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COMMISSION STAFF WORKING DOCUMENT

IMPACT ASSESSMENT

Accompanying the document

Report from the Commission to the European Parliament and the Council

on the voluntary ecodesign scheme for complex set-top boxes

{COM(2012) 684 final}
{SWD(2012) 392 final}

TABLE OF CONTENTS

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on the voluntary ecodesign scheme for complex set-top boxes

Lead DG: DG TREN

Associated DG: DG ENTR

Other involved services: SG, LS, DG ENV, DG COMP, DG ECFIN, DG INFSO, DG MARKT, DG SANCO, DG TRADE, DG CLIMA

1. PROCEDURAL ISSUES AND CONSULTATION

1.1 Organisation and timing

The proposed Voluntary Agreement is based on the Directive 2009/125/EC of the European Parliament and of the Council establishing a framework for the Commission to set ecodesign requirements for energy-related products[1], in the following abbreviated as "Ecodesign Directive". An energy-related product (ErP), or a group of ErPs, shall be covered by ecodesign implementing measures, or by self-regulation (cf. criteria in Article 19), if the ErP represents significant sales volumes, while having a significant environmental impact and significant improvement potential (Article 15).

The Commission has carried out a technical, environmental and economic analysis in preparation of these initiatives, in the following called "preparatory study". The preparatory study was carried out by a consortium of external consultants[2] on behalf of the Commission's Directorate General for Energy and Transport (DG TREN).

On 12 October 2009 a meeting of the Ecodesign Consultation Forum established under Article 18 of the Ecodesign Directive was held (details are provided below).

1.2 Transparency and outcome of the consultation process

External expertise on complex set-top boxes (hereafter 'CSTBs') was gathered mainly in the framework of the preparatory study. The preparatory study provided a dedicated website[3]

1 OJ L 285 of 31.10.2009, p. 10.

2 EuP Preparatory study "Lot 18 – Complex set-top boxes", Bio Intelligence Service S.A.S, France, final report of December 2008 documentation available on the DG ENER ecodesign website http://ec.europa.eu/energy/efficiency/studies/ecodesign_en.htm

3 http://www.ecocomplexstb.org/

where interim results and further relevant materials were published regularly for timely stakeholder consultation and input.

During the meeting of the Ecodesign Consultation Forum on 12 October 2009 the Digitial Interoperability Forum presented a proposal for a Voluntary Industry Agreement aiming at limiting the power consumption of CSTBs (hereafter 'VA') which was largely based on the results of the preparatory study. The proposal together with explanatory notes by Commission staff were posted on DG TREN's ecodesign website, and stakeholder comments received in writing before and after the meeting are included in the Commission's CIRCA system.

The position of main stakeholders on the key features of the proposal for a Voluntary Agreement presented in the meeting of the Consultation Forum meeting on 12 October 2009 can be summarised as follows.

The **Member States** support in principle the industry proposal but would welcome a further improvement of the level of ambition in the second tier. The industry was asked to provide further information/evidence on the level of market coverage of the Agreement; the target in this respect should be around 80-90% (of products placed on the market). The industry was asked to provide further clarification on the governance of the VA.

NGOs indicate that in general regulation is preferable over self-regulation. NGOs acknowledge that the industry proposal on CTBs has certain merits (e.g. the involvement of manufacturers as well as service providers) however it needs to be improved in terms of the representativeness and targets for the second tier.

The **Industry** pointed to the advantages of this initiative as compared to regulation, i.e. faster entry into force of the requirements, greater flexibility, availability of data, and possibility of all market actors to work together towards greater energy efficiency of equipment. The industry committed to providing the Consultation Forum with an independent assessment of the market coverage of the VA. Lastly, the industry confirmed that it will be willing to reassess to level of commitment in the second tier.

2. PROBLEM DEFINITION

2.1 Introduction

The underlying problem can be summarised in the following way: cost-effective and energy efficient technologies for CSTBs do exist on the market but their market penetration is lower than it could be. Furthermore, although the installed base of CSTBs is expected to stabilise in 2010 at around 82 million and start decreasing after 2015 to 41 million in 2020, their overall energy consumption will still be considerable as the market will be increasingly dominated by devices providing additional functionalities requiring increased power. The energy demand for functions provided today by CSTBs will not decrease but will migrate to other products that will be providing these functions in the future, e.g. TV sets and home media centres.

As requested by Article 15 of the Ecodesign Directive, the preparatory study identified the environmental aspects in relation to CSTBs.

The study concludes that:

– they have a significant environmental impact within the European Union

– they present significant potential for improvement without entailing excessive costs

– the following environmental aspects are relevant:

  – energy consumption in the use phase, including power consumption in the different operating modes, and power management ;

  – materials acquisition and waste;

The most significant aspect for improving the environmental performance of CSTBs is the energy consumption the different operating modes, and power management.

2.2 Product scope

Products analysed in this impact assessment are CSTBs defined as stand-alone devices using an integral or dedicated external power supply, for the reception of digital broadcasting and depending on Conditional Access to perform its primary function. Translated into non-technical language this means receivers for pay TV.

2.3 Market failures

Major barriers for the market uptake of CSTBs with low energy consumption exist which are largely due to the following market failures:

1. **Split incentives.** The vast majority of CSTBs are purchased by the providers of pay TV which resell them or lease to the end-user as part of a service. Not bearing the usage cost of these devices, the service providers do not consider energy efficiency as one of the purchasing criterions.

2. **Negative externality** related to energy use: not all environmental costs are included in electricity prices. That is why consumer (and producer) choices are made on the basis of lower electricity price not reflecting environmental costs for the society.

