

Energy efficiency in permitting of installations

Enforcement of the provision concerning economical and efficient energy use of the Federal Immission Control Act

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NAPE 2014 – National Action Plan on Energy Efficiency

- energy efficiency makes up the twin pillar to renewables expansion in the energy transition. The aim is to make a 20 per cent reduction in primary energy consumption by 2020 compared with 2008 and halve it by 2050
- To reach this target, the German Federal Government launched a comprehensive strategy on 3 December 2014: the National Action Plan on Energy Efficiency (NAPE)
- Download: <http://www.bmwi.de/EN/Service/publications,did=701906.html>
- In addressing final energy consumption, NAPE therefore bundles demand-side measures to reduce energy consumption (consumption efficiency)



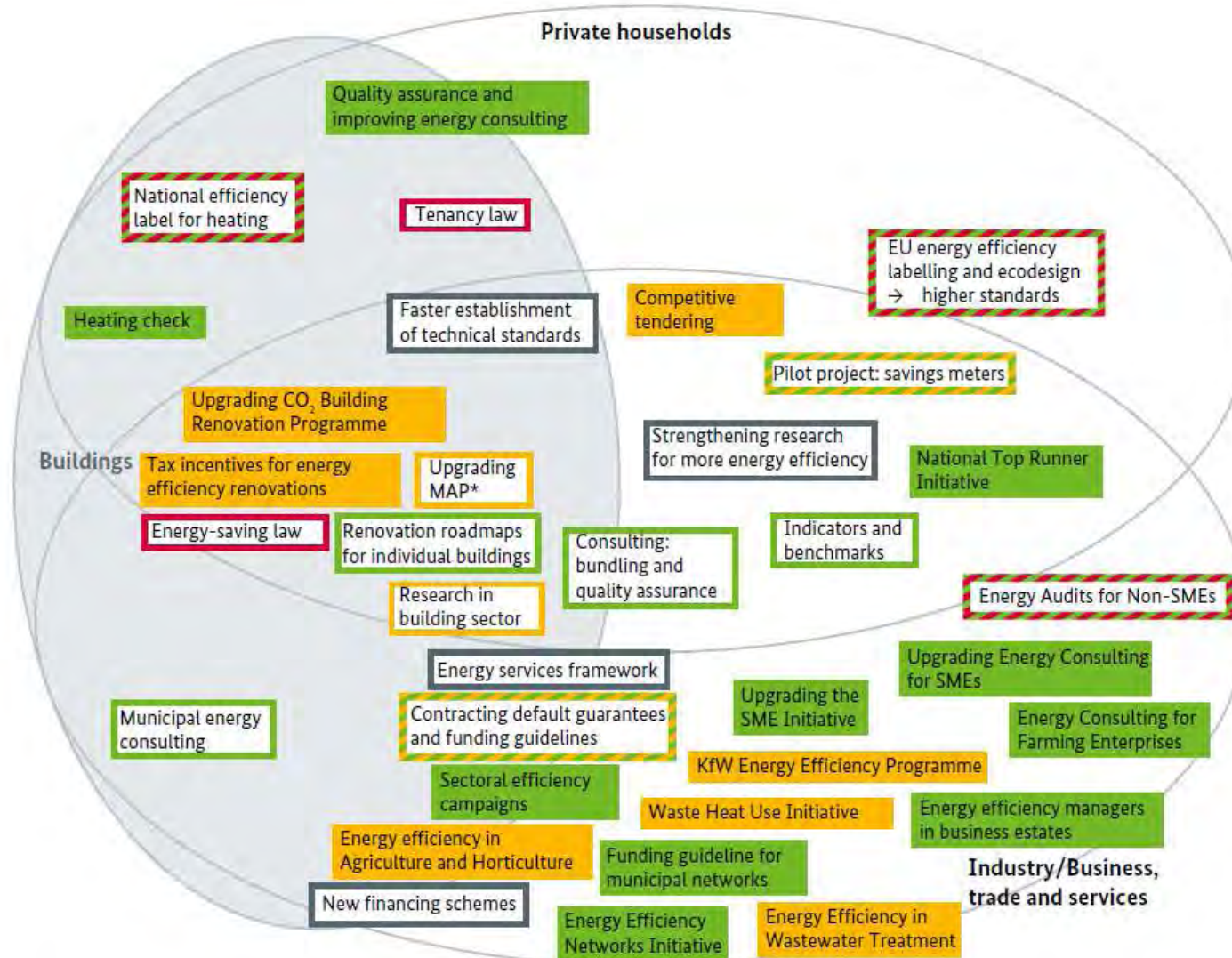
NAPE 2014 – National Action Plan on Energy Efficiency

