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# **Legal instruments making provision for a more efficient energy usage**

**- Executive Summary -**

by

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# 1 Summary

## 1.1 Brief Project Description

An increase in energy efficiency is the defined and vital goal of European and national sustainability policies. The necessity for this goal becomes ever more apparent when seen against the background of increasing energy consumption worldwide with, not only the expected difficulties in guaranteeing supply security, but also in fulfilling the envisaged Kyoto-objectives. The federal government of Germany in its strategy on sustainability from 10 August 2005, set as a goal a two-fold rise in energy productivity in German economy by the year 2020, compared to 1990. The European Union defined its energy consumption reduction target as 20% for the year 2020. In order to satisfy political specifications and fulfill political objectives, legal instruments making provision for a more efficient energy usage must be further investigated, developed and implemented.

It is the goal of this research project to discover hitherto untapped efficiency potential on the consumer side, and to identify, further develop and adapt this to the existing legal framework. In particular, European requirements must be considered. Attention must be drawn to such instruments deemed promising in view of their energy efficiency potential and their legal and political feasibility.

At the heart of the investigation are instruments suitable to effect an increase in energy efficiency and consumer energy reduction and their legal anchorage. The focus lies in the observation of the national legal framework against the background of ever-developing European law. Both the fields of energy-consuming standard products and promotion of energy-saving services stand in the foreground. The project does not cover the fields of traffic or the public sector. The field of industry and business is not in the foreground of the study, but is dealt with in as far as it concerns industrial machines, production processes and operator duties. The same applies to the fields of heat supply for buildings. Specific reform approaches in the Energy Saving Act (Energie-Einsparungs-Gesetz – EnEG) and in the Energy Saving Ordinance (Energie-Einsparungs-Verordnung – EnEV) which go beyond existing amendments are analysed. Instruments based on tax regulation are only dealt with peripherally.

The main object of the project is an analysis of existing legal instrumentaria. The evaluation of the various regulations is based on their efficacy, efficiency, legal conformity and public acceptability. A further criterion is the distribution of responsibility for compliance with such

regulations. Optimization and development potential for the envisaged increase of end-energy efficiency are described in detail. The second project phase contains proposals for the further development and definition of selected legal instruments for a more efficient energy usage. Of these, the most promising instrumentaria are presented, which were most likely to be both politically and legally viable. The wide scope of potential legislation is analysed and substantiated with a view to future implementation.

The investigation takes the form of two main sections: in the first section, the basis for a selection of instrumentaria at national and EU-level is given. To this end, an appraisal is made of current, disputed and conceivable instruments aiming at increasing energy efficiency and energy saving. In this first section, the instruments are clearly defined, analysed and evaluated on the basis of the afore-mentioned criteria.

The second section deals with the development and legal implementation of these selected instruments. The top-runner approach and efficiency competition belonging to the field of product-specific instrumentaria, smart metering from the field of energy saving services and binding energy saving goals/quotas, as well as regulation approaches from the industry and business sector, are analysed in depth. The focal point of the project however, lies with the top runner approach and smart metering.

The attempt is made to create an instrumentaria not so specific or complex as to only be suitable in one particular case or for one particular combination, but such instrumentaria as can be individually and independently altered to suit minimal differentiation, while still remaining effective.

## **1.2 Section 1: Description and Evaluation of Current and Discussed Legal Instrumentaria for Increasing Energy Efficiency**

In order to offer a greater spectrum for investigation, both existing and disputed instrumentaria are discussed. The terms “instrument” or “instrumentaria” are used in the sense of abstract legal regulations or economic incentive systems facilitating the attaining of desired goals. The distinction must be made between instruments and measures. Measures are the actual, technical or organizational implementation of such regulations.

The separate instruments are characterized. In some cases, existing European and national regulations are examined. In order to verify the performance quality of legal instrumentaria the afore-mentioned evaluation criteria are essential.