3. **Incomplete information** on running costs/cost savings: information on running costs/cost savings is not explicit and can be obtained only with difficulty.

2.4 Related initiatives on European Union and Member State level

Regulation 1275/2008 sets requirements for standby and off mode electric power consumption of electrical and electronic household and office equipment. The impact of this Regulation can remain limited as CSTBs are rarely in the 'off' or 'standby' modes as they need to be constantly in on mode or networked standby to be able to operate.

The European Code of Conduct for Digital TV Services orchestrated by the JRC brings together service providers and manufacturers with the aim of improving the efficiency of set-top boxes. Although the CoC has a much smaller coverage than the VA it aims at seeking innovative technology solutions, and not setting minimum requirements. These two initiatives are therefore complementary.

WEEE addresses the CSTBs environmental impact of waste. No particular difficulties for the implementation of WEEE for such devices are reported in the 2008 WEEE review[4].

2.5 Baseline Scenario

The electricity consumption of CSTBs will be approx. 10 TWh in 2010 in EU-27, it will peak in 2015 at 21 TWh, and go down to 10 TWh in 2020. This baseline scenario is based on the following predictions and assumptions.

– It is assumed that the future technical improvements of the complex STBs will lead to reduction in terms of power requirements in different operating modes but that these improvements will be offset by an increasing number of functionalities provided by the STBs. It is therefore assumed that these two trends will offset each other.

– It is assumed that the number of CSTBs will grow until 2015 due to the digitalisation of TV services in the EU (see graph 1 below) and an increasing number of subscribers for pay TV servies.

– It is assumed that after 2015 the power consumption of CSTBs will decrease as their functions will be increasingly performed by TV sets, PCs, and other devices. Therefore although the power demand for services provided today by CSTBs will grow, it will be used by other products.

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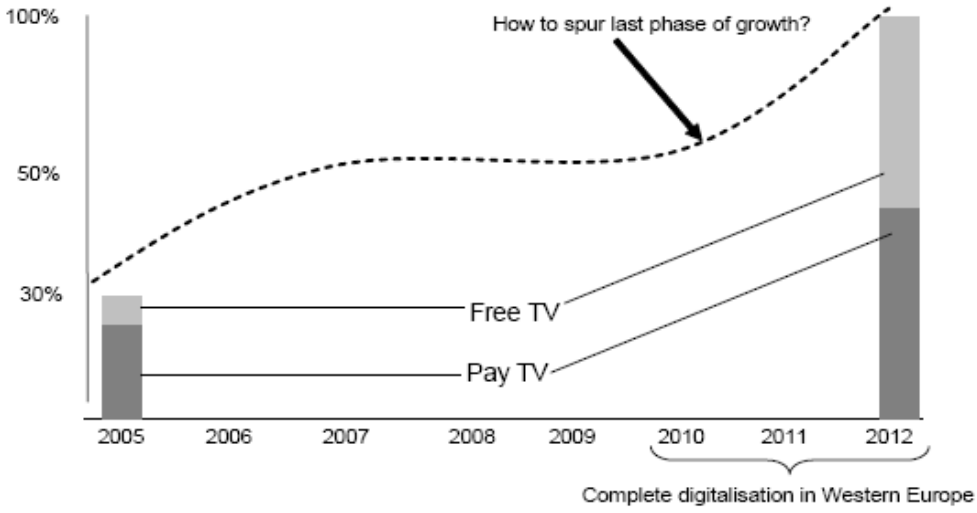
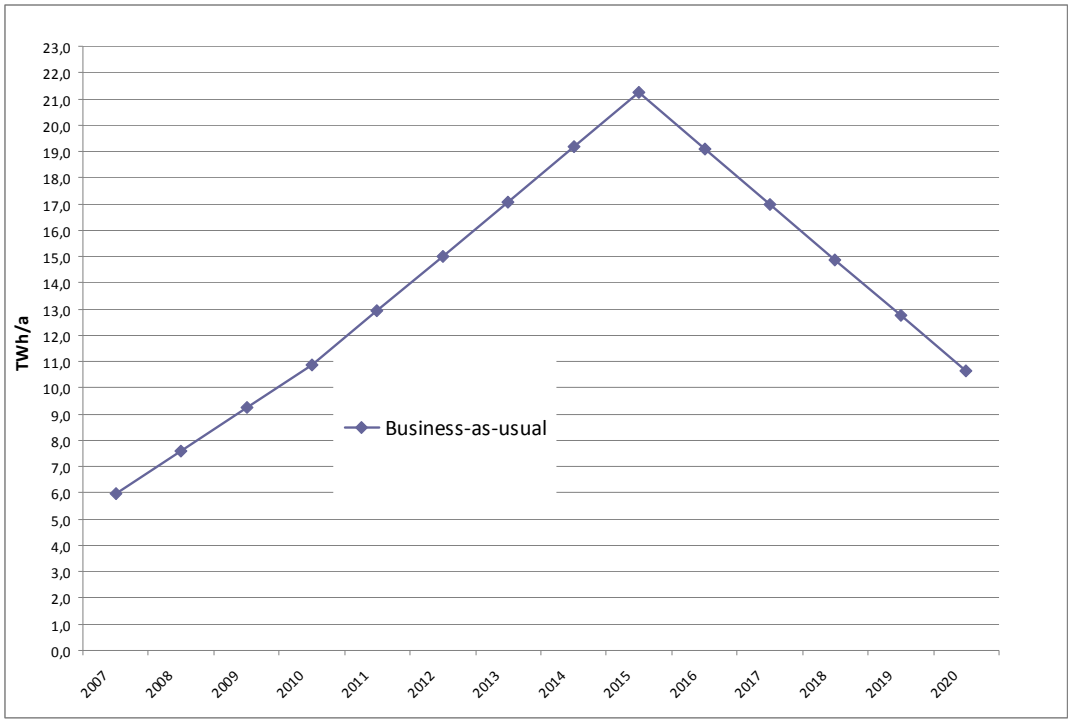


Graph 1: Digital TV penetration scenario in Europe

The above considerations already point to the challenge of addressing such products with regulatory measures, and the comparative advantage of more flexible instruments, such as voluntary agreements. These assumptions lead to the baseline scenario showed below.

