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SUSTAINABLE DEVELOPMENT PERFORMANCE INDICATORS FOR TRANSMISSION SYSTEM OPERATORS

Working Group
C3.02

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WG C3.02

Sustainable development performance indicators for transmission system operators

Members

E. Serres (Convenor) (FR), F. Havenga (ZA), M. Vazquez (ES), R. Furtado (BR), Y. Nakagami (JP), M. Nederlandt (BE), F. Parada (PO), H. Sanders (NL), A. Vallée (CA)

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EXECUTIVE SUMMARY

Transmission infrastructures have small impacts on the Environment compared to heavy industry activities. Some of these impacts are well known and objective: transformer and overhead line audible noise, maintenance work, waste generation, Joule effect, greenhouse gas effect due to SF_6, oil leakage, PCB issues, wildlife preservation, tree pruning under overhead lines… but some others are subjective and refer to social acceptance issues: visual impact, EMF issues… Contrary to locally polluting activities such as mining, iron and steel industries, transmission overhead lines, underground cables, substations, are usually located in open areas, throughout countries. Taking into account Sustainable Development is a global issue for Transmission System Operators.

As a consequence, many TSO launched vigorous Sustainable Development policies in order to attenuate NIMBY (Not In My Back Yard) effects on new infrastructures and to improve existing grid acceptance. In order to measure their efficiencies, these Sustainable Development policies must rely on Performance Indicators. Hence, these indicators are key points towards comparison between TSO and other industrial activities. Because of transmission network particularities, these indicators may be completely different from other industry sectors.

One of the major goals of the Working Group was to provide a short list of indicators that should be reported for Transmission System Operators because of their importance. The Working Group will was not to provide an extensive list of performance indicators but to chose those considered to be the most relevant and those allowing comparisons. From the study of several guidelines and from about ten Sustainable Development Reports or Environmental Reports published by Utilities, it appeared that the "Sustainability Reporting Guidelines V 3.0" [5] and the "Electric Utility Sector Supplement" [6], published by the Global Reporting Initiative organization are the major references. As a consequence, the Working Group defined a set of indicators from these GRI guidelines and proposed adapted definitions to TSO activities.

The tables hereunder give all the indicators selected from "Sustainability Reporting Guidelines V 3.0" (EC, EN, LA, HR, SO, PR) and from the "Electric Utility Sector Supplement" (*EU*). Some indicators were commented in the sector supplement. The comments are mentioned in the tables (*Comm*).

GRI V3.0 Economic Indicators and *Electric Utility Sector Supplement indicators or comments*
Aspect: Economic Performance
EC1 Direct economic value generated and distributed, including revenues, operating costs, employee compensation, donations and other community investments, retained earnings, and payments to capital providers and governments.
EC3 Coverage of the organization's defined benefit plan obligations.
Aspect: Market Presence
EC6 Policy, practices, and proportion of spending on locally-based suppliers at significant locations of operation.
Aspect: Indirect Economic Impacts
EC8 Development and impact of infrastructure investments and services provided primarily for public benefit through commercial, in-kind, or pro bono engagement.
EC9 Understanding and describing significant indirect economic impacts, including the extent of impacts.
Aspect: Availability and Reliability
***EU9** Planned capacity (MW) against projected electricity demand over the long term, broken down by energy source and country or regulatory regime.*
***EU5** Planning to ensure short and long-term electricity availability and reliability.*
Aspect: System Efficiency
***EU13** Transmission and distribution efficiency.*

GRI V3.0 Environmental Indicators and *Electric Utility Sector Supplement indicators or comments*
Aspect: Energy
EN3 Direct energy consumption by primary energy source.
EN4 Indirect energy consumption by primary source.
Aspect: Biodiversity
EN11 Location and size of land owned, leased, managed in, or adjacent to, protected areas and areas of high biodiversity value outside protected areas.
EN12 Description of significant impacts of activities, products, and services on biodiversity in protected areas and areas of high biodiversity value outside protected areas. (+*CommEN12*) *Disclosure on Management Approach: Report approaches for pest and vegetation management along transmission and distribution corridors (e.g., use of Integrated Pest Management and Integrated Vegetation Management).*.
EN14 Strategies, current actions, and future plans for managing impacts on biodiversity. (+*CommEN14*)
***EU14**: Biodiversity of replacement habitats compared to the biodiversity of the areas that are being replaced.*
Aspect: Emissions, Effluents, and Waste
EN16 Total direct and indirect greenhouse gas emissions by weight. *(+CommEN16*)
EN18 Initiatives to reduce greenhouse gas emissions and reductions achieved. *(+CommEN18)*
EN22 Total weight of waste by type and disposal method. *(+CommEN22 + CommEN1)* *Disclosure on Management Approach: Long-term strategy for managing and phasing out high level and low level in-service PCBs.*
EN23 Total number and volume of significant spills.
Aspect: Compliance
EN28 Monetary value of significant fines and total number of non-monetary sanctions for non-compliance with environmental laws and regulations.
Aspect: Overall
EN30 Total environmental protection expenditures and investments by type.

GRI V3.0 Social Indicators and *Electric Utility Sector Supplement indicators or comments*
LABOUR PRACTICES AND DECENT WORK
Aspect: Occupational Health and Safety
LA7 Rates of injury, occupational diseases, lost days, and absenteeism, and total number of work-related fatalities by region. *(+CommLA7)*
Aspect: Training and education
LA10 Average hours of training per year per employee by employee category.
LA12 Percentage of employees receiving regular performance and career development reviews.
Aspect: Diversity and Equal Opportunity
LA14 Ratio of basic salary of men to women by employee category.
SOCIETY
Aspect: Community
SO1 Nature, scope, and effectiveness of any programs and practices that assess and manage the impacts of operations on communities, including entering, operating, and exiting. *(+CommSO1)*
***EU18**: Participatory decision making processes with stakeholders and outcomes of engagement.*
***EU21** Number of people displaced by new or expansion projects related to generation facilities and transmission lines, broken down by physical and economic displacement.*
Aspect: Compliance
SO8 Monetary value of significant fines and total number of non-monetary sanctions for non-compliance with laws and regulations.
Aspect: Disaster/Emergency Planning and Response
***EU20** Contingency planning measures and disaster/emergency management plan and training programs, and recovery/restoration plans..*
PRODUCT RESPONSIBILITY
Aspect: Customer Health and Safety
PR1 Life cycle stages in which health and safety impacts of products and services are assessed for improvement, and percentage of significant products and services categories subject to such procedures. *(+CommPR1)*
Aspect: Products and Service Labeling
PR5 Practices related to customer satisfaction, including results of surveys measuring customer satisfaction.
Aspect: Access
***EU27** Power outage frequency.*
***EU28** Average power outage duration.*

INTRODUCTION

Transmission infrastructures have small impacts on the Environment compared to heavy industry activities. Some of these impacts are well known and objective: transformer and overhead line audible noise, maintenance work, waste generation, Joule effect, greenhouse gas effect due to SF_6, oil leakage, PCB issues, wildlife preservation, tree pruning under overhead lines… but some others are subjective and refer to social acceptance issues: visual impact, EMF issues… Contrary to locally polluting activities such as mining, iron and steel industries, transmission overhead lines, underground cables, substations, are usually located in open areas, throughout countries. Taking into account Sustainable Development is a global issue for Transmission System Operators.

As a consequence, many TSO launched vigorous Sustainable Development policies in order to attenuate NIMBY (Not In My Back Yard) effects on new infrastructures and to improve existing grid acceptance. In order to measure their efficiencies, these Sustainable Development policies must rely on Performance Indicators. Hence, these indicators are key points towards comparison between TSO and other industrial activities. Because of transmission network particularities, these indicators may be completely different from other industry sectors.

In order to make the best choice, the Working Group methodology was as a first step to analyse all available guidelines then to analyse as a second step about ten Sustainable Development Reports or Environmental Reports published by Electric Utilities.

1. GUIDELINES AND ENVIRONMENTAL AND SUSTAINABLE DEVELOPMENT REPORTS ANALYSIS

1.1 Guidelines analysis

Six Sustainable Development or Environmental guidelines have been analysed, namely:

- "Sustainability Reporting Guidelines V 2.0" (Global Reporting Initiative - 2002) [1]
- "Environmental Performance Indicator guidelines for the Australian Electricity Industry" (Electricity Supply Association of Australia - 2004) [2]
- "Guidance notes on environmental benchmarking indicators for the electricity sector" (UK Electricity Association - 2001) [3]
- "Sustainability in the electricity utility sector - Phase 1" (World Business Council for Sustainable development) [4]
- "Sustainability Reporting Guidelines V 3.0" (Global Reporting Initiative - 2006) [5]
- "GRI Electric Utility Sector Supplement" (Draft for Public Comment until 9 April 2007) [6]

At first, it appeared that the "Sustainability Reporting Guidelines V 2.0" published by the Global Reporting Initiative organization was a tool that may help not to skip major elements. Moreover, the GRI guidelines appear to be the major reference, although there was no dedicated sector supplement available. It was considered that "Environmental Performance Indicator guidelines for the Australian Electricity Industry" and "Guidance notes on environmental benchmarking indicators for the electricity sector" could be the environmental basis for the Electricity sector supplement.

