Enforcement of energy efficiency regulations for energy consuming equipment: findings from a new European study

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Abstract

Like other major economies, the European Union applies a variety of energy labelling and minimum energy efficiency standards regulations to energy using equipment. Each EU and EEA Member State has responsibility to enforce these regulations; however, in practice the level of enforcement effort varies substantially from one economy to another while the loss of cost-effective energy savings through weak enforcement effort across Europe as a whole remains significant. This paper reports the results of the most detailed study yet undertaken into enforcement with European equipment energy efficiency regulations, which is based upon a very detailed assessment of the state of enforcement in each individual EU economy. It examines the legal basis for enforcement, the institutional arrangements to ensure compliance, the technical competence of entities responsible for compliance, the procedures to be followed to monitor the market and in the event of non-compliance, the penalties applied for non-compliance, the resources committed to enforcement and the degree of cooperation over enforcement between EU Member States. It further assesses the extent of energy losses and costs attributable to imperfect enforcement for each economy and determines the extra savings that would be associated with a stronger enforcement effort as well as the expected benefit-costs from doing so. Lastly, it presents new thinking on practical and politically viable means of strengthening enforcement at an affordable cost and sets out a viable pathway to substantially improve the situation across Europe as a whole.

Introduction

Navigant Consulting and its partners SEVEn and SoWatt, were commissioned by CLASP Europe to undertake a study on the monitoring, verification and enforcement structures, programmes and policies relating to the European Energy Labelling and Ecodesign Directives across the European Union's Member States.

The subsequent study was executed through literature reviews, internet research and a comprehensive survey of stakeholders within the Energy Labelling and Ecodesign domain, which included central governments and government departments, consumer associations, energy agencies and testing laboratories. A detailed report documenting the nature of compliance activities was produced for each of the EU and EEA countries, making 30 countries in total.

For each country the following tasks were undertaken:

- a complete list of legislation of the transposition and implementation of both Directives was obtained,
- a map of the institutions involved in compliance was produced, documenting institutional roles and mandates and linkages

- the capacity of each institution to fulfil their compliance function was assessed
- the frequency, type and scale of compliance testing activities under the Directives was assessed
- the scale of, and barriers to, international cooperative activities were assessed
- the nature of non-compliance procedures and penalties were documented

In addition to the above, an assessment of the value of full compliance was produced and compared to the resources currently allocated to compliance and the expected benefits of higher compliance.

Transposition of the legislation

All but one Member State and EEA has transposed the Energy Labelling and Ecodesign Directives into their national laws. The legislative and administrative functions were generally well planned and executed whereas the monitoring, verification and enforcement functions were either in their infancy or not undertaken at all. Responsibilities in most cases had been distributed and were transparent, but their physical activities were less well defined.

The table below shows the law used by each Member State and EEA to transpose the Energy Labelling and Ecodesign Directives and the date of the transposition.

Table 1. Date of Transposition of Directives by Country and Law Used

Country	Energy Labelling – 92/75/EEC		Ecodesign – 2005/32/EC	
	Date of Transposition	**Law used to Transpose**	**Date of Transposition**	**Law used to Transpose**
Austria	1998	Electrical Engineering Legislation	2007	Electrical Engineering Legislation
Belgium	1996	Commercial Law	2007	Environmental Law
Bulgaria	2006	Ordinance on the labelling requirements of the consumption of energy and other resources by household appliances under the Consumer Protection Act.	2007	Technical Requirements towards Products Act (TRPA)
Cyprus	2001	The Indication of the Consumption of Energy and Other Essential Resources By Household Appliances	2007	Ecodesign requirements for energy-using products law
Czech Republic	2001	Commercial Law (Energy Act and Energy Management Act)	Various 1997-2008	Commercial Law (Energy Act and Energy Management Act)
Denmark	1993	Energy Law	2008	Energy Law
Estonia	2004	Energy Efficiency of Equipment Act	2008	Energy Efficiency of Equipment Act
Finland	1994	Act of Ecodesign and Energy Labelling of Products	2009	Act on Ecodesign and Energy Labelling of Products
France	1994	Consumer Protection Law	2007	General Environment Law

