Metrics for the Energy Sector

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MBA292T - Metrics of Sustainability
10 December 2008

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Executive Summary

By converting inputs such as uranium, crude oil, silicon, water, wind and coal into outputs that can be harnessed as electricity and fuel, energy companies have become some of the largest and most profitable companies in the world. Exxon, for example, is a company that grossed more than $40B profit in 2007.[1] Another is the Russian company Gazprom, which is said to be the largest energy company in the world ($46B in 2005).[2,3] A good barometer for the priority given to sustainability is the company's definition of "Sustainability" and its inclusion in corporate goals and strategy.

In reviewing the energy sector, it is important to keep several things in mind. The first is, of course, that it is an incredibly diverse sector. In creating a set of metrics to cover this field, we have attempted to create a net that will at once capture the good things companies are doing, as well as highlight the areas where they may need improvement. This can be a fine line at times, and we have attempted to create a set of metrics that allow

1 Exxon Mobil's Profit in 2007 Tops $40 Billion, http://www.washingtonpost.com/wp-dyn/content/article/2007/02/01/AR2007020100714.html

2 CEO Of World's Largest Energy Company Predicts Oil Will Hit $250 A Barrel, http://www.huffingtonpost.com/2008/06/10/ceo-of-worlds-largest-ene_n_106400.html

3 Gazprom, Wikipedia.org, http://en.wikipedia.org/wiki/Gazprom

both quantitative and qualitative measurement. Similar to the Global Reporting Initiative (GRI) metrics,[4] we have created a set of metrics that are weighted as either essential or optional.

These metrics are designed to help companies determine weak points in their goal of sustainability. These metrics are divided into sub-categories of value chain, environmental, financial, social, compliance and risk management metrics. Additionally, each metric identifies the following:

- A description of the metric,
- Whether the metric is optional or essential,
- Whether it is reporting the status quo or structured to drive positive change (i.e. normative or positive)
- Intended directionality of the metric over time
- Whether the metric aims to demonstrate company transparency or performance,
- The metric's relevance in the value chain (i.e. is it a part of input, output, and/or process)

This information is intended to help determine the importance of the metric, how it should be used, and what trends should occur from year to year. These metrics enable the company to factor in "Whole Systems Accounting", i.e. incorporate the economic consequences of externalities[5] into its management decision making process.

Transparency

Trust in a company's practices and goals requires ensuring that their methods of measurement are transparent and open, as well as credible and ethical.[6] This report aims to increase transparency by rewarding companies which verify that they provide convincing evidence for their claims, have an ever-evolving but actionable plan, and involve stakeholders' feedback in their decision-making processes. Data that is reported will be ranked from highest to lowest, with the highest rating source being third-party measurement of data, followed by third-party verification of company-reported data, then systematic tracking of company-reported data, and finally data that is compiled by the company without outside consultation or systematic tracking.[7] This ranking rewards accurate and timely data collection, and the metrics themselves insure relevancy thus "support[ing] better decisions and generat[ing] actionable insights."[8] Metrics are designed to probe for details of the company's policies, implementation of such policy, impact of company actions, and over time record the company's progress. This helps to both share innovative ideas among the industry and to ensure that the companies' actions are justifiable.[9] Metrics that require a record of how stakeholders and their feedback are

4 http://www.globalreporting.org/Home
5 Friend, Gil, 1998. Ecometrics: Integrating Direct and Indirect Environmental Costs and Benefits Info Management Information Systems, Page 2.
6 Herman, Paul. HIP Investor, HIP Scorecard: Valuing Human Impact + Profit
7 Olsen, S. and Galimidi, B. (May 2008). "Catalog of Approaches to Impact Measurement: Assessing social impact in private ventures." *Social Venture Technology Group*.
8 Sustainable Business Achievement Ratings, About S-Bar. http://www.sustainabilityratings.com/about/index.html
9 Sustainable Business Achievement Ratings.How S-Bar Works. http://www.sustainabilityratings.com/how/rating_categories.html

included in a company's decision-making processes also help to facilitate an open environment of communication.

Deciding what entities to include in this report will require the company to determine (1) those over which they have significant control or influence (e.g through a joint venture) and (2) the entities which contribute significantly to the company's inputs, processes and outputs. If the company has significant control and the entity has significant impacts, concrete quantifiable metrics are required. Else, more qualitative reporting measures are acceptable.[10] Once company metrics are reported, the metrics should be compared against industry averages and similar companies should be compared in order to drive industry improvement.[11]