Hence, it was decided to analyse the Sustainable Development and Environmental Reports using the performance indicators from the GRI guidelines.

During this study, the Global Reporting Initiative published a new version (V 3.0) of its "Sustainability Reporting Guidelines" [5] and a draft version of the "Electric Utility Sector Supplement" [6]. It was then decided to take these two documents into account in this work in order to publish an up to date set of indicators, GRI V3.0 compliant.

1.2 Environmental and Sustainable Development Reports analysis

Several 2003 Reports were available, from WG members, WG C3-03 ftp site and websites. One major difficulty was that where the transmission activities are integrated with generation activities, the environmental indicators are usually those concerning the generation activities. For instance, although the SF_6 global warming potential is very high, the environmental indicators focus on CO_2 emissions due to thermal power plants and do not take into account SF_6 emissions. One difficulty was to find TSO reports or sufficiently detailed reports from integrated companies.

Another criteria in the report selection process was to be as representative as possible of the world diversity. An interesting point was the difficulty to find Sustainable Development or Environmental Reports from other regions than Europe, North America, Japan and South Africa.

The geographical coverage of the analysis was:

- six from (Western) Europe
- two from North America
- one from Japan
- one from Africa.

The following Table 1 summarises, for the Utilities considered, the main activity sectors. It can be seen that there are seven vertically integrated utilities (RWE, ENEL, EnBW, Scottish Power, Kansai Electric Power, ESKOM, Hydro Quebec), covering all the sectors of Generation, Transmission, and Distribution of electricity. Two are only two TSOs (National Grid Transco, Red Electrica de España). The last one has Transmission and Distribution activities (National Grid USA).

The reference to the GRI Guidelines was also analyzed.

Utility name	Country	Activity sector			Reference to the GRI Guideline
		generation	transmission	distribution	
Red Electrica de España	Spain		X		X
Enel Spa	Italy	X	X	X	
EnBW	Germany	X	X	X	
RWE	Germany	X	X	X	X
National Grid Transco	United Kingdom		X		Yes but no indicators reference to GRI
Scottish Power	United Kingdom	X	X	X	X
National Grid USA	USA		X	X	
Hydro Quebec	Canada	X	X	X	X
Eskom	South Africa	X	X	X	X
Kansai Electric Power Co.	Japan	X	X	X	X

Table 1: Sustainable Development and Environmental Reports analysed

The large majority of Utilities refers, in their reports, to the GRI Guidelines. Some of them provide a conversion table between their indicators and the GRI indicators. This point confirms what was found in the analysis in the last chapter: The Global Reporting Initiative Guidelines is now the reference in the reporting of the Sustainable Development performance indicators.

Nevertheless, the GRI indicators are on a very general basis and our analysis showed that the guidelines may lead to different meanings for the utilities, especially for indicators dealing with Greenhouse Gas Emissions where one can find SF_6 emissions and/or transmission losses and/or emissions due to transportation…

Moreover, indicators should be considered as a way for every company to challenge themselves with benchmarking. It appears very important to standardize the indicators in order to allow stakeholders to make fair comparison between companies. For instance, the amount of SF_6 released in tonnes does not reflect the performance of a TSO. On the contrary, the amount of SF_6 released in percentage of the amount of SF_6 in use allows such a comparison. The choice of the indicator unit is a critical choice.

As a consequence, as a first step, the WG proposed a correspondence between all the indicators mentioned in the reports and the GRI indicators and then tried to put all the indicators and their units in common in order to confront the WG members interpretation of these indicators and the utilities practices.

This table is not part of this report but is the basis of the WG selection of the most relevant indicators.

2. ECONOMIC PERFORMANCE INDICATORS

9 economic performance indicators are given in the GRI V3.0 guidelines [5].

From the Electric Utility Sector Supplement (EUSS) pilot version [6], 5 new indicators are proposed, 4 indicators dealing with economic disclosures on management approach and no comments on the GRI indicators.

The WG analysis of these indicators and the content of the Sustainable Development reports analysed led to focus on 8 most relevant indicators, as mentioned in table 2 and 3. It had also been difficult to establish a short list of indicators because of the major difference between public and private companies.

Keeping in mind the goals of relevance and comparability, the use of tables and graphs is highly recommended. Stakeholders should be able to understand how the company shares the monetary flow between investors, employees, suppliers, community, how the company deals with the future (investments, R&D)…

GRI V3.0 Indicators and *Electric Utility Sector Supplement indicators or comments*		**WG C3-02**
Core Indicators	**Additional Indicators**	**selection**
Aspect: Economic Performance		
EC1 Direct economic value generated and distributed, including revenues, operating costs, employee compensation, donations and other community investments, retained earnings, and payments to capital providers and governments.		**EC1**
EC2 Financial implications and other risks and opportunities for the organization's activities due to climate change.		
EC3 Coverage of the organization's defined benefit plan obligations.		**EC3**
EC4 Significant financial assistance received from government.		
Aspect: Market Presence		
EC6 Policy, practices, and proportion of spending on locally-based suppliers at significant locations of operation.	EC5 Range of ratios of standard entry level wage compared to local minimum wage at significant locations of operation.	**EC6**
EC7 Procedures for local hiring and proportion of senior management hired from the local community at significant locations of operation.		
Aspect: Indirect Economic Impacts		
EC8 Development and impact of infrastructure investments and services provided primarily for public benefit through commercial, in-kind, or pro bono engagement.	EC9 Understanding and describing significant indirect economic impacts, including the extent of impacts.	**EC8** **EC9**
Aspect: Availability and Reliability		
EU9 Planned capacity (MW) against projected electricity demand over the long term, broken down by energy source and country or regulatory regime.		***EU9***
Aspect: Demand Side Management		
EU10 Estimated capacity (MW) saved through demand-side management programs.		
EU11 Estimated energy (MWh) saved through demand-side management programs, broken down by residential, commercial and industrial customers.		

Aspect: System Efficiency		
EU12 Average generation efficiency by energy source and by country or regulatory regime.		
EU13 Transmission and distribution efficiency		***EU13***

Table 2: GRI V3.0 and EUSS economic indicators and comments: WG selection

Electric Utility Sector Supplement : Economic Disclosures on Management Approach		**WG C3-02**
Aspect	**Commentary**	**selection**
Availability and Reliability	EU5 Planning to ensure short and long-term electricity availability and reliability.	***EU5***
Demand Side Management	EU6 Demand-side management programs including residential, commercial and industrial programs.	Not relevant for TSO
Research and Development	EU7 Research and development activity aimed at providing reliable and affordable electricity and promoting sustainable development.	Not relevant for TSO
Plant Decomissioning	EU8 Provisions for decommissioning of nuclear power sites.	Not relevant for TSO

Table 3: EUSS Economic Disclosures on Management Approach: WG selection

2.1 Economic performance

GRI EC1 : Direct economic value generated and distributed, including revenues, operating costs, employee compensation, donations and other community investments, retained earnings, and payments to capital providers and governments.

Data on the creation and distribution of economic value provide a basic indication of how the organization has created wealth for stakeholders.

This indicator gives an interesting picture of the company and the way the generated value is shared between employees, community, capital providers, governments… It refers to International Accounting Standards such as IAS 12 on Income Taxes, IAS 14 on segment Reporting, IAS 18 on Revenues, and IAS 19 on Employee Benefits. It should be given in the following table form:

Component	Comments
Direct economic value generated.	
a) Revenues	Net sales plus revenues from financial sales of assets
Economic value distributed	
b) Operating costs	Payments to suppliers, non-strategic investments, royalties, and facilitation payments
c) Employee wages and benefits	Total monetary out flows for employees (current payments, not future commitments)
d) Payments to providers of capital	All financial payments made to the providers of the organizations's capital
e) Payments to government	Gross taxes
f) Community investments	Voluntary contributions and investment of funds in the broader community (includes donations)
Economic value retained (calculated as Economic value generated less Economic value distributed)	Investments, equity release, etc.

GRI EC3 : Coverage of the organization's defined benefit plan obligations.

When an organization provides a retirement plan for its workforce, these benefits could become commitments that members of the schemes plan on for their long-term economic well-being. Defined benefits plans have potential implications for employers in terms of the obligations that need to be met. Other types of plans, like defined contributions, do not guarantee access to a retirement plan or the quality of benefits.

This indicator is useful both for providers or capital and for employees. It refers to IAS 19 on Employee Benefits.

WG C3-02 Proposal	Coverage of the organization's defined benefit plan obligations
Justification	Gives information to shareholders and to workforce about commitments in benefit plans
Description	Benefit plans
Units	Structure of the benefit plan Money in the benefit plant
How to measure	From financial data
Accuracy	High
Examples	➢ Benefit plan based on the company own resources and financial data ➢ Benefit plan based on a separate fund and financial data ➢ …

2.2 Market Presence

GRI EC6 : Policy, practices, and proportion of spending on locally-based suppliers at significant locations of operation.

The influence an organization can have on a local economy goes beyond direct jobs and payment of wages and taxes. By supporting local business in the supply chain, an organization can indirectly attract additional investment to the local economy.