[4] See 2008 Review of Directive 2002/96 on Waste Electrical and Electronic Equipment (WEEE), Final Report, United Nations University, Bonn, Germany et al., Contract No: 07010401/2006/442493/ETU/G4, ENV.G.4/ETU/2006/0032, 05 August 2007, http://ec.europa.eu/environment/waste/weee/studies_weee_en.htm



Graph 2: Baseline development of electricity consumption of CSTBs until 2020

2.6 Legal basis for voluntary agreements under the Ecodesign Directive

The Ecodesign Directive and, more specifically, its Recitals 16, 17, and 18, Article 17 and Annex VIII provide for the recognition, under certain conditions, of voluntary agreements as valid alternative to EC regulation.

2.7 Improvement potential

The preparatory study has shown that existing cost effective technical solutions allow for improvement of the energy efficiency of CSTBs. The total energy consumption of a CSTB can be reduced by up to 50%. Thanks to reduced power consumption the life-cycle cost (therefore including the purchase price of the box) can be reduced from 375 euro to 307 euro allowing the consumer to save 68 euro.

3. OBJECTIVES

As laid out in Section 2, the preparatory study has confirmed that a large cost-effective potential for reducing electricity consumption of CSTBs exists. This potential is not captured, as outlined above. The general objective is to develop a policy which corrects the market failures, and which:

I) Reduces energy consumption and related CO2 and pollutant emissions due to CSTBs and drives following Community environmental priorities, such as those set out in Decision 1600/2002/EC or in the Commissions European Climate Change Programme (ECCP);

II) Promotes energy efficiency hence contributes to security of supply in the framework of the Community objective of saving 20% of the EU's energy consumption by 2020.

4. POLICY OPTIONS

4.1 Option 1: No new EU action

This option would have the following implications:

– the barriers for realizing the potentials to improve the energy efficiency of CSTBs would persist.

– it is to be expected that Member States would want to take individual, non-harmonized action. This would hamper the functioning of the internal market and lead to high administrative burdens and costs for manufacturers, in contradiction to the goals of the Ecodesign Directive.

– the provisions of the Directive would not be respected.

4.2 Option 2: Self regulation

As a basic condition, voluntary agreements under the Ecodesign Directive need a high level of environmental ambition and need to demonstrate that they are likely to deliver the policy objectives faster or in a less costly manner than mandatory requirements. In such case, they are considered a preferred option (recital 18). Proposals for voluntary agreements (self-regulation) are recognised as a valid alternative to regulation if their assessment against the criteria of Annex VIII is deemed satisfactory (Article 17), taking into account the feedback from the Consultation forum.

4.2.1 Rationale and main elements

The rationale for addressing the environmental impact of CSTBs through self-regulation is underpinned by the following characteristics of this product group:

– The energy consumption of these devices is impacted not only by their design but also the way they are operated by the service providers. A significant improvement of the energy efficiency of CSTBs necessitates therefore a close cooperation of hardware, software and service providers and could not be achieved by setting product requirements only. In needs to be noted that the overall power consumption of CSTBs is not addressed through mandatory requirements almost anywhere in the world.

– The functions of these devices and related products (e.g. data modems) are quickly evolving and often merging which requires a flexible approach in terms of defining the addressed parameters and setting applicable requirements.

– Although the number of potential manufactures of CSTBs is enormous, the bulk of CSTBs specifications are drawn up by restricted number of service providers/operators. This potentially facilitates monitoring and decreases the risk of 'free-riding' by a significant part of the sector.

On the basis of these arguments and the applicable provisions of the Ecodesign Directive, the Digital Interoperability Forum (hereafter 'DIF') presented to the Consultation Forum a proposal for a Voluntary Industry Agreement aiming at limiting the power consumption of CSTBs. DIF brings together manufacturers of hardware and middleware, software, and service providers (see Annex I).

The industry proposes to introduce targets for the typical energy consumption (TEC[5]) of CSTBs in two stages, with the first reporting period from July 2010 to July 2011, and the second from July 2013 to July 2014. The target values will have to be met by 90% of CSTBs placed on the market or put into service by each signatory during the reporting periods.

4.2.2 Assessment against Annex VIII of the Directive

In line with Article 17 of the Ecodesign Directive *"Voluntary agreements or other self-regulation measures presented as alternatives to implementing measures in the context of this Directive shall be assessed at least on the basis of Annex VIII"*. Therefore before proceeding to the comparison of the expected impacts of this option with the other viable option(s), this section will give an overview of how it responds to the criteria annexed to the directive.

– Openness of participation: the agreement development was open to all interested parties. Its drafting followed a transparent process and timetable that was agreed with all members and consulted with the Commission services.

– Added value**:** the draft VA aims at improving the energy efficiency of CSTBs beyond business as usual. A detailed overview of its expected impact and comparison with the other viable option(s) is provided in section 5.

– Representativeness: annex VIII of the Directive stipulates that Industry and their associations taking part in a self-regulatory action shall represent a large majority of the relevant economic sector. A report commissioned by DIF[6] indicated that approx. 75% of CSTBs on the EU market would be covered by the Agreement. This number could be increased with the adherence of additional companies, and indeed since then additional signatories have joined.

