Top Runner in Europe? Inspiration from Japan for EU ecodesign implementing measures

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Abstract
Top Runner is a Japanese programme addressing energy use in the transport, commercial and private sectors. Since the beginning of the programme in 1999, mandatory standards have been set for a variety of products. The programme is effective in the sense that, in general, the standards have been met.

The appeal of the Top Runner approach is embedded in its clear and simple goal: go for the best; the product on the market with the highest energy efficiency (the Top Runner) sets the standard. Moreover the scheme is dynamic: once the date is reached by which time the standard should be implemented, market data is analysed to select the next Top Runner.

Review of the main characteristics of the Top Runner programme does not show insurmountable barriers for using the Top Runner approach in Europe. On the other hand it is unlikely that an exact copy of the Top Runner programme could be successfully implemented in Europe. Especially the fleet average approach (i.e. not individual products but the sales weighted averages of products of a manufacturer have to meet the standard) does not seem appropriate for a mandatory instrument in Europe.

The Top Runner approach can in principle be achieved in Europe by adopting specific implementing measures within the framework of the Ecodesign Directve. A separate "Top Runner" Directive is not needed. However, the Top Runner approach contains valuable lessons for the Ecodesign approach:

- Most important: make Ecodesign an appealing policy by focussing clearly on the minimum life-cycle costs: *Ecodesign means lowest cost for the consumer*.
- Make Ecodesign a dynamic policy by including an update clause in every specific implementing measure.
- Use Ecodesign to trigger innovation by setting ambitious standards with a long planning horizon.
- Strict enforcement of Ecodesign requirements is needed; coordination between Member States and mutual support are necessary.

Introduction
The Japanese Top Runner approach to address energy use in the transport, commercial and private sectors has appealed to several organisations (e.g. Greenpeace) and EU Member States (Germany, UK) as a scheme for introduction in Europe. However, some industry associations have reacted negatively.

In principle the Top Runner approach is simple. Assessing the energy consumption of products available on the market reveals the "Top Runner" product, i.e. the product with the highest energy efficiency. This product then sets the standard which all manufacturers have to meet for the average of their products after a number of years (the target year). Then the cycle starts again with the assessment of the (new) Top Runner product.

The appeal of the approach is embedded in the following characteristics:

- It is dynamic and market driven.
- The assessment is simple, based upon data from products available on the market.
- It has a positive connotation: the most efficient product on the market is the Top Runner.
- It is effective in Japan, where the programme has been running since 1999.

This document explores the characteristics of the Top Runner scheme, its results (based on Tojo (2005), Nagata (2006) and METI and ECCJ (2006)) and discusses the possibility and necessity of introducing a Top Runner scheme in Europe.

Characteristics and results of the Top Runner programme

MAIN CHARACTERISTICS

The main characteristics of the Top Runner programme are:

- The Top Runners set the standards.
- The standards setting process is dynamic, with stakeholder input.
- The standards refer to a (fleet) average.
- The standards are mandatory.

Besides these main characteristics (presented below) the Top Runner programme has other aspects which are dealt with in the next section. Furthermore, some information on results is provided.

The Top Runners set the standards

In principle the standard for the target year is set at the value of the most energy efficient product (the Top Runner) at the time of market analysis. Because the standard is based upon data from existing products it can be said that the standard is market driven, i.e. no standard is set that is not (yet) available in a product on the market. This is the general principle, however, standard setting takes into account technological innovation and diffusion. The standard should not be set by a unique product using patented technology; on the other hand if technological innovation indicates more room for improvement the standard can be set above the value of the Top Runner product.

A great advantage of this approach is that it is (relatively) easy to implement: the data is in most cases readily available[1] and the analysis can be kept straightforward. Furthermore, no life cycle cost analysis is required. An underlying assumption is that the relevant test procedures (e.g. for energy consumption and performance) are available and up to date.

The standards setting process is dynamic, with stakeholder input

The standards setting process is dynamic, i.e. the revision of the criteria is triggered when the target year for a product group approaches, or earlier when the criteria have been met well before the target year. However, the time span between setting the standards and the target year is (relatively) long: between 3 and 11 years, with an average of 5.6 years (see Murakoshi (2005, table 2)).

The approach is incremental and based on progress with existing products. This might not be the optimal or optimal (technical-economical) progress. Furthermore, it can not be expected that this process results in radical changes that are needed for achieving a sustainable society.

