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EUROPEAN STANDARD

**Access, Terminals, Transmission and Multiplexing (ATTM);
Energy management;
Operational infrastructures;
Global KPIs;
Part 1: General requirements**

ETSI

650 Route des Lucioles
F-06921 Sophia Antipolis Cedex - FRANCE

Tel.: +33 4 92 94 42 00   Fax: +33 4 93 65 47 16

Siret N° 348 623 562 00017 - NAF 742 C
Association à but non lucratif enregistrée à la
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Foreword

This European Standard (EN) has been produced by ETSI Technical Committee Access, Terminals, Transmission and Multiplexing (ATTM).

The present document is part 1 of a multi-part deliverable covering Global Key Performance Indicators for energy management of operational broadband deployment infrastructures, as identified below:

Part 1:   "General requirements";

Part 2:   "Specific requirements";

Part 3:   "ICT Sites";

Part 4:   "Design assessments".

National transposition dates	
Date of adoption of this EN:	4 July 2018
Date of latest announcement of this EN (doa):	31 October 2018
Date of latest publication of new National Standard or endorsement of this EN (dop/e):	30 April 2019
Date of withdrawal of any conflicting National Standard (dow):	30 April 2019

Modal verbs terminology

In the present document "**shall**", "**shall not**", "**should**", "**should not**", "**may**", "**need not**", "**will**", "**will not**", "**can**" and "**cannot**" are to be interpreted as described in clause 3.2 of the ETSI Drafting Rules (Verbal forms for the expression of provisions).

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Introduction

Energy costs continue to rise, a trend that will continue in the future, while broadband penetration is introducing new active equipment to the network architecture. In this context, and to reflect other environmental aspects of sustainability, it is vital that the main telecommunication operators implement effective general engineering of fixed and mobile broadband networks and sites provisioning, managing or using those networks (i.e. ICT sites) in order to respond to critical issues of energy consumption while proposing essential solutions to broadband deployment. To guide this process, it is essential that metrics are defined, termed Global Key Performance Indicators (KPIs), that enable energy usage to be managed more effectively.

The Global Key Performance Indicators specified in the standards in the ETSI EN 305 200 series [i.2] address operational infrastructures and do not consider design or operation of individual components comprising those infrastructures.

The ETSI EN 305 200 [i.2] multi-part deliverable comprises:

- The present document: a generic requirements document addressing Global KPIs for operational infrastructures.

- A sub-series ETSI EN 305 200-2 that defines the Global KPIs, and drives energy management targets, for specific operational networks and sites and which describes how the Global KPIs are to be applied (which may be used to support future regulatory objectives):

  - ETSI EN 305 200-2-1 [i.3]: "ICT sites";

  - ETSI EN 305 200-2-2 [i.4]: "Fixed broadband access networks";

  NOTE: Excluding cable access networks.

  - ETSI EN 305 200-2-3 [i.5]: "Mobile broadband access networks".

  The standards do not define weightings of Objective KPIs or targets or limits for Global KPIs but may contain information on values that have been used by certain organizations.

- A sub-series ETSI EN 305 200-3 including ETSI EN 305 200-3-1 [i.6] that defines particular implementations of Global KPIs within ICT sites based on the requirements of ETSI EN 305 200-2-1 [i.3], and which may define levels of performance to simplify and provide clearer understanding of Global KPIs allowing the evaluation of performance of energy use management in ICT sites.

  The standards do not define weightings of Objective KPIs or targets or limits for Global KPIs but may contain information on values that have been used by certain organizations.

- A sub-series ETSI EN 305 200-4 including ETSI EN 305 200-4-4 [i.7] that defines design assessments of Global KPIs, and drives energy management targets, for specific operational networks and sites and which describes how the Global KPIs are to be applied (which may be used to support future regulatory objectives).

These standards may be considered to be a contribution to the application of ISO 50001 [i.8] in relation to the development of policy for the continuous improvement of energy management and will accelerate:

- the availability of operational infrastructure architectures and network implementations that use energy more efficiently;

- the definition and attainment objectives for other environmental aspects of sustainability for operational broadband networks.

1 Scope

The present document describes the energy management landscape of the operational infrastructures of broadband deployment addressed by this multi-part deliverable, their inter-relationship and boundaries.