Priority Metric	Source (G3 or New)	Essential/ Optional	Normative/ Positive	Desired Trend	Transparency v Performance	Metric Phase
Number of training sessions held to train employees on compliance versus the sector and industry average	New	Optional	Positive	Up	Transparency	Input, Process
Number of compliance and ethics cases handled by the company and also by its entities and resolved in company or in court	New	Essential	Normative	Down	Performance	Process
Percent of revenues from investments or procurement in countries that have a low ranking on the human rights index (amnesty international)[12]	New	Essential	Positive	Down	Transparency	Input, Output
Amount of energy produced in countries that are low on the corruption indicator (MW)/ Total energy produced (MW). Corruption index provided by Transparency International[13]	New	Essential	Positive	Down	Transparency	Input, Output
Membership in transparency initiatives such as the Global Compact,[14] the Extractive Industry Transparency Initiative (EITI)[15] and the Joint Anti-Corruption Initiative (PACI)[16]	New	Essential	Normative	Up	Transparency	N/A

Value Chain

To address sustainability across the value chain this index proposes metrics which draw attention to actions of downstream and upstream partners and metrics associated with certain types of energy producers. These metrics aim to transform the energy industry by drawing attention to metrics that matter on a company level and shift the relationship between actors involved in the supply chain. Specifically, these metrics note whether or not the company is taking action to monitor industry partners over whom they have control, and partner with these industries to move them in a mutually beneficial direction, improving relationships, impacts and efficiencies. The downstream metrics are especially challenging because by-products of these industries can be used in applications ranging from agriculture (e.g. as fertilizer) to transportation (e.g. as automobile fuel). Because energy producers have more control over how energy is created and from where they purchase supplies rather than dictating how energy is used, companies are expected to implement preferential buying and selling

10 Global Reporting Initiative, http://www.globalreporting.org/Home
11 Friend, Gil, 1998. Ecometrics: Integrating Direct and Indirect Environmental Costs and Benefits Info Management Information Systems, Page 25.
12 Amnesty International, http://www.amnesty.org
13 Transparency International, Bribe Payers Index, http://www.transparency.org/news_room/in_focus/2008/bpi_2008
14 United Nations Global Compact, http://www.unglobalcompact.org/
15 EITI Overview, http://eitransparency.org/
16 Partnering Against Corruption Initiative, http://www.weforum.org/en/initiatives/paci/index.htm

practices, and educate downstream consumers. To support these actions this index notes whether the entity using the index requires suppliers to meet the same requirements as itself, notes the transparency with which such claims/actions are recorded or verified (as described above) and supports such actions though preferential buying. In the future, granularity of such reporting may have to be increased to include details on preferential buying techniques to ensure best-in-class purchases and an expectation of innovation, cooperation and continual improvement. Additional action will depend on each individual company and how they align their goals with the items this index requires them to measure.

Priority Value Chain Metric	Source	Essential/ Optional	Normative/ Positive	Desired Trend	Transparency v Performance	Metric Phase
Preferential buying and/or selling practices and selection criteria	New	Optional	Positive	Up	Transparency	Input, Output
Percent of suppliers which use this index and percent of annual purchases which they supply you with	New	Optional	Positive	Down	Performance	Input
Percent of purchasers which use this index and percent of annual purchases which you supply them with	New	Optional	Positive	Down	Performance	Output
Number of supplier agreements terminated due to compliance violations / Total number of supplier violations	New	Essential	Positive		Transparency	Input
Number of educational initiatives aimed at downstream consumers on energy conservation and usage /Total number of customers	New	Essential	Positive	Up	Performance	Output

This index's metrics apply to both renewable and nonrenewable energy sources. Both types of sources are used to produce electricity, heat, light and fuel transportation. Although renewable (Biomass, Hydropower, Geothermal, Wind, Solar) and nonrenewable (Petroleum, Natural Gas, Coal, Uranium, Propane) energy sources have vastly different supply chains and the ability to cause varying environmental and social impacts, this index has created metrics which aim to illustrate the globally comparable impacts with the processes' inputs and outputs. [17] Renewable energy will report far better than conventional energy producers in this index but the sector-specific metrics below allow renewable energies to be further differentiated from one another and ensure the methods used are as low-impact as possible. These binary ratings are also subject to the same transparency requirements as the rest of the index.

Priority Metric	Source (G3 or New)	Existence
Producers of ***Biogas/Biomass-fueled*** electricity have operational air emissions of carbon monoxide (CO), particulate matter (PM), nitrogen oxides (NOX measured as NO2) and sulphur oxides (SOX measured as SO2) which do not exceed six.[18] Use wood or agricultural wastes from a operation with explicit environmental management practices, do not use wastes from species that are listed in the CITES Appendices, are harvested at a rate which can be sustained, and do not emit polychlorinated dioxins and/or furans in excess of 100 pg I-TEQ/m3.	Ecologo[19]	(Yes/No)
Producers of ***solar-powered*** electricity have planned for appropriate recycling of material waste.	Ecologo	(Yes/No)
Producers of ***water-powered*** electricity does not affecting the limiting factor controlling productive capacity, loss of the affected habitat is compensated by the creation of similar habitat; operates such that any changes in water temperature or other impacts (reduced water flow etc.) caused by the facility are not detrimental to indigenous aquatic species; provides fish passage when necessary for the purpose of maintaining preexisting migration patterns for fish communities both upstream and downstream; have taken measures to minimize fish mortality that would occur through impingement and entrainment.	Ecologo	(Yes/No)