Several problems[2] can be identified when deciding upon the new target:

1. Interference with other environmental aspects.
2. Interference with performance aspects.
3. Differentiation between products from the same category.
4. Dealing with (exponential) increased performance.

Interference with other environmental aspects

Decreasing energy consumption could interfere with improving other environmental aspects. Even if it is not directly conflicting, a strong focus on energy effiency could absorb resources at manufacturers' that otherwise could have been used to improve other environmental aspects. Tojo (2005, p. 64) indicates some issues regarding expanding the Top Runner programme towards other environmental aspects, especially setting the boundary and agreeing on parameters would not be straightforward.

Interference with performance aspects

Decreasing energy consumption could interfere with performance. Decreasing washing temperature could decrease the wash performance of a washing machine or dishwasher. A longer wash cycle in a washing machine to maintain performance at decreased temperature could increase wear of the fabric.

Differentiation between products from the same category

Another aspect is the differentiation between products from the same category but with a different type of performance, e.g. a television with a small screen compared to one with a large screen or a refrigerator with and without internet terminal. Differentiating the standards with regard to such performance aspects ensures that a wide range of products are available because there is no penalty for e.g. a larger screens as such, but may result in increasing (absolute) energy consumption when consumers favour the larger products. The Top Runner programme differentiates standards with regard to performance for e.g. cars and televisions. Tojo (2005, p. 61) questions this approach in view of achieving a sustainable society.

Dealing with (exponential) increased performance

In many cases the standard is expressed as energy efficiency, i.e. functional units per unit of energy consumption. If the performance (the number of functional units) of the product increases dramatically during the period, the standard looses

1. If not at the first analysis then certainly for the second and following analysis; otherwise monitoring and enforcement would not be possible.

2. However, these problems are not unique to the Top Runner approach, they apply to all (energy efficiency) standards setting approaches that intend to be dynamic.

its guiding principle. Examples in the Top Runner programme include standards for hard disks and computers. The solution used by the Top Runner programme is to use two tier standards (METI and ECCJ (2006, p. 47 and 49)).

The standards refer to a (fleet) average

The fleet average of products of a manufacturer should comply with the standard. This means that the Top Runner approach is (formally) not a MEPS3: not all products of a manufacturer have to fulfil the target, but the (sales weighted) average has to. Several problems are associated with this characteristic. First it is necessary to calculate the average sales data. In most cases this data will not be (publicly) available from manufacturers because of its highly confidential nature; and gaining access to this information through a specialised company is very expensive. Experience shows that estimates based on a simple average (i.e. not sales weighted) can provide a good proxy for a sales weighted average. Second, it means that consumer behaviour is still important. Whereas with MEPS you can be sure that every product meets the standard, the (fleet) average approach goes wrong if too many customers buy products with low efficiency (which are then not compensated for by products bought with a high efficiency). Third, enforcement is much more difficult. Testing the efficiency of a single product does not ascertain whether the target is complied with (by the manufacturer), since that you would need the values and the sales data of all products of the manufacturer. Therefore, verification is highly dependent on manufacturers.

Of course the fleet average provides flexibility for manufacturers, especially for products where several platforms co-exist and are sequentially updated (as is the case for many consumer electronic and ICT products). Another advantage is that – in principle – no models are banned from the market. Even low efficiency products can be produced and sold, provided they are compensated for by the sales of high efficiency models.

The standards are mandatory

Mandatory standards can and should be enforced, otherwise they are in practice a voluntary agreement. As indicated in the previous paragraph the fleet average approach provides special challenges regarding enforcement. So far the Top Runner programme has been dominated by manufacturers and importers who are members of the respective industry associations, the majority of whom are Japanese. Enforcement within the Top Runner programme relies on "blame and shame" which works well in Japan with Japanese manufacturers and importers. It is uncertain how effective this type of enforcement is when "no name" brands obtain a larger market share.

OTHER ASPECTS

The Top Runner approach is complemented by related policy instruments, such as information to consumers, the use of Top Runner standards in public procurement and award schemes and a tax reduction scheme for cars. Some of these instruments are mandatory, e.g. information provided by manufacturers, others are voluntary, e.g. the labelling scheme and the award scheme for retailers (Murakoshi, 2005).

Tojo (2005, p. 62) notes that especially the Green Procurement Law promoted earlier application of environmental technologies because the law came into force before the target years set for the Top Runner programme were reached.