It specifies the following aspects for Global Key Performance Indicators in relation to energy management for the operational infrastructures of broadband deployment:

- common objectives in relation to energy consumption:

    - energy consumption;

    - task effectiveness;

    - energy re-use;

    - renewable energy;

- general requirements for all KPIs specified in the other standards in the ETSI EN 305 200 series [i.2] in relation to:

    - infrastructure scalability;

    - infrastructure evolution;

    - formulae and definition of terms;

    - measurement points and procedures;

- the use of KPIs.

The environmental impact and management of different energy sources are outside the scope of the present document.

Within the present document:

- clause 4 explains the context underlying the need for the development of Global KPIs for energy efficiency and introduces the Objective KPIs upon which the Global KPIs are founded;

- clause 5 specifies the general requirements that are applied to all KPIs defined within the standards in the ETSI EN 305 200-2 series and ETSI EN 305 200-3 series;

- clause 6 summarizes the applicability of the Global and Objective KPIs defined within the standards in the ETSI EN 305 200-2 series and ETSI EN 305 200-3 series.

2 References

2.1 Normative references

References are either specific (identified by date of publication and/or edition number or version number) or non-specific. For specific references, only the cited version applies. For non-specific references, the latest version of the referenced document (including any amendments) applies.

Referenced documents which are not found to be publicly available in the expected location might be found at https://docbox.etsi.org/Reference/.

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The following referenced documents are necessary for the application of the present document.

Not applicable.

2.2   Informative references

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The following referenced documents are not necessary for the application of the present document but they assist the user with regard to a particular subject area.

[i.1]   Directive 2010/31/EU of the European Parliament and of the Council of 19 May 2010 on the energy performance of buildings.

[i.2]   ETSI EN 305 200 series: "Access, Terminals, Transmission and Multiplexing (ATTM); Energy management; Operational infrastructures; Global KPIs".

[i.3]   ETSI EN 305 200-2-1: "Access, Terminals, Transmission and Multiplexing (ATTM); Energy management; Operational infrastructures; Global KPIs; Part 2: Specific requirements; Sub-part 1: ICT Sites".

[i.4]   ETSI EN 305 200-2-2: "Access, Terminals, Transmission and Multiplexing (ATTM); Energy management; Operational infrastructures; Global KPIs; Part 2: Specific requirements; Sub-part 2: Fixed broadband access networks".

[i.5]   ETSI EN 305 200-2-3: "Access, Terminals, Transmission and Multiplexing (ATTM); Energy management; Operational infrastructures; Global KPIs; Part 2: Specific requirements; Sub-part 3: Mobile broadband access networks".

[i.6]   ETSI EN 305 200-3-1: "Access, Terminals, Transmission and Multiplexing (ATTM); Energy management; Operational infrastructures; Global KPIs; Part 3: ICT sites; Sub-part 1: DCEM".

[i.7]   ETSI EN 305 200-4-4: "Integrated broadband cable telecommunication networks (CABLE); Energy management; Operational infrastructures; Global KPIs; Part 4: Design assessments; Sub-part 4: Cable access networks".

[i.8]   ISO 50001: "Energy management systems - Requirements with guidance for use".

[i.9]   ISO Guide 82: "Guide for addressing sustainability in standards".

3   Definitions, symbols and abbreviations

3.1   Definitions

For the purposes of the present document, the following terms and definitions apply:

access network: functional elements (that is equipment and infrastructure) that enable communication between an operator site (OS) and a customer network

cable access network: access network provided by cable operators comprising optical fibre and metallic cabling providing direct connection to customer premises

energy consumption: total consumption of energy by an operational infrastructure

energy management: combination of reduced energy consumption and increased task effectiveness, re-use of energy and use of renewable energy

energy re-use: transfer or conversion of energy (typically in the form of heat) produced by the operational infrastructure to do other work

fixed (broadband) access network: access network provided by telecommunications operators comprising optical fibre and metallic cabling providing direct connection to customer premises

global KPI: KPI, combining two or more Objective KPIs, which reflects the overall energy management performance of an operational infrastructure

ICT equipment: equipment providing data storage, processing and transport services

   NOTE: A combination of Information Technology Equipment and Network Telecommunications Equipment.

