



LUND UNIVERSITY

The Top Runner policy concept: Pass it down?

Nordqvist, Joakim

Published in:

Proceedings of the eceee 2007 Summer Study: Saving energy – just do it!

2007

[Link to publication](#)

Citation for published version (APA):

Nordqvist, J. (2007). The Top Runner policy concept: Pass it down? In *Proceedings of the eceee 2007 Summer Study: Saving energy – just do it!* (pp. 1209-1214). European Council for an Energy Efficient Economy (ECEEE).

Total number of authors:

1

General rights

Unless other specific re-use rights are stated the following general rights apply:

Copyright and moral rights for the publications made accessible in the public portal are retained by the authors and/or other copyright owners and it is a condition of accessing publications that users recognise and abide by the legal requirements associated with these rights.

- Users may download and print one copy of any publication from the public portal for the purpose of private study or research.
- You may not further distribute the material or use it for any profit-making activity or commercial gain
- You may freely distribute the URL identifying the publication in the public portal

Read more about Creative commons licenses: <https://creativecommons.org/licenses/>

Take down policy

If you believe that this document breaches copyright please contact us providing details, and we will remove access to the work immediately and investigate your claim.

LUND UNIVERSITY

PO Box 117
221 00 Lund
+46 46-222 00 00

The Top Runner policy concept: Pass it down?

Joakim Nordqvist
Environmental and Energy Systems Studies, Lund University
Sweden
Joakim.Nordqvist@miljo.lth.se

Keywords

appliances, energy efficiency standards, energy labels, Europe, Japan, market transformation

Abstract

In the 1990s, Japanese energy regulators were concerned by the fact that new generations of energy using appliances and products no longer displayed successive use-phase energy efficiency improvements, such as those that characterised product development in Japan after the 1970s oil crises. Therefore, in 1999, Japan inceptioned its Top Runner programme, designed to rejuvenate the lost momentum. Several years into the scheme, the programme, as a whole, seems generally to be perceived as successful by Japanese stakeholders.

The approach now attracts increasing attention outside of its country of origin. In 2005, the German Bundestag assigned to the federal government the task of promoting Top Runner policies also in Europe. However, the suitability of the strategy is under debate, one reason being claims of potential conflicts with existing energy efficiency programmes.

Adopting a comparative stance, this presentation notes that Top Runner concept discussed in Europe and the original Japanese programme display fundamental differences. As in a game of Chinese whispers or Pass it down – where receivers of information interpret fragmented input by filling out gaps in ways that need not be in accordance at all with the original message – the Top Runner policy concept seems to have undergone significant change on its way from Japan to Germany. Nominally alike, the two approaches diverge on many accounts, for example in their implicit assumptions about stakeholder roles and responsibilities. Expounding on such variances this paper

analyzes arguments from the debate about prospects for European Top Runner policies.

Introduction

Following a mission statement by the Bundestag (Germany's federal Parliament) in June 2005, the new federal government of Germany declared, in its coalition treaty of November the same year, as one of its targets the promotion of a European "Top Runner programme" (Stinglwagner, 2006). The background leading up to these two, politically obligating policy statements includes a concrete proposition, sponsored by Greenpeace, for national legislation, intended to promote increasingly energy efficient products on consumer appliance markets (Mey, 2005). The context of the discussions, including the proposal for a German "Top Runner Act" (Hack, 2005), is clearly influenced by the Japanese Top Runner programme that was launched in 1999.

In June 2006, twelve months after the Bundestag decision, an experts' workshop was organised in Berlin to address and explore the appropriateness of Top Runner policies in the European context (IEE, 2006). At the workshop – where the speakers represented public administration offices at German federal and EU levels, as well as national producer and consumer organisations, the Social Democratic Party (partner in the federal coalition government) and Greenpeace – different perspectives on this issue were brought forth.

Analysing these arguments the author of this paper notes that, despite evident inspiration from the Japanese Top Runner programme, the policy concept for Europe that was discussed in Germany differs substantially from the approach taken in Japan. By exposing this finding, this paper aims to contribute

to avoiding possible confusions in the discussions about these (and possibly other) Top Runner concepts in Europe. Before engaging in a comparative discussion, the paper offers below brief descriptions of the two separate approaches.