17 Energy Information Agency. (EIA). U.S. Energy Consumption by Source. http://www.eia.doe.gov/kids/energyfacts/science/images/consumption%20by%20source.gif

18 For measurement details, see Ecologo Appendix I

19 Ecologo (December, 2003). CCD-003: Electricity - Renewable Low-impact . Available Online, Accessed November 22, 2008: http://www.ecologo.org/en/seeourcriteria/details.asp?ccd_id=228

Priority Metric	Source (G3 or New)	Existence
Producers of ***wind-powered*** electricity have not harmed avian species; have avoided excessive silt erosion that would be harmful to the local ecosystem; and have replaced uprooted vegetation after construction.	Ecologo	(Yes/No)

Environmental Metrics

The environmental metrics for the energy sector vary greatly depending on the source of fuel being used as an input. These metrics have been categorized into the following sub-sections: energy used/conserved, biodiversity, green house gases (GHG), water input/output, material use/disposal, and other.

Energy Used/Conserved

Priority Environmental Metric	Source	Essential/ Optional	Normative/ Positive	Desired Trend	Transparency v Performance	Metric Phase
Efficiency of energy creation (energy used per energy created)	New	Essential	Positive	Down	Performance	Input, Output
Direct energy consumption by primary energy source	G3-EN3[20]	Essential	Positive	Down	Transparency	Input
Indirect energy consumption by primary energy source	G3-EN4	Essential	Positive	Down	Transparency	Input
Energy saved by conservation and efficiency improvements	G3-EN5	Optional	Positive	Up	Performance	Input
Inventory of energy creation mechanisms by percent of total energy distributed and total quantity distributed	New	Essential	Positive	N/A	Transparency, Performance	Output
Initiatives to provide energy efficient or renewable energy based products and services, and reductions in energy requirements as a result	G3-EN6	Optional	Positive	Up	Performance	Input, Output
Initiatives to reduce indirect energy consumption and reductions achieved	G3-EN7	Optional	Positive	Up	Performance	Input

In the Energy Used/Conserved section, many of the measures are common with the G3. One that is not captured is the *efficiency of energy creation*. This measure has been included to create a metric that can be easily compared from one company or energy source to another. While this measure is not as specific as the others, it provides a bird's eye view of the efficiency of the inspected organization.

Of the remaining metrics, the goal is to measure the amount of energy used, and to reward companies that successfully implement initiatives to reduce their energy consumption. Direct and indirect energy consumption reflect the amount of energy used when creating their product. The remaining three metrics are optional because they allow a company to describe initiatives that they have implemented that may have reduced their energy consumption. For some areas of the sector, such metrics may be less relevant than others. For example, solar companies may not need to spend as much time discussing or mitigating their energy consumption as another company drawing energy from a different source.

Biodiversity

Priority Environmental Metric	Source	Essential/ Optional	Normative/ Positive	Desired Trend	Transparency v Performance	Metric Phase
Location and size of land owned, leased, managed in, or adjacent to protected areas and areas of high biodiversity value outside protected areas	G3-EN11	Essential	Normative	Down	Transparency	N/A

20 Such references throughout this guideline refer to the Global Reporting Initiative G3 Guidelines, followed by a specific metric number, where applicable (e.g. the metric referenced here is numbered EN3).

Priority Environmental Metric	Source	Essential/ Optional	Normative/ Positive	Desired Trend	Transparency v Performance	Metric Phase
Description of significant impacts of activities, products, and services on biodiversity in protected areas, and areas of high biodiversity value outside protected areas, including effects of temperature changes.	G3-EN12, EUSS[21]	Essential	Positive	Down	Transparency	Process
Habitats protected or restored	G3-EN13	Essential	Normative	Up	Transparency	Process
Strategies, current actions, and future plans for managing impacts on biodiversity	G3-EN14	Optional	Normative	Up	Transparency	N/A
Number of IUCN red list species[22] and national conservation list species with habitats in areas affected by operations, by level of extinction risk	G3-EN15	Essential	Normative	Down	Transparency	Process
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, and the effects upon those bodies	G3-EN25	Essential	Normative	Down	Transparency	Process, Output
Initiatives to mitigate environmental impacts of products and services, and extent of impact mitigation	G3-EN26	Optional	Normative	Up	Transparency	Process

The biodiversity metrics serve to determine the impact of a company's operation on the land, flora and fauna. As such, metrics in this sub-category are largely qualitative, and refer to less measurable goods such as identity of protected species and descriptions of impact. Where possible, quantitative metrics are used.