3 cornerstones:

- 1. Stepping up energy efficiency in the building sector**
- 2. Establishing energy efficiency as an investment and business model**
 - strengthen the market for energy services
- 3. Increasing individual responsibility for energy efficiency**
 - Setting up energy efficiency networks together with business and industry
 - Promotion of cross-sectorial energy managers
 - Efficiency campaigns for industrial sectors
 - Energy-related advisory services
 - Obligation to carry out energy audits for non-SMEs (EnEffzRL)



Short-term and long-term work processes of NAPE for the 18th legislative term



■ Information
 ■ Financial incentives
 ■ Regulatory law

* "Marktanreizprogramm" – Market Incentive Programme for Renewable Energies

Extract of the National Action Plan Energy Efficiency (p. 14)

„For installations requiring authorisation, the Federal Immission Control Act (BImSchG) contains provisions on the economical and efficient use of energy and is subject to continual review, which also includes issues of improving enforcement, for example“

Voluntary tools

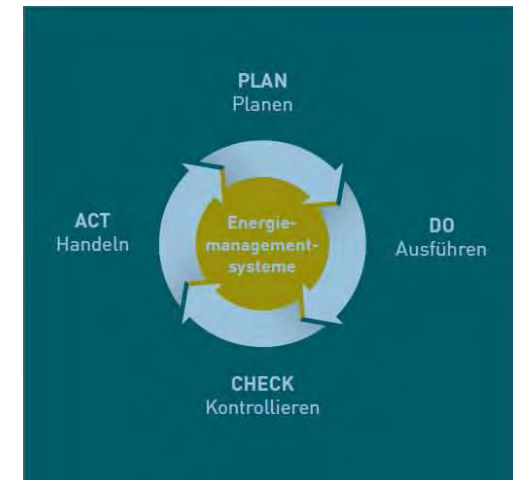
- Management systems: EMS DIN EN ISO 50001
UMS DIN EN ISO 14001
EMAS

- Energy audit DIN EN 16247

- *The energy audit per DIN EN 16247-1 offers an alternative to ISO 50001*
- *Particularly interesting for small and mid-sized companies*
- *targeted at improving energy efficiency and reducing consumption*
- *The first step: establishment of goals and limits for the energy audit*
- *Internal company processes and user conduct is then analyzed*
- *Finally, the most significant areas of potential for reducing energy consumption, as well as measures for exploiting this potential, are summarized in a report*

- Energy consulting

- Energy monitoring



Legal provisions

- TEHG - German Greenhouse Gas Emissions Trading Law: Law regulating the trade in greenhouse gas emission allowances in Germany
§ 5 para. 2 BImSchG:
 - for greenhouse gases released from installations that are regulated by the TEHG, requirements with regard to energy efficiency are only allowed if motivated by the principle of protection (non-CO2 emissions) → § 5 para.1 Nr.1
 - no requirements with regard to CO2 generated during combustion or processes (but measures related to energy efficiency concerning the efficient use of heat and power)
- Ordinance for cost-benefit comparison (Kosten-Nutzen-Vergleich-Verordnung) dated 28.04.2015 → promotion of combined heat and power applications
- Law on Energy Services and other Energy Efficiency Measures (EDL-G), „Energiedienstleistungsgesetz“ (15.4.2015): Energy Efficiency Directive 2012/27/EU was adopted and came into force on 4 December 2012. Provides that all Member States must require companies that are not Small and Medium-sized Enterprises (SMEs) to conduct energy audits
- Provisions of funding (energy management systems, highly-efficient cross-sectional technologies in medium-sized business, energy-efficient production processes...)
- EU: Ecodesign Directive, Energy Efficiency Directive 2012/27/EU, ...