RESULTS OF THE TOP RUNNER PROGRAMME

Although information on sales-weighted average is scarce, except for computers and cars, figures regarding the number of models placed on the market that comply with the Top Runner standards indicate that in general these standards have been met (Tojo, 2005, p 40, 42). (Table 1)

Nagata (2006) summarizes results on improvements for televisions, video cassette recorders (VCRs), refrigerators and air conditioners. For these products the first target year passed in 2003 or 2004. Other results are provided by METI and ECCJ (2006). (Table 2)

At first instance these tables illustrate that the Top Runner approach is successful. However, since the targets have been (easily) met, it could also mean that the Top Runner standards were set too low. Tojo (2005, p 44) spends some attention on the relative stringency of the Top Runner standards, concluding that "manufacturers must be at least as well equipped with technologies as their counterparts abroad when it comes to meeting and exceeding the Top Runner standards". The Top Runner programme is considered to be a success in Japan. For the next rounds product categories are extended (LCD and Plasma TV are added to the product "Television", trucks and busses are added to the product "Vehicle"), targets are under revision (air conditioners and refrigerators), products and sectors are added.

Table 1. Percentage of products meeting the Top Runner standard

Product	2000	2001	2002	2003	2004
Desktop computers	90 %	100 %	100 %	100 %	
Laptop computers	88 %	89 %	100 %	100 %	
Cars	37 %	55 %	73 %	80 %	87 %
Air conditioners	40 %	57 %	59 %	90 %	100 %
Refrigerators	47 %	77 %	82 %	87 %	96 %

Source: Tojo (2005, p. 40, 42)

3. Minimum Efficiency Performance Standard

Table 2. Realized improvements

Product	Target	Target year (FY)	Result
Television	117 kWh/year (16.4 % improvement)	2003 (starting at 1997)	104 kWh/year (25.7 % improvement)
VCR (standby)	1.88 W (58.7 % improvement)	2003 (starting at 1997)	1.2 W (73.6 % improvement)
Refrigerators	449.7 kWh/year (30.5 % improvement)	2004 (starting at 1998)	290.3 kWh/year (55.2 % improvement)
Air conditioners (3 categories)	COP 5.27, COP 4.90, COP 3.65 (63.0 % improvement)	2004 (starting at 1997)	COP 5.33, COP 5.14, COP 4.10 (67.8 % improvement)
Freezers	22.9 % improvement	2004 (starting at 1998)	29.6 % improvement
Passenger gasoline vehicles	23.0 % improvement	2010 (starting at 1995)	22.0 % improvement (as of 2004)

Source: Nagata (2006), METI and ECCJ (2006); FY=fiscal year

Top Runner in Europe?

The main aim of this paper is to present pros and cons whether the Top Runner approach could be successfully applied in Europe within the scope of the Ecodesign Directive. This question can be split up into two subquestions:

1. Could the Top Runner approach, as such, successfully be applied in the EU?
2. Has the Top Runner approach added value compared to other instruments applied in the EU, especially regarding the implementing measures within the framework of the Ecodesign Directive?

First, it is noted that a *product* approach, such as Top Runner, by definition targets energy consumption of individual products. However, *total* household and commercial electricity consumption is not (completely) controlled with such an approach. Firstly, not all products that are used in households are included in e.g. the Top Runner approach. Second, even if all products were included, the approach does not control the number of products households use, nor the duration of their use. An example: the electricity consumption of cold appliances has decreased over the last decade in the Netherlands because of successful implementation of the EU labelling programme. However, at the same time household electricity consumption increased due to the increase in use of other household appliances.. So, nor Top Runner, nor any other product oriented approach can be the single "silver bullet" regarding energy saving and CO_2 reduction (Siderius, 2004).

In the next sections the questions will be answered. In a separate section attention will be paid to the application of the Top Runner principle in voluntary programmes.

WOULD THE APPLICATION OF TOP RUNNER IN EUROPE MEET WITH SUCCESS?

To answer the first question the main characteristics of the Top Runner scheme – as assessed in the first part of the paper – will be reviewed with regard to the situation in Europe.

The Top Runners set the standards

The best product to set the standard is as such not common practice in Europe. With regard to MEPS and voluntary agreements the current practice in Europe could be described as "eliminating the worst", whereas the Top Runner programme "aims at the best". Note the difference in connotation, which could be illustrative of the cultural difference between Europe and Japan.