– Quantified and staged objectives: the draft VA provides quantified objectives to be introduced in two stages (details are provided in Section 5).

– Involvement of civil society: the draft VA stipulates that the meetings of the Steering Committee will be opened to any *"person who wishes to attend and who the Steering Committee believes represents a legitimate stakeholder"*. The annual reports that will be submitted by the industry to the Commission will be each time discussed by the Consultation forum.

– Monitoring and reporting: the draft VA provides the modalities for monitoring and reporting. The monitoring will be performed by the Steering Committee composed of signatories and of the European Commission and its meetings will be opened for the participation of Member States, EFTA, and any other person who wishes to attend and who the Steering Committee believes represents a legitimate stakeholder. This monitoring will

5 'Typical Energy Consumption (TEC)' means the electricity consumed by the device while in various modes during a representative period of time

6 Market Penetration: Voluntary Agreement on complex set-top boxes power consumption – a report for the Digital Interoperability Forum, Screen Digest, January 2010

be performed on the basis of annual reports submitted by an independent third-party based on data collected from the signatories.

– Cost-effectiveness of administering a self-regulatory initiative: it is expected that the administrative burden as compared to other available policy instruments will remain limited (details are provided in Section 5).

– Sustainability: The draft VA responds to the policy objectives of the Ecodesign Directive by aiming at reducing the environmental impact of CSTBs.

– Incentive compatibility: It is considered that the VA is compatible with the elements mentioned in section 2.4.

4.3 Option 3: Ecodesign requirements

This option aims at improving the environmental impact CSTBs by setting mandatory maximum levels for their power consumption.

The preparatory study concluded that Ecodesign requirements formulated in TEC could be set in 3 stages set on July 2011, July 2012, and January 2014. However certain requirements implemented in the later tiers could have a negative impact on the functionality of the equipment (details are provided in section 5).

A comparison of the levels proposed in Option 2 and 3 is presented in Section 5.

4.4 Option 4: Mandatory energy labelling for CSTBs under Directive 2010/30/EC

– The vast majority of CSTBs is not purchased by end-users, but by service providers, a labelling scheme would not address the main applicable market failure (split incentives).

– The introduction and an A-G labelling scheme would not be in line with Article 11 of the Energy Labelling Directive which stipulates that the steps of the energy classification shall correspond to significant energy and cost savings from the end-user perspective.

– That is why this option is discarded from further analysis.

5. IMPACTS ANALYSIS

Given that option 4 has been discarded from further analysis, this section will compare the impacts of options 2 and 3 against the BAU. .

The assessment is done in two stages. First options 2 and 3 are compared with respect to:

– the type and level of ambition of the requirements/targets, and the timing of their entry into force

– the modalities for reporting/measurement/verification

In the second stage the two options are compared with a view to the criteria set out in Article 15(5) of the Ecodesign Directive, and the impacts on manufacturers, including SMEs.

5.1 Type and level of ambition of ecodesign requirements/targets

The scope of options 2 and 3 in terms of the covered equipment is analogous therefore a first step in comparing the two options is a comparison of the type of elements addressed by them and their respective levels of ambition.

5.1.1. Improvement options

The preparatory study concluded that the main environmental impact associated with STBs, i.e. the energy consumption during use could be decreased by the implementation of the several options, including power management, decreased power-consumption in 'on' and 'active standby' modes, and efficient power supplies. The cost of these improvement options is negligible and ranges between 0 and 3 euros. The exception are solid state drives which can add a cost of 100 euros.

All of these options lead to the setting of minimum efficiency requirements formulated in TEC (typical energy consumption) which leaves manufacturers the flexibility for achieving the desired levels. The TEC allowances vary according the platforms that are used by the devices and to the additional functionalities provided by the devices. This approach is applied in both option 2 and 3.

5.1.2. Level of ambition and timing

According to the Ecodesign Directive the target levels for measures should be set at least life cycle cost (LLCC), which presumes that at some point the price of the product increases so much with extra design options to save energy that the life cycle costs (purchase price plus running costs) will start to rise again. The table below compares the levels identified by the preparatory study as LLCC (four right-hand columns), with the levels proposed by the industry (2nd and 3rd column) and the base-case/business-as-usual (1st column).

	Base case Levels	Industry proposed voluntary agreement		EuP lot 18 (Preparatory Study) final report recommendations			
		Tier 1 July 2010, no APD	Tier 2, July 2013, APD	Tier 1, July 2011 no APD	Tier 1, July 2011, APD optional	Tier 2 July 2012, APD, low-power standby*	Tier 3, January 2014 APD, low-power standby*
Base Functionality (kWh/year)							
Cable	60,2	45	40	40	32,2	27,6	21,7
Satellite	60,2	45	40	40	32,2	27,6	21,7
IP	60,2	40	35	40	32,2	27,6	21,7
Terrestrial	60,2	40	35	40	32,2	27,6	21,7
Thin-Client/Remote	60,2	40	35	40	32,2	27,6	21,7
Additional Functionalities (kWh/year)							
Additional Tuners	21,9	20	14	20,4	14,1	8,9	8,9
Adv. Video Processing		20	14				
DVR (hard drive)	19,7	20	18	18,5	18,5	7,4	7,4
High Definition (AVP factored in here the case of base case and prep study recommendations)	70,1	20	14	40	32,2	15,9	15,9
Multi-Decode		38	12				
Return path	87,6	60	35	78	78	26	21,3

Table 1: Comparison of Base-case with VA targets and recommendations from preparatory study.

Table 1 indicates that:

– Minimum efficiency levels under option 2 (VA) and 3 (mandatory requirements) are structured in the same way.