Even though it does not make sense for TSO in small countries, it was considered as important by the WG to select this indicator because it gives an overview of the company's impacts on the local economy. Local has to be defined by the company. Examples of local procurement could be: local goods, tree cutting services, painting services…

WG C3-02 Proposal	Local suppliers
Justification	To demonstrate the local impact of the company
Description	Percentage of the procurement budget used for significant locations of operation that is spent on suppliers local to that operation
Units	%
How to measure	From financial data
Accuracy	High
Examples	% of goods and supplies purchased locally

2.3 Indirect Economic Impacts

GRI EC8 : Development and impact of infra-structure investments and services provided primarily for public benefit through commercial, in-kind, or pro bono engagement.

As well as generating and distributing economic value, an organization can affect an economy through its investments in infrastructure...

TSO may have to spend money to support public acceptance of their infrastructure. This can be done on a project to project basis, but sometimes through dedicated programs. In some reports, this indicator is used by TSO to give figures about money donated to foundations…

WG C3-02 Proposal	Total spent on public benefit infrastructure development
Justification	To communicate the organisation's direct financial impact on non-core business to stakeholders.
Description	This is infrastructure built outside the main business activities of the reporting entity such as a school, hospital, road, water supply…
Units	Monetary units
How to measure	From financial data
Accuracy	High
Examples	➢ Amount given to foundations ➢ Amount given to dedicated programs

GRI EC9 : Understanding and describing significant indirect economic impacts, including the extent of impacts.

Indirect economic impacts are an important part of an organization's economic influence in the context of sustainable development. Whereas direct economic impacts and market influence tend to focus on the immediate consequences of monetary flows to stakeholders, indirect economic impacts include the additional impacts generated as money circulates through the economy.

TSO have usually indirect economic impacts that are very difficult to quantify. Some impacts can be considered as negative impacts such as impacts on tourism, others are positive such as the maintenance of forests tracks, firewall effect… This is a narrative indicator, a very difficult one to detail, but it is a key issue toward infrastructure acceptance.

2.4 Availability and Reliability

EUSS EU5 : Planning to ensure short and long-term electricity availability and reliability.

EUSS EU9 : Planned capacity (MW) against projected electricity demand over the long term, broken down by energy source and country or regulatory regime.

EU5 includes both long-term (5 -10 years) and short term issues. Of the numerous responsibilities entrusted to TSO, the task of maintaining the security and availability of the power system is perhaps the most important.

TSO have to establish consumption forecasts for different timeframes:

- On the long term to give information about the equilibrium of electricity supply and demand to ensure that supply will meet demand in the future. This generation adequacy report is a neutral source of information for players in the electricity network about the need of new power plants and the need of new lines.
- On the short term, TSO has to act to maintain the balance between supply and demand for electricity. Since electricity cannot be stored, any change in the demand for or generation of

electricity at a given point on the transmission network has an instant impact on the entire power system. This means the system must constantly adapt to ensure that supply is strictly equal to demand

WG C3-02 Proposal	System Planning
Justification	To demonstrate the ability of the company to face power system evolution
Description	Company's organization and mechanisms for system planning
Units	Mainly Narrative
How to measure	-
Accuracy	As high as possible for forecasts
Examples	➢ Long term Generation Adequacy report (additional MW needed or not, identification of fragile zones…) ➢ Long term Network Development plan ➢ Short term adjustments mechanisms description

2.5 Demand-Side Management

From their experience, it was considered by all the WG members that the global issue of Demand-Side Management is not devoted to TSO. TSO may have launched DSM program within their company to reduce energy consumption (transmission losses, facility management..) but usually, distribution companies or suppliers are in charge of DSM for the public.

2.6 System Efficiency

EUSS EU13 : Transmission and distribution efficiency.

The WG considered that this indicator is very important and complementary to EN4. EN4 gives raw values and EU13 should focus on transmission efficiency. The CO_2 equivalent content of the transmission losses is detailed in EN16. The added value of this indicator is to point out system efficiency and to allow comparisons.

It is also interesting to make comments about the technical choices of infrastructure that have been made by TSO, if these comments give additional explanations about losses (meshed network, underground cables, voltage in use, premium given to reduced losses devices in the purchasing process, low losses technical specifications…)

Moreover, as the environmental pressure is growing, TSO are required to push the existing network to its load limits, increasing directly the transmission losses to reduce other environmental impacts due to new network development. Transmission losses per operated circuit length (Wh/km) may give additional information about system efficiency.

WG C3-02 Proposal	Transmission efficiency
Justification	To demonstrate the company efficiency in reducing transmission losses
Description	Electricity used per calendar year
Units	Ratio for transmission losses
How to measure	Metering or electricity bought on the market to compensate losses
Accuracy	High
Examples	% of transmission losses compared to total energy transmitted

3. ENVIRONMENTAL PERFORMANCE INDICATORS

30 environmental performance indicators are given by the GRI V3.0 guidelines [5]. From the Electric Utility Sector Supplement (EUSS) pilot version [6], one new indicator is proposed, 4 indicators dealing with environmental disclosures on management approach and 9 comments on the GRI indicators.

The WG analysis of these indicators and the content of the Sustainable Development and Environmental reports led to focus on only 12 most relevant indicators, as mentioned in table 4 and 5.

GRI V3.0 Indicators and *Electric Utility Sector Supplement indicators or comments*		**WG C3-02**
Core Indicators	**Additional Indicators**	**selection**
Aspect: Materials		
EN1 Materials used by weight or volume. *(+CommEN1*)		
EN2 Percentage of materials used that are recycled input materials.		
Aspect: Energy		
EN3 Direct energy consumption by primary energy source.	EN5 Energy saved due to conservation and efficiency improvements.	**EN3**
EN4 Indirect energy consumption by primary source.	EN6 Initiatives to provide energy-efficient or renewable energy based products and services, and reductions in energy requirements as a result of these initiatives.	**EN4**
	EN7 Initiatives to reduce indirect energy consumption and reductions achieved.	
Aspect: Water		
EN8 Total water withdrawal by source. (+*CommEN8*)	EN9 Water sources significantly affected by withdrawal of water.	
	EN10 Percentage and total volume of water recycled and reused.	
Aspect: Biodiversity		
EN11 Location and size of land owned, leased, managed in, or adjacent to, protected areas and areas of high biodiversity value outside protected areas.	EN13 Habitats protected or restored.	**EN11**
EN12 Description of significant impacts of activities, products, and services on biodiversity in protected areas and areas of high biodiversity value outside protected areas. (+*CommEN12*)	EN14 Strategies, current actions, and future plans for managing impacts on biodiversity. (+*CommEN14*)	**EN12** **EN14 + *CommEN14***
EU14 Biodiversity of replacement habitats compared to the biodiversity of the areas that are being replaced.	EN15 Number of IUCN Red List species and national conservation list species with habitats in areas affected by operations by level of extinction risk.	***EU14***
Aspect: Emissions, Effluents, and Waste		
EN16 Total direct and indirect greenhouse gas emissions by weight. *(+CommEN16*)	EN18 Initiatives to reduce greenhouse gas emissions and reductions achieved. *(+CommEN18)*	**EN16** **EN18 + *CommEN18***
EN17 Other relevant indirect greenhouse gas emissions by weight.	EN24 Weight of transported, imported, exported, or treated waste deemed hazardous under the terms of the Basel Convention Annex I, II, III, and VIII, and percentage of transported waste shipped internationally.	

EN19 Emissions of ozone-depleting substances by weight.	EN25 Identity, size, protected status, and biodiversity value of water bodies and related habitats significantly affected by the reporting organization's discharges of water and runoff.	
EN20 NOx, SOx, and other significant air emissions by type and weight. *(+CommEN20)*		
EN21 Total water discharge by quality and destination. *(+CommEN21)*		
EN22 Total weight of waste by type and disposal method. *(+CommEN22)*		**EN22 + *CommEN1* + *CommEN22***
EN23 Total number and volume of significant spills.		**EN23**
Aspect: Products and Services		
EN26 Initiatives to mitigate environmental impacts of products and services, and extent of impact mitigation.		
EN27 Percentage of products sold and their packaging materials that are reclaimed by category.		
Aspect: Compliance		
EN28 Monetary value of significant fines and total number of non-monetary sanctions for non-compliance with environmental laws and regulations.		**EN28**
Aspect: Transport		
	EN29 Significant environmental impacts of transporting products and other goods and materials used for the organization's operations, and transporting members of the workforce.	
Aspect: Overall		
	EN30 Total environmental protection expenditures and investments by type.	**EN30**

Table 4: GRI V3.0 and EUSS environmental indicators and comments: WG selection

In addition to this table EUSS pilot version asks for disclosures on management approach to be reported:

Electric Utility Sector Supplement ENvironmental Disclosures on Management Approach (ENDMA)		**WG C3-02**
Aspect	**Commentary**	**selection**
Materials	Long-term strategy for managing and phasing out high level and low level in-service PCBs.	**With EN 22**
Water	At the watershed level, include collaborative approaches to managing watersheds and reservoirs for multiple uses (e.g., irrigation, drinking water, ecosystem conservation, etc.). Also report long-term planning for securing water resources, including description of how the criteria for managing maximum/minimum flow of surface water and volume of ground water are determined and maintained.	Not relevant for TSO
Biodiversity	Report approaches for pest and vegetation management along transmission and distribution corridors (e.g., use of Integrated Pest Management and Integrated Vegetation Management).	**With EN 12**

Emissions, Effluents and Waste	Management strategy and storage methods for different types of radioactive nuclear waste, including: • Temporary and permanent storage • Environmental, health and safety impacts of radioactive nuclear waste • Security measures according to the applicable management standards/legislative framework	Not relevant for TSO

Table 5: EUSS Environmental Disclosures on Management Approach: WG selection

All these indicators deal with objective impacts of the companies' activities on the environment. TSO activities are characterized by objective impacts but also subjective impacts (visual impact for overhead lines, EMF issue …). An Environmental Analysis (see example in figure 1), according to ISO 14001, leads to the same question. How to deal with visual impact and the EMF issue ?