Provisions in the context of permitting and supervision of installations

§ 5 para.1 No .4 BImSchG (since 2001): **Obligations of operators of installations subject to licensing**

- Installations subject to licensing shall be constructed and operated in such a way that, in order to ensure a high level of the protection of the environment as a whole

....

4. economical and efficient energy use is ensured.

Annex to § 3 para. 6 BImSchG: Definition of best available techniques

- Criteria for determining BAT

.....

9. consumption and nature of raw materials (...) used in the process
and energy efficiency

Provisions in the context of permitting and supervision of installations

9. Ordinance of the Federal Immission Control Act

→ regulates the permitting procedure for installations that require a permit

§ 4d Information with regard to energy efficiency (as part of the required application documents)

- Documents shall include information concerning intended measures for economical and efficient energy use, in particular data regarding options for achieving a high degree of energetic efficiency and utilisation, in order to reduce energy losses and to better use generated energy

Sentences of German Administrative Courts concerning permitting and efficient use of energy

- OVG NRW: 21 D 10/95.AK, 18.11.1995
According to 5 para.1 Nr.4 BImSchG the obligation of waste heat utilisation depends on the suitability of the given site and not reverse. That means that the permissibility of a project proposal at a selected site does not depend on the technical feasibility of waste heat utilisation.
- OVG Lüneburg: 12 LA 26/13, 29.11.2013
...the application for an integrated permit is not suitable for verification since a transparent concept for waste heat utilisation of the biogas installation is missing. It can therefore not be assessed and verified whether the project matches the obligations of operators of installations subject to licensing according to 5 para.1 Satz 1 Nr.4 BImSchG, ...

Experiences concerning enforcement in Saxonia

- **Pilot project until 2010:**

Energy intensive installations were assessed centrally by the state-authority „Sächsisches Landesamt für Umwelt, Landwirtschaft und Geologie“ with regard to the provision for efficient energy use

- External expert opinions were ordered by the competent authorities (and commissioned by the operator) and then assessed concerning the proposed measures for energy use improvement

Recommendations for an uniform and consistent enforcement of the provision for efficient energy use of § 5 para.1 Nr. 4 BImSchG (drafted by an expert group)

- Unambiguous provisions for the enforcement authorities and the operators (level of detail, criteria for decision making, supervision and inspection, ...)
- Preferably simple and unbureaucratic, use of expert knowledge were required
- Consideration of European provisions
- Consideration of voluntary activities of enterprises (energy audits, energy management system) as far as possible and reasonable
- Use of synergies with other legislative areas
- Consideration of the dynamics of technological development

Sources for criteria to be used by enforcement authorities

- BAT Reference Documents (BREF) (Cross-sectorial (ENE) and sectorial BREFs), assessed by an IMPEL-project on enforcement of energy efficiency
- Benchmarks and reference data for energy consumption used in the framework of the emission trading scheme
- Data base of energie efficiency agency (benchmarks)
- Data generated in voluntary projects (EMAS-reference values; Ökoprofit, SächsGEP, ...)
- Idea: Central data base (??)

Example: Extract IMPEL-Check list for the glass industry

(also available: Food, drink and milk industry, intensive rearing of poultry and pigs)

4. Techniques for the reduction of specific energy consumption (SEC)

Do you apply one or a combination of the following techniques for the reduction of the specific energy consumption? Please give additional explanation/justification.		
Techniques	yes (give a short explanation):	no (give a short explanation):
Process optimisation, through the control of the operating parameters		
Regular maintenance of the melting furnace		
Optimisation of the furnace design and the selection of the melting technique		
Application of combustion control techniques		
Use of increasing levels of cullet, where available and economically and technically viable		
Use of a waste heat boiler for energy recovery, where technically and economically viable		
Use of batch and cullet preheating, where technically and economically viable		

AIS-V working group – Principles of the recommendation for enforcement

- Investigate production process and cross-sectorial technologies for energy efficiency separately
- Master-templates for gathering most relevant energy data required in the context of application documents
- Sector specific check list for known energy efficiency technologies
- Searching specific energy consumption data, benchmarks (during the design phase)
- Distinction between measures for efficient energy use to be considered during planning and during operating phase
- EMS are BAT, supervision of identified measures for improvements by enforcement authorities via permit requirements
- Define criteria for proportionality (e.g. period for amortisation)
- Table of content for the „recommendations for enforcement“ or examples

Where to find qualified energy experts?