The following instruments are shown in detail:

“Minimum Efficiency Standards”, “Product Prohibition”, “Labelling-Requirements”, “Top Runner/Efficiency Competition” and “Quality Seal Allocation”<sup>XX</sup> are investigated as components in the area of product specific instrumentaria. As instruments for the promotion of energy saving services, the “Energy Supply Companies’ Obligation to Energy Saving Services”, “Binding Energy Saving Targets/Quotas”, “White Certificate Trade”, and “NEgawatt Feed-In Act” “Efficiency Funds”, “Smart Metering” and “Energy Audits” are discussed. The Energy Saving Act and Energy Saving Ordinance are considered within the field of building efficiency. Finally, the generally applicable instruments “Voluntary Commitment Declaration” and “Bonus/Grant” are looked at.

### **1.2.1 Product Specific Instruments**

The instrument “**Minimum Efficiency Standard**” consists of mandatory or voluntary regulations governing the fulfillment of minimum efficiency or maximum consumption requirements by products brought onto the market. The mandatory prescription of minimum efficiency standards is particularly suitable for increasing energy efficient products’ share in the market. For this regulation however, there is next to no intermediate-term margin at national level.

The instrument “**Product Prohibition**” covers a legal ban on putting certain, particularly inefficient products on the market. On the one hand, product prohibition is seen as highly effective. On the other hand, it is a far reaching intrusion into the rights of addressees. This can lead to difficulties in its reception. Greater problems can be met concerning the legal conformity of a ban on such products.

In the context of this investigation, “**Labelling Requirements**” include making correct statements concerning energy consumption of household appliances and making comprehensible information available to the consumer. Despite coming under the adjustment clause of the “Council Directive 92/75/EEC of 22 September 1992 on the indication by labelling and standard product information of the consumption of energy and other resources by household appliances”, criticism is appropriate for the missing regular adaptation of efficiency classifications to technical developments, in the commission directive. A regular adaptation of labelling (dynamic sampling) and an ensuring of the implementation of the rules are crucial to this instrument’s effectivity. In this case, there is a comparatively low intrusive intensity involved with this instrument.

The instrument described as the “**Top-Runner-Approach**” requires a market overview on the energy efficiency level of a specific product group - at a specific time. Based on this, the

consumption by the best appliances is defined as the minimum standard for the entire product group. From a given time, this standard must be complied with by all producers. The effectivity rate of this instrument is considered high. An implementation however, only seems reasonable and legally possibly at European level.

The allocation of the **eco-label** according to the council regulation no. 1980/2000 of 17 July 2000 follows a predescribed control scheme which governs the compliance with environmentally relevant criteria. Once a product is proven as fulfilling these criteria it is awarded a visible emblem demonstrating such compliance and functioning as commercial incentive. The essential difference displayed by this instrument is the voluntary participation in the system. In comparison with other instruments, the effectivity is only considered minimal.

### **1.2.2 Instruments for the Promotion of Energy Saving Services**

In the framework of the instrument “**Mandatory Energy Saving Quotas**”, a particular group of actors, for instance energy suppliers, is required through various programmes and measures, and within a limited period, to reduce by a given amount their supply of energy to their customers. The effectivity rate of this instrument is considered very high. Criticisms lie within the complexity and expense of implementation and the problems expected concerning public acceptance of this instrument.

The basis of the “**White Certificate Trade**” is the obligation of a specific group of actors to save a given amount of energy on the demand side within a limited time (mandatory saving quotas). In other words, the companies concerned must prove they have saved a certain amount of energy, verification of which takes the shape of a “white certificate”. The businesses concerned must show a given number of certificates which are then counted and stamped annually. New white certificates, earned through energy saving measures, must be verified in the following accounting periods. The purpose of the tradeability of these certificates is that those actors save energy who can employ energy saving measures efficiently. At the same time, less efficient businesses can contribute to energy saving measures by financing these through the buying of white certificates.

A milder alternative to the binding energy saving quota instrument is the obligation of energy supply companies to end-use efficiency and energy services. Compliance with measures is required, without specific legally binding energy saving objectives having to be achieved. It must be noted that the relative simplicity of this instrument and the waiving of binding energy saving requirements lead to a considerably lower level of effectivity.

