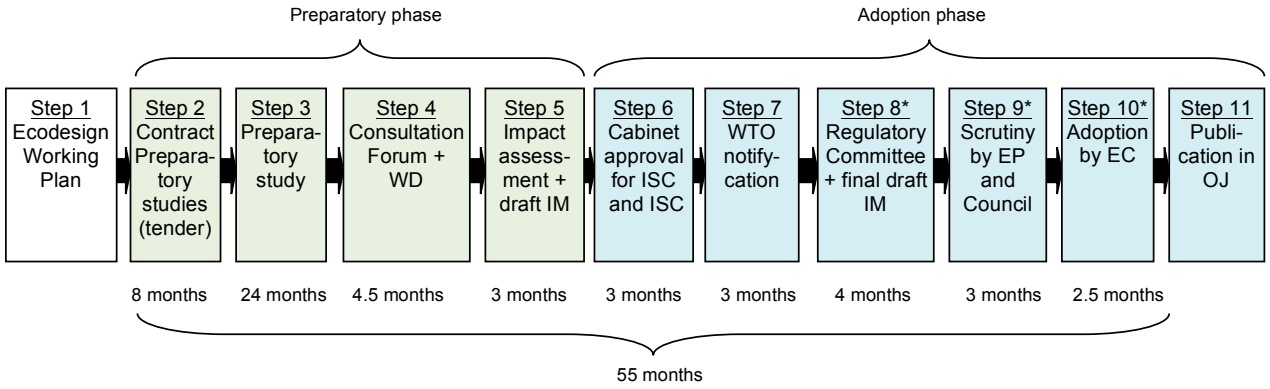
OVERVIEW OF PROCESS TIME

Table 1 shows process time data for all products (n=41) and for products for which measures have been published in the Official Journal (n=16). Figure 3 shows the distribution of the process time variables in Table 1. Most variables have a high (>0.5) coefficient of variation and a skewed distribution.

Figure 4 shows the duration of the ecodesign process (total duration and duration after first Consultation Forum meeting) by publication year for products with published measures.

1. d: date; 3 indicates the step in the process (see Figure 1); b: begin, e: end, m: meeting.

2. The Commission presents a draft working plan, based on a study, to the Consultation Forum for comments. The final version is adopted by the Commission after Interservice Consultation.



WD: working document; IM: implementing measure; ISC: InterService Consultation; WTO: World Trade Organisation; EP: European Parliament; EC: European Commission; OJ: Official Journal
*Regarding energy labeling implementing measures, step 8 is not applicable and step 9 and 10 are exchanged, i.e. first the measure is adopted by the Commission and then it is sent to the European Parliament and Council for scrutiny.

Figure 1. Ecodesign process.

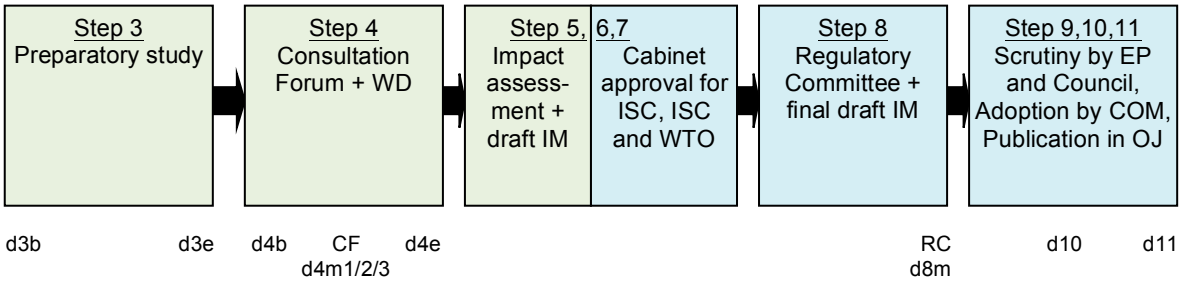


Figure 2. Ecodesign process as used in analysis.

Table 1. Process time data.

	Norm (see fig. 1)	Average [months]	St.dev. [months]	Coefficient of variation
All products (n=41)				
D_3: duration preparatory study (step 3)	24	23	7	0.3
D_4: duration Consultation Forum (step 4)	4.5	11	15	1.3
$D_{3\text{-}4}$: time between step 3 (prep. st.) and 4 (CF)	0	10	9	0.8
Products with measure published (n=16)				
D_T: total duration	47*	49	17	0.3
D_{CF}: duration since (first) CF meeting	21	20	11	0.6
D_{RC}: duration since RC meeting	5.5	6	2	0.3
D_3: duration preparatory study (step 3)	24	22	7	0.3
D_4: duration Consultation Forum (step 4)	4.5	7	7	1.1
$D_{3\text{-}4}$: time between step 3 (prep. st.) and 4 (CF)	0	7	6	0.8
$D_{4\text{-}8}$: time between end step 4 and RC meeting	13	11	10	0.9