Green House Gases (GHG)

Priority Environmental Metric	Source	Essential/ Optional	Normative/ Positive	Desired Trend	Transparency v Performance	Metric Phase
GHG inventory including total direct and indirect GHG emissions by weight, intensity and IPCC AR4 100-year Global Warming Potentials[23]	G3-EN16-17, 19-20, EPA GHG Inventory[24]	Essential	Positive	Down	Transparency	Process, Output
Initiatives to reduce GHG emissions and reductions achieved	G3-EN18	Essential	Normative	Up	Transparency	Process

The two metrics in this category may be challenging for many organizations to compile. The G3 captures the majority of the first question through a series of metrics, however it does not require a complete inventory of GHGs. By requiring a complete inventory, we are requiring that companies analyze not only how much total GHG is being released, but also the amount per energy produced (intensity) and IPCC 100-year global-warming potential of each. By requiring these numbers, we force organizations to determine which of their GHGs warrant the greatest investment in improvement. The second metric in this category, *Initiatives to reduce GHG emissions and reductions achieved,* is a more qualitative metric, allowing companies to elaborate on such efforts.

Water Input/Output

Priority Environmental Metric	Source	Essential/ Optional	Normative/ Positive	Desired Trend	Transparency v Performance	Metric Phase
Inventory of discharges into water sources by weight, type, ppm, temperature change and intensity	New	Essential	Positive	Down	Transparency	Process, Output
Total water discharge quantity and intensity by quality and destination	G3-EN21	Essential	Normative	Quantity down, quality up	Transparency	Output

21 Sustainability Reporting Guidelines & Electric Utility Sector Supplement, http://www.globalreporting.org/NR/rdonlyres/133469FE-6C9D-4894-B21A-1562314F1FF7/0/**EUSS**_Pilot.pdf
22 International Union for Conservation of Nature and Natural Resources, Red List of Threatened Species, http://www.iucnredlist.org/
23 Intergovernmental Panel on Climate Change Fourth Assessment Report, http://www.ipcc.ch/ipccreports/ar4-syr.htm
24 EPA Inventory of US Greenhouse Gas Emissions and Sinks: 1990-2006, http://www.epa.gov/climatechange/emissions/usinventoryreport.html

Priority Environmental Metric	Source	Essential/ Optional	Normative/ Positive	Desired Trend	Transparency v Performance	Metric Phase
Quantity and intensity of water withdrawal by source	G3-EN8	Essential	Positive	Down	Transparency	Input
Effect on water sources of withdrawal/discharge	G3-EN9	Essential	Normative	Down	Transparency	Input, Output
Percentage and total volume of discharged water recycled and/or reused	G3-EN10	Essential	Positive	Down	Transparency	Output

The metrics for water input/output have the overall goal of accounting for any negative or positive effect that a company may have on the water system from which is it drawing or discharging water. All of the quantitative measures have been modified from the G3 guidelines to include an intensity measurement, with the exception of the last metric, which requests a percentage of total water discharged. The first metric compares directly to the GHG inventory outlined above, and serves the same purpose. The goal of a water discharge inventory is to capture all of the discharges into water systems including intensity, concentration (ppm), and change in temperature of discharged water. This metric will facilitate comparison of metrics across reports.

Material Use/Disposal

Priority Environmental Metric	Source	Essential/ Optional	Normative/ Positive	Desired Trend	Transparency v Performance	Metric Phase
Materials used by weight/volume and intensity	G3-EN1	Essential	Positive	Up	Transparency	Input
Percentage of materials used that are recycled input materials	G3-EN2	Essential	Positive	Up	Transparency	Input
Total weight and intensity of waste by type and disposal/storage method	G3-EN22, EUSS	Essential	Positive	Down	Transparency	Output
Security measures taken to protect hazardous waste	EUSS	Essential	Normative	Up	Transparency	Process
Total number, volume and intensity of spills	G3-EN23	Essential	Positive	Down	Transparency	Process
Weight and intensity of transported, imported, exported or treated radioactive waste or waste deemed hazardous under the terms of the Basel Convention Annex I, II, III, and VIII,[25] and percentage of transported waste shipped internationally	G3-EN24, Basel convention of 1989	Essential	Positive	Down	Transparency	Output

The metrics above are similar to those of the G3, with some critical additions and differences. Specific differences include the addition of intensity measurements for many measures, and the capture of information relating to radioactive waste in the final metric.