The Top Runner programme of Japan

BACKGROUND

In the 1990s, end-use energy performance curves of new generations of consumer appliances and vehicles in Japan had stagnated compared with the progress seen after the 1970s oil crises. This, in combination with the increasing use throughout society of energy using products, meant that the share of Japan's aggregated energy balance taken up by the operation of appliances and vehicles kept increasing. In the light of Japan's commitments under the Kyoto Protocol 1997, as well as from a wider perspective of national energy security, energy authorities saw a problem – with a solution. Despite technical potentials to further bring down the use-phase energy need of appliances and vehicles, market forces alone failed to realise them. The manufacturing sector, by its own initiative, was seen to invest insufficient effort in the continuous increase of the use-phase energy efficiency of the products that it manufactures and sells. The Top Runner programme was designed to address and overcome this specific market inadequacy.

DESIGN

Through Parliamentary decision in 1998, the Top Runner programme was incorporated as an element of the Japanese Law Concerning the Rational Use of Energy (the Energy Conservation Law). The programme is administered by the Agency for Natural Resources and Energy under the Ministry of Economy, Trade and Industry. By design, it is cyclic and iterative: it undergoes recurring revisions, allowing its scope to be continuously modified. Top Runner cycles run through the following sequence of steps:

1. The regulator designates or discards proposed product categories, which may be nominated additions to the programme as well as revised and previously adopted designees. For a product category to be eligible for selection, the following criteria have to be met: (i) products should be commonly used in Japan, (ii) products should require a sizeable supply of use-phase energy, and (iii) products should have a potential for energy efficiency improvements. An immediate consequence of Top Runner designation is that all manufacturers and importers of such products are required to publicly provide information about the end-use performance of every model that they market in Japan.
2. Product committees and working groups convene to revise the market situation, and to negotiate appropriate target standards and target years. The basis for the adoption of standards is the use-phase energy performance of the best technology available on the market at the time of revision. As an important prerequisite for standard setting, committees also have to agree on indicators and methods for determining, measuring and comparing products' energy performance. The committees and working groups involve and engage representatives of the manufacturing and import-

ing enterprises in extensive, collaborative efforts that also include the regulator and relevant academic expertise, as well as representatives of consumers, trade unions, supplier industries and local governments. This step constitutes the centrepiece, around which the whole Top Runner scheme is oriented.

3. Methods, target standards and target years proposed by product committees are officially published in so-called interim reports for public review. In principle, steps 2 and 3 may be reiterated several times before moving on. Typically, this phase of the cycle lasts for 1 to 2½ years, where, in the most intense periods, weekly meetings with relevant stakeholders are required (Tojo, 2006; 2005).
4. Targets are set and promulgated by the regulator. This step signifies the commencement of commitment periods, which may vary considerably in length from a few to several years.
5. Producers and importers work individually on measures to comply with up-coming obligations, for example through technical research and development. Thus, successively, the aggregated energy efficiency performance of marketed products should shift. During commitment periods, the regulator may (but need not) monitor and evaluate interim progress. In cases of early overall target attainment (see item 6, below), cycles may be reinitiated from the top before target years are reached.
6. Commitment periods end, and target standards become legally obligatory minimum fleet performance standards. This means that manufacturers and importers of designated products have to ascertain that the mean energy performance of their total annual product shipments meets or exceeds the standards. (Actors with annual shipment volumes below certain prescribed quantities are exempt from the obligation.) Neither retailers, nor product owners or users are targeted by the programme.
7. Compliance controls are conducted by the regulator, and ex-post revisions and evaluations of methods and targets are carried out. Cycles are reiterated.

By 2005, eighteen product categories had been brought into the Top Runner scheme and an additional three were considered for inclusion. See Table 1. Two categories had been phased out: cathode-ray tube TVs and video cassette recorders.