The instrument “**NEgawatt-Feed-In-Act**” was developed in accordance with the Renewable Energies Act (Erneuerbare-Energien-Gesetz – EEG). The financial rewarding for saved amounts of energy is the core element of this instrument. The verifiability of such energy saving amounts and the precise definition of the cost-distribution-system are problematic in this instrument. In contrast to the quota-system, regulating of incentives allows for greater effectivity and acceptance.

**Smart-metering** regulations make it necessary for energy suppliers to charge correctly for end-users’ real energy consumption over an actual usage period. As a component of the bill, customers must be given information governing the development of their energy consumption and tips on saving energy. In addition to this, the contemporary billing period of one year should be reduced to monthly or quarterly. These requirements can only be met through smart-metering. The instrument can effect energy savings of 5-10% as well as altering electricity consumption peak periods.

The instrument “**energy audit**” concerns a procedure for gleaning information on energy consumption and possible energy savings.

### **1.2.3 Buildings – Energy Saving Act/Energy Saving Ordinance**

Roughly 90% of energy end-use in private households in Germany is due to heating, and supplying warm water. The building area is therefore the most important as far as raising energy efficiency is concerned. Despite current regulations through the Energy Saving Act (EnEG) and the Energy Saving Ordinance (EnEV) only a comparatively small part of the technically and economically feasible national saving potential is achieved. In addition to which the savings made possible by the EnEV fall far short of the long term energy saving and climate protection objectives. An amendment of both, the EnEG and the EnEV (amended in 2007) is deemed necessary.

### **1.2.4 Generally Applicable Instruments**

**Voluntary agreements** are legally binding commitments between companies or groups of companies and the state. These aim at achieving political objectives by employing concrete measures relating to the environment. These agreements are based on generating responsibility and motivation in the world of business and industry through unobligatory cooperation. With regard to the effectivity, this instrument must be seen critically. On the other hand, advantages become apparent through the regulation of requirements for energy using products, since minimal efficiency standards can be adjusted flexibly and swiftly. Apart

from that, both the comparatively uncomplicated and inexpensive administration, and high level of acceptance speak in favour of this instrument.

**Bonuses and grants** are economic instruments intended to provide financial incentive; in the context of this study this means, for instance, saving energy or raising energy efficiency, i. e. awarding a bonus for the purchase of efficient household appliances. Based on the relatively high financial input and therefore usually limited time window for bonuses and grants, their efficiency is judged as being very low.

### **1.3 Section 2: Further Development and Legal Embodiment of Selected Instruments**

The top-runner approach or efficiency competition from the area of product specific instruments, and smart-metering and binding energy saving targets/quotas from the area of energy saving services are considered in greater depth. Finally, selected questions from the field of industry and business are reviewed. The focus of the investigation lies with the top-runner approach and smart-metering. Within the different areas of research, the instrument-packages are inspected closely with a view to possible and feasible national implementation. With respect to the field of top-runner/efficiency competition, possible development within the European framework is reflected.

#### **1.3.1 Top Runner/ Efficiency Competition**

Precise regulation proposals are developed, creating efficient competition for market representation of energy efficient products at both national and European level. Particular attention is paid to the combination of instruments with, for the most part, economical effects and instruments which are basically compulsive (e.g. efficiency standards, labelling). In order to gain knowledge about the regulations in other states, the Japanese top-runner programme and further energy efficiency specific product regulations from other countries are investigated. The idea is to discover to what extent a top-runner regulation system can be adopted and implemented at national and European level. Following that, regulation components for a comprehensive product efficiency regulation system is evolved and discussed. The top-runner approach means that the greatest level of energy efficiency of leading appliances and techniques on the market be considered the binding minimum standard for all such others, as of a set time in the future. Labelling on the basis of top-runner classifications supplements this instrument.