Other Metrics

Priority Environmental Metric	Source	Essential/ Optional	Normative/ Positive	Desired Trend	Transparency v Performance	Metric Phase
Monetary value and intensity of fines and total number of sanctions for non-compliance with environmental laws and regulations	G3-EN28	Essential	Positive	Down	Transparency	Input, Process, Output
Significant environmental impacts of transporting products and other goods and materials used for the organization's operations, and transporting members of the workforce	G3-EN29	Essential	Positive	Down	Transparency	Output
Quantity and intensity of environmental protection expenditures and investments by type	G3-EN30	Optional	Positive	Up	Transparency	Input, Process, Output
Number of projects that are accompanied with a environmental impact assessment	New	Essential	Positive	Up	Transparency	Process
Quantity and percentage of environmental metrics verified by a third party organization, and the name of the verification organization(s)	New	Essential	Positive	Up	Transparency	N/A
Quantity and percentage of environmental metrics compiled by a third party organization, and the name of the verification organization(s)	New	Essential	Positive	Up	Transparency	N/A

25 Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal, http://www.basel.int

The final metrics category in the environmental metrics section serves to capture any remaining aspects of the environmental impact of the company that have not been mentioned elsewhere. The first three metrics reflect metrics in the G3 aimed at capturing fines due to non-compliance with environmental laws, transportation and transmission impacts (including of electricity and power lines), and the quantity of environmental protection expenditures for the company. The balance of the metrics create a meta-analysis of all the former environmental metrics, by asking how many of them have been compiled or verified by a third party, and also how many projects have environmental impact reports. These metrics are important because they contribute to the transparency of all the former metrics.

Financial Metrics

Most of the energy sector's financial sustainability indicators are common irrespective of the source of energy and the processes involved in producing the energy. The G3's economic indicator EC1 captures most of the relevant financial metrics such as revenues, costs, operating expenses, taxes, and debt obligations, among others. It is essential that all the economic metrics monitored by the company be tracked over time (estimate dto be 5 years) and against industry and sector averages.

Economic Performance:

The main financial metric that is specific to the energy sector not captured by the G3 is the levelized cost of energy,[26] i.e. the total life cycle cost of the specific energy system divided by the total energy produced by the system. This metric is for standardized comparison of costs associated with energy generation from different sources.

Another metric for the energy sector is the "Profit at Risk"[27] due to climate change. This metric has to be added to the economic impact of climate change indicator EC-2 in the G3 guidelines. This metric measures the impact on revenues due to climate risk and due to policy changes that various governments may undertake to minimize climate change. It could be measured as the costs of shutting down extraction and refining operations due to hurricanes, or the expenses involved in buying carbon credits under a mandated carbon cap and trade system. This metric may be negative for a renewable energy company and be positive with significant impact for the profits in an oil and gas company.

Other financial metrics that are relevant to the entire energy sector are the percentage of revenues and profits that are generated from conventional fossil fuel sources compared to clean energy sources and the percentage of R&D and new investment expenditures in renewable energy compared to conventional energy sources. These metrics are mainly applicable to large oil and gas companies that also have a presence in renewable energy production (e.g.: British Petroleum, Exxon Mobil, Shell).

26 Wikipedia: The Free Encyclopedia, Levelized Cost of Energy, http://en.wikipedia.org/wiki/Levelized_cost_of_energy
27 Herman, Paul. HIP Investor, HIP Scorecard: Valuing Human Impact + Profit, Slide 33

Another metric is the ownership of responsibility for social and environmental impacts of joint ventures with other corporations or government entities.[28] This metric indicates how the energy company implements and enforces social and environmental regulations and whether it accepts responsibility for incidents that could create the potential for legal and financial consequences.

For the indicators that G3 proposes for market presence, instead of just tracking local wages, the metric that is more useful to track wages is the percentage of wages paid that can be used for discretionary spending as opposed to spending on essentials in the average family. This metric will indicate whether the company is paying wages that enables workers to have a better standard of life than the country's local wages. This is an essential metric that has a high impact on other social metrics.

For indirect economic impacts, besides monitoring metrics on the G3 indicators EC-8 and EC-9, the energy company should also provide performance metrics on the number of initiatives undertaken by the company in local communities to promote sustainability (education, training and awareness campaigns) and the money and initiatives undertaken by the company to promote volunteerism amongst employees. This provides transparency on the company's participation in community activities and pro-bono engagements