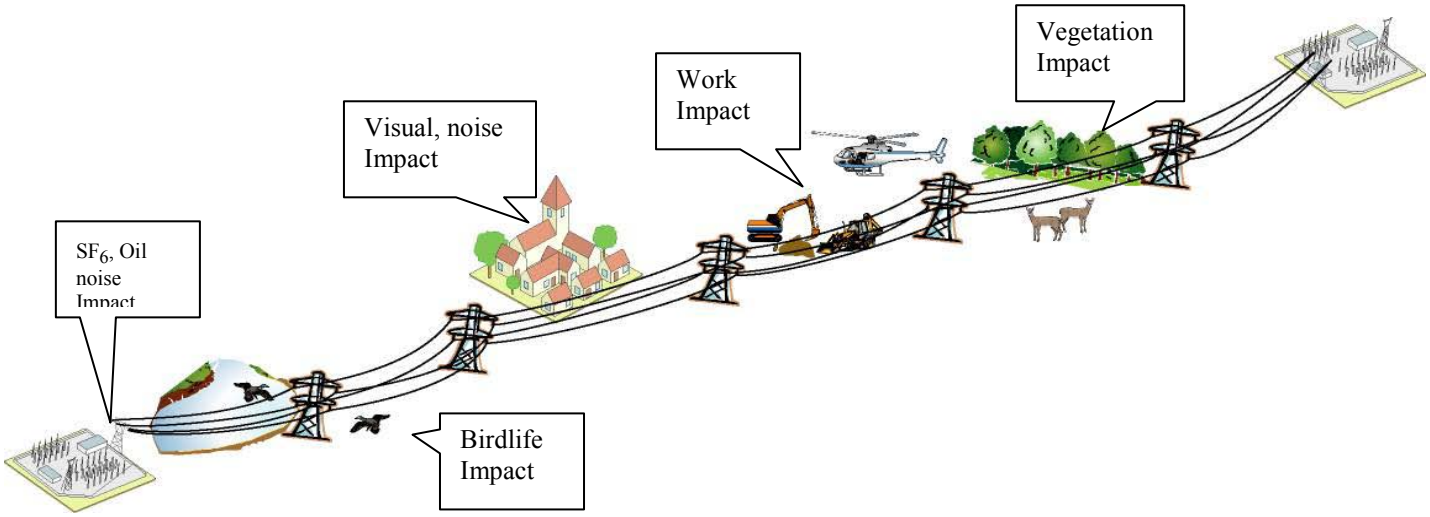

Figure 1: Environmental analysis example for OHL

The WG proposal is to shift the EMF issue and visual impact issue into the social part of the indicators (see chapter 4: PR1 and SO1). Moreover, taking into account specific TSO impacts given in ESAA [2] or EA UK [3], it was decided to split them into existing GRI indicators:

Vegetation and painting:

- Impacts to be mentioned in EN 12
- Special programs or actions to be described in EN 14
- Complaints to be listed in EN 28

Pesticide:

- Impacts to be mentioned in EN 12
- Amounts used in EN 22 or EN23
- Special programs or actions to be described in EN 14
- Complaints to be listed in EN 28

R&D:

- Special programs or actions to be described in EN 12 and 14
- Costs in EN 30

Figure 2: OHL in agricultural area – Source: REN

3.1 Materials

As TSO activities are not requiring a lot of materials, indicators dealing with the use of materials did not appear to be relevant from WG point of view. Moreover it was nearly impossible to find the same indicators among reports and Environmental Performance guidelines (Australian Electricity and UK Electricity Association): Oil in transformers, even waste amount…

3.2 Energy

GRI EN3 : Direct energy consumption by primary energy source

GRI EN4 : Indirect energy consumption by primary source

The ability of the reporting organization to use energy efficiently can be revealed by calculating the amount of energy it consumes.

We can find here two different approaches:

- Energy bought or produced to compensate for Transmission losses (Not a "direct energy" ⇨EN4)
- Energy consumption for "facility management": building energy consumption, transportation…

Obviously, transmission losses should be more important than the energy used for facility management or transportation but it is much more difficult to reduce transmission losses ! The WG recommendation is to focus at first on the transmission losses estimation and then to go to other energy consumption. Indicator EU13 in the Economic Indicators Section of [6] asks for transmission loss factor as a picture of the system efficiency.

WG C3-02 Proposal	**Direct and indirect energy use**
Justification	To give the energy consumption by the organisation and the improvement
Description	Fuel used per calendar year
Units	➢ GWh for transmission losses ➢ GJ (Giga Joules) per source per year
How to measure	GWh Metering or estimation for transmission losses

	Calculate total energy consumption in joules or multiples such as gigajoules (one billion Joules) using the following equation: Total direct energy consumption = direct primary energy purchased + direct primary energy produced- direct primary energy sold. Add Indirect energy consumption.
Accuracy	Low
Examples	➢ GWh for transmission losses ➢ GJ for buildings ➢ GJ for vehicles (for number of kilometres)

3.3 Water

TSO activities are not water consuming. Nevertheless, some substations may need water for cooling purpose or some works may require the use of water (pole painting, transformer fan cleaning…). Indicators dealing with the water consumption didn't appear to be relevant from WG point of view.

3.4 Biodiversity

GRI EN11 : Location and size of land owned, leased or managed in, or adjacent to, protected areas and areas of high biodiversity value outside protected areas:

By reporting on the potential impact on land that lies within, contains, or is adjacent to legally protected areas, as well as areas of high biodiversity value outside protected areas, an organization can identify and understand certain risks associated with biodiversity.

Again, we can find here two different approaches:

- Description of biodiversity protective actions such as bird protection, vegetation management program, wetlands restorations in high biodiversity areas… These actions can't be considered as an indicator as such.
- Figures given when relevant (for instance percent of circuit length in Natura 2000 (European regulation) area, km of lines marked with birdsavers spirals…)…

WG C3-02 Proposal	Land in protected areas or in areas of high Biodiversity value
Justification	To demonstrate the importance of the land occupied by the organisation in or adjacent to protected areas
Description	Area for buildings, substation and transmission lines
Units	➢ Square kilometre or ha ➢ Ratio for particular information
How to measure	Compute area involved
Accuracy	Medium
Examples	➢ km^2 or ha managed transmission right of ways in high biodiversity areas ➢ km^2 or ha owned for facilities and buildings in high biodiversity areas ➢ % of area in identified biodiversity-rich area if data is available compared to total area owned or managed

GRI EN12 : Description of significant impacts of activities, products, and services on biodiversity in protected areas and areas of high biodiversity value outside protected areas:

This Indicator provides information on the significant direct and indirect impacts of the reporting organization on biodiversity in protected areas and areas of high biodiversity value outside protected areas.

This indicator is not an indicator as such but is widely used to give part of the Environment Analysis results under ISO 14001 Standard (see figure 1) or results of Environmental Impact Assessments. In order to give a figure, some TSO give number of bird collision, number of trees planted... This indicator should focus on biodiversity, not on other impacts (EMF, visual impact…). This description should be adapted country by country. Impacts should include permanent and temporary impacts.

WG C3-02 Proposal	**Significant impacts on protected areas or on areas of high Biodiversity value**
Justification	To demonstrate the effort made by the organisation to mitigate the possible impact of its activities
Description	Description of the major impacts on biodiversity associated with activities. Sites may involve substation or others
Units	Description of impacts
How to measure	-
Accuracy	Low
Examples	➢ Environmental Analysis results ➢ Environmental Impact Assessment results ➢ Number of bird collision and animal electrocution ➢ Description of R & D study to evaluate positive or negative impact of right of ways

Figure 3: Bird savers spirals implementation on OHL – © Médiathèque RTE / PICART Fabrice

EUSS EU14 : Biodiversity of replacement habitats compared to the biodiversity of the areas that are being replaced.