The regulation of the top-runner approach at national level does not conflict with WTO-law (GATT, TBT-agreement). Should those products come under the scope of a commission directive or the Council directives for Eco-Design (2005/32/EC) or Labelling- (92/75/EEC), then no deviating efficiency standards or energy-consumption-labelling requirements may be made at national level. Very soon nearly all relevant product groups will come under the scope of a commission directive for either labelling or Eco-Design. An independent regulation for these products at national level is out of the question. Within the implementation of European commission directives and measures, national scopes do exist. At national level, economic and informative instruments such as bonuses and data banks for appliances are possible.

For such products as are not considered relevant for the EU, and therefore do not fall under a commission directive, a national regulation can be made upholding stipulations for the free movement of goods (art. 28 ff. EC). The Council directive 98/34/EC which lays down a procedure for the provision of information in the field of technical standards and regulations and of rules on information society services does not stand in contradiction to the regulation of national efficiency or labelling requirements but can delay this considerably.

The top-runner-approach does not contradict with national fundamental rights. It aims at a reduction of energy consumption by appliances, energy supply security and climate protection and can be justified on the grounds of the common good. The federal state of Germany (Bund) is given legislative competence through art. 74 par. 1 no. 11 and art. 72 par. 1 and 2 of the Basic Law for the Federal Republic of Germany (Grundgesetz).

With respect to the question whether the top-runner approach can be regulated at European level, it must be noted that the regulation of top-runner based minimum efficiency standards is possible within the framework of the commission measures for the Eco-Design-directive. It must however, be taken into consideration that with respect to specific product groups, the requirements of art. 15 par. 5 Eco-Design-directive in particular can stand in contradiction. The introduction of binding labelling requirements in the sense of the top-runner classifications is legally possible under the Eco-Design-directive, as well as under the Labelling-directive. Thus, the top-runner approach is basically feasible at European level on the basis of the Eco-Design or Labelling-directive.

With new regulations according to art. 176 EC (opting out) at national level, a directive for the regulation of the top-runner approach would have to be based on art. 175 EC, and no longer art. 95 EC. The regulation of the top-runner approach cannot however, be based merely

on art 175 EC. The reason is that the regulation objectives common market and environmental protection are considered of equal importance. As a result, a two point anchorage on art. 175 and 95 EC seems possible. On the other hand, there seems to be considerable uncertainty as to whether national margins for further efficiency standards or labelling must respect the requirements of art. 95 or 175 EC. Regulation competency for the top-runner approach at European level would be much clearer under the treaty of Lisbon and the new art. 176 a EC. but at national level however, legislative margins could possibly be restricted.

The investigation of the definition for a comprehensive product efficiency specific regulation system has lead to the following results:

Relevant conditions for the definition of minimum efficiency standards are the level and the mode of standards (relating to either fleet or single product consumption), the time from when the requirements are binding, and the dynamization of the standards.

The regulation of top-runner based minimum standards in Europe is seen as positive on the whole. The regulation of fleet-consumption related standards is desirable with regard to the effectivity of this instrument. Under current European law however, this is not possible. In addition to this, there are doubts concerning the acceptability and, should no interim goals be set, the effectivity of the top-runner approach in the European economy. A regulation of not strictly binding but top-runner based desired standards as an economical innovation incentive, must therefore be considered as an alternative. The same applies to binding regulations for annually raised minimum standards. With respect to the dynamization of product efficiency specific regulations, it must be considered in the legislative procedure that deadlines for the regular evaluation and possible alteration of the commission measures should be implemented. The speed with which technical developments occur must be taken into account. A bad example of this is, for instance, the Council Directive 92/75/EEC which has so far not initiated a single adjustment. Concerning labelling procedures, the classification requirements should be adjusted accordingly and the efficiency classifications neither altered nor substantiated. An annual up-to-date classification of products could and should be guaranteed, using an appliance data bank. By the awarding of contract cancellation rights consumers should be enabled to sanction non-upholding of energy efficiency standards as a means for strengthening implementation and controlling. German consumer protection law (Act against Unfair Competition – Gesetz gegen den unlauteren Wettbewerb/UWG) offers market participants and interest groups the opportunity for litigation in the case of infringement concerning labelling-regulations.