Priority Financial Metric	**Source**	**Essential/ Optional**	**Normative/ Positive**	**Desired Trend**	**Transparency v Performance**	**Metric Phase**
Levelized cost of energy per energy source and comparison to industry average	EUSS	Essential	Normative	Down	Performance	Input, Process, Output
Corporate debt to equity ratio, EBIT interest coverage, EPS and comparison to previous years and to industry average + EC1 metrics	Add to G3-EC1	Essential	Positive	N/A	Performance	Input, Process
Energy Resource acquisition cost/ Total Revenue,[29] Waste management costs/ Total Revenue and comparison to industry average	EUSS	Essential	Positive	Down	Performance	Input, Process
Total amount of revenue ($)/ Total energy produced (MW), comparison to previous year and industry average	EUSS	Essential	Positive	Up	Performance	Output
Debt rating of company and industry average	Add to EC1	Essential	Positive	Up	Performance	
Number of joint ventures and percent of ownership	New	Essential	Normative		Transparency	Input, Process
Profit at risk: Percent of profit from conventional energy sources that could be impacted by public policy on climate change	EUSS	Essential	Positive	Down	Performance	Output
Percent of investment in research and development of renewable energy / Total R&D expenses	EUSS	Essential	Positive	Up	Transparency	Input
Number of new ventures involving renewable energy/ Total new ventures	EUSS	Essential	Positive	Up	Transparency	Input
Assets set aside to cover obligations and assets required	EC3	Optional	Normative	Up	Transparency	
Amount of money received from the government and the purpose of assistance and industry average	EC4	Essential	Normative	Down	Transparency	Input
Percent of wages in locations of operations that can be spent on discretionary spending	G3-EC5	Essential	Positive	Up	Performance	Input, Process
Ratio between the highest and lowest remuneration in the company (PPP)	G3-EC5	Optional	Positive	Down	Transparency	
Local suppliers/ Overall suppliers for every location	G3-EC6	Essential	Positive	Up	Transparency	Input
Local Senior management/Total management	G3-EC7	Essential	Positive	Up	Transparency	Input
Impact on Brand value because of litigations and negative publicity	New	Optional	Positive		Performance	N/A

28 Shell Sustainability Report 2007, Joint ventures, Page 33
29 Eco-Metrics: Integrating Direct and Indirect Costs and Benefits into Management Information Systems, Gil Friends, Page 7

Priority Financial Metric	Source	Essential/ Optional	Normative/ Positive	Desired Trend	Transparency v Performance	Metric Phase
Number of sustainability initiatives the company is involved in and comparison over time & industry	New	Essential	Positive	Up	Performance	N/A
Number of initiatives, money and hours spent to encourage volunteerism by employees	G3-EC9	Essential	Positive	Up	Performance	N/A

Risk Management

Besides the economic, social and environmental metrics that most companies track in their sustainability reports, the risk management policies that companies enforce, monitor and apply to their operations and business strategies are extremely important to the company's sustainability and need to be captured in the report. The priority given to risk management, especially market, credit and operational risks in the energy sector and the types of risks in each category and their implications for the company's sustainability should be monitored by a board level committee with support from independent audit teams within the company. The company also should document their activities and provide this information to external auditors.

Priority Metric	Source	Essential/ Optional	Normative/ Positive	Desired Trend	Transparency v Performance	Metric Phase
Presence of a board level committee to monitor and supervise risk management and availability of audit reports for risk management	New	Essential	Normative	Up	Transparency	Input, Process
Documentation of scenario analysis and stress testing for various risks (business, operational, reputational, market and credit related)	New	Essential	Positive	Up	Performance	Input, Process, Output
Percent of market (foreign exchange), credit and operational risk (carbon risk) either insured or hedged compared to industry average	New	Essential	Positive	Up	Performance	Input, Process, Output

Social Metrics

Social metrics were chosen for their applicability to basic human needs and desires, their relative ease of calculation, and their applicability to the function of the company in the global community. Specifically, these metrics aim to support corporate actions in the service of humans (employees and community), extend the reach of recording operations into the supply chain, and encourage exchange of innovative ideas.

The following categories can loosely be thought of as three different categories of social metrics encompassing (1) the responsibility of the company to ensure their individual employees' right to live and pursue happiness; (2) the company's responsibility to maintain an employment environment of equality and support; and (3) an acknowledgment of the company's effects on the larger world, the community outside their direct inputs, processes and outputs.[30] Many impact issues (including those of public health) are indirectly addressed though environmental measures.

30 http://www.happyplanetindex.org/life-expectancy.htm

Individual Health and Aspirations

To determine the individual health of the workers, both physical well-being and mental agility were taken into consideration.[31] Options for employees were measured in order to support the importance of human choice in supporting meaningful lives and, though reporting, share ideas across the industry.[32] In order to ensure that such options are appropriate for the local community, transparency metrics ensure that input is channeled and addressed.

This index notes concepts of both happiness and life satisfaction. It is assumed that basic material well-being is accounted for in more traditional metrics (purchasing power parity) because we assume market need will facilitate access to traditional basic needs (local markets, good quality food, community garden, ability to travel, leisure activities, running water, accommodation, etc.). In many cases, however, through community feedback, the granularity of these metrics may need to be adjusted to fit local priorities. Certain determinants of happiness (for example, age and family life[33]) are harder for a company to influence. Our specific indicators have used the assumption that a simple question is easy to measure and has been shown to correlate with indirect and direct measures, across cultures and with standard indicators of well-being.[34,35]