Germany	1997	Energy Law	2008	Commercial Law
Greece	1997	Presidential Decree 180/1994	2007	Presidential Decree 32/2010
Hungary	2002	Consumer Protection Law	2007	Consumer Protection Law
Iceland	1994	Act on Ecodesign of Energy Using Products No 42/2009	2009	Law amending law no. 72/1994, labelling and disclosure requirements relating to household appliances energy use
Ireland	1995	European Communities Act 1972	2007	European Communities Act 1972
Italy	1998	General Law No. 107	2007	General Law No. 201
Latvia	2004	Consumer Protection Law	2007	Environmental Law
Lithuania	2003	Technical Regulation on indicating standard product information by labelling the consumption of energy and other resources for household appliances	2007	Technical Regulation on establishing a framework for the setting of Ecodesign requirements for energy using products
Luxembourg	2009	Product Surveillance Legislation	2008	Product Surveillance Legislation
Malta	2002	Product Safety Act	2007	Product Safety Act
The Netherlands	1992	Law on Energy Saving of Appliances/ Commercial Law	2007	Dutch Law of Environmental Governance
Norway	1996	EEA Agreement with the Norwegian Act relating to the Labelling of Consumer Goods.	Expected in 2011	Had not been transposed at the time of publishing
Poland	1997	Energy Law	2007	Energy Law
Portugal	1997	Consumer Protection Law	2009	Consumer Protection Law
Romania	Various 2002-2006	Energy Efficiency legislation	2007	Judgement on Ecodesign Requirements for Energy Using Products and Amending, Supplementing and Repeal of Laws
Slovakia	1999	Acts within Conformity Assessment Law	2007	Acts within Conformity Assessment Law
Slovenia	2001	Energy Law	2008	Energy Law

Spain	1994	Consumer Protection Law	2007	Royal Decree 1369/2007, of 19 October on the establishment of Ecodesign requirements for energy-using products
Sweden	1994	Law 92/1232 on the Labelling of Household Appliances and Regulation, and 1994:1774 on the Labelling of Household Appliances	2008	Law 2008:112 on Ecodesign.
United Kingdom	1994	Energy Conservation Law	2007	Energy Conservation Law

Source: Navigant, 2010 [1]

The recast Energy Labelling framework Directive 2010/30/EU was extended to cover more products and include products in the commercial and industrial sectors. It also added energy classes A+ to A+++ on top of the A rating for televisions, refrigerators, dishwashers and washing machines. Refrigerators, vending machines and display cabinets in the commercial sector and televisions, refrigerators, dishwashers, washing machines, water heaters, boilers and air-conditioners in the residential sector are being planned for legislation. The Commission is also working on the adoption of new energy labels for lighting, air conditioning, laundry driers, water heaters, boilers and vacuum cleaners. At the time that this study was carried out only one country had transposed the 2010 recast into national law (according to the European Law portal EUR-Lex), this was Estonia through Toote nõuetele vastavuse seadus (Product Conformity Act) - Legal act: seadus, number: RT I 2010, 31, 157; Official Journal: Elektrooniline Riigi Teataja, number: RT I 2010, 31, 157, Entry into force: 01/01/2011; Reference: (MNE(2010)57049).