EXPERIENCE

In terms of target standard attainment, the Top Runner programme in Japan has so far fulfilled (and in some cases exceeded) expectations. Manufacturers and importers have not objected to the scheme, but a few cases are known where, as target years have approached, potentially non-compliant manufacturers of designated products have decided to withdraw from the market (Tojo, 2006). No cases actual of non-compliance are reported.

The main sanction mechanism is a name and shame strategy: Erring companies are first to be discreetly advised to comply. Failing this, their transgression would be publicly announced.

Table 1. Designated product categories under the Top Runner programme (ECCJ, 2005a).

	Product category	Target year	Expected energy savings
1	Gasoline passenger vehicles	2010	~23 % (cf. 1995)
	Diesel passenger vehicles	2005	~15 % (cf. 1995)
	LPG passenger vehicles	2010	~11.4 % (cf. 2001)
2	Air conditioners	2007 (2004)	~63 % (cf. 1997)
	coolers/heaters coolers only	2007	~14 % (cf. 1997)
3	Fluorescent lights	2005	~16.6 % (cf. 1997)
4	Cathode-ray tube television sets	2003	~16.4 % (cf. 1997)
5	Copying machines	2006	~30 % (cf. 1997)
6	Computers	2005	~83 % (cf. 1997)
7	Magnetic disk units	2005	~78 % (cf. 1997)
8	Diesel freight vehicles	2005	~7 % (cf. 1995)
	Gasoline freight vehicles	2010	~13 % (cf. 1995)
9	Video cassette recorders	2003	~58.7 % (cf. 1997)
10	Electric refrigerators and freezers	2004	~30 % (cf. 1998)
11			
12	Gas space heaters	2006	~1.4 % (cf. 2000)
	Oil space heaters		~3.8 % (cf. 2000)
13	Gas cooking appliances	2006	~13.9 % (cf. 2000)
14	Gas water heaters	2006	~4.1 % (cf. 2000)
15	Oil water heaters	2006	~3.5 % (cf. 2000)
16	Electric toilet seats	2006	~10 % (cf. 2000)
17	Vending machines	2005	~33.9 % (cf. 2000)
18	Oil-filled transformers	2006	~30.3 % (cf. 1999)
	Mold transformers	2007	
	Electric rice cookers		
	Microwave ovens		
	Heavy vehicles		

If they still do not comply with the standards, they may be ordered to comply and given a fine.

Greenpeace's Top Runner proposal

In the EU, unilateral measures that restrict the movement of goods within the common market are generally not allowed. Greenpeace's proposal for a German "Top Runner Act" (Hack, 2005), therefore – like any other Top-Runner-style application in Europe – implicates EU-wide adoption of similar national legislation under a directive by the European Commission. The Greenpeace version that is discussed here has two important characteristics in common with the Japanese Top Runner programme. It aims to promote the increased energy efficiency of marketed appliances and, in so doing, it uses market leading products as benchmarks.

The proposal suggests the Federal Environment Agency as the regulator for the Top Runner scheme in Germany, and it stipulates a labelling system consisting of a five-tiered benchmarking scale (1: very good, 2: good, 3: satisfactory, 4: acceptable and 5: insufficient). The value separating the first two tiers is called Good Standard.

Under the scheme, the regulator carries out market revisions for product categories to be included in the programme. The purpose of the revisions is to establish numerical values to separate the tiers of the scale above. Once product categories have been included in the programme, annual updates to revise the scale are performed. The indicators and methods used for

evaluation of products' energy efficiency are determined beforehand by the regulator.

When Top Runner benchmarking scales have been established for a product category, all products for sale would have to be labelled according to their energy efficiency performance, using the most recent applicable scale at the time that they are put on the market. This labelling requirement constitutes the first pillar of Greenpeace's Top Runner concept. As a second pillar, in order to propel increasing overall efficiencies, the proposal introduces an obligation on manufacturers and importers similar to the Japanese target standard. Five years after the establishment of benchmarking scales, values for Good Standards become minimum fleet performance standards – i.e., values of mean energy performance of total annual product sales (per manufacturer and importer) have to meet or exceed the standards. This translates into constant, annual additions of new and overlapping five-year compliance periods for all product categories covered by the scheme. A third pillar of Greenpeace's Top Runner concept allows the regulator to suggest to the European Commission that certain energy performance improving technical or design characteristics be included in EU eco-design requirements.