Priority Metric	Source	Essential/ Optional	Normative/ Positive	Desired Trend	Transparency v Performance	Metric Phase
Health Indicator (How would you describe your state of health? Would you say it is: 1. very good; 2. good; 3. fair; 4. poor)	V11. WVS[36]	Essential	Positive	Up	Transparency	Process
Rates of injury, occupational diseases, lost days, and absenteeism, and total number of work-related fatalities by region and explanation. (Includes report on health and safety performance of contractors and subcontractors working on site)	G3 -LA7, EULA7	Essential	Positive	Down	Transparency	Input, Output, Process
Ratio of life expectancy of employees & dependents / country's life expectancy	UN[37]	Optional	Positive	Up	Performance	
Average hours of training per year per employee by employee category and training type, including employee reviews, programs for skills management and lifelong learning that support the continued employability of employees and assist them in managing career endings.	G3 - LA10, LA11, LA12	Essential	Positive	Up	Transparency	Process
Average employee education level and employee literacy rate	New	Essential	Positive	Up	Performance	Process
Percentage of employees trained in policies and procedures concerning health and safety, human rights, organization's anti-corruption policies and procedures, ethics and frequency & duration of exercises to refresh skills.	G3 -HR3, EU17, S02, S03, S04 & New	Essential	Positive	Up	Performance	Process
Processes (also note attendance, frequency and target - spacial area and specialty) to ensure retention and renewal of skilled workforce (and local community).	G3- EU15	Essential	Positive	Up	Performance	Process
Benefits provided, separated by full-time employees, temporary or part-time employees, by major operations.	G3- LA3	Optional	Normative	Up	Transparency	Process

31 Herman, Paul. HIP Investor, HIP Scorecard: Valuing Human Impact + Profit
32 Sen, A. (1998). Development as Freedom. Alfred A Knopf.
33 Conceição, P. and R. Bandura. Measuring Subjective Wellbeing: A Summary Review of the Literature. UNDP, p. 7, 24. Available Online, Accessed November 18, 2008. http://www.undp.org/developmentstudies/docs/subjective_wellbeing_conc eicao_bandura.pdf (p. 14-15)
34 New Economics Foundation. The Un-Happy Planet Index. Available Online, Accessed November 10, 2008: http://www.happyplanetindex.org/reveals.htm
35 Conceição, P. and R. Bandura. Measuring Subjective Wellbeing: A Summary Review of the Literature. UNDP, p. 7, 24. Available Online, Accessed November 18, 2008. http://www.undp.org/developmentstudies/docs/subjective_wellbeing_conc eicao_bandura.pdf (p. 14-15)
36 WVS 2005 Questionnaire, http://www.worldvaluessurvey.org/; Eurobarometer Survey: www.gesis.org/en/data_service/eurobarometer/standard_eb_trend/indexframe_trend.htm;
37 UN, 2006. Indicators of sustainable development: Guidelines and methodologies third edition. United Nations. Available Online, Accessed November 22, 2008: http://www.un.org/esa/sustdev/natlinfo/indicators/isd.htm.

Happiness Indicator: (Taking all things together, would you say you are: 1. very happy, 2. rather happy, 3. Not very happy, 4, not at all happy.	V10., WVS and Gallop Poll[38]	Essential	Positive	Up	Transparency	Process
How happy do you think you will be in the future, say 5 years from now?	V10., WVS and Gallop Poll	Essential	Positive	Up	Transparency	Process
Average hours of employee contributions to cultural events and civic life, noting event type and both paid and unpaid activity	New	Optional	Positive	Up	Transparency	Process
Average percent of time employees spend working/ week (as surveyed)	New	Optional	Positive	N/A	Transparency	Process
Total number and rate of employee turnover by age group, gender, and region.	G3- LA2	Essential	Normative	Down	Transparency	Process

Work Environment and Corporate Policies

How company policies and practices engage employees with the intention to support the health, well-being and productivity of all employees depends significantly on equitable practices. These range from labor practices and management relationships which foster a culture of innovation and improvement to policies that support equal opportunities and inclusion. Measuring these requires use of indicator norms (such as gender balance) with extensions of traditional health and safety measures to include mental agility opportunities (training).