– The Tier 1 levels under option 2 and 3 are similar. The timing of their entry into force is also similar, however one important difference has to be noted: whereas under option 3 (mandatory requirements) all CSTBs placed on the market after July 2011 would have to meet the indicated level, the levels of option 2 would have to be achieved by 90% of CSTBs placed on the market by each signatory of the VA between July 2010 and July 2011. Requirements are therefore phased-in faster under option 2.

– The levels recommended by the preparatory study for Tier 2 and 3 are more ambitious than the industry proposal. It has to be noted however that the levels indicated in Table 1 in the last two columns on the right assume the implementation of low-power standby across all CSTBs placed on the market. However this option couldn't be made mandatory as, with the current technology it would have a negative impact on the functionality of the equipment- a CSTB that would switch automatically to a very low-power mode could not ensure the performance of such functions as software updates, security of the network etc. Its implementation would require a close cooperation of hardware manufacturers and service providers which goes beyond design requirements, hence beyond what can be required under an ecodesign implementing measure. This option however theoretically could be implemented in the mid-term under a voluntary approach. Its potential is depicted on Graph 3 (p. 16).

5.2 Reporting/measurement/verification

Under a regulatory approach (option 3) requirements would have to be met by all products meeting the definition that would be placed on the market after the date of the entry into force of the requirements. Manufacturers would have to test their equipment in line with the applicable test procedure and report the values in the technical documentation referred to in Annexes IV and V of Directive 2009/125/EC. Verification would be preformed by market surveillance authorities on the basis of an established procedure.

In the case of option 2 (VA) the monitoring will be performed by the Commission assisted by the Committee referred to in Article 19 of the Directive. This monitoring will be performed on the basis of reports submitted by an independent third-party that will be collecting and aggregating the data from the individual signatories in accordance with Annex G of the draft VA. Member State market surveillance authorities will have access upon request to the background data in order to verify their accuracy.

5.3 Economic impacts

Complex STBs are usually provided by the service provider (e.g. broadcaster, cable company) who often rents or provides the appliance to the consumer free of charge, or at an advantageous price, along with the service subscription. The consumer (i.e. end-user) is therefore rarely the purchaser due to the currently existing business models.

The main actors of the complex STB market are the manufacturers of the complex STBs (e.g. LG Electronics, Pace, Motorola), TV service providers (e.g. BSkyB, Telenet, Canal+),

providers of software for Conditional Access, providers of middleware to enable applications such as electronic programme guide to run on the STB (Osmosys), and silicon vendors who supply the micro-processor technologies at the heart of the product (e.g. ADM, Broadcom, Microsoft, NEC Electronics).

These 5 segments are mainly dominated by large companies. It should be noted that the evolution in the design of the complex STB will affect and involve co-operation of all the parties. This concerns also energy efficiency, where improvements would require hardware engineers (STB manufacturers) to consider energy efficiency from the outset, CA suppliers and silicon vendors to consider if full active standby mode is required[7], middleware designers to be aware of power management requirements, and service providers to consider the implementation of power management in the STB they deliver even through they are not the final end-user of these devices. These changes cannot therefore be influenced only at the design level, hence the limitations of regulation.

5.3.1 Costs related to improved technology and production, re-design and supply chain

As indicated in the section 5.1.2 both options aim at addressing similar parameters with similar allowances. They would therefore necessitate similar redesign solutions, also in terms of cost. The aspects differentiating them are therefore:

– the percentage of equipment covered

– the potential to drive further in the mid-term the energy efficiency of CSTBs

– the adjustability to future technological changes.

The improvement in both options in the first and partly second tier is achieved with readily-available technology involving minimum or no additional cost. No major additional costs for re-design are expected, because compliance can be achieved by a minor modification which can be accommodated into planned re-design cycles for CSTBs. The technical options for improving the energy efficiency of CSTBs are estimated to add between 0 and 5 euro to the price of the box, depending on the option chosen. These price adders are well within the limit of the least life-cycle cost.

The redesign cost is expected to be somewhat smaller in the case of option 2 as manufacturers/service providers signing up to the VA will be allowed to leave 10% of their fleet outside of the commitments.

5.3.2 Costs related to reporting/measurement/verification

In general assessing the conformity with mandatory ecodesign requirements implies costs for manufacturers. The same holds true for verifying compliance with voluntary commitments. Based on stakeholder feedback it is estimated that the cost for assessing the conformity with ecodesign requirements is in the order of 500€ to 1000€ per sample product/model. The aggregate cost to manufacturers is expected to be somewhat smaller in the case of option 2 as manufacturers signing up to the VA will be allowed to leave 10% of their fleet outside of the

[7] Active standby mode is defined as (Task 1) "*The appliance is connected to a power source, does not fulfil a main function but can be switched into another mode with the remote control unit or an internal signal. It can additionally be switched into another mode with an external signal or it is receiving a minimal level of data from an external source.*" - see further details on "active standby" in later tasks 3,4,5,6 and 7.

commitments and hence will not be required to test this equipment. The cost of reporting is considered to be negligible (in the order of 2-3 thousand EURO per year per signatory).

5.3.3 Administrative costs for Member States

In the case of option 3 the costs for carrying out the verification procedure for market surveillance purposes is expected to be in the order of several thousand EURO.

In the case of option 2 the monitoring of the VA would be performed on the basis of aggregated data provided by an independent third party. This third party would be financed by the industry hence the cost would be shifted away from Member States.

5.4 Social impacts

5.4.1 Affordability of equipment

The price increases due to the implementation of either option 2 or option 3 are estimated to be in the range of 0 to 5 euro, i.e. less than 2 % of the purchase price of a CSTBs. This increase in the upfront price is expected to be largely offset by use cost savings ranging between 15 euro in the case of a 'basic' CSTB to 95 euro, in the case of a CSTB with additional functionalities.