- --> Consultants for energy efficiency in business:

<http://www.energieportal-sachsen.de/%28S%28kbnptj4r0dzzxhmrgnbauf1b%29%29/wilma.aspx>

- --> Saxonian Agency for Energy (Sächsische Energieagentur SAENA, Team industry & business-energy efficiency)

<http://www.saena.de/themen/energie-in-unternehmen.html>

- --> www.energie-effizienz-experten.de

References

- SAENA: Energieeffizienz in Unternehmen – Praxisbeispiele aus Sachsen
- SAENA: Energiekennzahlen für Betriebsvergleiche
- SAENA: Technologien der Abwärmenutzung
- VDMA: Mehr Energieeffizienz im deutschen Maschinenbau – 26 Praxisbeispiele
- UBA: Energiemanagementsysteme in der Praxis (ISO 50001)
- Bay. LfU: Energieeffizienz bei Planung und Betrieb von Anlagen – Arbeitshilfe
- UBA (intern): Branchen- und anlagenspezifische Energieverbrauchskennwerte
- UBA: Methodik für Energiekennzahlen (kurz vor Abschluss)
- NRW: Steigerung der Ressourceneffizienz in der Ernährungswirtschaft, 2015
- LfULG-Schriftenreihe: 19/2014 (Schweinehaltung), 1/2015 (Melk- und Kühlanlagen)

Provisions of the draft TA Luft 2017 on energy and raw materials (5.2.11)

5.2.11 Energy and raw materials

5.2.11.1 General

In laying down these requirements, taking into account the principle of proportionality in particular:

- their general applicability or their limitation to new installations
- dependence on third parties
- costs of retrofitting including possible savings
- restriction depending on product qualities and varieties

The measures shall also be carried out in accordance with the findings of operational management system and possible effects on direct or indirect emission mitigation.

Provisions of the draft TA Luft 2017 on energy and raw materials (5.2.11)

5.2.11 Energy and raw materials

5.2.11.2 Measurements to energy saving, including electric energy and efficient energy use

When defining requirements for saving and efficient energy use, the following measures are in particular relevant:

GENERAL MEASURES

- Selection of suitable starting materials that have a lower energy consumption or better energy efficiency,
- Selection, design and use of optimized, variably usable units such as pumps, motors, blowers, presses, mills, furnaces, compressors, hoists, actuators
- acquisition / measurement of energy consumption and control parameters
- avoidance of leak
- Optimized, possibly automated process control and control with regard to a stable plant operation with a low energy consumption
- Use of the overpressure of process media, e.g. for electricity generation.

Provisions of the draft TA Luft 2017 on energy and raw materials (5.2.11)

5.2.11 Energy and raw materials

5.2.11.2 Measurements to energy saving, including electric energy and efficient energy use

MEASURES FOR THERMAL ENERGY

- Optimized fuel feed systems, e.g. gravimetric or flow-controlled systems
- Optimized steam and heat management systems,
- use of high-efficiency steam generators and turbines,
- use of suitable insulation for apparatus and lines,
- Extensive use of waste heat, also from products and waste streams as well as cooling and process liquids, e.g. for preheating combustion products, process fluids, combustion air, exhaust gases and other heating purposes or for electricity generation,
- Use of the caloric value of by - products, waste and residues for the substitution of other energy sources,
- Use of energy-optimized post-combustion systems, e.g. regenerative or recuperative post-combustion,
- application of exhaust gas recirculation systems.

Provisions of the draft TA Luft 2017 on energy and raw materials (5.2.11)

5.2.11 Energy and raw materials

5.2.11.2 Measurements to energy saving, including electric energy and efficient energy use

MEASURES REGARDING ELECTRIC ENERGY

- Optimized design and operation of electrical thermal process plants,
- load management systems,
- Optimization of extraction systems for the reduction of the discharge and discharge to be treated.

In the case of installations which fall within the scope of the Act on Trade with authorizations for the emission of greenhouse gases of 21 July 2011 (BGBl I p. 1475), which is governed by Article 4 (27) of the Law of 18 July 2016 (Federal Law Gazette I, p.1666) (TEHG) are the restrictions according to § 5 paragraph 2 BImSchG must be observed.