ICT equipment load: total requirement for power by a set of information technology equipment (ITE) and/or network telecommunications equipment (NTE)

ICT site: site containing structures or group of structures dedicated to the accommodation, interconnection and operation of ICT equipment together with all the facilities and infrastructures for power distribution and environmental control together with the necessary levels of resilience and security required to provide the desired service availability

Information Technology Equipment (ITE): equipment providing data storage, processing and transport services for subsequent distribution by network telecommunications equipment (NTE)

mobile access network: telecommunications network in which the access to the network (connection between user equipment and network) is implemented over the air interface

Network Telecommunications Equipment (NTE): equipment between the boundaries of, and dedicated to providing connection to, core and/or access networks

objective KPI: KPI assessing one of the objectives of operational energy performance which is subsequently used to define a Global KPI for energy management

operational infrastructure: combination of ICT equipment together with the power supply and environmental control systems necessary to ensure provision of service

renewable energy: energy produced from dedicated generation systems using resources that are naturally replenished and for which the energy required for production does not exceed 10 % of the energy produced

   NOTE: Directive 2010/31/EU [i.1] defines "energy from renewable sources" as energy from renewable non-fossil sources, namely wind, solar, aerothermal, geothermal, hydrothermal and ocean energy, hydropower, biomass, landfill gas, sewage treatment plant gas and biogases.

task effectiveness: measure of the work done (as a result of design and/or operational procedures) for a given amount of energy consumed

3.2   Symbols

For the purposes of the present document, the following symbols apply:

Δt	the maximum time variation between measurement points of the different Objective KPIs within a given Global KPI
k	assessment period index
KPI_{EC}	Objective KPI of energy consumption
$KPI_{Global\_Energy\_Management}$	Global KPI of energy management
KPI_{REN}	Objective KPI of renewable energy usage
KPI_{REUSE}	Objective KPI of energy re-use
KPI_{TE}	Objective KPI of task effectiveness
T_{KPI}	period of time over which Objective KPIs are assessed
T_{REPEAT}	the time between which the Objective and Global KPIs are assessed to determine relevant trend information
W_{EC}	weighting factor applied to KPI_{EC}
W_L	weighting factor within KPI_{REUSE}
W_{REN}	weighting factor applied to KPI_{REN}
W_{REUSE}	weighting factor applied to KPI_{REUSE}
W_{TE}	weighting factor applied to KPI_{TE}

3.3 Abbreviations

For the purposes of the present document, the following abbreviations apply:

DCEM   Data processing and Communications Energy Management
ICT   Information and Communications Technology
ISO   International Organization for Standardization
ITE   Information Technology Equipment
KPI   Key Performance Indicator
NTE   Network Telecommunications Equipment

4 Context for Key Performance Indicators (KPI)

4.1 Energy management and sustainability concepts

ISO Guide 82 [i.9], entitled "*Guide for addressing sustainability in standards*", defines sustainability as "state of the global system, which includes environmental, social and economic subsystems, in which the needs of the present are met without compromising the ability of future generations to meet their own needs".

The standards in the ETSI EN 305 200 series [i.2] do not specifically address any social and economic aspects of sustainability but do focus on the environmental issues in relation to the operational performance of infrastructures of deployed broadband.

The standards in the ETSI EN 305 200 series [i.2] adopt the position that the environmental viability aspects of sustainability addressing those elements that relate directly to energy consumption and its outcomes within the locale of the broadband deployment infrastructures are within scope.

Other aspects such as environmental elements relating to the wider impact of power generation (e.g. greenhouse gas, carbon), consumption of other resources (e.g. water), and issues such as life cycle assessment are out of scope.

While it is self-evident that if less energy is consumed by an operational infrastructure then the environmental impact of that infrastructure will be reduced, it is equally important to consider:

- the task effectiveness of the operation for which that energy is consumed;

- while not wishing to encourage poor task effectiveness, some benefit can be seen if waste energy, typically in the form of heat, is re-used. This may substitute for, to some degree, energy from other sources.

Energy consumption, task effectiveness, re-use of waste heat and the contribution of locally generated energy from renewable sources are considered to work in concert, albeit to different degrees for different infrastructures. In the ETSI EN 305 200 series [i.2], these four aspects are considered and specified as Objective KPIs from which Global KPIs are produced (see clause 4.2) which reflect energy management of operational systems - meeting the needs of operators and legislators alike.

The imperatives placed on the different elements may vary from time to time - regulators specifically encouraging local generation of energy from renewable sources but then shifting focus on to other areas.

4.2 Differentiation of Key Performance Indicators

4.2.1 General

It is common for equipment suppliers to define the energy efficiency of their products in terms of either:

- the energy consumed to perform specific tasks; or

- task performance improvements for a given energy consumption.