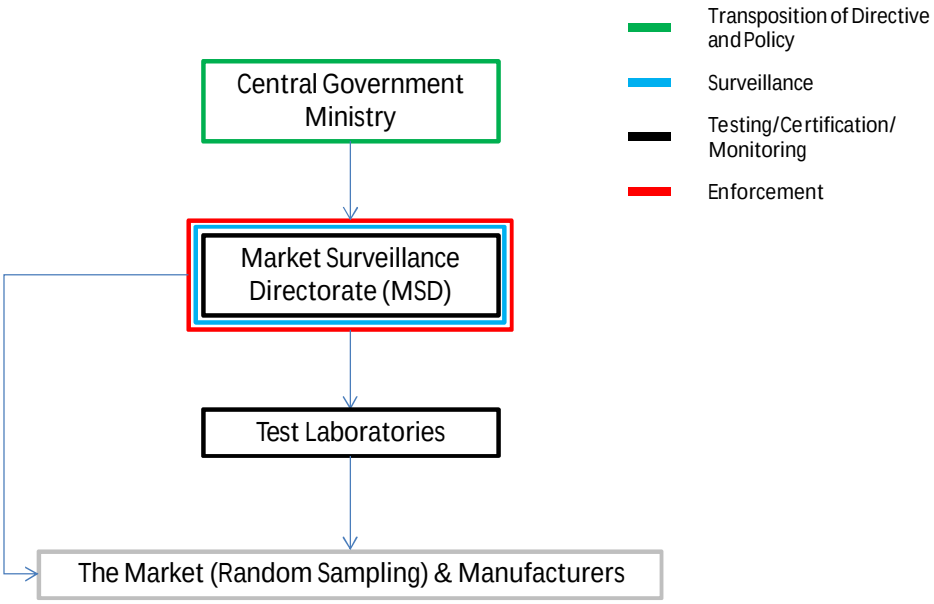
According to EUR-Lex, the recast Ecodesign Directive 2009/125/EC (which extended its scope to all energy-using products) has been transposed by Cyprus in 2011; Denmark (2010); Estonia (2010/11); Finland (2010); France (2010); Greece (2011); Lithuania (2010); Luxembourg (2010); Malta (2010); Poland (2011); Portugal (2011); Romania (2011); Slovakia (2010); The Netherlands (2010); and United Kingdom (2010). Future plans for Ecodesign include a further indicative list of product groups (10 in total) which are described in the working plan for 2009-2011 under the Ecodesign Directive. A preparatory study is being planned for each of these products between 2009 and 2011.

Institutional arrangements

The majority of the countries interviewed had clearly defined the roles of the institutions/stakeholders involved in MV&E. The capacity of those institutions however, varied considerably between countries. Broadly speaking, a Central Government department (often called a Ministry) was responsible for the transposition of the legislation; a delegated Government department sitting beneath the Ministry (often referred to as the market surveillance authority) was then responsible for compliance activities such as shop inspections and reviewing technical documents and in most cases enforcement also; testing was generally carried out by accredited laboratories after being instructed by the market surveillance authority. The share of responsibility was generally the same for Energy Labelling and Eco-Design but the role of a separate Government Agency which reported to a Government department such as an Energy Agency played a larger role in Energy Labelling. Denmark and Norway have set up/tasked a specific institution; Energy Labelling Denmark and Infratek Elsikkerhet AS, to manage the surveillance role under the Directive. Consumer Associations played a small role in the Directives some assisting with surveillance activities (Belgium, Cyprus, Greece, Italy and Luxemburg), and some countries

(Germany and Spain) delegate all compliance responsibilities except transposition to the federal states within their countries.

Figure 1. Typical Institutional Arrangement for MV&E Activities under the Energy Labelling and Ecodesign Directives



Institutional capacity

As mentioned in the previous section, the capacities of these institutions vary considerably in terms of resources and budgets. Many economies lacked clarity regarding the financial resources committed to their MV&E programmes, this may be due to a split in responsibility across agencies but more likely suggests that the information on the budgets is not readily available.

Most countries allocate some resources to the Directives, some are shared between both Directives (France, Hungary, Norway, Sweden) but most have allocated staff specifically for duties under either Energy Labelling or Ecodesign.

Under Energy Labelling some teams have very small capacities i.e. less than 1 FTE (Cyprus, Czech Republic, France, Greece, Iceland, Ireland and Malta) although these tend to be the smaller economies and some have large numbers of staff at their disposal, Slovakia has 10 FTE, The Netherlands have 3.5 FTE, Spain have 2-3 FTE in Central Government and 0.5 FTE in each region, Austria has 2 full time and 3 part time in Government and agencies and the UK has 3 FTE. Inspectors are generally available to most institutions on an ad hoc basis and are not counted as full time staff.

For Ecodesign compliance activities small numbers of staff exist in the countries previously mentioned under labelling, plus Estonia, and larger numbers in Austria (2 FTE in central government and 2 part time in the responsible agency) Denmark (3 FTE), Germany (13.5 at Federal level split between two organisations), and the UK (3 FTE).

Annual budgets for Energy Labelling compliance activities range from €1.2k (Luxembourg) to around €390k (Denmark). For Ecodesign compliance budgets range from less that €1k (Iceland) to €500k (Denmark). The larger combined compliance budgets, i.e. over €500k, are seen in Denmark, Norway, Sweden and the UK. Sweden's large budget, €180k for market surveillance and €650k for testing, is split between both Directives so it is unclear how it is distributed. Many countries are reluctant to share budgetary figures so conclusions can only be drawn from a sample.