Companies found to be in non-compliance are to be fined.

A brief comparison between the two approaches

Japan's Top Runner programme (TRJ) is commonly regarded as successful – in the sense that target standards are in fact being met. An important success factor is that not only are the

stakeholders that are directly targeted by the regulation (i.e. manufacturers and importers) *required* to take part in the extensive, collaborative target setting phase of an instrument cycle but, furthermore, they acquiesce and their participation has been constructive. By design, the programme is fundamentally a participatory instrument: it is the stakeholders themselves who jointly define indicators, methods and target standards, and who negotiate the duration of compliance periods. The TRJ is also, in practice, a flexible instrument, in that targets may be, and have been, reformulated in cases where overall compliance is accomplished ahead of time. The criterion that Top Runner target standards should incorporate expectations of hypothetical technical development under a baseline scenario gives flexibility as well. It allows for and handles differences in development potential between product categories; differences that might arise from the reliance on younger or more mature technologies. Moreover, if the leadership performance of specific models is due to protected proprietary design elements, such models may be disregarded in standard setting negotiations.

Greenpeace's Top Runner concept (TRG), on the other hand, is neither participatory nor flexible. Not designed to provide an arena or incentive for concerted industrial efforts, the TRG is framed instead as a race, where, in the existing proposal (Hack, 2005), target years for compliance, as well as the Top Runner benchmarking algorithm, are predetermined. Using governance theory terminology (Bäckstrand, 2006), the TRG approach scores lower on input legitimacy than the Japanese programme. Moreover, the annual updating revisions and the constant compliance monitoring tasks necessitated by Greenpeace's proposal would create a heavier workload for the regulator – and infer a more enforcement-laden regulator role – than in the case of the TRJ, where the regulator acts more as a supervisor and a mediator.

Energy labels are another major difference between the two approaches. The TRG can be seen as an alternative to current European energy efficiency appliance labels, and labelling is an essential and obligatory component of the proposal. The TRJ, however, is not in itself, nor primarily, a labelling effort, although, in truth, it was supplemented, already in 2000, by a sister scheme: the e-Mark labelling programme (ECCJ, 2005b). Starting out with five of the originally eleven designated Top Runner product categories, e-Mark has successively grown to include now most of the product categories that are regulated under the TRJ. The features of the e-Mark label differ a lot from those of the proposed TRG label though, and, importantly (and quite contrary to the TRG approach), participation in the e-Mark programme is entirely voluntary.

Summing up, one may observe that stakeholder rights and responsibilities are issues where Greenpeace's proposal and the Japanese programme take quite different approaches. An important feature of Japan's Top Runner scheme is its focus on the supply-side, not the demand-side, of product markets. The TRG, on the other hand, while regulating manufacturers, chiefly addresses consumers, who are thus, implicitly, regarded as the market actors first and foremost responsible for determining the supply situation. Table 2 displays some of the differences and similarities between the TRJ and the TRG approaches.

It is appropriate of course that policy instruments, when applied in other regions than in their country or culture of origin, be adapted to local conditions. The transformation from TRJ into TRG, however, involves quite substantial alterations of the means (and arguably, perhaps, the objectives) of the instrument. In fact, this paper suggests that the TRG is so much altered that it ought not to be seen as a European adaptation of the TRJ, but as a completely different instrument. The situation is analogous to a round of *Chinese whispers* or *Pass it down*, the children's game where a whispered message becomes distorted as it passes along a chain of people. Participants in the European Top Runner discussion may be likely to assume that the arguments for and against implementation of the TRG in Europe automatically apply to the TRJ approach as well. This paper presents some reasons for why such an assumption is incorrect.