** Step 2 has not been included in the analysis, so total duration is 55-8=47 months.*

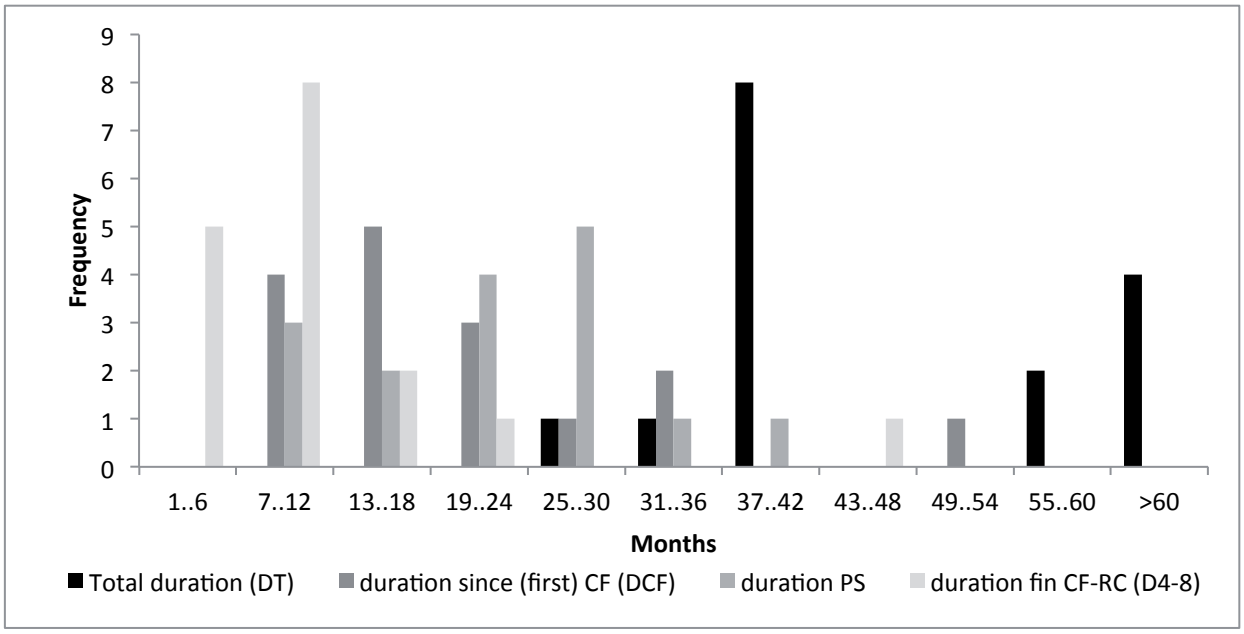


Figure 3. Frequency distribution of various durations for products with published measures (n=16).

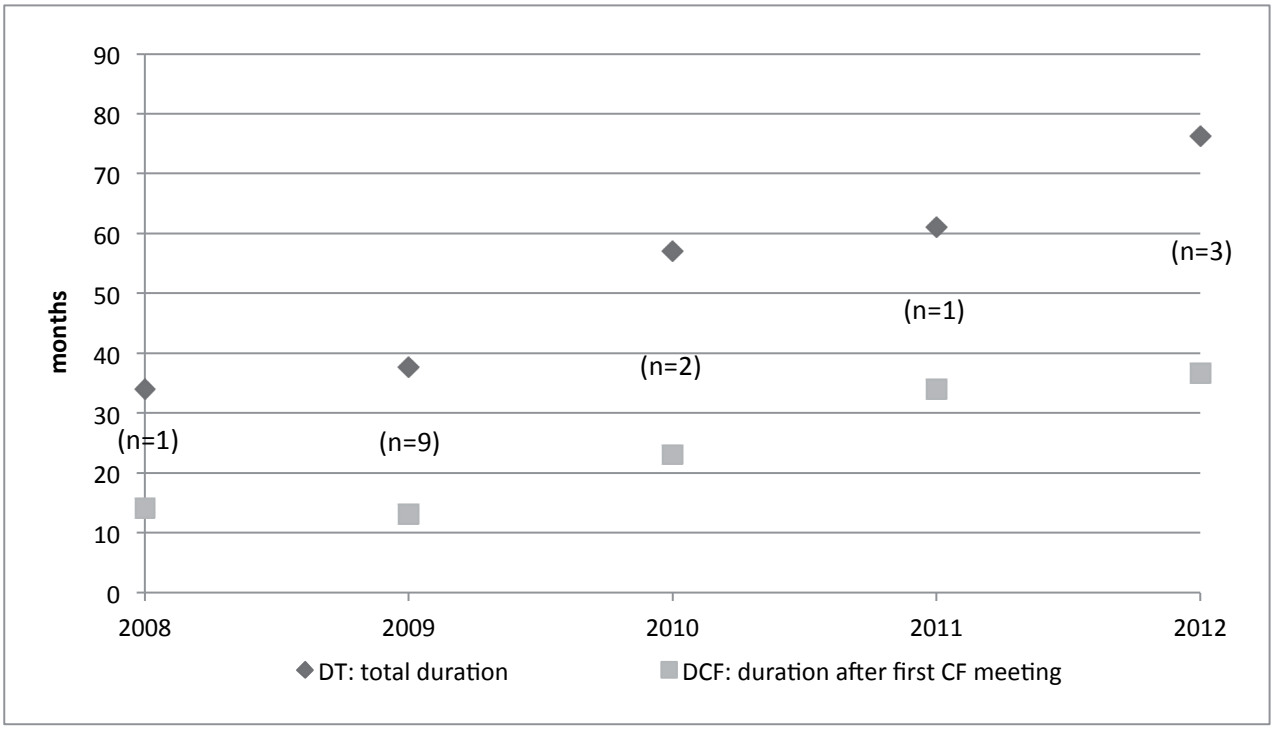


Figure 4. Duration of ecodesign process by publication year for products with published measures (n=16).

Products that also have an energy label measure published have on average a total duration that is 15 months longer, although the statistical evidence is weak (R^2=0.22; p<0.10).

In 2008 and 2010 the Commission provided an indicative date of adoption for the various product groups in the process. Actual adoption dates were on average 9 months (2008) and 8 months (2010) later than indicated. However the coefficient of variation was 1.1 respectively 1.0, indicating that a few products were very much later than indicated. From the indication in 2008, 9 out of 13 products were less than 6 months late, whereas the remaining 4 products were between 18 and 28 months late.

From the data we conclude that especially the duration of the Consultation Forum phase (step 4) and the time between the end of the preparatory study (step 3) and the beginning of step 4 are much longer than the norm. In the next sections we

will analyze the various steps in the process to find explanations for the delays, i.e. the differences between the durations found in practice and those in Figure 1.

ANALYSIS OF THE VARIOUS STEPS IN THE PROCESS

Step 3: Preparatory study

In most cases the planning for the preparatory study is quite strict, because tied to a contract with deadlines that cannot be changed without administrative burdens. The following factors therefore influence mostly the process time of other steps.

First the availability of data; as such the non or lesser availability of data can be absorbed within the preparatory study without delay. It will however heavily influence the preparation of documents for the Consultation Forum (working document) and the interservice consultation (draft implementing measure). Furthermore, delays after the preparatory study can render data collected in this study obsolete and unsuitable for basing implementing measures upon. An example is the study for computers where there was a delay of two years between the end of the preparatory study and the Consultation Forum meeting. Data availability is not only based on stakeholders willingness to provide data or the existence of affordable commercial datasets, but also on the availability of standard measurement methods. Commercial refrigeration products is an example where the lack of standardized measurement methods resulted in no suitable data being available for some product categories.