Across the EU we tentatively estimate that there are about 80 full time equivalent staff working on Ecodesign and energy labelling compliance administration in the 27 Member States and perhaps the same level (optimistically) involved in store inspection to ensure labelling compliance. Total

Community wide annual expenditure on compliance appears to be between about 7 and 10 million Euro.

Scale of compliance testing

Testing is heavily dependent on the availability of laboratories, accredited or otherwise. At the time of interview the following countries had no operational accredited laboratories: Austria; Belgium; Cyprus; Iceland; Ireland; Latvia; Lithuania; Luxembourg; Malta; Portugal; Romania; and Slovakia. This represents 41% of the countries interviewed. Of these countries, some looked outside to foreign to laboratories to undertake tests on their behalf (Austria, Iceland, Ireland, Luxembourg, Romania and Slovakia), some also stated that they were in the process of arranging for accreditation for their domestic laboratories (Austria and Ireland).

The Danish laboratory DTI is used by the Governments of Norway and Sweden to perform tests under the Directives. These are good best practice examples of overcoming capacity restrictions in countries that wish to undertake testing.

Because of the comparable infancy of the Ecodesign Directives to Energy Labelling, testing under the Ecodesign Directive was fairly limited. For Energy Labelling more testing has been undertaken as part of monitoring and surveillance activities.

Of the 17 countries with accredited laboratories, only 7 currently conduct verification tests (Denmark, Germany, Hungary, The Netherlands, Spain, Sweden and The United Kingdom). Of these 7 countries most performed testing on the full range of products covered under Energy Labelling making it hard to determine whether one product was favoured over another. Of the 7 countries conducting testing only 4 have undertaken testing under the Ecodesign Directive: Denmark (preliminary testing only), Germany (stand-by and lamps), The Netherlands (stand-by is being planned) and the United Kingdom (products unknown).

Across the EU as a whole we estimate that there are between 800 and 1500 product energy conformity tests done for official compliance purposes per year.

Levels of non-compliance

Types of non-compliance under the Energy Labelling Directive include: mixed labels (e.g. label for a refrigerator placed on a washing machine); label in a foreign language; no label; the sticker with the equipment's specific energy data was an inadequate size (it did not match the size of the energy label base grid for that appliance type, making it difficult to read); energy label used was a carbon copy; data was handwritten on the energy label (making it less credible); reuse of labels (stickers glued on top of each other; sometimes the information corresponding to the previous equipment, under the last sticker, was still legible); and noise level of equipment is not indicated (particularly in washing machines and air-conditioners) –although it is not always clear whether that qualifies as non-compliance.

The reported EU average for unlabelled appliances is 20 – 30% [2].

The largest retailer and manufacturer survey undertaken to date has been the Fraunhofer Report in 2009. Fraunhofer interviewed all Member States and conducted surveys on retailers in the various countries. The results from the retailers varied considerably, from 26% to 90%. Fraunhofer also asked stakeholders what they considered compliance to be, invariably they answered higher than the survey results. Compliance was also noticed to be higher in larger chain stores in towns than when compared to smaller stores out of town, regardless of the country.

Manufacturer compliance is a little harder to gauge without testing which the majority of countries do not undertake. Fraunhofer classified compliance for manufacturers as low, medium, high based on interviews with stakeholders, again results varied across Europe. For those countries not undertaking verification testing, the justification provided was that it was deemed either: too expensive; the market was considered too small; MV&E budgets were too constrained; not enough resources; no access to accredited laboratories; and testing procedures were considered too complex. When this was the case many countries only engaged in testing as a result of a complaint which was satisfactory for their requirements.

Monitoring of the internet and catalogue offers also varied by country. The main reason proffered for a lack of consistent mass checks for these mediums was that the internet and catalogue sales volumes are low and not considered to be a common route to market at present. Thus it is suggested that attributing resources in the form of employees or budget would not be effective or justified [3].