Some TSO may have to acquire land to compensate for the land used for substations or OHL. In this case, this indicator must be reported especially in high biodiversity areas

WG C3-02 Proposal	**Biodiversity of replacement habitats**
Justification	To demonstrate the efforts made by the organisation to compensate impacts
Description	Description of the land compensation process
Units	➢ Square kilometre or ha ➢ Biodiversity inventory
How to measure	Compute area involved
Accuracy	Medium
Examples	➢ km^2 or ha of land acquired for compensation ➢ Biodiversity type or inventory of the land used for substations and OHL vs biodiversity type or inventory of the land acquired

Figure 4: Bonelli's eagle inventory – © Médiathèque RTE / ROUX Lionel

GRI EN14: Strategies, current actions, and future plans for managing impacts on biodiversity.

This indicator enables both internal and external stakeholders to analyze how well the reporting organization's strategies, current actions, and future plans address potential impacts on biodiversity.

CommEN14: *Strategies, current actions, and future plans for managing impacts on biodiversity: Report the impacts and mitigation measures of new sites and existing sites to the following:*

- *Forested areas (e.g., alterations to crown density);*
- *Landscape (e.g., impacts of wind farms, transmission lines);*
- *Freshwater and wetland ecosystems (e.g., downstream water quality including turbidity, sedimentation, siltation and water quality of reservoir areas)*
- *Assessment and mitigation should consider alterations in the migration, breeding, or habitat of animals (e.g., fish passage) from the reporting organization's infrastructure (e.g., power lines and dams) (in Compilation section 2.3).*

CommENDMA *Report approaches for pest and vegetation management along transmission and distribution corridors (e.g., use of Integrated Pest Management and Integrated Vegetation Management).*

EN 12 focuses on the impacts description of TSO activities on biodiversity in protected areas and areas of high biodiversity value outside protected areas, whereas EN 14 should focus on programmes or actions that TSO may have launched to manage these impacts during both work and operating phases.

EN 14 is not used by all TSO but examples are given mainly concerning birdlife protection by the use of nesting area… EN14 should be used to introduce programs such as vegetation management program, birdlife protection program, landscape integration, even R&D programs related to this topic.

WG C3-02 Proposal	**Managing impacts on biodiversity**
Justification	To demonstrate the effort made by the organisation to protect and restore biodiversity
Description	Programmes
Units	➢ Description of programmes ➢ Description of special working procedures (in the protected zones for exemple)
How to measure	-
Accuracy	Low
Examples	➢ Operating procedures taking into account specific precautions in relation with protected zones (e.g.: maintenance out of nesting period, specific machines used in protected zones…) ➢ Vegetation management program ➢ Pesticide management program ➢ Wildlife protection or restoration policy ➢ Description of R & D study to evaluate impacts mitigation programs on biodiversity, landscape…

Figure 5: Vegetation management– © Médiathèque RTE

From the commentaries on ENvironmental Disclosures on Management Approach (ENDMA), the WG thought it was important to give some information about pest and vegetation management along transmission corridors (e.g., use of Integrated Pest Management and Integrated Vegetation Management). We think that this has to be reported within EN14 and information should be given about the use of pesiticide in the Right Of Way, in the substations or both. Amounts should be reported in the Emissions, Effluents and Waste section.

3.5 Emissions, Effluents, and Waste

GRI EN16 : Total direct and indirect green-house gas emissions by weight.:
Report total greenhouse gas emissions as the sum of direct and indirect emissions in tonnes of CO_2 equivalent.
Further details on the compilation of this Indicator are available in the WRI /WBCSD GHG Protocol and in the IPCC document

All TSO give figures concerning SF_6 released. SF_6 can be considered on a first stage as the major source of direct emissions of GHG. The global warming potential of SF_6 is 23800 higher than CO_2. GHG due to transportation means wasn't considered as important.

Obviously, indirect emissions due to the transmission losses CO_2 are higher than the CO_2 eq of the SF_6 released (depending on the generation mix) but all TSO focus on SF_6. Few of them include transmission losses.

The choice of the Unit is important and should be % of SF_6 released compared to SF_6 installed if a fair comparison is sought. Nevertheless, CO_2 eq of the transmission losses should be given.

WG C3-02 Proposal	Direct and Indirect Greenhouse Gases emissions
Justification	To demonstrate the effort made by the company to control its direct and indirect emissions
Description	Description of the Greenhouse Gases emissions
Units	**Direct emissions:** ➢ Tonnes ➢ CO_2 eq in tonnes ➢ **%** **Indirect emissions:** ➢ CO_2 eq in tonnes
How to measure	**Direct emissions:** A dedicated procedure has to be set up in order to measure the SF_6 released (SF_6 bottle weighing before and after filling…) **Indirect emissions:** If the origin of the energy used for the transmission losses is known, one has to apply CO_2 values corresponding to the energy source (e.g (g/kWh).: Nuclear 0, Water 0, Renewables 0, CCGT: 360, Coal: 900, Oil: 750).
Accuracy	Medium
Examples	**Direct emissions:** ➢ SF_6 released in tonnes (does not allow comparisons) ➢ CO_2 eq in tonnes ➢ **% of SF_6 released / in use** **Indirect emissions:** ➢ CO_2 eq in tonnes corresponding to the transmission losses (information about the energy used content to be given)

Figure 6: Gas Insulated Switchgear– © Médiathèque RTE / WEYL Laurent

GRI EN18 : Initiatives to reduce greenhouse gas emissions and reductions achieved:

- Report initiatives to reduce greenhouse gas emissions, include the areas where the initiatives were implemented.
- Report quantitatively the extent greenhouse gas emissions reductions achieved during the reporting period as a direct result of the initiative(s) in tonnes of CO_2 equivalent.

Tracking and reducing greenhouse gas emissions can improve the overall life cycle performance of products and services, and serve as part of a comprehensive design-for-environment program.

CommEN18: *This should be a core indicator for the sector.*

This indicator is considered as an additional indicator in the GRI V3.0 guidelines, but ranked as core with the EUSS pilot version. The working group considered this indicator as very important. Actions on SF_6 or losses reduction should be described.

WG C3-02 Proposal	**Greenhouse Gases emissions reduction due to voluntary actions**
Justification	To demonstrate the effort made by the company to reduce its direct and indirect emissions
Description	Actions and results of GHG emissions reductions
Units	**Direct emissions:** ➢ Tonnes ➢ CO_2 eq in tonnes **Indirect emissions:** ➢ CO_2 eq in tonnes
How to measure	**Direct emissions:** A dedicated procedure has to be set up in order to measure the SF_6 released (SF_6 bottle weighing before and after filling…) **Indirect emissions:** If the origin of the energy used for the transmission losses is known, one has to apply CO_2 values corresponding to the energy source (e.g (g/kWh).: Nuclear 0, Water 0, Renewables 0, CCGT: 360, Coal: 900, Oil: 750).
Accuracy	Medium
Examples	**Direct emissions:** ➢ SF_6 emissions avoided (improvements of working procedures, leak management program, low SF_6 impact device selection… ➢ CO_2 eq in tonnes **Indirect emissions:** ➢ CO_2 eq in tonnes corresponding to the transmission losses reduction due to voluntary actions (directly on the losses amount or on the CO_2 content of energy bought or produced for compensation)

GRI EN22: Total weight of waste by type and disposal method:

Data on waste generation figures over several years can indicate the level of progress the organization has made toward waste reduction efforts. It can also indicate potential improvements in process efficiency and productivity.

CommEN22: *Include PCB waste (in kilograms or litres)*

CommENDMA: *Long-term strategy for managing and phasing out high level and low level in-service PCBs.*

All TSO give figures concerning wastes with the amount by type and frequently the recycling rate. TSO should have a special focus on oil and PCB. Long-term strategy for managing and phasing out high level

and low level in-service PCBs should be described, as required in the ENvironmental Disclosures on Management Approach section.

On a first stage, TSO should focus on the figures concerning the waste inventory and their destination. Then, if known, the percentage per destination.

WG C3-02 Proposal	Waste management
Justification	To demonstrate the effort made by the company to control its waste
Description	Figures concerning waste management and description of specific actions including PCB management
Units	➢ kg or Tonnes ➢ Waste disposal (composting, reuse, recycling, recovery, incineration, landfill, deep well injection, on site storage …) ➢ Year to substitute all equipments with PCB…
How to measure	A dedicated procedure has to be set up in order to quantify and classify the wastes generated. Usually, regulation forces TSO to give these figures
Accuracy	Medium
Examples	**Hazardous waste and disposal (composting, reuse, recycling, recovery, incineration, landfill, deep well injection, on site storage …) :** in kg or Tonnes ➢ Oil ➢ Oil with PCB (tonnes of PCB incinerated per year) ➢ Number of transformer with PCB ➢ Ratio PCB incinerated / PCB in use **Non Hazardous Waste and disposal (composting, reuse, recycling, recovery, incineration, landfill, deep well injection, on site storage …):** in kg or Tonnes ➢ Scrap metal, scrap paper …

Figure 7: Transformer maintenance– Source: ELIA

GRI EN23 : Total number and volume of significant spills.

Spills of chemicals, oils, and fuels can have significant negative impacts on the surrounding environment, potentially affecting soil, water, air, biodiversity, and human health.