There is another difference between the Top Runner approach and the European practice regarding MEPS and voluntary agreements: the period between the analysis (and setting the standards) and the date of entry into force. Figure 1 illustrates these differences: the Top Runner target is the (efficiency of the) best product on the market at time of the analysis (t0), the MEPS or efficiency level in the voluntary agreement (VA) in the EU is a level that eliminates the worst. The time given to industry to reach the Top Runner level (t2-t0) is longer than the time given to comply with the MEPS or VA level (t1-t0). (Figure 1)

This has several consequences:

a) A long period between the analysis and the entry into force poses risks for products that develop fast, e.g. computers, because the date of entry into force of the standard is outside the normal time horizon of the industry. In that case the standard might have become meaningless by then.

b) It could be argued that the more ambitious level of the Top Runner approach is compensated for by a longer lead time (on average 5.6 years). However, the more ambitious level also provides more riscs for manufacturers, especially those with multiple products with low efficiency levels. They don't know on beforehand whether they can achieve the more ambitious level. This might be the reason why industry associations in Europe are not in favour of the Top Runner approach; since they (also) defend the interests of the members that produce or import low efficiency products.

c) Related to the foregoing item, a more ambitious level will spur innovation, which at the time is an important element in EU (industry) policy.

The standards setting process is dynamic with stakeholder input

To be dynamic the process needs an automatic update trigger. Some instruments in Europe have a deadline for updating, e.g. the ecolabelling scheme, others do not, e.g. the energy labelling scheme. This does not seem to act as a barrier. However, industry might oppose automatic updating because it decreases their negotiating space.

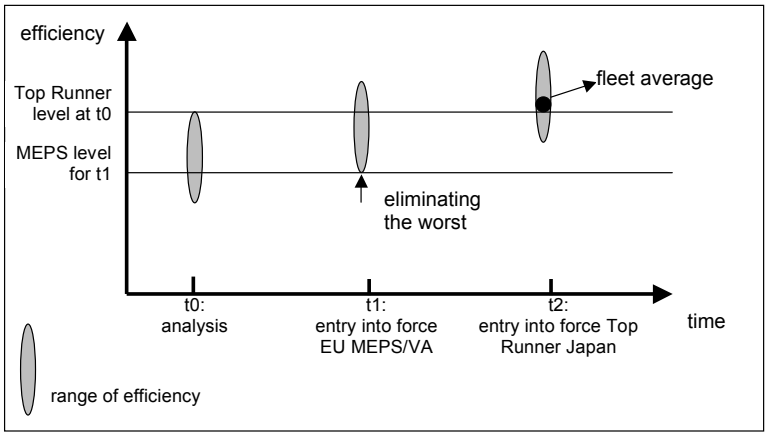

Figure 1. Top Runner approach versus EU MEPS and voluntary agreements (VA)

The standards setting process includes discussion and negotiation with stakeholders (industry). This is common practice in Europe, not only with voluntary agreements but also regarding Energy Star, energy labelling, ecolabelling and implementing measures within the framework of the Ecodesign Directive.

The standards refer to a fleet average

The market structure is also relevant when reviewing the fleet average approach within the European context. The fleet average approach offers advantages in a market with a relative stable number of players (few newcomers). In a market with a continuous stream of newcomers – which then are only on the market for a relatively short period – the fleet average approach has serious flaws regarding enforcement. Therefore the fleet average approach does not seem appropriate in the context of the EU market. All the more because one of the main goals of the single European market is to encourage competition.

However, this does not disqualify the *Top Runner* approach as such, it only indicates that a Top Runner standard has to be a real MEPS[4].

The standards are mandatory

The mandatory character is a "must" regarding the use of the Top Runner approach in Europe. Experience shows that with a voluntary approach market coverage is about 50 %, except for voluntary agreements with the white goods industry (Siderius and Meier, 2006, table 2). Moreover, industry associations are – initially – not in favour of a Top Runner approach.

The structure of most industries relevant for the Top Runner approach is such that non European (based) manufacturers have a significant market share. Also the degree of organization, e.g. through industry associations, varies between industries. This implies that 'naming and shaming' which is the main enforcement mechanism for Top Runner would not be an adequate enforcement mechanism.

Conclusion

The main characteristics of the Top Runner approach have a variable match when reviewed with regard to the situation in Europe. On the one hand the review does not show insurmountable barriers for using the Top Runner approach in Europe, on the other hand it is unlikely that an exact copy of the Top Runner programme could be successfully implemented in Europe.