Of the countries that did undertake verification testing:

- Denmark - 50-60 products were systematically tested under the Energy Labelling Directive in 2010 and only CFL's and technical document assessments for Ecodesign

- Germany - Ecodesign only at State level – around 400 products by October 2010 in Hessen including lamps, televisions, refrigerators, EPS, and those covered by the stand-by regulation

- Hungary - 200 appliances a year from all product groups, with between 3 and 5 reported cases of non compliance under the Energy Labelling Directive

- The Netherlands – about 75 appliances are tested for Energy Labelling compliance each year of which the majority are washing machines, ovens and refrigerators. It is reported that 98% of the appliances are classified correctly [4]. Ecodesign testing is still in the planning stage and Stand-by power consumption in consumer electrical appliances was due to be tested towards the end of 2010

- Spain - through the RENOVE subsidy programme (details below)

- Sweden – Under an Energy Labelling Directive 2010 testing programme the following appliances were tested by the Danish Technological Institute: freezers (90% compliance), washing machines (90%) and tumble dryers (100%)

- UK – 20 to 100 units a year from all product groups - typically only 10 % are classified correctly if permitted tolerances are discounted, but the tolerances are too large, so that 80 % are classified correctly if the 15 % permitted tolerance limits are applied

Some observations follow:

Outside of the Eco Design and Energy Labelling Directives, Spain also has other programmes that encourage the adoption of energy efficient appliances. For example, the "RENOVE plan", now in its fifth cycle, works to subsidise the replacement of old appliances with new efficient models. The RENOVE plan is managed by the regional governments who allocate a fixed annual budget to encourage the selection of efficient appliances within the official database of IDAE. This restriction ensures that only appliances that have been tested and verified can be supported by the subsidy. The level of the support is approximately €100-130 per appliance. The retailer receives the rebate, and the cost for the consumer is discounted. This is a substantial programme in Spain, where between 2006 and 2008, 1.8 million electric appliances were replaced under the scheme, of which 48% were washing machines, 38% fridges, 11% dishwashers and the remaining 3%, freezers.

The central Government, mainly the IDAE selected appliances from the Plan RENOVE programme, purchased them and then tested them to ensure that the energy class and performance data presented on the label are correct. Through monitoring of the database, IDAE estimates that approximately 75% of the products are correctly labelled and 25% of the products are removed from the list [5].

This programme is an example of one of the initiatives working to improve the level of supplier compliance with the energy label and addresses both the presentation of the label on the appliance in retail shops and the technical performance reported on the label itself. If the programme has a specific energy efficiency requirement for a model to be included, manufacturers have to submit the documentation to the programme organisers for inspection.

In the UK Defra noted that testing of consumer products is time consuming, expensive and it can be difficult to find specialist laboratories able to conduct the tests. Typically, if permitted tolerances are discounted only 10 % of products would be deemed to have their declared energy label class; however, this is largely a function of the legally permitted tolerances being overly generous and of

producers taking advantage of this as about 80% of products were found to be properly classified if the 15 % tolerance limit is applied.

Penalties for non-compliance

Penalties under the Directives typically consist of warning letters; fines; prosecutions; and judicial sentences; warning letters and fines being the most common course of action. Fines vary by country and by Directive, Ecodesign appearing to carry heavier fines than Energy Labelling. Fines are sometimes very difficult to administer due to the interaction with other parties and often it costs more to administer the fine that the fine itself, particularly when the fines are modest.

In Denmark, a new course of action that has not been trialled yet is that if the Government can show that there has been extra earning as a result of the mislabelling/ misrepresentation of an appliance, they can confiscate the money earned. This approach could be hard to prove and might explain why there have been no cases of its use yet [6]. Another popular and effective course of action is to 'name-and-shame' non-compliant manufacturers and retailers through websites and press releases. This approach is considered more powerful than any other approach due to the damage to reputation. Sometimes even the threat of publishing test results is enough to provoke a manufacturer to change their product's label information.

The enforcement of the Directives comes up against some barriers for example when manufacturers are not a part of Conseil Européen de la Construction d'appareils Domestiques (CECED) there is a problem with enforcement [7]. This is due to the parties responsible, mainly from China, being more challenging to make contact with and the importers not being considered legally responsible [8].

The Market Inspectorate of Slovenia reported that Slovenia had problems implementing a penalty system and it took two years to put a system into place. Clarity of the existing laws was needed. According to reports from the Market Inspectorate, administrative checks were conducted on energy labelling and the Energy law is currently under reconstruction [9].