Appliance data banks, the regulation of a binding labelling of energy-consumption costs and the consideration of top-runner criteria in public provision are suggested as auxiliary economic and informational instruments of a product efficiency specific regulating system at national level. Particularly important are the appliance data banks, since they serve as a basis for the awarding of both bonuses and grants, for the classification in efficiency categories and the consideration of efficiency criteria applicable to public provision. Purchase-bonuses for top-runner products awarded to private households as an interim-instrument stand in long-term opposition to the great demand for financial provision and the limited efficacy of this instrument.

### **1.3.2 Smart Metering**

Smart Metering can result in considerable energy saving. For one thing, electricity consumption peak periods can be effected through demand management. For another, increased customer information and regular consumer feedback can lead to electric energy saving. In addition to this, intelligent meters display a lower energy usage by a factor of 6 - 8. Although smart-metering is widespread in other European and non-European countries, and a few of these have fitted households out with intelligent metering nationwide, the introduction of smart-metering in Germany is only just beginning. So far, only few smart meters and those only in the framework of trial models, have been installed in German households. However, growing interest in smart-metering can be registered.

With regard to European law, art. 13 par. 1 of the directive 2006/32/EC on energy end-use efficiency and energy services makes no stipulations for particular meters or metering technique. With the general requirement, unlimited in the case of a new connection for a meter, binding obligations must be met with respect to the electronic metering of electricity consumption, so that all end-users are provided with competitively priced individual meters which reflect the final energy consumption time. Further noticeable impulses are visible regarding the requirements for electricity billing. This covers, on the one hand the overall amount and additional information gained by comparative evaluation, and on the other hand, billing in regular intervals of less than a year. This means that transferral measures become necessary at national level. The directive 2006/32/EC must be transferred into national law by 17. May 2008.

The analysis of the legal framework for smart metering shows essential gaps and legal uncertainties, which lead to delays in a nationwide introduction of smart meters. The regulation of the liberalisation, the metering process and the metering itself is insufficient.

The material and formal requirements regarding the metering process are not satisfactory in providing a reliable and supportive framework for the distribution of smart metering. The standardization regulations of metering techniques, processes and data formatting, which for the most part are based on association guidelines, are particularly problematic. The legal requirements governing the billing of electricity consumption and the fixation of energy tariffs are insufficient.

In order to eliminate the current discrimination within the calibration of electronic meters compared to analogue meters (valid at the moment only for 8 years as opposed to 16 years), the calibration intervals should be fixed separately within the calibration act.

Following regulatory and optimizational measures for the elimination of the deficits shown by the analysis above, and with regard to the transferral of art. 13 of the directive 2006/32/EC should be considered:

- Revision and unification of the energy related regulations concerning the contents and definitions of the metering operation and metering itself, the reading of the meter and the distribution of data.
- With regard to the optimization of the liberalisation of metering in general, there must be an ordinance concerning the third party operation of the meter and an ordinance concerning the liberalisation of metering. Legal uncertainties and regulation gaps can be eliminated by regulating details, frame conditions and procedures pertaining to both business sequences, on the basis of the authorization for an ordinance in § 21 b par. 3 of the German Energy Act (Energiewirtschaftsgesetz – EnWG).
- It is suggested that a regulation of so-called basic requirements for meters and data formats should take place. This would lead to improvements in competition in the field of metering, in particular through optimal coverage of wide ranging potential for energy saving, and further economic and technical advantages through smart metering.
- As a means for raising the level of awareness among customers for their energy consumption and for indirectly forcing the introduction of intelligent meters, the requirement for informing householders monthly as to their level of consumption seems reasonable.
- Further, minimum requirements concerning the configuration (form and content) of the billing process should be enforced. These should cover both the areas of basic supply and special customer relations.

- Finally, a regulation of minimum requirements or restrictions regarding energy tariff composition is necessary. As well as a ban on tariffs supporting high energy consumption, the requirement to offer tariffs for periods of low energy demand or energy saving tariffs is recommended.

### **1.3.3 Binding Energy Saving Quotas/White Certificates**

An energy saving quota requires certain actors to save a specific amount of energy within a specific period and to show proof of this. Trading with white certificates is possible.