Second the extent of cooperation by stakeholders, especially industry. Also this factor may not only affect the process time of this step but may result in less information available to prepare documents in other steps, which then leads to delays in these steps. This factor also covers withholding information that then in later steps is disclosed to challenge e.g. requirements or the scope of a measure. In general this can or should be dealt with by the contractor who should be qualified on the (technical aspects of the) product.

Third the contentiousness of the matter. For some products, e.g. space and water heaters, different (industry) groups exist that have opposite views. Although this certainly is an aspect that should be disclosed by the preparatory study, it can result in delays because no common ground for a proposal, metric etc. can be found. Although regarding technical aspects the consultant should be able to deal with different views, it is the more political issues that can raise problems.

The quality of the preparatory studies vary. An assessment of the quality by the author resulted in an average score of 6.7 on a scale from 1 (very bad) to 10 (excellent), with a standard deviation of 1.5. The quality partly depends on the factors indicated above but also on the quality of the consultant related to the product. A consultant with good (technical) knowledge of the product and good contacts with stakeholders, will probably extract more relevant data than a consultant who merely copies the information certain manufacturers provide.

Step 4: Consultation Forum

The link between the finalization of the preparatory study and the (preparation of the) Consultation Forum is critical, because with the preparation of the Consultation Forum the Commission takes over the responsibility of the documents. The working document discussed at the Consultation Forum is a Commission document, no matter to what extent it is based on the final report of the preparatory study or even prepared by a consultant.

The results show that there is an average delay of 10 months (with a standard deviation of 9 months) between the end of the preparatory study and the start of the Consultation Forum phase. This indicates that the Commission has too little staff to handle the results from the preparatory studies or that the complexity or contentiousness of the matter requires more time for preparation.

Although the preparatory study is open to all stakeholders, the Consultation Forum meeting is the first formal consultation regarding the proposed implementing measure. This means that several stakeholders, including Member States experts, only now "wake up" and study documents for the first time. The results show that the duration of the Consultation Forum phase is much longer than indicated in Figure 1. The duration of the Consultation Forum phase is related to the number of Consultation Forum meetings: each extra Consultation Forum meeting adds – on average – 19 months to this phase (R^2=0.82; $p<0.01$).

Step 5, 6, 7: Draft implementing measure, impact assessment, interservice consultation

The draft implementing measure is a first consolidated working document issued by the Commission for input in the interservice consultation. Consolidated means that it seeks to take into accout views and comments issued in the Consultation Forum, including written comments sent to the Commission before and after the Consultation Forum meeting. Furthermore, it contains a single proposal for an implementing measure, contrary to earlier working documents in the process that often contain several options for implementing measures, e.g. with different level for requirements or timing. In principle the text of the draft implementing measure should be such that when no comments would be issued and it would be voted and scrutinized positively the text could be adopted by the Commission and published in the Official Journal.

In this step[3] sometimes still intensive informal bilateral discussions with stakeholders take place that can cause delays. If the complexity of the matter results in complex legislative texts then this can also cause delay because the Commission Legal Service needs to be more involved.

The nature of the interservice consultation has changed recently in such way that the draft implementing measure that is sent to interservice consultation is also (informally) sent to the members of the Consultation Forum. Of course this triggers comments and proposals for amendments, including those from stakeholders that see this as an extra chance to bring forward their views that were not included in the draft implementing measure. This will especially happen for contentious products.

Step 8: Regulatory Committee

The Regulatory Committee only applies to ecodesign implementing measures and not to energy labelling measures. The ecodesign directive (European Parliament 2009) is a pre-Lis-

3. One could also argue that this is still part of step 4.

bon Treaty directive with comitology whereas the energy labelling directive is a post-Lisbon Treaty directive without comitology (European Parliament 2010). As with the preparation of the draft implementing measure for interservice consultation, the preparation of the final draft implementing measure can include intensive informal bilateral discussions with various stakeholders. If one of these stakeholders has the power to block the release of the final draft to the Committee then this can cause delays. The results show that for the published measures the average duration between the end of the Consultation Forum phase and the Regulatory Committee meeting are less than the norm in Figure 1. However, the standard deviation is almost the same as the average, indicating that for some measures this period is much larger than the norm; examples are electric pumps and household tumble driers. Once the documents are sent to the Committee members and the date for the meeting is set, no delays are to be expected. There is enough (public) pressure on Member States representatives to sort out the final issues at the meeting and to vote upon the amended final draft.

Step 9, 10, 11: Scrutiny, adoption and publication

If the proposal is voted positively and no objections have been raised during the scrutiny by the European Parliament and the Council, this should be a straightforward step. Nevertheless, experience shows that it sometimes can take a long time before a measure is adopted. The ecodesign implementing measure for household air conditioners was voted upon positively on 31 May 2011 but was published only on 6 March 2012.

DELAY FACTORS; COMPLEXITY AND CONTENTIOUSNESS

Three categories of potential delay factors can be distinguished:

- Delay factors related to process organization, including capacity at the Commission and practical issues.
- Delay factors related to the quality of the preparatory study and availability of data.
- Product related delay factors: technical complexity and contentiousness.

Finally, delays itself are causes of further delays, because (new) people need to study documents again, data has become obsolete, consensus issues are opened for discussion again, etc.

In this section we discuss these factors in more detail, focussing on the product related delay factors, showing how technical complexity and contentiousness result in delays in the process. Also we try to quantify several factors.

Process organization, capacity and practical issues

First we note the process seems to be too elastic, i.e. deadlines – if any – can be ignored, steps can be stretched almost endlessly without consequences and "old" issues can be raised at almost any point (again) in the process. This makes the process an ideal target for delaying tactics. Of course the advantages are that this offers maximum opportunities for consensus building and that serious omissions and mistakes can be corrected until the very end. Related to this is the impression that each step seems to be prepared and planned in isolation and sequential.

Second, the influence of practical issues should not be underestimated, e.g. the availability of meeting rooms and translation services (both for final documents and Regulatory Committee meetings) can cause a delay of several months. Apart from careful planning and accepting meetings on unpopular days, these depend on the political priority of the issue (energy efficiency of products) compared to other issues. What can be noted though is that organizing an extra face-to-face meeting, even informally, results in a delay.

Third, the capacity at the Commission (availability of staff) did not match the planning: in the beginning of the process many preparatory studies finished at about the same time and there was not enough capacity to take all products to the next steps, resulting in delays. Also the absolute level of capacity was not sufficient. Since this is a general aspect, it can not be related to specific products. However, for individual products we can assess the number of changes in Commission staff dealing with a product during the process. Ideally the same Commission desk officer should be involved through all the phases of the process. Table 2 shows the frequency of the number of staff changes for all products and products for which a measure has been published: for half of the products there has been at least one change in Commission staff during the process.