In many reports TSO gives figures concerning oil filled cable or transformer leakage. As this impact is one of the most important objective impacts, TSO should give figures concerning number of leaks with the amount and the source (transformer, cable…) and should mention PCB presence. The average leak rate is interesting additional information from a comparison point of view.

The amount and the kind of pesticide used in relation to treated area may be included in one of these two indicators (EN22 or EN23).

WG C3-02 Proposal	**Significant spills**
Justification	To demonstrate the company control on incidents and particularly oil leaks (and the use of pesticide)
Description	Figures concerning spills and description if any of incidents control policy or leaks policy
Units	➢ Litre or kg ➢ **%** ➢ Number of incidents
How to measure	**Leakage during normal operation:** A dedicated procedure has to be set up in order to measure oil leaks during normal operation (Oil can weighing before and after filling…) **Incidents:** A dedicated procedure has to be set up in order to count incidents leading to oil spillage and to estimate the volume.
Accuracy	Medium
Examples	**Total oil filled cable losses during leaks or incidents:** ➢ Oil (in kg or litres) ➢ **% of oil released / in use** **Other oil losses in substations (transformers…) during leaks or incidents:** ➢ Oil (in kg or litres) ➢ **% of oil released / in use** **Number of incidents** **(Total amount of pesticide used in kg or Tonnes or litres in relation to treated area)**

Figure 8: Transformer bay with fire walls and oil separator– © Médiathèque RTE / BARATIER Laurent

3.6 Product and Services

TSO activities are not related with product manufacturing, even though transmitting electricity can be considered as a service activity. The WG decided not to select this topic.

3.7 Compliance

GRI EN28 : Monetary value of significant fines and total number of non-monetary sanctions for non-compliance with environmental laws and regulations.

The level of non-compliance within the organization helps indicate the ability of management to ensure that operations conform to certain performance parameters.

Nearly all TSO give figures concerning number of violations or incidents reported to the regulator. Some TSO give the fines amount. This indicator is considered as important because it gives a general overview of the company performance in the environmental field. Moreover, environmental regulation is becoming heavier and to stay in compliance with the regulation mean a new regulation survey mechanism.

In addition to regulation compliance, a survey of public complaints is interesting (see PR5).

WG C3-02 Proposal	Compliance with environmental regulations
Justification	To demonstrate the company control on environmental regulation compliance.
Description	Description of non-compliance with environmental regulations and figures
Units	➢ Number ➢ Monetary units for fines
How to measure	-
Accuracy	High
Examples	➢ Number of non-compliance leading to regulatory action ➢ Fine amount

3.8 Overall

GRI EN30 : Total environmental protection expenditures and investments by type.

Measuring environmental mitigation and protection expenditures allows organizations to assess the efficiency of their environmental initiatives. It also provides valuable input for internal cost-benefit analyses.

Some TSO give figures. Most of WG members indicate that this may need an improvement of the accounting system. It was also said that it might be interesting to have these figures project by project and on the whole. R&D costs have to be included.

WG C3-02 Proposal	Environmental expenditures
Justification	To demonstrate the company control on environmental expenses.
Description	Description of the different costs induced by environmental protection, item per item.
Units	Monetary units
How to measure	From financial accounting management systems
Accuracy	High or low, depending from the software accuracy…
Examples	**Environmental costs (breakdown example)** **INVESTMENTS :** ➢ Environmental expenditures in relationship with the design and construction of new facilities ➢ Resettlement of people leaving near right of ways (in some countries)… **EXPENSES:** ➢ Waste disposal ➢ Emissions treatment if any ➢ Remediation costs (Soil decontamination, Noise control) ➢ Prevention costs (Soil pollution protection, environmental improvements at sub stations, preventive and corrective measures at facilities in service) ➢ Biodiversity and landscape protection (protection of birdlife, protection of vegetation, preservation of protected nature reserves) ➢ Environmental management costs (training and communication, overheads of environment department personnel, Environment Management System, Research and Development)

Figure 9: Substation integration– Source: ELIA

4. SOCIAL PERFORMANCE INDICATORS

40 social performance indicators are given in the GRI V3.0 guidelines [5]. From the Electric Utility Sector Supplement (EUSS) pilot version [6], 9 new indicators are proposed, 6 indicators dealing with social disclosures on management approach and 6 comments on the GRI indicators.

The WG analysis of these indicators and the content of the Sustainable Development reports analysed led to focus on 13 most relevant indicators, as mentioned in table 6 and 7.

GRI V3.0 Indicators and *Electric Utility Sector Supplement indicators or comments*		**WG C3-02**
Core Indicators	**Additional Indicators**	**selection**
LABOUR PRACTICES AND DECENT WORK		
Aspect: Employment		
LA1 Total workforce by employment type, employment contract, and region. *(+CommLA1)*	LA3 Benefits provided to full-time employees that are not provided to temporary or part-time employees, by major operations.	
EU16 Total subcontracted workforce.		
EU17 Percentage of contractors and subcontractors that have undergone relevant health and safety training.		
LA2 Total number and rate of employee turnover by age group, gender, and region.		
Aspect: Labour/Management Relations		
LA4 Percentage of employees covered by collective bargaining agreements. *(+CommLA4)*		
LA5 Minimum notice period(s) regarding significant operational changes, including whether it is specified in collective agreements.		
Aspect: Occupational Health and Safety		
LA7 Rates of injury, occupational diseases, lost days, and absenteeism, and total number of work-related fatalities by region. *(+CommLA7)*	LA6 Percentage of total workforce represented in formal joint management-worker health and safety committees that help monitor and advise on occupational health and safety programs.	**LA7 + CommLA7**
LA8 Education, training, counseling, prevention, and risk-control programs in place to assist workforce members, their families, or community members regarding serious diseases.	LA9 Health and safety topics covered in formal agreements with trade unions. Health and safety topics covered in formal agreements with trade unions.	
Aspect: Training and Education		
LA10 Average hours of training per year per employee by employee category.	LA11 Programs for skills management and lifelong learning that support the continued employability of employees and assist them in managing career endings.	**LA10**
	LA12 Percentage of employees receiving regular performance and career development reviews.	**LA12**
Aspect: Diversity and Equal Opportunity		
LA13 Composition of governance bodies and breakdown of employees per category according to gender, age group, minority group membership, and other indicators of diversity.		
LA14 Ratio of basic salary of men to women by employee category.		**LA14**
HUMAN RIGHTS		
Aspect: Investment and Procurement Practices		

HR1 Percentage and total number of significant investment agreements that include human rights clauses or that have undergone human rights screening.	HR3 Total hours of employee training on policies and procedures concerning aspects of human rights that are relevant to operations, including the percentage of employees trained.	
HR2 Percentage of significant suppliers and contractors that have undergone screening on human rights and actions taken.		
Aspect: Non-discrimination		
HR4 Total number of incidents of discrimination and actions taken.		
Aspect: Freedom of Association and Collective Bargaining		
HR5 Operations identified in which the right to exercise freedom of association and collective bargaining may be at significant risk, and actions taken to support these rights. *(+CommHR5)*		
Aspect: Child Labor		
HR6 Operations identified as having significant risk for incidents of child labor, and measures taken to contribute to the elimination of child labor.		
Aspect: Forced and Compulsory Labor		
HR7 Operations identified as having significant risk for incidents of forced or compulsory labor, and measures taken to contribute to the elimination of forced or compulsory labor.		
Aspect: Security Practices		
	HR8 Percentage of security personnel trained in the organization's policies or procedures concerning aspects of human rights that are relevant to operations.	
Aspect: Indigenous Rights		
	HR9 Total number of incidents of violations involving rights of indigenous people and actions taken.	
SOCIETY		
Aspect: Community		
SO1 Nature, scope, and effectiveness of any programs and practices that assess and manage the impacts of operations on communities, including entering, operating, and exiting. *(+CommSO1)*		**SO1 + CommSO1**
EU21 Number of people displaced by new or expansion projects related to generation facilities and transmission lines, broken down by physical and economic displacement.		***EU21***
Aspect: Corruption		
SO2 Percentage and total number of business units analyzed for risks related to corruption.		
SO3 Percentage of employees trained in organization's anti-corruption policies and procedures.		
SO4 Actions taken in response to incidents of corruption.		
Aspect: Public Policy		

SO5 Public policy positions and participation in public policy development and lobbying.	SO6 Total value of financial and in-kind contributions to political parties, politicians, and related institutions by country.	
Aspect: Anti–Competitive Behavior		
	SO7 Total number of legal actions for anti-competitive behavior, anti-trust, and monopoly practices and their outcomes.	
Aspect: Compliance		
SO8 Monetary value of significant fines and total number of non-monetary sanctions for non-compliance with laws and regulations.		**SO8**
PRODUCT RESPONSIBILITY		
Aspect: Customer Health and Safety		
PR1 Life cycle stages in which health and safety impacts of products and services are assessed for improvement, and percentage of significant products and services categories subject to such procedures. *(+CommPR1)*	PR2 Total number of incidents of non-compliance with regulations and voluntary codes concerning health and safety impacts of products and services, by type of outcomes.	**PR1 + CommPR1**
EU24 Number of injuries and fatalities to the public involving company assets, including legal judgements, settlements and pending legal cases of diseases.		
Aspect: Products and Service Labeling		
PR3 Type of product and service information required by procedures, and percentage of significant products and services subject to such information requirements.	PR4 Total number of incidents of non-compliance with regulations and voluntary codes concerning product and service information and labeling, by type of outcomes.	
	PR5 Practices related to customer satisfaction, including results of surveys measuring customer satisfaction.	**PR5**
Aspect: Marketing Communications		
PR6 Programs for adherence to laws, standards, and voluntary codes related to marketing communications, including advertising, promotion, and sponsorship.	PR7 Total number of incidents of non-compliance with regulations and voluntary codes concerning marketing communications, including advertising, promotion, and sponsorship, by type of outcomes.	
Aspect: Customer Privacy		
	PR8 Total number of substantiated complaints regarding breaches of customer privacy and losses of customer data.	
Aspect: Compliance		
PR9 Monetary value of significant fines for non-compliance with laws and regulations concerning the provision and use of products and services.		
Aspect: Access		
EU25 Percentage of population unserved in licensed distribution areas, broken down by population in rural areas and urban areas.		
EU26 Number of residential disconnections for non-payment, broken by duration of disconnection.		
EU27 Power outage frequency.		***EU27***
EU28 Average power outage duration.		***EU28***
EU29 Average plant availability factor by energy source and by country or regulatory regime.		