Some comments on the discussion about Top Runner in Europe

As is noted above the appropriateness of implementing a TRG approach in the EU is contested. Among the arguments against it, there is the view that it would not harmonise with other appliance labelling schemes currently in use in Europe. Since Greenpeace's Top Runner proposal is based on an implicit assumption that market transformation responsibilities chiefly rest upon the demand side of markets, the consumer perspective (i.e. the TRG label) is seen as essential and instrumental. The TRJ approach, however, is not reliant on labelling of any particular type. Focusing its market transforming ambition solely on the supply side, it is designed explicitly for this purpose. It may be viewed as a complement to consumer-oriented efforts (such as labelling), not though, in itself, as an alternative or supplementary labelling concept as such. Thus, a hypothetical application of Top Runner principles in Europe need not be accompanied by the introduction of the TRG benchmarking scale, nor of any other kind of new appliance labelling system.

Table 2. Some properties of the Japanese and Greenpeace's Top Runner approaches.

	TRJ	TRG
Aim	Transformation of markets for energy using products	Transformation of markets for energy using products
Regulated actors	Manufacturers and importers	Manufacturers and importers
Addressees	Manufacturers and importers	Consumers
Instrumental concept (objective)	Rejuvenation of actor commitment through a participatory process	Provision of adequate market information through dynamic product labelling
Regulator role	Process supervision	Process execution
Input legitimacy	High	Low
Built-in flexibility	High	Low

The fleet average criterion for determining compliance with Top Runner standards, which has also been criticised in Europe, is, on the other hand, a characteristic that has been transferred into the TRG proposal directly from the TRJ programme. Compared with a per-model-based criterion this feature complicates compliance control as well as enforcement of the standards, since it requires that manufacturers and importers declare details about their annual sales to the regulator. It places, therefore, an extra bureaucratic burden on the regulator, and if enforcement becomes a problem because of this, the integrity of the programme is compromised. Differences between European and Japanese administrative cultures and public-private relations might be a reason why this risk is perceived much stronger in Europe. In addition, the TRG proposal for Europe defines overlapping compliance periods that start and end annually – for *all* included product categories – which exacerbates the weight of the regulator's control obligation compared with the TRJ, where compliance periods end intermittently.

Interestingly, manufacturers and importers in Japan have not so far, to any known extent, made use of the fleet average allowance. By the time that target years have arrived, all under-achieving models have already been taken off the market. In practise, therefore, TRJ minimum performance standards have functioned on a per-model basis rather than on a fleet average basis. This has facilitated compliance control in Japan. This paper notes that the fleet average principle is not an inalienable part of the Top Runner concept in Japan, and it claims that it need not be in the EU either – irrespective of what version might be chosen; TRG, TRJ or something different. Per-model criteria for determining compliance are a feasible and probably preferable option.

Another aspect of the Top Runner approach that has been brought up, in the European discussion, as a shortcoming, is its focus solely on appliances' use-phase energy performance: unlike current European labelling programmes, Top Runner does not include life-cycle perspectives as a performance evaluation indicator. This is generally true of the TRG and the TRJ both. It may appear a problem, particularly if one assumes that Top Runner in Europe would replace instruments that currently do integrate life-cycle performance in energy evaluations of products. Two reassuring observations could then be made. In principle, life-cycle concerns could be introduced into Top Runner energy targets too, without compromising the core idea and integrity of the approach. They may, however, also be left out: as pointed out above, the Top Runner approach itself does not exclude other programmes from being used as well. This includes life-cycle integrating energy labels.

Concluding remarks

A message that this paper wants to bring forth and underscore is that the TRG approach should not be confused with or connected to the implementation and successes of Japan's Top Runner programme. Important parts of European critique against the TRG are not applicable to the Japanese version of Top Runner. This circumstance does not, however, imply that the Japanese approach would be as successful in Europe as it is presently considered to be at home. One aspect that especially needs to be considered is the differences between Japan and the EU in conditions for public-private co-operation. The

TRJ succeeds, one could say, thanks to industry's complaisance. Incentives and disincentives of European manufacturers for constructive participation in a TRJ style instrument would differ from those of their Japanese partners and competitors. For example, the name and shame sanction system has worked well in Japan. In Europe, it probably would not. Obviously then, the question arises of how the issue of incentives for compliance might be differently and, for the EU, more suitably addressed. Acknowledging this need, this paper does not delve further into the topic.