Within the ETSI EN 305 200 series [i.2], these are considered, separately, as improvements in "energy consumption" and "task effectiveness" respectively.

By comparison, operators and legislators are more interested in the performance of complete systems at an operational level taking into account global management aspects. As a result they apply a wider view of energy management that combines energy consumption and task effectiveness with more general objectives.

Against this background, the standards in the ETSI EN 305 200 series [i.2] recognize and differentiate between three types of energy-related KPIs as shown schematically in Figure 1. Operational Global and Objective KPIs are fundamentally different to the Technical KPIs applied to products and systems at the design and engineering stages. The former are used to monitor and drive user behaviour whereas the latter are substantial indications of potential operational performance.

It is therefore important to support, but differentiate, the role of the Technical KPIs from the Objective and Global operational KPIs.
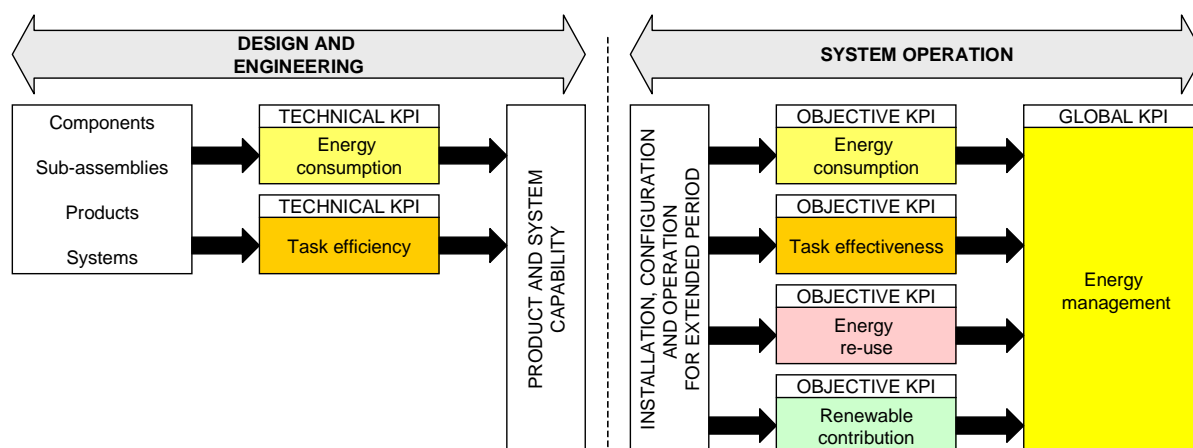

Figure 1: The relationship of energy related Technical, Objective and Global KPIs

Technical KPIs relate to the design and engineering phase for the components, sub-assemblies, products and systems to be employed in the infrastructures of broadband deployment. They are measured under specific operating conditions and provide indications of potential performance in an operational infrastructure. These are not addressed by the ETSI EN 305 200 series [i.2]. The left-hand side of Figure 1 relates to the Technical KPIs of the design and engineering phase for components, sub-assemblies, products and systems.

Objective KPIs apply to the infrastructures of broadband deployment in the operational phase and may be used to monitor and drive user behaviour within those infrastructures. The right-hand side of Figure 1 relates to the Objective KPIs of complete infrastructures in the operational phase.

Global KPIs provide a wider view of a user's commitment to strategic energy management practices than the Objective KPIs. For example a user is not supporting overall energy goals by achieving class-leading provision of local renewable energy if their overall energy consumption is based upon equipment with very poor task effectiveness.

It is not the intention to characterize an element of an infrastructure of broadband deployment by a single Global KPI - different global KPIs may combine different combinations of Objective KPIs with the intention of focussing on specific resource efficiency objectives.

It is also important to:

- consider operational KPIs (Objective or Global) as trend indicators and not comparators between different data centres;

- ensure that the use of Global KPIs does not serve to hide the trends demonstrated by the underpinning Objective KPIs.

4.2.2   Technical KPIs

Individual components or sub-assemblies can be designed to have improved task effectiveness i.e. less energy is consumed for a given output or task. Such components or sub-assemblies may be inherently more efficient in the way in which they use energy under specific operating conditions but are essentially unable to manage that consumption. An example of such a product would be a power supply unit which may be more efficient under higher load conditions.

More complex products may contain hardware and/or software which automatically reduces energy consumption under specific operating conditions by putting certain functions into "idle" states if not required This is distinctly different than that of a single task component or sub-assembly detailed above.