5.4.2 Impact on the functionality of equipment

The implementation of either of the two options considered here would not have a negative impact on the functionality of the equipment. As indicated earlier in the mid-term the biggest saving-potential is associated with the implementation of APD and low-power standby. Making these features (in particular the latter) mandatory at this stage could have a negative impact on the user. The implementation of these technical options will require changes to the infrastructure support systems that the major European subscription service providers run. The implementation of such solutions would be the main challenge of the revision process as part of both a VA and regulation. However in the case of a VA it can be assumed that this will be easier due to a greater flexibility of the decision-making process, but above all due to the participation of service providers.

5.5 Annual and accumulated electricity, electricity cost and CO2 emission savings by 2020

– The electricity cost savings triggered by ecodesign depend on the level of ambition of the commitments/requirements and the percentage of equipment complying with them.

5.5.1 Electricity savings (including cost)

Graph 5 shows the development of the electricity consumption of CSTBs until 2020.

The electricity cost savings triggered by ecodesign depend on the level of ambition of the commitments/requirements and the percentage of equipment complying with them. The figures below were established on the basic of the following assumptions:

– In the case of mandatory requirements (option 3) the assumed level of compliance is 100%. In the case of the VA (option 2), it is assumed that manufacturers subscribing to it will cover 80% of the market and, in line with the commitments in the draft VA 90% of the

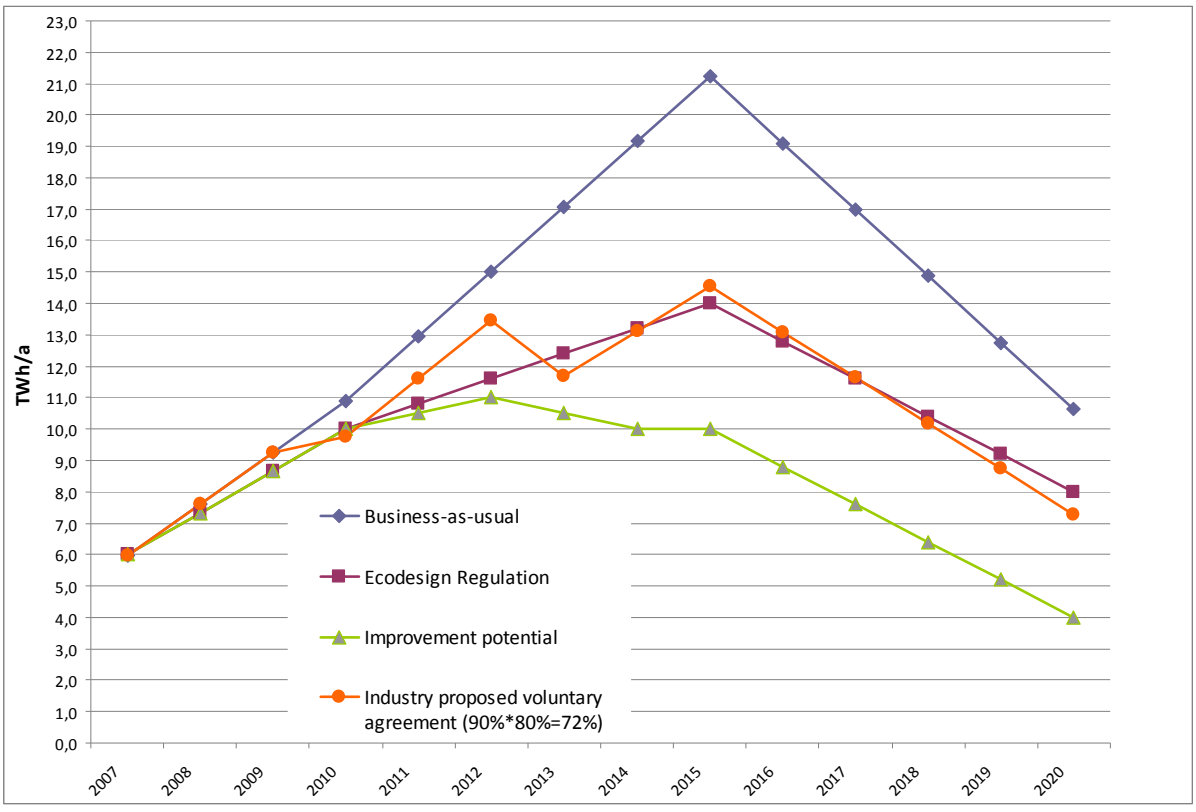
fleet of each signatory would comply, hence the overall percentage of equipment meeting the targets would be 72%.

– Option 3 (mandatory ecodesign requirements) assumed the implementation of the LLCC 1 scenario from the preparatory study, therefore the improvement of the efficiency though efficient power supplies and other technical options, such as efficient hard disk drives, but not the mandatory implementation of APD and low-power standby since the implementation of these options across the board is not possible in the short-term.

– Although as indicated in Table 1 the total allowed energy consumption for an STB with all additional features will be 218 kWh in the case of the VA and 196 kWh in the case of regulation, the market share of STBs providing multi-decoding is expected to remain very limited. If you correct for this element then the allowance under the VA is 180 kWh, while in the case of regulation it remains at 196 kWh (as the preparatory study didn't foresee any additional allowance for this element).

It has to be noted that in the case of such 'volatile' and quickly-evolving products as CSTBs and forecasts beyond a time horizon of 5 years bear a high degree of uncertainty.