From a European vantage, there is room, most definitely, for interesting evaluative comparisons to be made between different hypothetical Top Runner applications under EU conditions, *i.e.* as additions to or components of existing directives and member state legislations. In the eyes of the author, neither the TRG nor the TRJ, in their current forms, present a realistic option for a European Top Runner scheme – not without significant modifications or adaptations. This paper, however, does not aspire to perform a full-scale evaluation of these two approaches, nor to suggest a tailor-made synthesis or a new, alternative Top Runner approach for the EU. The main point made here is that an informed opinion on whether or not the Top Runner concept, as such, may successfully be passed down from Japan to Europe must not be limited to arguments concerning only the TRG proposal or other TRG style concepts. Experiences from the TRJ should also be weighed in. The two approaches, though nominally alike, differ from each other in many important ways. In fact they rely on quite divergent strategies for stimulating market transformation: one addressing supply, the other demand; one through participatory processes, the other through process control. Such aspects and differences need to be taken *ad notam*.

Acknowledgement

This paper is based on research conducted within the AID-EE project (the Active Implementation of the proposed Directive on Energy Efficiency). Information about AID-EE is available at www.aid-ee.org.

References and sources

- ANRE [Agency for Natural Resources and Energy], 2005: *Energy in Japan 2005* [online]. ANRE, Tokyo. Cited 2006-04-05, at www.enecho.meti.go.jp/energy2005E.pdf.
- ANRE [Agency for Natural Resources and Energy], no year: *Measures and policies* [online]. ANRE, Tokyo. Cited 2006-04-10, at www.enecho.meti.go.jp/english/policy/index.html.
- Bäckstrand, Karin, 2006: *Multi-Stakeholder Partnerships for Sustainable Development: Rethinking Legitimacy, Accountability and Effectiveness*. European Environment 16, pp. 290–306.
- Böhling, Andree, 2006: *Vorschlag für ein Energieeffizienzgesetz* [online]. Greenpeace, Hamburg. Presentation at "Expertenworkshop 'Top Runner'", Berlin, 29 June 2006. Cited 2006-07-08, at www.initiative-energieeffizienz.de/index.php?id=1163.
- Brisaer, André, 2006: *Main reasons why the Japanese "Top Runner" approach is not appropriate as a legal instrument*