The total duration of the process is related to the number of staff changes: each staff changes adds – on average – 14 months to the process (R^2=0.33; $p<0.01$).

Quality of the preparatory study, availability of data

As expected the quality of the preparatory study shows no relation with the duration of the preparatory study. However, the quality of the preparatory study also shows no relation with the duration of the process since the finalization of the preparatory study. An explanation could be that the lesser quality of a preparatory study is compensated for by other analyses in the process, e.g. additional analysis for the working document or impact analysis, which require extra time by consultants but no extra process time.

The availability of data, or better said the lack of up-to-date data, has been and is a problem for almost all products. The reasons are manifold: unwillingness of stakeholders to cooperate, unavailability of standard measurement methods, development of new measurement methods, new or more specific definitions of or energy efficiency metrics for products, prohibitive costs for data collection. Lack of data is especially problematic for technical complex and/or contentious products (see below) because there is no or not enough data to settle disputes. Moreo-

Table 2. Frequency of changes in Commission staff.

Number of changes	All products (n=41)	Products with measures (n=16)
0	20	8
1	15	4
2	4	4
3	2	0

ver, for these products the above mentioned factors itself are part of the discussions. The availability of data could not be assessed quantitatively but it is assumed that the effect on process time is incorporated in the effects of technical complexity and contentiousness.

Technical complexity and contentiousness

Technical complexity and contentiousness relate to the product for which a measure is prepared. A (technical) complex product is a product with a large variation of product types, user options, features, interdependent subsystems, for which it is difficult to set an efficiency metric or for which it is not easy to measure performance. Examples of such products are boilers. Complexity refers to the internal structure and performance.

Contentiousness refers to the political sensitivity of addressing the efficiency of the product, including banning certain product variants, or the measure having a significant effect on certain performance parameters or influence on energy infrastructure. Examples of such products are general lighting products, but also water heaters. Contentiousness refers to the external effects of the measure.

Complexity triggers the input of stakeholder and Member State experts[4] which has to be dealt with by (experts hired by) the Commission. Furthermore, complex issues have a high chance of several experts being involved, each on a subaspect; this requires coordination. Examples are large transformers, tapping patterns for water heaters, measurement methods for emissions of local space heaters. So, complexity introduces an extra layer in the process, including coordination (see Figure 5) thereby introducing delays.

Also in case of (large) Member States, industry organizations and NGOs an extra layer is introduced because they need to consult various ministries and/or stakeholders (Member States) or members (industry organizations, NGOs).

Contentiousness also triggers the input of extra people but now on different hierarchical levels (see Figure 6 for a simplified representation). This not only introduces delays because of the time needed to pass all hierarchical levels but also because it reduces flexibility in the negotiations to arrive at a compromise.

Both complexity and contentiousness were scored on a scale from 1 (least) to 5 (most). Figure 7 shows the scores for all products on both variables and the classification in four categories. The three products in category IV (high complexity and high contentiousness) have an average duration of the Consultation Forum phase (step 4) of 32 months compared to an average duration of 11 months for the other categories. The average total duration for products[5] in categories III and IV (high contentiousness) is 58 months compared to 46 months for products in categories I and II (low contentiousness).

SUMMARY OF THE ANALYSIS; RELATIONS BETWEEN DELAY FACTORS

In the foregoing sections we have analyzed the effect of individual factors on the delay in process time. Figure 8 summarizes the delay factors and the relations between the factors.

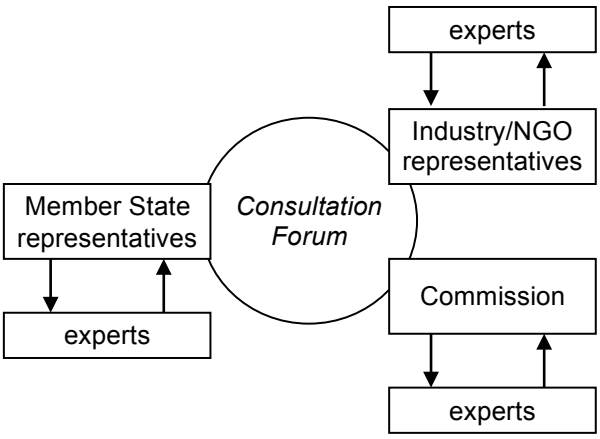


Figure 5. Involvement of experts in the consultation.

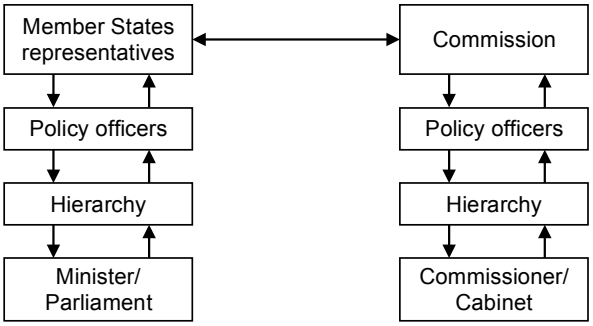


Figure 6. Involvement of higher political levels in the consultation.

The delay factors are interdependent; unfortunately the data set is not large enough to quantitatively assess these interdependencies. Therefore this summary describes them qualitatively. As indicated, contentiousness can increase complexity and vice versa. The more (technical) complex a product is, the larger the chance that some technical issues are politically sensitive and therefore contentious. On the other hand contentiousness can invoke close scrutiny of all technical aspects, thereby increasing complexity. Complexity and certainly contentiousness influence the process organization because they require more capacity and different skills, e.g. to deal with the political aspects within the Commission.

Addressing the challenges; international comparison

INTRODUCTION; SUGGESTIONS FOR PROCESS ORGANISATION

The analysis in the foregoing section provides some ideas to address the challenges of increasing and variable/uncertain process time for preparation and adoption of ecodesign and energy labelling measures. Two obvious ways are to increase Commission staff [6] and to increase the quality of the prepara-

4. Although participants in the Consultation Forum and the Regulatory Committee are also called experts, in most cases these are not the real technical specialists.