Priority Metric	**Source**	**Essential/ Optional**	**Normative/ Positive**	**Desired Trend**	**Transparency v Performance**	**Metric Phase**
Composition of governance and management bodies and breakdown of employees per category according to gender, age group, minority group membership, and other indicators of diversity.	G3-LA13	Essential	Positive	N/A	Transparency	Process
Ratio of basic salary of men to women by employee category.	G3-LA14	Essential	Positive	Towards Equality	Transparency	Process
Operations identified as having significant risk for incidents of child labor, and forced or compulsory labor and measures taken to contribute to the elimination of each.	G3-HR6,H7	Essential	Positive	Down	Transparency	Input, Process, Output
Company's ratio of diversity as compared to company's operational areas (province's/state's) average.	New	Essential	Positive	Up	Transparency	Process
Total number of incidents of non-compliance with regulations and voluntary codes (including health and safety impacts of products and services, anti- competitive behavior, anti-trust and monopoly actions, corruption) by type of outcomes.	G3-PR2, S07	Essential	Positive	Down	Transparency	Process
Percentage and total number of significant investment, supplier and contractor agreements that include human rights clauses or that have undergone human rights screening and actions taken to mitigate the occurrence	G3-HR1, HR2	Essential	Positive	Up	Transparency	Process
Number of incidents of discrimination action or abuse /employee (including to indigenous populations)	G3-HR4, HR9	Essential	Positive	Down	Transparency	Process
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.	G3-HR5, HR5EU	Essential	Positive	Down	Transparency	Process
Measures to include employee input in company decisions, and feedback mechanisms (including complaints), which ensure no repercussions.	New	Essential	Positive	Up	Performance	Process
Percentage of total workforce represented in formal joint management-worker committees that help monitor and advise on employee programs (including health and safety).	G3-LA6	Essential	Normative	Up	Transparency	Process

38 Gallup World Poll: www.gallup.com/poll/102259/Denmark-New-Zealand-Canada-Rank-Highest-WellBeing.aspx;

Total contractor, subcontractor, and employee workforce by employment type, employment contract, region and coverage by collective bargaining agreements. [39]	G3-LA1/4, EU-LA4/4, EU16	Essential	Normative	Up	Transparency	Process
Minimum notice period(s) regarding significant operational changes, including whether it is specified in collective agreements.	G3-LA5	Essential	Normative	Up	Transparency	Process

Community Impacts

Community metrics are meant to better expose the relationship between the company and the communities within which it is embedded. To ensure that the company is both proactive and aware of its impact metrics to support risk assessment, planning and feedback mechanisms have been incorporated into this index. These may have to increase their granularity with time as some programs are shown to be more pertinence than others. Metrics to support participatory feedback should help shape a culture of transparency and communication and planning and risk assessment to address known and unexpected impacts. Because it is easier to maintain and control known distribution channels, metrics have been chosen to support operations which are as localized as possible.

Priority Metric	Source	Essential/ Optional	Normative/ Positive	Desired Trend	Transparency v Performance	Metric Phase
Participatory decision making processes with stakeholders (frequency, duration, cause) and outcomes of engagement (including Percent monetary value of investments back into the community/ company profit)	G3-EU18, New	Essential	Normative	Up	Performance	Input, Process, Output
Public policy positions and participation in public policy development and lobbying. Also, note total value of financial and in-kind contributions to political parties, politicians, related institutions by country and reasons for contribution.	G3-S05, S06	Essential	Normative	N/A	Transparency	Output
Nature, scope, and effectiveness of any programs and practices that assess and manage the impacts or risks of operations on communities, including entering, operating, and exiting, number of people displaced by operations and actions taken to address discomfort/protest[40]	G3 - S01, SO1EU, EU21, EU19, EU20 PR1EU, LA8, New	Essential	Positive	N/A	Performance	Output
Practices to address language, cultural, low literacy and disability related barriers to accessing and safely using company services.	G3-EU23	Essential	Positive	Up	Performance	Process
Impact topics (including health and safety) covered in formal agreements with trade unions and community.	G3-LA9	Essential	Positive	Up	Performance	Process
Number of injuries and fatalities to the public involving company assets, including legal judgments, settlements and pending legal cases of diseases.	G3- EU24	Essential	Normative	Down	Transparency	Input, Process, Output
Product innovations and education of customers on impacts of actions and information on how to change to better practices (energy saving techniques etc).	New	Optional	Positive	Up	Transparency	Output
Percentage of population unserved in local radius of operation (50 mi) broken down by type of neglect.	EU27/28/29 /22/25,	Essential	Positive	Down	Transparency	Input, Process, Output

39 Global Reporting Initiative, GRI (). "Sustainability Reporting Guidelines & Electric Utility Sector Supplement." Global Reporting Initiative. Available Online, Accessed November 12, 2008:

40 Include both assessment and planning measures over varying lengths of time. Include discussions of programs related to: (1) Influx of workers and impacts; (2) Changes to land-use; (3) Impacts on infrastructure, and access to services; and (4) Changes to the aesthetics and quality of the landscape.

Conclusion

Through the metrics above, we hope to have created an analytical framework for analyzing the social, environmental, and financial sustainability of companies in the energy sector. In addition, we hope to have created metrics that allow companies in this sector to be compared against each other regardless of size or energy source(s). By outlining the phase, transparency/performance, and normative/positive aspects of each metric, we have allowed the readers to determine where the emphasis of their research should be applied. Finally, our weighting system allows the energy sector to be compared on any number of criteria, allowing cross-analysis of reports based on relevant traits.