Options 2 and 3 achieve a comparable improvement compared to BAU. Furthermore as the graph 'improvement potential' shows the possibility for an improvement beyond option 2 and 3 is considerable. The electricity consumption of CSTBs will peak around 2016 and from then will start declining. This is due to the fact that the functions provided today by CSTBs will be increasingly shifted into other devices, be it TV sets, media centres, or other devices that are not yet on the market. This provides yet another argument for engaging with the service providers to drive down the power consumption provided by their services, irrespectively of the physical device through which it is provided.



Graph 3: EU27 Electricity Scenarios 2007-2020 in TWh/a (electric)

Table - Electricity Savings 2016 vs. BaU:			
	Use	**Savings**	
	TWh/a	**TWh/a**	**%**
Business-as-usual	21		
Option 2 (VA)	14,5	6,5	31%
Option 3 (regulatory)	14	7	33%
Improvement potential	10	11	52%

Table 2: development of electricity consumption of CSTBs for several scenarios until 2016.

The annual electricity savings of 6,5 TWh expected by 2016 correspond to savings of electricity costs of 884 million EURO.

5.5.2 Accumulated electricity cost savings through the VA and ecodesign requirements

Table 3 gives an overview of the accumulated electricity savings, the corresponding cost savings and avoided CO2 emissions over a period between 2011 and 2020:

	Accumulated electricity consumption (TWh)	Accumulated electricity savings (TWh)	Accumulated electricity cost savings[8] (billion EURO)	Accumulated avoided CO2 emissions[9] (Mt)
BAU	159	-	-	-
Option 2	115	44	6	21
Option 3	114	45	6.2	21

Table 3: accumulated electricity and cost savings, and avoided CO2 emissions for the products placed on the market from October 2011 until 2020 for options 2 and 3.

The above table indicates the difference between the impact of the voluntary and mandatory approach is negligible.

5.5.3 Potential accumulated electricity cost savings through the implementation of power management options (APD and low-power standby)

The preparatory study indicated that the biggest saving potential in the mid-term is linked to the implementation of power-management options, APD and in particular low-power standby mode. These options are described in section 5.1.1. The implementation of these options would lead to accumulated electricity consumption by 2020 of 87 TWh, electricity savings of 72 TWh translating into10.2 billion EURO saved.

[8] Assumption: 0.136€/kWh

[9] Assumption: 0.4 kg CO2/kWh

5.5 Comparison of the sub-options

The following table summarizes the considerations on the impacts of the options 2 (VA) and 3 (regulatory) compared to the baseline scenario, and assesses them on a relative scale from 1 (low) to 4 (high):

	Economic impact (costs)	Environmental impact (electricity/CO_2/electricity cost savings)	Social impact (risk for Job losses in SMEs)	Improvement potential in the mid and long term
BAU	1	1	1	1
Option 2 (VA)	1	3	1	4
Option 3 (regulation)	2	3	1	2

Table 4: summary and assessment of options 2 and 3

It is concluded that option 2 and 3 have a similar impact on electricity savings. Option 2 has a somewhat smaller cost for Member States (as the burden linked to the verification/monitoring is shifted to the industry) and for industry (as the voluntary agreement allows it not to redesign products across the board, but leaves 10% of the fleet uncovered by the requirements). Most importantly option 2 offers higher potential for further improvement. However this will depend on the willingness of the industry to commit to new targets in later stages and on the ability of policy-makers to engage with the industry as part of the voluntary agreement. In order to ensure that ambitious targets are set in the subsequent stage synergies will be sought with the Code of Conduct orchestrated by the JRC.

6. CONCLUSION

Following the principle of proportionality in the analysis effort, policy options 1 and 4 were discarded at an earlier phase of the analysis. The analysis of options 2 and 3 shows that option 2 optimally fulfils the objectives as set out in Section 3. As described in section 4.2.3 it also meets the criteria of Annex VIII of the Directive. In particular, the Voluntary Agreement implies :

- cost-effective reduction of electricity consumption of 6,5 TWh by 2016 compared to the baseline scenario, corresponding to electricity cost savings of 884 million EURO, and 2,6 mln tons avoided CO_2 emissions;
- the requirements of Directive 2009/125/EC, in particular Recital 18 and Annex VIII are met;
- requirements enter into force faster and are less costly than in the case of regulation;
- compatibility and complementarily with existing policy instruments;
- correction of market failures and improvement of the functioning of the internal market;
- no significant administrative burdens for manufacturers or retailers;

– insignificant, if any, increase of the purchasing cost, which would be largely overcompensated by savings during the use-phase of the product;

– that the specific mandate of the Legislator is respected;

– no significant impacts on the competitiveness of industry and employment, and in particular in the SMEs sector due to the small absolute costs related to product re-design and re-assessment;

– policy objectives are achieved in a flexible way in line with the better regulation agenda;

– the involvement of service providers presents an opportunity to significantly decrease the energy consumption of CSTBs in the mid- and long-term

7. MONITORING AND EVALUATION

The procedure for monitoring and reporting will look as follows:

– The Steering Committee will continuously follow progress and results of the VA and agree on practicalities, such as the selection of an independent third-party/inspector that will be collecting the data from the individual signatories, and transmitting the aggregated results to the Commission. The Steering Committee will include the signatories of the VA and will be opened to outside stakeholders (as observers).

– Signatories will annually submit to the Commission a report through the independent third-party. For quantified objectives the report will include detailed figures based on agreed measurement methods. The first reporting period started in July 2010 and ends in July 2011. In line with the provisions of the draft VA, by the 31 August 2011 each signatory shall provide the applicable information to the independent third-party. The independent third-party will then have 3 months to aggregate the results and present them to the Commission and stakeholders.