Technical KPIs can be applied to both of the above by assessing energy consumption for a number of specific operating conditions and also across a combination of such operating conditions. Assuming those operating conditions reflect the probable operating environment for the component, sub-assembly or product, a customer may make valued judgements in relation to the appropriateness of the Technical KPI. For example, two products that have equal "combined" Technical KPIs, may be more efficient under very specific conditions. For example, a design of power supply that is more task efficient under high load conditions may be inappropriate for users who plan to predominantly operate under low load conditions (and vice versa).

A higher level of task effectiveness management is also possible where groups of products are managed to reduce energy consumption by either allocating loads in such a way that the group is operating at maximum task effectiveness and/or by putting individual products within the group into an "idle" mode. Once again, the value of such approaches can be validated by the establishment of Technical KPIs which can be applied to both of the above by assessing energy consumption of a defined group of products for a number of specific operating conditions and also across a combination of such operating conditions

4.2.3 Objective KPIs

4.2.3.1 General

The performance of products and systems, of proven Technical KPIs may exhibit different energy consumption and task effectiveness characteristics when subjected to actual operating conditions which lie outside those of the Technical KPIs applied to those products and systems at the design and engineering stages and, equally importantly, when subjected to user configuration and controls which may undermine the sophisticated systems available.

The Objective KPIs described in the standards of the ETSI EN 305 200 series [i.2] relate to specific elements of energy management of operational infrastructures including:

- energy consumption;

- task effectiveness;

- energy re-use;

- renewable energy.

The procurement of products and systems based upon their Technical KPIs for energy consumption and/or task effectiveness underpins the relevant Objective KPIs. However, the standards in the ETSI EN 305 200 series [i.2] define requirements for the measurement of operational infrastructures i.e. taking into account the real operating conditions over a defined period of time.

4.2.3.2 Energy consumption within ETSI EN 305 200 series

This multi-part deliverable supports the reduction in the energy consumption required to provide a given level of service as a primary objective.

This objective shall be clearly identified within the KPI for each operational infrastructure which specifically addresses energy consumption (KPI_{EC}).

4.2.3.3 Task effectiveness within ETSI EN 305 200 series

This multi-part deliverable supports the improvement of task effectiveness as a primary objective.

This objective shall be clearly identified within the KPI for each operational infrastructure which specifically addresses task effectiveness (KPI_{TE}).

4.2.3.4 Energy re-use within ETSI EN 305 200 series

This multi-part deliverable supports the re-use of energy as a secondary objective.

Where applicable, this objective shall be clearly identified within the KPI for each operational infrastructure which specifically addresses re-use of energy (KPI_{REUSE}).

The KPI_{REUSE} shall reflect:

- a preference for energy consumption reduction rather than re-use;

- a preference for re-use of energy in the form of heat generated by the ICT equipment rather than from poorly designed facilities and infrastructures.

In all cases "non-use" is better than "re-use".

4.2.3.5 Renewable energy within ETSI EN 305 200 series

This multi-part deliverable supports the use of renewable energy as a secondary objective.

Where applicable, this objective shall be clearly identified within the KPI for each operational infrastructure which specifically addresses use of renewable energy (KPI_{REN}). However, its application is subject to the following condition:

- even if all energy is renewable the Global KPIs for energy management shall be formulated to encourage the application of the other KPIs.

4.2.4 Global KPIs

4.2.4.1 General

The Objective KPIs, of which task effectiveness is only one, are combined using a formula appropriate to the specific operational infrastructure to produce a Global KPI which reflects the overall performance of the operational infrastructures against wider energy management targets which may be self-imposed by the operators or externally applied by legislators.

4.2.4.2 Global KPIs within ETSI EN 305 200 series

The Global KPIs for energy management specified in the standards in the ETSI EN 305 200 series [i.2] shall reflect and encourage the following objectives:

- objective 1: a reduction in energy consumption;

- objective 2: improvements in task effectiveness (the meaning of which may vary depending on the operational infrastructure under consideration);

- objective 3: the re-use of energy;

- objective 4: the contribution of renewable energy.

In addition other Objective KPIs may be deemed appropriate for certain infrastructures.