WOULD THE TOP RUNNER APPROACH DELIVER ADDED VALUE?

In the foregoing section the question was answered whether the Top Runner approach, as such, could be implemented in Europe. Since the result did not show any prohibitive aspects, this section will deal with the question whether the Top Runner approach would deliver added value above instruments already available in Europe. Given that a mandatory approach is needed, the framework for using a Top Runner approach in Europe would be the Ecodesign Directive. Although in theory a Top Runner approach in Europe could be implemented by a separate directive, given the existence of the Ecodesign Directive separate legislation is highly improbable and will not be considered. Therefore, the added value of the Top Runner approach will be viewed within the framework of the Ecodesign Directive[5]. Table 3 lists the products that are covered by the Top Runner programme and the products for which a preparatory study in the framework of the Ecodesign Directive is or will be carried out. From this table it can be concluded that not only overlap but also considerable differences exist in products covered by the Top Runner programme and Ecodesign.

The Top Runners set the standard

First, Ecodesign deals not only with energy efficiency but with all relevant environmental characteristics that can be (significantly) improved. In the following it is assumed that, when fulfilling the conditions in Article 15(5) of the Ecodesign Directive, if the energy effiency of a product can be improved it can be done without compromising other environmental characteristics[6]. Second, the method for setting specific ecode-

4. In Japan due to the Green Procurement Law almost all manufacturers meet the standards not only on a sales weighted average basis, but also on an individual product basis (Tojo, 2005 p. 62).

5. Restricted to specific implementing measures since only with these measures criteria for certain product characteristics can be set.

6. Kemna (2005, p 17) found that for almost all of the 10 product cases a reduction of environmental impact (including impact due to energy consumption) of 20-30 % could be achieved.

Table 3. Overview of products covered by the Top Runner programme and Ecodesign*

Products covered by Top Runner	and by Ecodesign
Space heaters	Boilers, including combi-boilers
Water heaters	Water heaters
Computers, magnetic disc units	PCs and computer monitors
Copying machines	Copiers, faxes, printers, scanners, multifunctional devices (imaging equipment)
TV sets	Consumer electronics: televisions
Air conditioners	Residential room-conditioning appliances
Refrigerators and freezers	Domestic refrigerators and freezers
Fluorescent lights	Domestic lighting
	Products covered by Ecodesign (and not by Top Runner)
	Standby- and off-mode losses
	Battery chargers and external power supplies
	Office lighting
	Street lighting
	Electric motors
	Commercial refrigerators and freezers
	Domestic dishwashers and washing machines
	Solid fuel boilers
	Laundry driers
	Industrial air compressors
	Electric heating appliances (incl heat pumps)
	Set-top boxes
	Vacuum cleaners
Products covered by Top Runner (and not by Ecodesign)	
VCRs	
Electric toilet seats	
Gas cooking appliances	
Vending machines	
Transformers	
Passenger vehicles	
Freight vehicles	

* products for which an preperatory study is or will be carried out

sign requirements is provided in Annex II of the Directive. The main part of this analysis runs as follows.

A technical, environmental and economic analysis will:

- select a number of representative models of the EuP in question;
- identify the technical options for improving the environmental performance of the product (conditions: economic viability, no significant loss of performance or usefulness for consumers);
- identify, for the environmental aspects under consideration (i.e. energy efficiency) the ***best-performing*** products and technology available on the market;
- take into consideration the performance of products available on international markets and benchmarks set in other countries' legislation

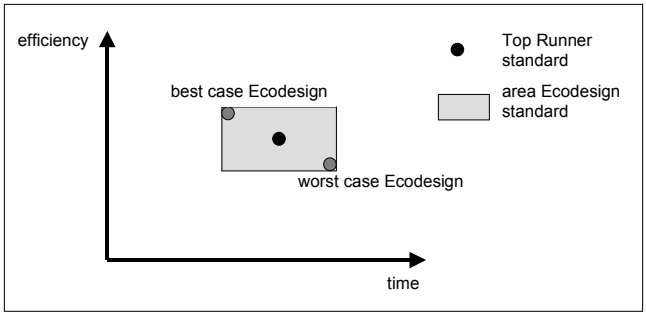

Figure 2. Standards setting: Top Runner versus Ecodesign

Concerning energy consumption in use, the level of energy efficiency or consumption will be set aiming at the life-cycle cost minimum to end-users for representative EuP models, taking into account the impact on other environmental aspects. Furthermore a sensitivity analysis covering the relevant factors will be carried out to check if there are significant changes and if the overall conclusions are reliable. Finally, the date of entry into force of the requirement will take the redesign cycle for the product into account.