Very few countries have taken legal action as a result of non-compliance under the Directives, of those that have some examples follow:

A recent high profile enforcement case in Sweden involved Samsung freezer model RZ80EESW labelled class A+ [10]. The product was tested and was found to only meet the requirements for Class B. The Swedish Energy Agency was alerted to this non-compliance by Bosch, illustrating the influence market competition can have on driving up compliance levels. The Swedish Energy Agency issued Samsung a penalty order for €500k with demands to re-classify the model as class B or improve its energy performance. In response, Samsung withdrew the model from the market and avoided paying the fine, even though 15,000 non-compliant freezers had been sold up to that point. It is interesting to note that the Swedish Energy Agency shared the non-compliance information with the Danish Energy Agencies, who collaborated with Sweden and were involved in the ensuing negotiations with Samsung Nordic [11].

The UK recently had a successful prosecution against a freezer importer who had false energy labels on their products. In August 2010, the Northamptonshire County Council's Trading Standards Office successfully prosecuted a retailer for advertising and selling chest freezers with incorrect energy labels. John Gillman and Sons (Electrical) Limited of Gloucester pleaded guilty to six offences contrary to regulation 9 of the Consumer Protection from Unfair Trading Regulations (2008). They were fined £5,400 and court costs of £9,400.

Benefit-cost value proposition of higher compliance

The costs incurred by poor compliance (in terms of energy, CO2 and economics).

The EU has a well documented target of reducing its primary energy use by 20% in 2020 compared to business as usual projections. Energy efficiency improvement is placed firmly at the heart of EU

Energy policy and according to Commission thinking Ecodesign and energy labelling are intended to produce 25% of this overall objective. Nonetheless, recent Commission estimates suggest that the EU is on course to achieve only half of the 20% savings objective.

The combined effects of full implementation of the existing and new measures will transform our daily life and have the potential to generate financial savings of up to € 1 000 per household11 every year; improve Europe's industrial competitiveness; create up to 2 million jobs12; and reduce annual greenhouse gas emissions by 740 million tons13

It's been estimated that at least 25% of the EU's total energy savings objectives need to be met by the combined impact of the Ecodesign and Energy Labelling efforts. Ecodesign measures have been issued for twelve product groupings already and measures are under development or consideration for another 34 products. The products already subject to measures are projected to consume almost 2000TWh of electricity by 2020 and give rise to 839Mt of CO2 emissions, whereas the entire set of products under consideration will have a much higher consumption.

Furthermore a new Ecodesign plan for 2012-14 is under development which considers priorities among all energy using and many energy consumption influencing products. For the products already subject to regulations the Commission has estimated that the total yearly savings by 2020 should total 341 TWh of electricity demand and 143 Mt of CO2; however, as more products are added these savings should increase by between a factor of 2 and 4. The Ecodesign and energy labelling measures are among the most concrete energy efficiency policy measures yet implemented or being countenanced and thus they form a central plank of the Community's energy conversation plans. Given this context it is germane to consider how adequate the existing enforcement effort is and whether or not sufficient resources are being committed to it. One means of doing this is to assess the value of the energy likely to be lost through poor compliance. As already alluded to the compliance data currently available is patchy and so it is difficult to draw a clear picture of the current degree of non compliance. Based on the detailed assessments reported in the UK and discussed at the IEA 4E workshop on compliance [13] the typical level of energy lost through non-compliance is likely to be at least 10% of the value of the total energy savings and probably greater than this.

As a working assumption if we estimate that by the time Eco-design measures are put in place for the current products under consideration in the Ecodesign process that expected savings in 2020 will be about 700 TWh of final electricity demand. If 10% of this would be lost under the current compliance regime it would amount to 70TWh of lost savings annually in 2020. At current energy prices this would be worth about 9.5 billion Euro per year or roughly €20 per capita. Thus current expenditure on compliance with energy labelling and Ecodesign across the EU is roughly one thousandth of the value of the lost energy!

It is not clear how much additional compliance would be ensured from incrementally increasing compliance efforts but there is clearly a huge scope for cost-effective increase in compliance expenditure at the societal level. As a first rule of thumb we would propose that states should certainly not be spending less than €1 per capita on product energy performance compliance. Although this would constitute a 50-fold increase over current average EU compliance expenditure, it is still only a 20^{th} of the value of the currently projected energy losses. Such expenditure could be expected to increase compliance by at least 50% and hence would still be highly cost-effective from a societal stand point.