According to the directive 2006/32/EC, there is no requirement for either the setting up of binding saving quotas, white certificates or trading in this matter on national level. An evaluation of saving certificates or an EU-wide system of white certificates is under consideration as a proposal for measures at EU-level in 2008. Since the directive 2006/32/EC does not apply to companies involved in the emission trading scheme, it remains to be seen whether a further certificate system for energy saving can be established alongside emission trading or whether a new integrative approach will be made. In this case it would also be possible that the relations governing emission trade will be reestablished.

An energy saving quota is possible at national level. This would however, involve considerable implementation efforts on the parts of administration and business, as well as the definition of the sectors and actors concerned. Within the energy sector, consistency problems are to be expected concerning emission trade and the promotion of renewable energies through the Renewable Energies Act (EEG). Other sectors are already governed by regulatory instruments. In the building sector, for instance, are the building renovation programme, the Energy Saving Ordinance (EnEV) and the promotion of renewable energies concerning heat supply, which is being planned with the help of the draft of a Heat-Renewable-Energy-Act. In the case of regulations in the traffic sector, CO<sub>2</sub>-emissions are of foremost concern.

Concerning the choice of addressees involved in a saving quota, the feasibility is not guaranteed, owing to the enormous sum and diversity of energy consumers, who should be obliged to contribute according with the polluter-pays principle. The intrusion into the freedom of occupation or profession caused by a savings quota on the part of energy suppliers and distribution grid operators, is problematic. The necessity for guaranteeing energy supplies and environmental and climate protection reasons can, for instance, result in justification for this intrusion. Suitable differentiation of a savings quota caused by environmental or climate relevant aspects of the saved energy (fossil or renewable energy), involves an increase in efforts, decreases the efficiency of the instrument and makes implementation extremely

difficult. Such differentiation is necessary however, in order to avoid a collision with the Renewable Energies Act (EEG).

#### **1.3.4 Industry and Business**

The end energy demand of German industry accounts for roughly 25% of the total end energy demand. Currently, process-heat makes up for two-thirds of the industrial sector's end energy demand. Industry offers a particularly interesting area for research in the shape of energy efficiency potential, and innovations can be expected in this capital-intensive sector. Where compressed-air plants are concerned, in the case of amortization over a period of less than two years, an economically attractive saving potential, of between 5 and 50% of energy can be expected.

Specific areas of action were marked out at the third national energy summit of July 2007. At this conference, attention was drawn to the great pertinence of benchmark systems (best practice comparison, collection of quantitative and qualitative indicators) which facilitate the evaluation of actual energy saving.

To date, the contemplation of legal regulations governing the guaranteeing of economical and efficient energy use in the field of industrial plants, discloses that binding law is being enforced on the one hand, in the case of immission control law (art 5 par. 1 no. 4 Federal Immission Control Act – Bundes-Immissionsschutzgesetz/BImSchG), and on the other through the understanding of the term “best available technique”. This dual concept is supplemented by a clear declaration of principles in the draft of the new environmental law book (Umweltgesetzbuch). With optimization instruction, it offers support in the balancing of legally protected interests. It also shows that the opportunities for establishment of ordinances below the level of parliamentary laws will remain in place.

The requirements of the BImSchG which over many years have proven themselves successful, allow a clear picture of optimization alternatives incorporating four main points. These are the requirement of ceding process heat, the opportunity to choose the form of energy used and the incorporation of in-house generated energy. Fourthly, the 1997 draft of an energy and heat-usage ordinance is taken into consideration.

The energy saving act (EnEG) could also be substantiated with regulations governing the industry sector. The same applies to the energy saving ordinance (EnEV) which already deals with energy saving heat insulation and technique in buildings.

The compulsory recognition of voluntary commitment within the framework of the EMAS-regulation seems reasonable.

The established national energy efficiency targets, which include the Energy Efficiency Action Plans (EEAP) for the years 2007, 2011 and 2014, are now anchored in the EU-directive 2006/32/EC. Following the top-runner approach for instance, the establishment of benchmarking methods in national law seems possible.