– The members of the Consultation Forum will be consulted on an annual basis to take stock and monitor the results of the VA. Member States wishing to verify the reported information will be granted access on demand to the background data and on that basis will be able perform products checks/tests.

– The Commission, assisted by the Committee on the Ecodesign of Energy-related Products (in its advisory capacity), will, in the light of the reports submitted and input from the Consultation Forum consider whether the objectives of the VA are met.

– If the Commission considers that the VA failed to achieve its objectives it will consider proposing an EC regulation instead.

ANNEX I

List of companies currently providing support to the VA

Set top box manufacturers	Chipset manufacturers	Service Providers	Middleware manufacturers	Conditional access providers
ADB Amstrad Cisco Humax Kaon Media Motorola Netgem Pace Sagem Samsung Tatung TechniSat Thomson	Broadcom Intel NXP ST	BT Canal+ Kabel BW Kabel Deutschland Liberty Global Ono Sky Ses Astra Sogecable Sky Deutschland Sky Italia Telenet Topup TV Viasat Virgin Welho	Mocrosoft Open TV	Conax Irdeto Nagra NDS

ANNEX II
Minutes of the Consultation Forum meeting

Subject: Ecodesign of EuPs Consultation Forum – Voluntary Agreement on Complex Set-top boxes
Place: Centre de Conférence Albert Borchette, Brussels
Chairman: André BRISAER (TREN/D3)
EC Participants: Jacek TRUSZCZYNSKI (TREN/D3), Martin EIFEL (ENTR/B1)
Kerstin LICHTENVORT (ENTR/B1), Paolo BERTOLDI (JRC/ISPRA)

Voluntary Agreement on Complex Set-top boxes
12 October 2009, 10:00 – 13:00

1. Welcome and introduction

The Chairman welcomed the participants and briefly introduced the proposal formulated by the *Digital Interoperability Forum* (DIF) for a "voluntary agreement on complex set-top boxes" within the framework of Directive 2009/125/EC.

2. Adoption of the agenda

The agenda was adopted without changes.

3. Voluntary Industry Agreement on Complex Set Top Boxes (*for opinions*)

The Commission services provided background information on the specific provisions of Directive 2009/125/EC related to voluntary agreements. The Commission services emphasized both the benefits and potential issues inherent to voluntary agreements.

DIF introduced the industry's proposal for a "Voluntary Industry Agreement to improve the energy consumption of Complex Set Top Boxes". The agreement, DIF explained, is not only supported by DIF, but has also been signed by companies from the greater market of CSTB manufacturers and related service-providers. Key elements of the presentation included the following:

CSTB sometimes account for up to five different modes of use and different types of actual usage by consumers.
The process of signing the voluntary agreement has not been finalized: talks are still taking place with representatives from further companies (the example of Kabel Deutschland as having recently signed the agreement was mentioned).
All "interested parties" are invited to sit in the Voluntary Agreement's Steering Committee. It was explained that, for instance, all organizations sitting in the Consultation Forum would be accepted.
Should a company not meet the targets it had agreed to, the Steering Committee would most likely expel the defaulting company, as well as publicize this fact.

The presentation was followed by a discussion on the basis of certain Annex VIII criteria, and in particular:

Added-value of the Voluntary Agreement

ANEC/BEUC would like to see a calculated comparison between a Voluntary Agreement and a regulation. ENV NGOs enquired about the extent to which the industry would be willing to amend the proposal. DIF explained that modifying the proposal at this stage would be all the more difficult as it would require approval of over thirty signatories. At the same time DIF is open to make changes related to future commitments once the initiative gets started.

DK, UK, NL acknowledged the industry's efforts, but would like the latter to propose even stricter levels, especially in the second tier.

ENV NGOs regret that the VA is focused on energy and the other environmental aspects are not addressed.

Openness and participation

ENV NGOs pointed out consistency issues between the text version and the oral presentation of the Voluntary Agreement as made by DIF: e.g. the text specifies that the Steering Committee would select its members. DIF reassured that all members of the Consultation Forum would be welcome in the Steering Committee; and that it would be politically disastrous for the Steering Committee not to accept NGOs.

Representativeness

Several members of the CF asked he industry to provide data (ideally provided through a third party) on the market coverage of the VA. The industry committed to submit such a report within the shortest delays.

ANEC/BEUC pointed out that some Member States might not be covered by this initiative. The industry confirmed that all countries were covered by at least one manufacturer and one service provider.

The UK estimates that the coverage should reach 90% of the market in order to be considered as a viable alternative to regulation.

Quantified and stated objective

UK indicated that it expected the industry to make stronger commitments as part of tier II. DIF reiterated that it will be opened to make changes when the process starts and pointed out that a voluntary approach allows for a flexible adjustment of targets.

Monitoring and Reporting

The Commission services stressed the importance of collecting data by an independent third-party.

The UK and ENV NGOs indicated that industry should make available to MS authorities upon request background data to allow for checks. DIF indicated that although such a provision is not included in the draft text of the agreement, these data will be made available. At the same time market share data has to remain confidential.

ANEC/BEAUC suggested that the names of defaulting companies be made public.

ANNEX III
Structure of the methodology used for establishing the technical, environmental and economic analysis

Following the "Methodology Study Eco-design of Energy Using Products" ("MEEuP"), the tasks listed below are carried out for developing the technical, environmental and economic analysis referred to in Annex II of the Ecodesign Directive:

Task 1: Product definition, existing standards and legislation

Task 2: Economics and market analysis

Task3: Analysis of consumer behaviour and local infrastructure

Task 4: Technical analysis of existing products

Task 5: Definition of base case ("average" model) and related environmental impact

Task 6: Technical analysis of best available technology

Task 7: Improvement potential