Thus the analysis prescribed in the Ecodesign Directive takes into account the best performing products, legislation in other countries (i.e. outside the EU) and sets the target at the life-cycle cost minimum at a date taking into account the redesign cycle of the product. The difference with the Top Runner approach is indicated by the following figure.

The Top Runner standard is – in theory – a fixed point in time, i.e. the Top Runner value at the new target year, whereas the Ecodesign Directive indicates an area from which the standard should be chosen. Or, in other words: the Ecodesign Directive specifies explicitly the factors that influence standard setting, including the date of entry into force. Since these factors can vary, the result can be pictured as an area in the time-efficiency diagram as shown in figure 2. This means that the (exact) point of the Ecodesign standard is not known on beforehand. It can vary from the 'best case' (standard with a high efficiency level on short time) to the 'worst case' (standard with low efficiency level later on). In the end the difference may not be that great as the Top Runner approach allows for the potential of technological innovation being taken into account. This could result in setting more stringent standards as the Top Runner product

would suggest (this happened for DVD players). Furthermore, if the Top Runner standard could only be achieved by a single, patented technology then this level is not used.

Although at the moment no experience regarding the criteria setting process in the Ecodesign Directive has been gained. An indicative conclusion would be that regarding the stringency of standards the same result could be achieved by both Ecodesign and Top Runner. However, the large conceptual advantage of the Top Runner approach is that the aim is clear from (almost) the start.

The standards setting process is dynamic with stakeholder input

The dynamic nature of the Top Runner approach clearly provides added value above the Ecodesign process. Although the Ecodesign Directive contains in Article 23 a mandatory general review of the Directive and its implementing measures in 2010, this review originates more from a policy review cycle than from making the implementing measures itself more dynamic. Experience from other fields (energy labelling) shows that if a review (and the conditions when a review is necessary) is not explicitly mentioned, it may never happen. Regarding the Top Runner programme, it should be noted that the time span between the date of setting the standards and the target year is between 3 and 11 years with an average of 5.6 years.

Stakeholder input is extensively covered by the process to arrive at an implementing measure as described in the various articles of the Ecodesign Directive.

The standards refer to a fleet average

The fleet average approach in ***not*** possible within the framework of the Ecodesign Directive because *all* energy-using products (EuPs) need to comply with the relevant requirements of the implementing measures (Article 8(1)).

Conclusion

The added value of the Top Runner approach, compared to an implementing measure within the framework of the Ecodesign Directive, is mainly embodied in the dynamic nature of Top Runner. However, it is important to notice that "dynamic" refers to the principle of (automatic) updating rather than to a short cycle of updating. The other main characteristics of the Top Runner approach are also – in principle – present in the Ecodesign directive.

THE TOP RUNNER APPROACH IN VOLUNTARY PROGRAMMES

In the previous sections it was concluded that a mandatory nature is required for applying the Top Runner approach in Europe. Having said that, the Top Ten approach, i.e. listing the best products available on the market for a number of product (sub)categories, already exists in Europe.[7] Furthermore, also programs like Energy Star and GEEA (Group for Energy Efficient Appliances) use a kind of Top Runner principle when setting their criteria, e.g. Energy Star aims to set the levels such that at maximum 25 % of the products on the market can achieve them when the criteria are set.

7. See e.g. www.TopTen.ch, the website in Switzerland where the programme started. At the moment also Austria, France, Germany and the Netherlands are participating in the project.

However, two differences exist between these voluntary programmes and Top Runner. First, these programmes do not aim to set minimum standards (that are to be fulfilled by all products) but they want to identify the best products. As a consequence the criteria of these programmes need and will be reviewed when the majority of the products on the market meets them. This is also the reason why these programmes do not need to be mandatory. Second they use – at least in theory – a less stringent criterion to set the standard: not the most efficient product, but the level where 25 % of the products can meet the standard.

The ***conclusion*** is that voluntary programmes using a Top Runner approach are complementary to (mandatory) minimum efficiency standards and that they can be used to enable customers to identify the best products on the market.