- for market transformation in the EU [online]. European Commission DG TREN, Brussels. Presentation at “Expertenworkshop ,Top Runner“, Berlin, 29 June 2006. Cited 2006-07-08, at www.initiative-energieeffizienz.de/index.php?id=1163.
- ECCJ [Energy Conservation Center, Japan], 2005a: *Japan Energy Conservation Handbook 2004/2005* [online]. ECCJ, Tokyo. Cited 2006-04-05, at www.eccj.or.jp/data-book/2004-2005e/index.html.
- ECCJ [Energy Conservation Center, Japan], 2005b: *Top Runner Program – Developing the World’s Best Energy-Efficient Appliances* [online]. ECCJ, Tokyo. Cited 2006-04-19, at www.eccj.or.jp/top_runner/index.html.
- ECCJ [Energy Conservation Center, Japan], no year: *What is the Top Runner Program – Japan’s Approach to Energy Efficiency and Conservation Measures* [online]. Agency for Natural Resources and Energy, Tokyo. Cited 2006-02-10, at www.enecho.meti.go.jp/english/toprunner/program.pdf.
- Hack, Martin, 2005. *Greenpeace-Entwurf vom 30.5.2005 für ein Gesetz zur Steigerung der Energieeffizienz beim Einsatz energiebetriebener Geräte und Maschinen (Energieeffizienzgesetz, „Top Runner“)*. Greenpeace, Hamburg.
- IEE [Initiative EnergieEffizienz], 2006: *Dokumentation des Top-Runner-Workshops am 29. Juni 2006* [online]. Deutsche Energie-Agentur, Berlin. Cited 2006-07-08, at www.initiative-energieeffizienz.de/index.php?id=1163.
- Kelber, Ulrich, 2006: *TopRunner-Ansatz. Energiepolitische Zielsetzungen* [online]. Social Democratic Party of Germany, Berlin. Presentation at “Expertenworkshop ,Top Runner“, Berlin, 29 June 2006. Cited 2006-07-08, at www.initiative-energieeffizienz.de/index.php?id=1163.
- Krawinkel, Holger, 2006: *Top-Runner-Ansatz aus Sicht eines Verbraucherverbandes* [online]. Federation of German Consumer Organisations, Berlin. Presentation at “Expertenworkshop ,Top Runner“, Berlin, 29 June 2006. Cited 2006-07-08, at www.initiative-energieeffizienz.de/index.php?id=1163.
- Mey, Jonas, 2005: *Effizienz: Die Energiequelle der Zukunft*. Greenpeace, Hamburg.
- Murakoshi, Chiharu; Hidetoshi Nakagami, Masanori Tsuruda and Nobuhisa Edamura, 2005: *New challenges of Japanese energy efficiency program by Top Runner approach*. Proceedings of the eceee 2005 Summer Study “What Works & Who Delivers?” (Panel 4): 767–777. European Council for an Energy-Efficient Economy, Stockholm.
- Murakoshi, Chiharu; Yutaka Nagata, Hidetoshi Nakagami and Yasuhiko Noguchi, no year: *Revision of Japanese Appliance Energy Efficiency Standards – A New Top Runner Approach*.
- Nagata, Yutaka, no year: *Analysis of energy efficiency standards for Japanese appliances*.
- Nakagami, Hidetoshi, and Yoshiaki Shibata. 2001. “Present Status and Perspective of Energy Efficiency and Conservation Policies in Japan – Residential and Commercial Sector” in *Energy Efficiency in Household Appliances and Lighting* by Paolo Bertoldi, Andrea Ricci and Anibal de Almeida (eds.), pp. 541–546. Springer-Verlag, New York.
- Sato, Ayako, no year: “Part 3: Promotion of Energy Efficiency Investments in Japan” in *Promotion of Energy Efficiency in Industry and Financing of Investment* [online]. United Nations Economic and Social Commission for Asia and the Pacific, Bangkok. Cited 2005-05-03, at www.unescap.org/esd/energy/publications/finance/part3_sato.html.
- Scholz, Werner, 2006: *TopRunner-Ansatz aus Sicht eines Industrieverbandes* [online]. ZVEI, Frankfurt/Main. Presentation at “Expertenworkshop ,Top Runner“, Berlin, 29 June 2006. Cited 2006-07-08, at www.initiative-energieeffizienz.de/index.php?id=1163.
- Schröder, Heike, 2003: *From Dusk to Dawn – Climate Change Policy in Japan*. Otto-Suhr-Institut, Freie Universität, Berlin.
- Stinglwagner, Wolfgang, 2006: *Energiepolitische Rahmenbedingungen zur Steigerung der gerätespezifischen Energieeffizienz* [online]. Federal Ministry of Economics and Technology, Berlin. Presentation at “Expertenworkshop ,Top Runner“, Berlin, 29 June 2006. Cited 2006-07-08, at www.initiative-energieeffizienz.de/index.php?id=1163.
- Tanaka, Izumi, 2005: *Top Runner i Japan – ökad målstyrning för energieffektivitet och konkurrenskraft*, Tillväxtpolitisk utblick nr 7. Institutet för tillväxtpolitiska studier, Stockholm.
- Tojo, Naoko, 2005: *The Top Runner Program in Japan – its effectiveness and implications for the EU*, Report 5515. Swedish Environmental Protection Agency, Stockholm.
- Tojo, Naoko, 2006: Personal communication, 22nd February 2006. International Institute for Industrial Environmental Economics, Lund University, Lund.