While Objectives 1 and 2 are in the foreground of the development of all Global KPIs, the relative priority given to the Objectives 3 and 4 above may differ depending on the opportunities available to the particular operational infrastructure. Figure 2 shows an example for ICT sites, a combination and inter-relation of the four objective KPIs in the production of a Global KPI for energy management of an operational infrastructure. The schematic may vary depending on the operational infrastructure under consideration.
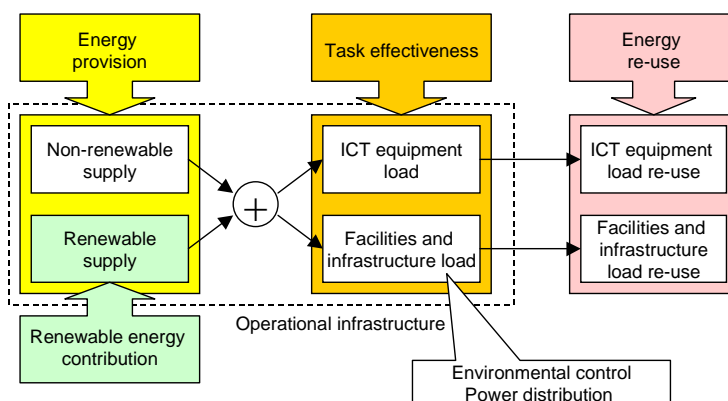
Figure 2: Schematic of the foundations of any Global KPI for energy management

For each of the operational infrastructures considered within the standards in the ETSI EN 305 200 series [i.2], there may be more than one Global KPI for energy management but each Global KPI shall reflect a combination of the Objective KPIs for energy consumption (KPI_{EC}) and task effectiveness (KPI_{TE}) and may include contributions of other Objective KPIs e.g. re-use of energy (KPI_{REUSE}) and use of renewable energy (KPI_{REN}).

# 5	Requirements for Global and Objective KPIs

## 5.1	General

A Global KPI for energy management shall either:

- be a single-valued parameter based upon a specified function comprising each of the Objective KPIs basis (as shown schematically in Figure 3);

- require each of the four Objective KPIs to be met on an agreed basis.

Where a value for a Global KPI is reported, the underpinning Objective KPIs shall also be reported.

The approach taken, the relative priority and definition of each Objective KPI may differ between each operational infrastructure considered.
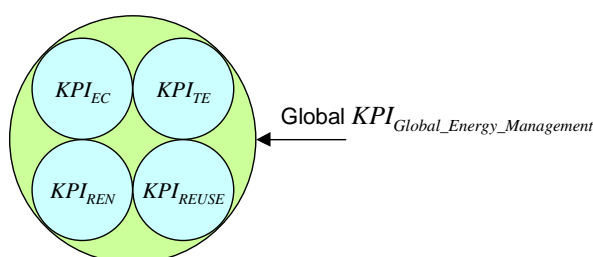

Figure 3: Schematic of combinations of Objective KPIs within a Global KPI for energy management

## 5.2	Scale

Operational infrastructures vary dramatically in terms of scale (i.e. the maximum design service implementation).

KPIs shall be valid for all "scales" of an operational infrastructure.

However both Objective and Global KPIs may address a group of operational infrastructures of different scales.

5.3 Utilization and evolution

Operational infrastructures:

- generally do not go from "zero" to full utilization on Day One;

- tend to feature power demands that grow from Day One, moving towards the maximum design load at which point strategic changes may take place (such as the procurement of more efficient information technology equipment and/or network telecommunications equipment) which will reduce the load before once again beginning to grow again towards the maximum design load.

KPIs shall be valid for all states of utilization and evolution of an operational infrastructure.

5.4 Definition of boundaries

Each KPI shall define the elements of the operational infrastructure to be included in any measurements or calculations.

Each KPI shall define the treatment of resources at the interfaces to the operational infrastructure to which the KPI applies.

5.5 Formulae

5.5.1 General

Where the Global KPI for energy management of an operational infrastructure is defined as a combination of the Objective KPIs, weighting factors may be applied (depending on the infrastructure under consideration) which reflect the priority given to each Objective KPI which results in a formula of following general type:

$$KPI_{Global\_Energy\_Management} = f\left(W_{EC} \times KPI_{EC}, W_{TE} \times KPI_{TE}, W_{REUSE} \times KPI_{REUSE}, W_{REN} \times KPI_{REN}\right)$$

For each infrastructure for which weighting of Objective KPIs is relevant, standards in the ETSI EN 305 200 series [i.2] will specify an appropriate range of weightings and may provide information regarding values used by industry organizations.