Conclusions and recommendations

CONCLUSIONS

Top Runner is a Japanese programme which addresses energy use in the transport, commercial and private sectors. It is effective in the sense that in general the standards that were set, have been met. The appeal of the approach is embedded in the following characteristics: the simple assessment of the standards (Top Runners) based upon data from products available on the market and its dynamic nature. Moreover the name of the programme has a positive connotation: the most efficient product on the market is the Top Runner.

The analysis of the characteristics of the Top Runner programme do not indicate insurmountable barriers for applying the Top Runner approach in Europe; on the other hand it is unlikely that an exact copy of the Top Runner programme could be successfully implemented in Europe. Especially the fleet average approach does not seem appropriate for a mandatory instrument in Europe.

Comparing the Top Runner approach with the approach offered by the Ecodesign Directive reveals that most of the characteristics of the Top Runner approach can also be found in the Ecodesign Directive. However, the "Top Runner" aspect is somewhat hidden in Annex II of the Ecodesign Directive, and – more importantly – the Ecodesign Directive does not demand an update of the standards after a specified period. It must be noted that in the Top Runner programme the time span between setting the standards and the target year (the year that the targets must be met) is between 3 and 11 years with an average of 5.6 years.

Voluntary programmes using a Top Runner approach, e.g. Top Ten, are complementary to (mandatory) efficiency standards and intend to enable customers to identify the most efficient products on the market.

RECOMMENDATIONS – TOP RUNNER IN EUROPE?

From the conclusions above it follows that the Top Runner approach can in principle be achieved by adopting implementing measures within the framework of the Ecodesign Directive. A ***separate*** "Top Runner" Directive is ***not*** needed.

However, from the analysis of the Top Runner programme valuable lessons for Ecodesign can be learned. These are provided in the following recommendations.

Make Ecodesign an appealing policy

The main appeal of the Top Runner approach is that it is easy to understand – for policy makers and the general public – aim: go for the best, the Top Runner[8]. Although in practice this principle is softened and no standards are set that will make (Japanese) manufacturers that do their best go out of business, the intention is simple and clear.

The Ecodesign approach, on the other hand, is more complex. First, because it encompasses not only energy efficiency but also other environmental aspects. Second, because the method in Annex II for setting specific ecodesign requirements is fuzzy. Third, because voluntary agreements might forestall the adoption of (mandatory) implementing measures; and (again) the criteria in Annex VIII to evaluate voluntary agreements are ambiguous. All these aspects also have a positive side because they provide room for negotiations but the main drawback is that they make the Ecodesign Directive appear to be a fuzzy and unappealing instrument.

A solution is to focus the Ecodesign measures on minimum life-cycle costs: ***Ecodesign means lowest cost for the consumer***.

Make Ecodesign a dynamic policy

Also in case of the dynamic nature, *perception* plays an important role in the differences between the Top Runner programme and the Ecodesign Directive. Yes, Top Runner is dynamic, but the time span to the next revision is (on average) more than 5 years. Furthermore, the approach is flexible enough not to update standards for products that will become obsolete in the near future, e.g. VCRs.

The Ecodesign approach can be strengthened by explicitly including an update clause in every implementing measure.

Use Ecodesign to trigger innovation

Energy efficiency policy can spur innovation. Main ingredients are ambitious standards and a long-term planning horizon. Combining the two foregoing recommendations this would mean that the standard would strictly hold on to the minimum life-cycle cost level and that the planning horizon would be set taking into account a reasonable redesign cycle. Ambitious standards forces manufacturers to invest in innovation and a long-term planning horizon enables them to do so. Furthermore, it prevents "hit and run" behaviour.

Strict enforcement

Ambitious standards and a long-term planning horizon must be complemented with strict enforcement of the standards. First, manufacturers need to be sure that there is a "level playing field" and that all manufacturers have to achieve the same goals. Otherwise manufacturers who do nothing would have a (financial) advantage, this is relevant in markets where every €cent counts. Second, the credibility and the effectiveness of the programme must be insured by guaranteeing that all manufacturers comply to the standards and that non compliance has consequences.

Enforcement in Europe is complex because it is a Member State competence, so – at least – 25 authorities deal with the subject. Local, Member State enforcement seems appropriate for e.g. verifying compliance with energy labelling display obligations in shops. However, enforcement of Ecodesign requirements must be concentrated at places where products are produced and/or imported because the manufacturer/importer is responsible for meeting the requirements. Coordination between Member States and mutual support are necessary for successful enforcement.

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8. Note that the Australians follow a similar approach by saying that their MEPS program contains the worlds best MEPS for each product (only they delay the implementation a few years).