Table 6: GRI V3.0 and EUSS social indicators and comments: WG selection

In addition to this table EUSS pilot version asks for disclosures on management approach to be reported:

Electric Utility Sector Supplement Social Disclosures on Management Approach		WG C3-02
Aspect	**Commentary**	**selection**
Labor / Employment	EU15 Processes to ensure retention and renewal of skilled workforce..	**No**
Society / Community	EU18 Participatory decision making processes with stakeholders and outcomes of engagement.	**EU18**
	EU19 Approach to managing the impacts of involuntary displacement	
Society / Disaster / Emergency Planning and Response	EU20 Contingency planning measures and disaster/emergency management plan and training programs, and recovery/restoration plans.	**EU20**
Product Responsibility / Access	EU22 Programs, including those in partnership with government, to improve or maintain access to electricity services.	**No**
Product Responsibility / Provision of information	EU23 Practices to address language, cultural, low literacy and accessing and safely using electricity services.	**No**

Table 7: EUSS Social Disclosures on Management Approach: WG selection

13 indicators out of 55 may be considered as a too small number. It had been difficult to establish this short list because a lot of these GRI V3.0 and EUSS indicators are covered by regulations in most of the countries (for instance those related to human rights, non discrimination, child labour and forced labour…). Moreover, as seen in chapter 1.2, most of the Sustainable Development reports are issued in developed countries where regulations related to this topic do exist.

As a consequence, it was decided to keep indicators that reflect the commitments of TSO, in addition to regulations. Of course, the indicators choice is very dependant from the local regulations regarding these issues.

As mentioned earlier, it was decided to include the EMF issue into the social part of the indicators, especially in PR1.

LABOUR PRACTICES AND DECENT WORK

4.1 Employment

Considered by the WG members as a legal compliance in most of the countries.

4.2 Labour / Management Relations

Considered by the WG members as a legal compliance in most of the countries.

4.3 Occupational Health and Safety

GRI LA7 : Rates of injury, occupational diseases, lost days, and absenteeism, and total number of work-related fatalities by region. (total workforce + independent contractors)
CommLA7: *Include subcontractors in the reporting*

This indicator is used by all TSO and considered important. It gives information about Health and Safety management within the company. Additional information about employees morale and motivation is given by the absentee rate.

GRI V3.0 indicates that the guidelines for reporting the statistics should be the 'ILO Code of Practice on Recording and Notification of Occupational Accidents and Diseases'. Where national laws require reporting on that type of indicator, indication of the calculation system should be given.

EUSS requires to add subcontractors in this indicator, as a lot of work is outsourced. Reporting about subcontractors is considered relevant by the WG members. Nevertheless, it appears to be difficult to have precise figures, even though it is required by contract.

WG C3-02 Proposal	**Health and Safety rates**
Justification	To demonstrate the effort made by the organisation toward improving its employee's health
Description	Rates
Units	No unit (Frequency)
How to measure	Human resources data
Accuracy	High
Examples	➢ Fatalities ➢ Injury rate ➢ Occupational Diseases Rate ➢ Lost Day Rate ➢ Absentee Rate Example from Canada: Incidents: e.g. Freq. = ((Medical Aids + Loss of time) X 200 000)/Worked hour

Figure 10: Work on OHL– Source: José Antunes for REN

4.4 Training and Education

GRI LA10 : Average hours of training per year per employee by category of employee. (e.g. s enior m anagement, m iddle m anagement, pr ofessional, technical, a dministrative, pr oduction a nd maintenance)

All TSO focus on training, especially on environmental training. This point is considered as important.

WG C3-02 Proposal	**Average hours of training**
Justification	To demonstrate the effort made by the organisation toward improving i ts employee's knowledge
Description	Total hou rs of t raining pe r em ployee ca tegory / T otal em ployees pe r employee category
Units	Hours (or days)
How to measure	Human resources data
Accuracy	High
Examples	➢ Average hours (or days) of training per employee ➢ Average hours (or days) of environmental training per employee

GRI L A12 : P ercentage o f e mployees receiving regular p erformance an d car eer d evelopment reviews.

This indicator is complementary to LA10 as it g ives additional information to the way the employee's career is taken into account in the long term in the management process.

WG C3-02 Proposal	**Performance and career development review**
Justification	To demonstrate the effort made by the organisation toward improving i ts human capital
Description	Total em ployees w ho received a f ormal pe rformance ap praisal and review during the reporting period / total number of employees
Units	%
How to measure	Human resources data
Accuracy	High
Examples	-

4.5 Diversity and Equal Opportunity

GRI LA14 : Ratio of basic salary of men to women by employee category.

Some companies do mention female / male ratio or other indicators of diversity. Because TSO activities have usually low female / male ratio, the WG decided to focus on salary equity between men and women workers. "Where unbalance exists, an organization runs a risk to its reputation and legal challenges on the basis of discrimination."

WG C3-02 Proposal	**Female discrimination**
Justification	To demonstrate the effort made by the organisation toward equal pay to equal value
Description	Basic salary of men to the basic salary of women for each employee category
Units	%

How to measure	Human resources data
Accuracy	High
Examples	-

HUMAN RIGHTS

Human Rights are considered by WG members as fully integrated in most of the TSO companies. If so, the indicators do not appear as relevant as these GRI V 3.0 and EUSS indicators are covered by regulations in most of the countries.

4.6 Investment and Procurement Practices

Considered by the WG members as a legal compliance in most of the countries.

4.7 Non-Discrimination

Considered by the WG members as a legal compliance in most of the countries.

4.8 Freedom of Association and Collective Bargaining

Considered by the WG members as a legal compliance in most of the countries.

4.9 Child Labor

Considered by the WG members as a legal compliance in most of the countries.

4.10 Forced and Compulsory Labor

Considered by the WG members as a legal compliance in most of the countries.

4.11 Disciplinary Practices

Considered by the WG members as a legal compliance in most of the countries.

4.12 Security Practices

Considered by the WG members as a legal compliance in most of the countries.

4.13 Indigenous Rights

Considered by the WG members as a legal compliance in most of the countries.

SOCIETY

4.14 Community

GRI SO1 : Nature, scope, and effectiveness of any programs and practices that assess and manage the impacts of operations on communities, including entering, operating, and exiting.

CommSO1: Include discussions of programs related to:

- Influx of workers and impacts on neighbouring communities (including changes to local social structures and culture);
- Changes to land-use including loss of global commons (e.g. access to land, natural resources, and heritage);
- Impacts on infrastructure (e.g. roads, housing), and access to services (e.g. education, utilities, healthcare); and
- Changes to the aesthetics and quality of the landscape (in Compilation section 2.4).

This indicator is used by most TSO. Some of them explain their policy to manage impacts on community areas.

From a network development point of view, Technical Brochure 274 "Consultation Model for overhead line projects" from SC B2 WG-B2.15 and Technical Brochure 250 "Technical and environmental issues regarding the integration of a new HV underground cable system in the network" from SC B1 WG-B1.19 gives additional information about impacts management. Consultation process should be described in EUSS EU18. Visual impact management should be mentioned in this indicator.

WG C3-02 Proposal	**Impact Management on Community**
Justification	To demonstrate the effort made by the organisation toward managing impacts on community
Description	Description of the procedures set up to manage impact on community
Units	No unit
How to measure	-
Accuracy	Medium
Examples	Description of Environmental Impact Assessment contents for new projects or maintenance activities (including post evaluation or follow up studies, according to local regulation)

Figure 11: Substation integration in urban area– © Médiathèque RTE / LARVOR Gilles

***EUSS EU18* : Participatory decision making processes with stakeholders and outcomes of engagement.**

This indicator is very dependant from local regulations. In many countries, the consultation process is strictly framed by law.