5. For products for which not yet a measure has been published the duration till 31 December 2012.

6. Note that regarding limited capacity at the Commission, it might be also an idea not to go ahead with products that have limited savings (although these still might be significant) and/or have other problems like missing (parts of) a measurement standard.

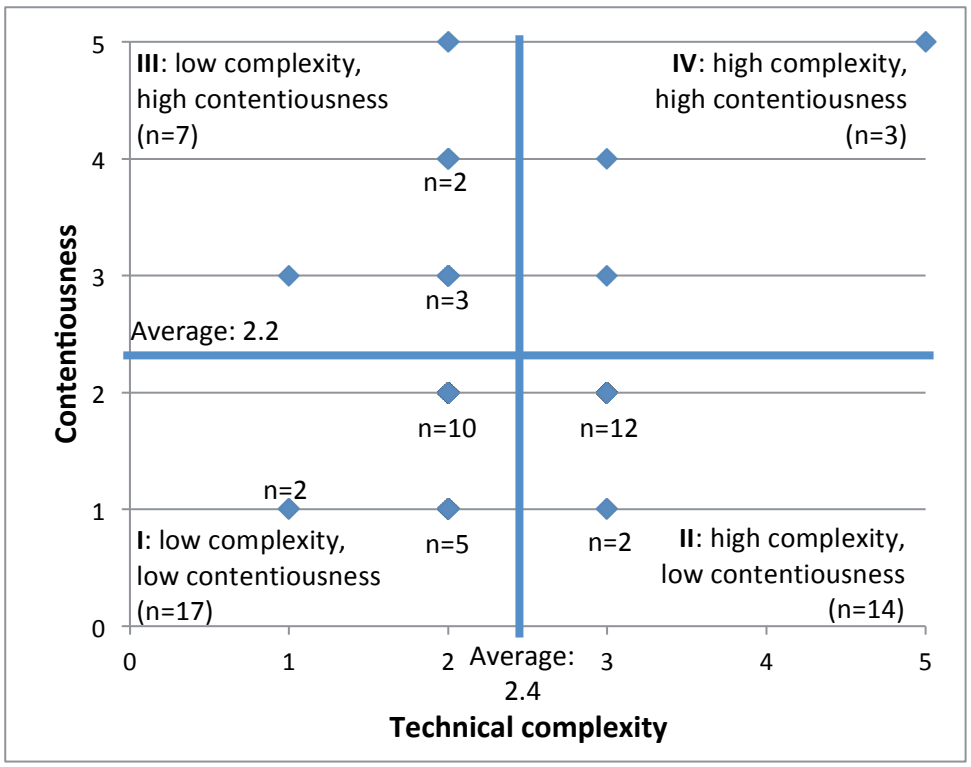


Figure 7. Complexity and contentiousness for all products (n=41).

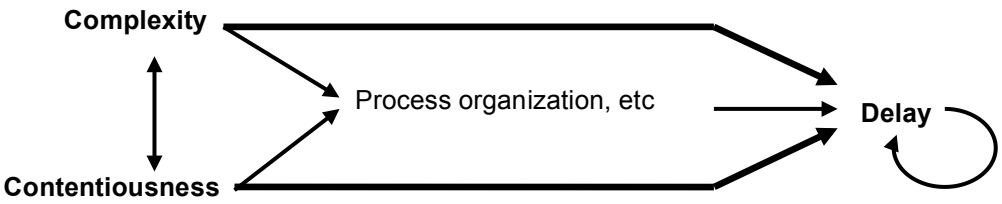


Figure 8. Relation between delay factors.

tory studies. However, the first might be politically less acceptable or realizable and the second is already taken into account. Therefore, we first pay attention to some aspects of process organization and then focus on better dealing with technical complexity and contentiousness. These aspects have not been dealt with yet and it is useful regardless increase of capacity or quality of studies.

Since large delays occur after the Consultation Forum meeting, a suggestion is to keep the (last) Consultation Forum meeting (in step 4), step 5 and the start of the interservice consultation (in step 6) as close together as possible. In principle stakeholders, including Member State experts, should provide their (main) comments and suggestions at or shortly after the Consultation Forum meeting. This means that they should have the working documents well in advance, e.g. 6 weeks. The other side of the coin is that the Commission can be strict in the deadline for comments: comments issued later than 1 week after the Consultation Forum meeting will not be taken into account for the draft implementing measure that will be sent to the interservice consultation. In this way it is clear for stakeholders that there is one opportunity to send comments to influence the draft implementing measure. Of course some comments will need bilateral clarification and discussion, but tying step 4 from the Consultation Forum meeting, step 5 and 6 till the start of the interservice consultation in a controlled time window, e.g. 4.5 months, prevents the emergence of several consultation cycles.

The problem of data availability is partly addressed in the ecodesign measures itself by requiring that manufacturers provide relevant data of their products on free accessible websites. Although this still requires collection of the data from these websites, it means that for revision of the measures data of products on the market is available.

Finally the following general suggestions for process organisation that can reduce uncertainty in process time are provided:

1. Reduce complexity, including accepting less stringent requirements for some subcategories.

2. Identify on beforehand events that could disturb the critical path: elections of the European Parliament, a new Commissioner, summer holiday period, etc.
3. Plan not too tight, also regarding capacity, e.g. up to 80 %.
4. Develop standard formulations for aspects that are more or less the same in all regulations.
5. When a delay occurs, revise the planning and communicate the revised planning including new deadlines to all stakeholders.

COMPLEXITY AND CONTENTIOUSNESS; SUGGESTED PLANNING FOR THE FOUR CATEGORIES

To deal with technical complexity and contentiousness, an assessment of these factors needs to be made by the Commission in step 3 and the rest of the process has to be planned taking this assessment into account. It cannot be done by the contractor of the preparatory study because first the contractor is or should be too knowledgeable on the technical aspects to assess the complexity for non-technical people and lacks the political sensitivity (also related to other dossiers being processed by the Commission) to fully assess the contentiousness. Second the Commission is responsible for the process, certainly after the preparatory study. In order for the assessment to have effect on the process, step 3 should be decoupled from the rest of the process. At the end of step 3 an evaluation of the type of process (according to the categorization in Table 2) is available and a planning for the rest of the process can been made. This can also include the decision not (yet) to start the rest of the process, meaning there can be a gap between the end of the preparatory study and the start of step 4. In the rest of this section we provide suggestions for planning of each of the four categories.