5.5.2 Definition of terms

Each KPI shall clearly define all terms relevant to its application.

5.5.3 Clarity

Each KPI shall be defined in clear and unambiguous mathematical terms.

5.5.4 Criteria

Each KPI shall clearly define strict criteria for inclusions/exclusions with the formulae.

5.6 Measurement points and procedures

5.6.1 Overview

Each KPI shall be based upon parameters that are measurable in an unambiguous manner. The measurement points and procedures shall be included for each KPI.

All the Objective KPIs used to produce a value for a Global KPI shall be measured during a defined and common time period T_{KPI}.

The measurement techniques or processes used for each Objective KPI may not allow simultaneous commencement or completion of an assessment period. A time-spread parameter Δt is provided to allow such conditions.

All Objective KPIs relevant to a given assessment of Global KPI for energy management shall be measured over a period not exceeding Δt. This is shown schematically in Figure 4 for the four Objectives KPIs listed in clause 4.2.4.2.

In order to obtain useful trend information the assessment periods should overlap. This is shown schematically in Figure 4. The time interval between which Objective KPIs shall be re-assessed is defined as T_{REPEAT}. which is bounded by a minimum (typically equal to Δt) and a maximum value. To provide the required trend profile and assessment period overlap, the maximum value of T_{REPEAT} shall be lower than T_{KPI}.

The other standards in the ETSI EN 305 200 series [i.2] shall define default values for T_{KPI}, T_{REPEAT} (minimum and maximum) and Δt for each Objective KPI. Use of alternative values of T_{KPI} and T_{REPEAT} for each Objective KPI is discussed in clause 6.
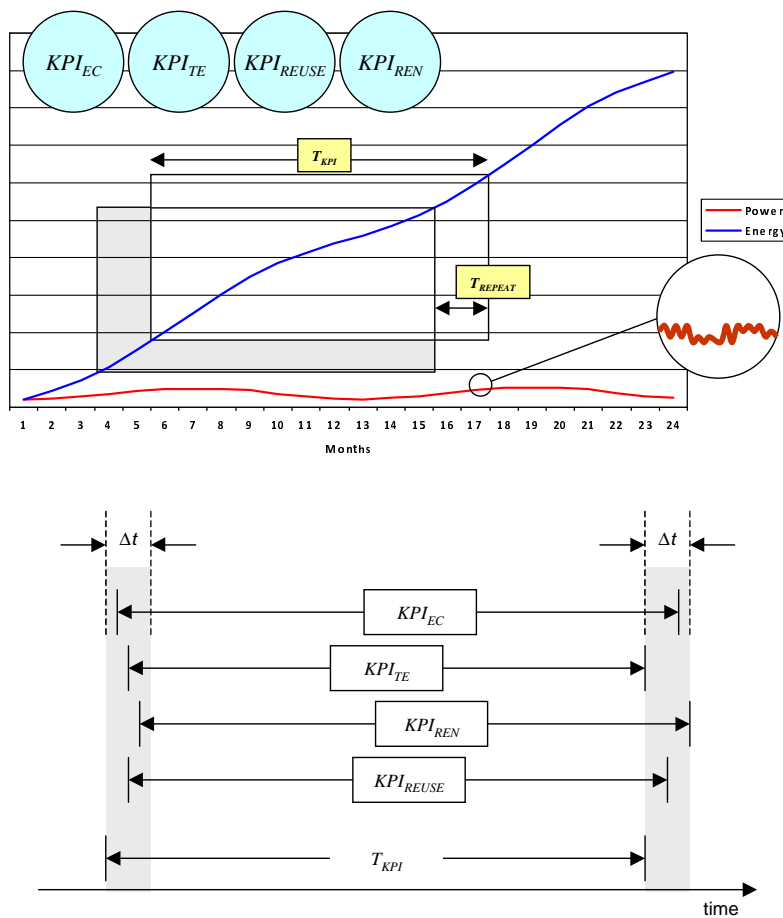

Figure 4: Schematic showing application of T_{KPI} , T_{REPEAT} and Δt

5.6.2   Detailed treatment

Figure 5 and the following text provides a detailed mathematical treatment of the content of clause 5.6.1.

The beginning of overall assessment period k is described as t_k^{begin}. The end of an overall assessment period k is described as $t_k^{end} = t_k^{begin} + T_{KPI}$.

Any subsequent assessment period, $k+1$, shall begin after a period T_{REPEAT} following t_k^{begin}.