WG C3-02 Proposal	Consultation process
Justification	To demonstrate the efforts made to take into account stakeholders point of view
Description	Description of the consultation process
Units	-
How to measure	-
Accuracy	High
Examples	➢ Description of consultation process ➢ Average duration of the consultation process for overhead lines, underground cables, substations…

***EUSS EU21* : Number of people displaced by new or expansion projects related to generation facilities and transmission lines, broken down by physical and economic displacement.**

This indicator is very dependant from local regulations too. Some regulations do not allow people living in the Right Of Way. Hence, people displacement may occur, particularly in high density areas.

The major difficulty with this indicator is that it does not reflect the efforts made by the company in the consultation process. The important point is to explain why from all alternatives, the final one was decided, leading to people displacement, and to compare it with the other ones. This should highlight the company performance.

WG C3-02 Proposal	People displacement
Justification	To demonstrate the efforts made to reduce people displacement
Description	Number of person displaced
Units	Number
How to measure	On a project basis
Accuracy	High
Examples	➢ Number of person displaced because of the project compared to other alternatives. ➢ Number of houses bought ➢ Description of the displacement process

4.15 Corruption

Considered by the WG members as a legal compliance in most of the countries.

4.16 Public Policy

Considered by the WG members as a legal compliance in most of the countries.

4.17 Anti-Competitive Behavior

Considered by the WG members as a legal compliance in most of the countries.

4.18 Compliance

GRI SO8 : Monetary value of significant fines and total number of non-monetary sanctions for non-compliance with laws and regulations.

This indicator is complementary to EN 28 that deals with environmental laws and regulations.

It used by so TSO to give an overview of how compliant with regulations they are. This indicator may also be used to report performances achieved with respect to the objectives given by the regulation authority (Power Quality…)

WG C3-02 Proposal	Compliance with regulations
Justification	To demonstrate the company control on regulation compliance
Description	Description of non-compliance with regulations and figures
Units	➢ Number ➢ Monetary units for fines
How to measure	-
Accuracy	High
Examples	➢ Number of non-compliance leading to regulatory action ➢ Fine amount

4.19 Disaster / Emergency Planning and Response

EUSS EU20 : Contingency planning measures and disaster/emergency management plan and training programs, and recovery/restoration plans.

Because electricity is very important for our society, black out s appear to be unacceptable. As a consequence TSO are usually in charge of emergency plan to reduce consequences and restore electricity supply.

On the long and medium term EUSS EU9 gives information on the system planning and therefore on the capability of the company to make its network resistant to emergency situations. Nevertheless, major storms, fires, lightning, may affect the grid.

WG C3-02 Proposal	Emergency planning and Response
Justification	To demonstrate the efforts made to anticipate emergency situations
Description	Description of internal procedures to reduce the consequences of disasters/emergencies and recovery/restoration plans
Units	-
How to measure	-
Accuracy	Medium
Examples	➢ Disaster/emergency organisation and management plan ➢ Recovery/restoration organisation and management plan ➢ Number of training made per year…

4.20 Customer Health and Safety

GRI PR1 : Life cycle stages in which health and safety impacts of products and services are assessed for improvement, and percentage of significant products and services categories subject to such procedures.

CommPR1: *Processes for assessing community health risks including monitoring, prevention measures and, if applicable, long term health-related studies (in Compilation section 2.1).*

This indicator is not an indicator as such. Some TSO give the results of their prevention policy (increasing public awareness of health and security). Number of accidents in relationship with the infrastructure can also be reported, although a dedicated indicator *(EUSS EU24)* was not selected by the WG.

WG members think that the EMF policy should be described in this indicator.

WG C3-02 Proposal	Third Party Health and Safety
Justification	To demonstrate the effort made by the organisation toward improving health and safety in the infrastructure neighbourhood
Description	Description of policy concerning third party health and safety in the infrastructure neighbourhood, including EMF consequences.
Units	Number
How to measure	Third parties accidents in relationship with the organisation infrastructure are usually known by companies. If not, a dedicated procedure has to be set up in order to measure these accidents
Accuracy	High
Examples	**EMF** ➢ EMF standard limits in use (public and employees) ➢ List of research projects or long term studies on EMF (+ amount of money) **Accidents *(EUSS EU24)*:** ➢ Number of reported third party accidents ➢ Money spend in public advertising on safety in the infrastructure neighbourhood

Figure 12: OHL in urban area– Source: ELIA

4.21 Product and Service Labeling

GRI P R5 : Practices re lated to customer sa tisfaction, including results of su rveys m easuring customer satisfaction.

This indicator is used by all TSO to give the number of claims and queries. Some of them also measure the population satisfaction and the customer satisfaction.

From a customer point of view, ISO 9001 Standard is based on customer satisfaction. As TSO are oftenly ISO 9001 certified, a customer satisfaction measurement procedure does exist. Results can be given.

From a ne ighbouring poi nt o f v iew, i t is r equired by I SO 14001 S tandard that a review of t he communications f rom ext ernal "interested parties" h as t o be m ade. Hence, procedures to catch these communications may exist w ithin ISO 14001 c ertified c ompanies and c an be described. R esults c an be given.

WG C3-02 Proposal	**Customer Satisfaction and Interested Party Concerns**
Justification	To demonstrate the effort made by the organisation toward customer and neighbour satisfaction
Description	Description of po licies c oncerning t oward c ustomer a nd neighbour satisfaction and related figures
Units	Number
How to measure	**Customer satisfaction survey** (sampling, special group of discussion). **Interested party concerns survey** (sampling, special group of discussion)
Accuracy	High
Examples	**Customer satisfaction**: ➢ Number of v ery sat isfied, satisfied, unsatisfied and v ery uns atisfied customers or ratio of customer satisfaction **Interested party concerns:** ➢ Number of queries, complaints ➢ Distribution (% indemnities, % EMF, % audible noise, % aesthetical issues …)

4.22 Marketing Communications

This indicator is usually not used by TSO.

4.23 Customer Privacy

This indicator is usually not used by TSO.

4.24 Compliance

This indicator is usually not used by TSO.

4.25 Access

Two additional indicators from the Sector supplement were selected, dealing with the question of short term reliability and therefore Power Quality performance of the TSO:

- Power outage frequency
- Average power outage duration

They are based on IEEE 1366-1998 standards, but other indicators may be used, especially if they are required by the regulation bodies in another calculation method. Nevertheless, comparability should be kept in mind.

EUSS EU27 : Power outage frequency.

Report System Average Interruption Frequency Index (SAIFI) which is commonly used as a reliability of supply indicator by electric power utilities

WG C3-02 Proposal	**Power outage frequency**
Justification	To demonstrate the efforts made for improving Power Quality
Description	SAIFI is the average number of interruptions that a customer would experience
Units	Interruptions per customer. It is usually measured over the course of a year.
How to measure	SAIFI= total number of customer interruptions / total number of customers served Refer to IEEE Standard 1366-1998
Accuracy	High
Examples	-

EUSS EU28 : Average power outage duration.

Report System Average Interruption Duration Index (SAIDI) which is commonly used as a reliability of supply indicator by electric power utilities

WG C3-02 Proposal	**Average power outage duration**
Justification	To demonstrate the efforts made for improving Power Quality
Description	SAIDI is the average outage duration for each customer served
Units	Time (often minutes or hours). It is usually measured over the course of a year.
How to measure	SAIDI= total duration of customer interruptions / total number of customers served Refer to IEEE Standard 1366-1998
Accuracy	High
Examples	-

CONCLUSION

One of the major goals of the Working Group was to provide a short list of indicators that should be reported by Transmission System Operators because of their importance. The Working Group will was not to provide an extensive list of performance indicators but to chose those considered to be the most relevant and those allowing comparisons.

From the study of several guidelines and from about ten Sustainable Development Reports or Environmental Reports published by the Utilities, it appeared that the "Sustainability Reporting Guidelines V3.0" [5] and the "Electric Utility Sector Supplement (Pilot Version)" [6] published by the Global Reporting Initiative organization are the major references.
As a consequence, the Working Group C3-02 defined a set of indicators from the GRI guidelines and proposed adapted definitions to TSO activities.

This brochure is a technical document aiming at assisting TSO in presenting a balanced and relevant picture of their economic, environmental and social performance to their stakeholders, in transparency.
When defining the indicators, the Working Group kept in mind that these indicators should:

- be relevant
- be accurate
- allow comparisons against company's earlier performance as well as other company's performance.

With this set of indicators, TSO Sustainability Report should be as complete as possible for all stakeholders.

REFERENCES

[1]: "Sustainability Reporting Guidelines V 2.0" (Global Reporting Initiative - 2002)

[2] "Environmental Performance Indicator guidelines for the Australian Electricity Industry" (Electricity Supply Association of Australia - 2004)

[3] "Guidance notes on environmental benchmarking indicators for the electricity sector" (UK Electricity Association - 2001)

[4] "Sustainability in the electricity utility sector - Phase 1" (World Business Council for Sustainable development)

[5] "Sustainability Reporting Guidelines V 3.0" (Global Reporting Initiative - 2006)

[6] "GRI Sustainability Reporting Guidelines & Electric Utility Sector Supplement (Pilot Version)" (Global Reporting Initiative - 2007)

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