Category I: low complexity, low contentiousness

In case of a product with low complexity and low contentiousness, the preparatory study should already contain building blocks for a draft implementing measure. Examples of these products are external power supplies, simple set top boxes and cold appliances. In the working document for the Consultation Forum already an advanced draft could be presented. In this case the planning can be straightforward and steps 4 and 8 could be shortened (see Figure 9), and the planning should be strictly kept. With the Consultation Forum meeting 2 months after the start of step 4 total process time till the Regulatory Committee is 11 months after the Consultation Forum meeting.

Category II: high complexity, low contentiousness

In case of a product with high complexity, such as (networked) standby, LED lighting and commercial refrigeration, the Commission should at least be prepared to ensure further technical assistance. In order not to let the technical complexity increase contentiousness, a thorough preparation of the Consultation Forum meeting is necessary: the working document should aim at explaining how the technical complexity is reduced and mapped into the proposed regulation, especially assumptions made to simplify aspects should receive attention. If necessary a technical working group meeting can be arranged after the Consultation Forum meeting. The process time for step 4 might need to be increased to 6 months (see Figure 10). In principle the (technical) complexity should have been dealt with in step 4 so that the process time of step 8 can be reduced.

Category III: low complexity, high contentiousness

Because complexity and contentiousness are related, the first task (preferably already done in task 3) is to distinguish which issues are in the technical realm and which represent political sensitivities that are contentious. The critical aspect is not to let contentious issues spread into the technical realm, suggesting complexities that are in reality different political opinions. More technical research will not solve these issues but only delay the process. Also it should be acknowledged that (some) contentious issues cannot be solved at the Consultation Forum meeting. Examples of products in this category are water heaters, general lighting, electric motors and tumble driers.

In general the timing of Figure 1 should be suitable to deal with these type of processes (see Figure 11). Contentious issues might be better resolved through bilateral discussion and informal meetings than through more Consultation Forum meetings.

Category IV: high complexity, high contentiousness

Category IV is also the category that processes in category II and III tend to drift into when not properly managed. Examples of category IV products are (combi)boilers and solid fuel small combustion installations. As for category III it is important to try to distinguish between the issues that are technical complex and those that are (politically) contentious. The first can be resolved with further (technical) research, the second not. Unfortunately also the discussion on what are technical issues and what political can be contentious.

This type of category will probably need a prolonged step 4 with two Consultation Forum meetings (see Figure 12), where the first is used to get more clear what the issues are and which

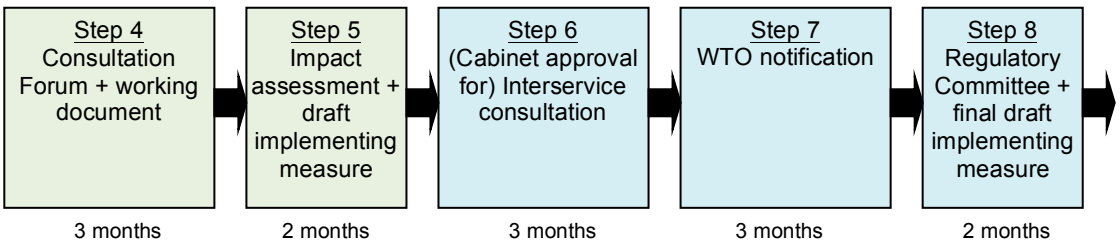


Figure 9. Suggested planning for category I process (total 13 months).

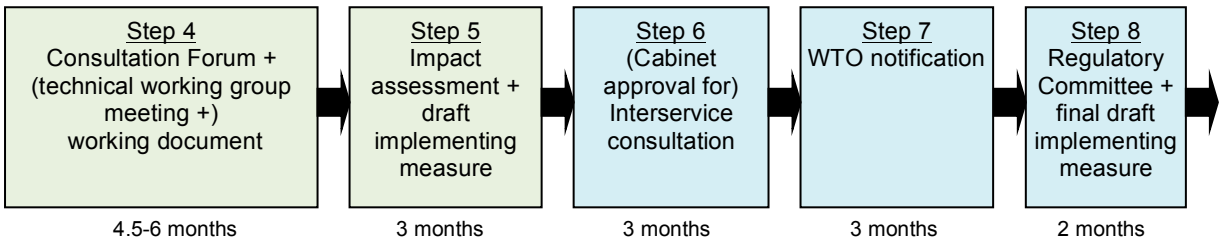


Figure 10. Suggested planning for category II process (total 15.5–17 months).

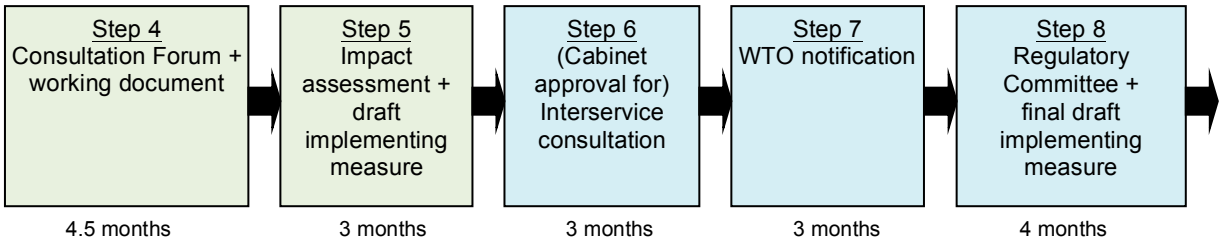


Figure 11. Suggested planning for category III process (total 17.5 months).

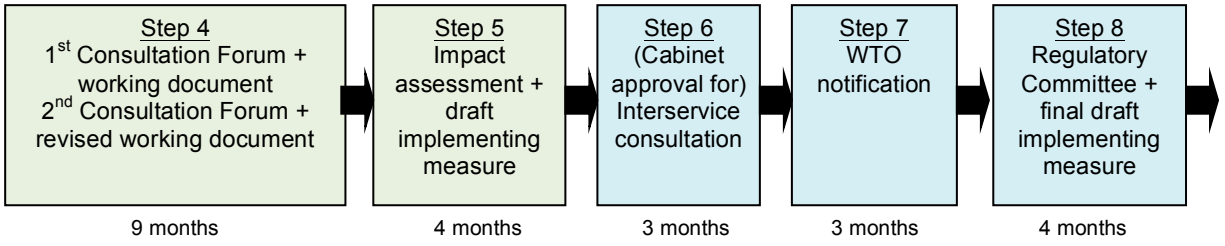


Figure 12. Suggested planning for category IV process (total 23 months).

are of technical nature and which are politically contentious, and where the second meeting can be used to resolve the (main) technical issues. Also in this case technical support for the Commission is necessary. An additional criterion for this technical support is that the consultant is seen as "political" acceptable by (almost) all stakeholders.