When considering multiple Objective KPIs the above concepts may be applied to a mean of the relevant time periods applied to the Objective KPIs. As shown in Figure 5, each Objective KPI may start and finish at a slightly different time.
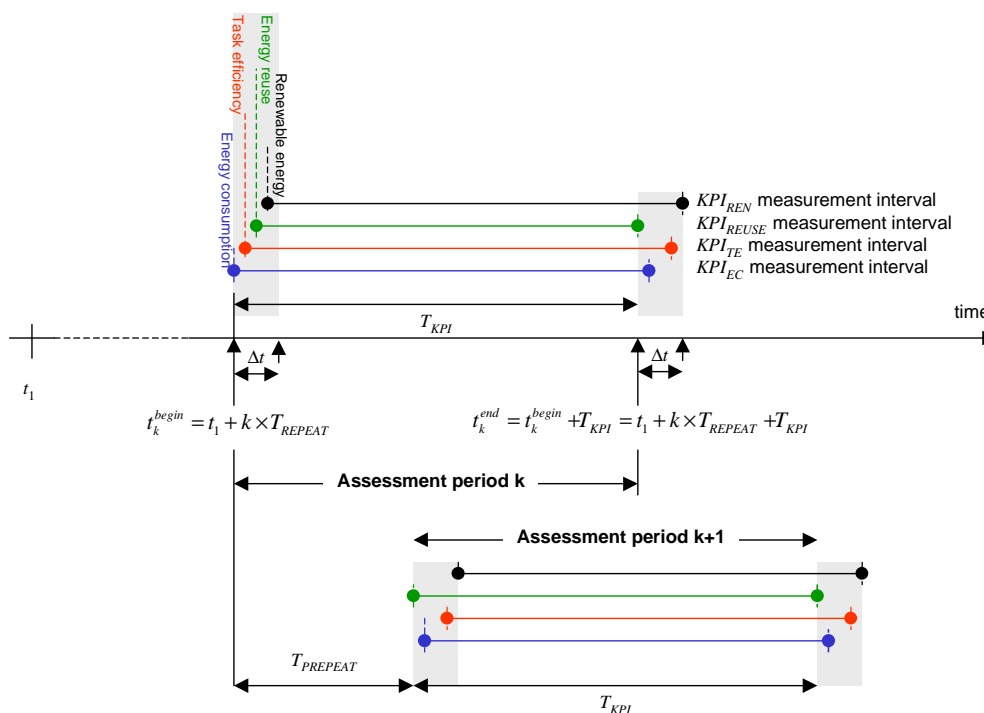
Figure 5: Mathematical treatment of assessment timing

5.7 Classifications

If the classification of Global KPIs is applicable in a document of the ETSI EN 305 200 series [i.2], by banding or some other means, the requirements of reporting shall include the underlying data for the Objectives KPIs so that effective trend analysis can be performed if necessary.

5.8 Reporting

Each KPI shall define the reporting requirements for resources relevant to the determination of the KPI.

6 The use of KPIs

It should be noted that the application of the standards in the ETSI EN 305 200 series [i.2] is not restricted to infrastructures of broadband deployment. Where applicable, the specific scope and field of application of each document includes a broader range of infrastructures within the ICT domain.

The objective of the standards in the ETSI EN 305 200 series [i.2] is to define Global KPIs for energy management that can be applied to all operational infrastructures of a given type. However this does not mean that all infrastructures of that type are intended to, or are able to, operate within a common limits for that KPI.

For example, operational infrastructures required to deliver high reliability (based on resilience of support infrastructures such as power distribution and environmental control) will tend to exhibit better values of a Global KPI for energy management.

Similarly, operational infrastructures of a given type but serving a different function (business models or primary technology employed) cannot be directly compared - although it is recognized that technology evolution may exhibit improved values of a Global KPI for energy management.

Objective and Global KPIs are generally used in order to indicate trends within a particular implementation of a given type of operational infrastructure and to indicate improvements achieved across the objectives identified in clause 4.

In order to obtain true trend analysis for a Global KPI for energy management, the assessment period T_{KPI} is typically one year in order to take full account of climatic variations on the Objective KPIs. However, general engineering changes to an operational infrastructure (new equipment or modified operating procedures) may use much shorter values of T_{KPI} (e.g. based on days or weeks) to determine improvements in one or more of the Objective KPIs.

History

Document history		
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