How could things be improved?

Like previous studies into this area this latest effort has confirmed that at best product energy performance compliance efforts in Europe can be described as half-hearted. A number of barriers to improving compliance were identified through the study. The key ones being: inadequate funding and capacity of the institutions responsible for carrying out monitoring, verification and enforcement activities; weak penalties for non-compliance; lack of transparency regarding compliance activities and lastly a lack of awareness among consumers such that manufacturers and retailers do less likely to fear being 'shamed' in the media. Overall these problems stem in large part from a lack of prioritisation of MV&E activities among central Governments. In general, the system is assumed to be

working and whenever faults are detected they are liable to be blamed on individual parties, retailers, manufacturers, agencies rather than the collective.

Compliance levels seem to vary significantly and even in the Member States with the most comprehensive compliance efforts the coverage by product type is not comprehensive. In some Member States the coverage is minimal or non-existent. As progressively larger lists of products are added to the Ecodesign and Energy Labelling portfolios the coverage of compliance programmes and the availability of accessible testing facilities is set to become a progressively greater concern.

Across the EU as a whole expenditure on ensuring product energy performance compliance is estimated to be roughly one thousandth of the likely value of the extra energy consumed due to poor compliance. Thus the investment case for strengthening compliance is clear. There is a need to educate finance ministries of this lost opportunity so the broader macro-economic arguments can be considered in resource allocation decisions.

At present the financial penalties imposed for non-compliance are generally rather weak and hence their deterrent effect must be questioned. The main deterrent value appears to be the risk of bad publicity from being found to be in breach of EU legal requirements; however, some suppliers with greater brand value are likely to be more susceptible to this concern than those that sell to private label or OEM markets and thus some part of the market may only be weakly affected by brand value concerns. It is interesting to compare penalties applied in the EU to those in place in the US. In the latter the authorities have the possibility of applying fines of up to hundreds of dollars per non-compliant product sold on the market and thus the cost of a proven case of deliberate non-compliance could be so large as to effectively bankrupt a perpetrator. Such penalties do not appear to be available to EU regulators and thus the need to have a more comprehensive market surveillance effort becomes that much greater.

Aside from the obvious opportunities of increasing national resource allocations for compliance activities and strengthening penalties for non-compliance our stakeholders presented a number of suggestions to overcome the barriers identified. These included: strengthening the role of the ad hoc committee of Member State compliance agencies, ADCO, and encouraging more Intelligent Energy Europe led compliance support projects; greater information sharing and cooperation between countries, which would particularly benefit countries with limited or no access to accredited laboratories; increase financial support for responsible institutions operated by the EU or EC; subsidise/standardise the cost of testing – this makes MV&E plans easier to budget for and is more inclusive for countries with very small budgets for these activities; simplify the MV&E procedure as some stakeholders/manufacturers/retailers do not understand their role and specific responsibilities; make labels more adhesive as some stakeholders claim they fell off the products easily and were not replaced by retailers; more manufacturer inspections generally; testing at a European level; and finally storing key documents such as technical files on line, making them easier to access by enforcement staff as and when they require them.

- increase the fines for failing to comply with the Directives and thereby increase the incentive to comply;
- Our own recommendations include these but emphasise the following:
- Resource allocations for compliance activities need to be greatly increased to a level of at least €1 per capita per annum.

If increased central funding is not possible through central taxation governments might wish to consider funding compliance activities through energy efficiency schemes such as energy efficiency obligations or white certificate programmes

The extra resources should be spent on expanding verification testing (both for the number of products being tested and the range of products being tested), on strengthening market surveillance for energy labelling and on managing prosecutions and publication of non-compliance and other non-compliance procedural processes

To increase the effectiveness of compliance efforts governments should consider significantly increasing penalties for non compliance

Member States cooperation could be greatly facilitated were all products and their variants sold in the EU to be registered in a central database and national compliance testing results to be shared such that other member states could minimise duplicative testing.

Record keeping in general would benefit from greater standardisation and consistency to ensure commonality of procedures and reporting templates

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