INTERNATIONAL COMPARISON

In this section we will compare the ecodesign process with the process to establish Top Runner standards in Japan and the DOE (Department of Energy) rulemaking process for setting appliance standards in the USA.

The **Top Runner process** can be summarized as follows (METI 2010, p. 10–12); see Figure 13.The Energy Efficiency Standards Subcommittee, a subcommittee of the Advisory Committee for Natural Resources and Energy, evaluates proposals for candidate products for the Top Runner programme. If a Top Runner standard for a certain product is to be set, an Evaluation Standard Subcommittee is established. If necessary, to prepare for the Top Runner standard and measurement method studies are conducted and the results discussed in working groups. In these working groups industry experts, academia and consumer groups participate. After the working groups have formulated a recommendation, the Evaluation Standards Subcommittee prepares a first draft of the Top Runner standard. This draft is published in an interim report for public comment. The comments are processed and a final report with a final draft standard is published. Also the final draft is notified to the WTO. The authorization of the new standard is done by the Advisory Committee for Natural Resources and Energy. According to METI (2010, p. 12) this process (from step 2) takes 24 to 30 months.

The **DOE rulemaking process** is determined by the Process Rule of 1996 and can be summarized as follows (US DOE 2006, p. 18–31; especially Figure 1 on p. 20); see Figure 14 for a simplified representation. If there is not already a statutory or legislative mandate for DOE to set a standard for a certain product, the first step is a Determination Analysis to determine if a mandatory standard is technologically feasible and economically justified. To that extent a Notice of Determination for the product is published in the Federal Register and the public (i.e. stakeholders) are invited to provide input to DOE. Once DOE determines that a rulemaking will be undertaken, DOE prepares a Framework Document describ-

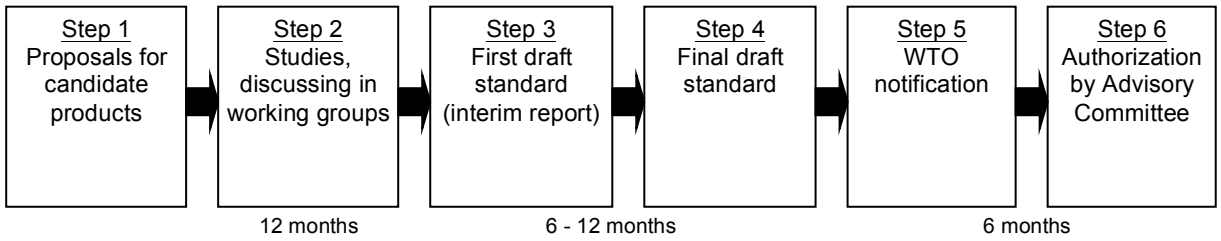


Figure 13. Top Runner standard setting process.

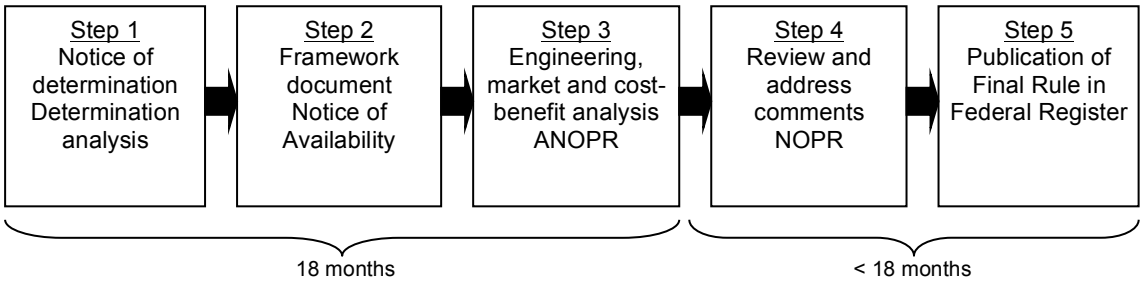


Figure 14. DOE rulemaking process.

ing DOE's plans and posts a Notice of Availability, including the Framework and other relevant documents, on its website. Furthermore DOE asks again for comments and organizes a public meeting. In the third step an engineering, market and cost-benefit analysis is conducted. The results of this analysis are published in an Advance Notice of Proposed Rulemaking (ANOPR), including a Technical Support Document, in the Federal Register. The publication of the ANOPR is followed by a comment period and another public meeting. In the fourth step DOE revises the comments and addresses them in a Notice of Proposed Rulemaking (NOPR) which is published in the Federal Register. In the fifth and final step DOE considers again comments and takes them into account when publishing the Final Rule (i.e. the standard) in the Federal Register.

The total process should not take longer than 3 years and the period from the publication of the ANOPR until the publication of the Final Rule should be less than 18 months. However, in 2005 it became clear that DOE failed to meet the deadlines under the Energy Policy Act of 2005 to deliver new or amended appliance standards. Moreover the time between ANOPR and NOPR had increased from 12 months to between 23 and 26 months and the time between NOPR and final rule increased from between 6 and 8 months to 12 months. An analysis of the causes for the missed deadlines and the delays revealed the following (US DOE 2006, p. 32–41):

- The priority setting process resulted in stopping the work on products that were not the highest priority.
- The open nature of the process introduced delays because the policy of sharing drafts and accepting stakeholder comments on an ongoing basis resulted in a fragmented and inefficient process.
- Many aspects of the rule making process that made it more robust also made it more voluminous, complex and time-consuming.
- The external (to DOE) reviews added up to 1 year to the process.
- The sequential process made it impossible to recover delays.

In this analysis we recognize several of the delay factors identified for the ecodesign process: the external reviews (in the EU: impact assessment and ISC), the sequential and open nature of the process.

Improvements to clear the backlog and shorten the actual process time to achieve the 3 year target for the rule making process included (US DOE 2006, p. 42–52):

- Improved process management of parallel rule making, including a cross-cutting review team.
- Reintroduce bundled product rule makings, e.g. for white goods.
- Greater discipline in keeping deadlines for comments, including standardizing document formats.
- Streamline the analysis.
- Hiring more staff.

Both the DOE analysis and the suggestions in this paper indicate that in general a 3 year schedule from the start of the study phase to the final publication of the measure seems a reasonable time span. A shorter duration would leave too little time for the study (data collection, technical-economical analysis) and negotiation. A longer duration runs the risk of creating its own delays, e.g. due to increased risk of staff changes. As in the DOE process in the first half of the process the emphasis should be on technical-economical analysis, whereas in the second half

the emphasis could be on negotiation between government and stakeholders. However, as we have seen above the assessment of complexity and contentiousness could fine tune the balance between technical preparation and negotiation. In order for the Commission to meet a 3 year schedule the internal process organization, including capacity and priority management, should be improved and – certainly for revisions of existing measures – the time for the preparatory study could be reduced to 18 or 12 months.

Conclusion

The process of preparing and adopting EU ecodesign and energy labelling measures has according to the Commission a norm duration of 55 months. However, apart from the 10 measures published in 2008 and 2009 for which a more simple process applied, none of the other 6 published measures have met this planning nor will probably any of the 25 measures that are now in the process. The duration of the process has increased from 34 months for the first measure published in 2008 to an average of 76 months for the 3 measures published in 2012. The process for products for which also an energy label measure has been published is on average 15 months longer: 58 months instead of 43.

The data on the duration of the various steps in the process shows that especially the duration of the Consultation Forum phase (step 4) and the time between the end of the preparatory study (step 3) and the beginning of step 4 are much longer than the norm. Also the coefficient of variation for these process time variables is large (1.3, respectively 0.8) meaning that a few products have much larger process times for these phases than the average. Data shows that the duration of the Consultation Forum phase is related to the number of Consultation Forum meetings: each extra meeting adds on average 19 months to this phase.

Analysis of the process reveals two categories of delay factors: process organisation and product related delay factors. Although the quality of the preparatory studies for the measures varied, quality did not relate to the duration of the process. An explanation could be that the process is flexible enough to deal with inadequacies of studies in later phases. Process organization includes aspects like capacity at the Commission, changes in staff, priorities and practical issues. From the delay (on average 10 months) between the end of the preparatory study and the beginning of step 4 (Consultation Forum phase) we conclude that there was not enough capacity to handle all products. Each staff change added on average 14 months to the process. Regarding product related delay factors we have distinguished between technical complexity of the product and political sensitivity (contentiousness) of the measure. For products that score higher than average on contentiousness the average total duration of the process is 58 months whereas products that score lower than average it is 46 months. Furthermore, the 3 products so far that score higher than average on both complexity and contentiousness have an average duration of the Consultation Forum phase of 32 months compared to an average duration of 11 months for the other products.

We have shown how the assessment of the technical complexity and contentiousness in the early phases of the process can guide the planning of the rest of the process. Compared to the current norm this could reduce the process time by 4.5 months for simple (low complexity and low contentiousness) products. Although this would increase process time for products with high complexity and high contentiousness by 5.5 months, it would increase the predictability of the process time.

An international comparison with Top Runner in Japan and the US DOE rulemaking process showed that especially the latter faced many of the same problems and delays as the ecodesign process. The DOE analysis and the suggestion in this paper indicate, as a benchmark, a 3 year process from the start of the study phase to the final publication. Such a schedule seems to balance the need for a proper technical-economical analysis as preparation for a measure and sufficient time for negotiation with stakeholders on one hand and a manageable process that does not induce its own delays on the other hand.

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Annex: overview of products for which an ecodesign and/or energy labelling measure is published or prepared

Status: 31 December 2012

Product group	measure	category	Duration (months)			
			D_T	D_3	D_4	D_{3-4}
Boilers and combi-boilers (gas/oil/electric)	e/l	IV	82	19	55	4
Water heaters (gas/oil/electric)	e/l	III	82	19	55	4
Personal Computers (desktops & laptops)	e	III	82	19	3	24
Computer monitors	e/l	I	82	19	39	24
Consumer electronics: televisions	E/L	III	41	18	3	13
Standby and off-mode losses	E	II	34	20	3	*
External power supplies	E	I	38	11	3	12
Office lighting	E	II	37	14	3	7
(Public) street lighting	E	II	37	11	3	4
Residential room conditioning appliances and fans	E/L	II	73	26	13	13
Electric motors 0,75-375 kW	E	III	41	26	3	0
Circulators in buildings	E	I	41	26	3	0
Electric pumps	E	I	76	26	3	0
Industrial fans	E	II	61	26	25	0
Commercial refrigerators and freezers	e/l	II	82	22	35	27
Domestic refrigerators and freezers	E/L	I	41	22	3	11
Domestic washing machines	E/L	I	57	22	18	11
Domestic dishwashers	E/L	I	57	22	18	11
Solid Fuel Small Combustion Installations	e/l	IV	63	28	8	29
Household tumble driers	E/L	III	80	37	3	14
Vacuum cleaners	e/l	I	59	13	18	15
Domestic lighting products (general lighting)	E/L	III	37	32	3	*
Domestic lighting products (direct lighting, LED)	e/L	II	60	23	3	19
Simple set top boxes	E	I	26	12	3	1
Local room heating products	e/l	III	42	36	6	2
Central heating products using hot air	e/l	II	42	37	4	0
Domestic ovens, hobs and grills	e/l	I	42	26	11	7
Commercial ovens, hobs and grills	e	II	42	26	11	7
Professional washers, dryers and dishwashers	e	I	42	23		
Non-tertiary coffee machines	e	I	42	22	3	7
Networked standby losses of EuPs	e	II	42	24	3	2
Domestic uninterruptible power supplies (UPS)	e	I	11			
Waste water pumps	e	I	12			
Clean water pumps	e	I	12			
Electrical motors (other than induction)	e	II	9			
Compressors	e	I	9			
Commercial refrigerating and freezing equipment	e/l	II	48	29	35	
Transformers	e	II	47	24	11	14
Sound and imaging equipment	e	I	47	23	4	22
Industrial and laboratory furnaces and ovens	e	IV	35			
Air-conditioning and ventilation systems	e	II	35			

*E/L: ecodesign/energy label measure published in the Official Journal; e/l: ecodesign/energy label measure in preparation; category: see figure 7 for legend; *: preparatory study finished before start CF*