Introduction to

RESPONSIBLE INNOVATION CRITERIA

a guide to entrepreneurs
and innovation
support organizations

PARIS REGION ENTREPRISES

karim
knowledge
acceleration
responsible
innovation
meta network

INTERREG IV B - 207G - KARIM
KARIM Project is co-financed by the European Union.

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Investing in Opportunities
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Contents

Introduction

This manual sets out to provide both an introduction to the foundations of the emerging concept of responsible innovation and a practical guide for implementing such an approach within a project. Although mainly aimed at those supporting innovation, it can also be easily used by any small and medium-sized enterprise wishing to take the first steps in implementing a responsible innovation process and assimilate the main concepts surrounding the corresponding strategy.

This guide provides a snapshot of the new opportunities that responsible innovation can offer to businesses. It aims to help companies wishing to reconsider their business model, develop new products and services, new technologies or even improve their production processes. It begins with a brief presentation of the context of innovation and the issues at stake within responsible innovation, followed by a detailed explanation of the diagnostic tool and its analysis process alongside the analytical grid developed by KARIM. The grid contains 24 criteria which represent the various potential social, economic and environmental impacts potentially linked to an innovation project. A responsible innovation approach involves questioning the project according to these various potential impacts in order to establish a certain level of control surrounding the development and launch phases. Each criterion is provided with a complete description of the issue at hand, including sample questions, good practice suggestions and indicators in order to stimulate the creativity of the innovation team in addressing a specific issue.

It is important to note that the diagnostic tool and analysis process are aimed at using responsibility as a lever of creativity for the innovation team. This will ensure that performance and responsibility are combined towards paving a more sustainable and competitive path of development for the organization.

RESPONSIBLE INNOVATION:

facilitating competitive business

INNOVATION IN ITS NEW CONTEXT

The omnipresence of innovation in today's business discourse and in that of the evolution of societies in general is uncontested. In line with Schumpeter, Peter Drucker defined innovation as: "The design and realization of something new, unknown, and non-existent, so as to establish new economic conditions from the combination of old elements already known and existing giving them a new economic dimension. Innovation then is the link that transforms a set of elements, each of which has a marginal efficiency in a powerful integrated system"[1].

There is a clear need to stimulate, by all means possible, the capacity for innovation within an ever-increasing number of organizations, regardless of their size, business activities or geographical origin. Over the past few years, business sectors previously completely unknown have emerged surrounding health, education, entertainment among others. This has been coupled with a raised awareness among citizens with regards to the various challenges linked to different forms of development for the future of the planet and its populations. Organizations thus stand under increasing pressure from customers, stakeholders and society in general to engage in responsible business practices.

On the other hand, the unprecedented rise of technology and of its power is occurring in a context of accelerated globalization[2]. Technology represents a critical resource in most innovation projects. However, its role differs depending on whether it is at the heart of a new device whose value resides in the exploitation of a scientific invention, or whether it is used as a facilitator of a process whose essence is captured elsewhere.

The tremendous growth of information technology and telecommunications has created a direct and permanent link between various actors from all over the globe. Communication networks, mass information transfer networks, video streaming networks among others all converge in a way that stimulates competition and generates opportunities for the creation of services which are today not even yet thought of[3].

The mass adoption of telephony and the spectacular expansion of terminal features (eg. photography, video, scanner, etc.) have significantly altered the dynamics of relationships between individuals, towards business and towards society in general. Moreover, the widespread of network technologies allowing rapid and low cost transfer of information is leading to a stronger competitiveness in specific geographic zones which are witnessing a rapid evolution in their economic position.

General opinion is that significant opportunities of innovation lie ahead for the decade 2010-2020. However, it is expected that the corresponding growth opportunities will emerge within a profoundly changed context. The consumer is no longer satisfied with a one-way communication channel from companies. Their wish is to actively engage with the latter, express their opinions, get their questions heard and receive relevant answers as fast as possible. The creation of networks for these increasingly demanding actors creates constraints, but also new opportunities. Companies have no other choice but to be capable of responding quickly and efficiently to this drastic change in the consumers' way of expressing their demand. This is inevitably leading to an upheaval in management systems, pressing organizations to redesign production and distribution processes, to revisit the modes of customer relationship and the dynamics of commercialization while reconstructing business models[4]. The call for more innovation across all aspects of organizations is becoming steadier, thereby calling into question the issues of responsibility assigned to specific projects.

[1] Drucker, P. (1986). *Innovation and Entrepreneurship.* New York : Perennial Library

[2] Pavie, X. (2012). *The Importance of Responsible-Innovation and the Necessity of "Innovation-Care". ESSEC Research Center Working Paper 1203.* Updated September 2013

[3] Gustafson, P. and Koff, W. (2006). *Connected World : Redefining the geography of business and how we work and play.* Leading Edge Forum CSC, El Segundo

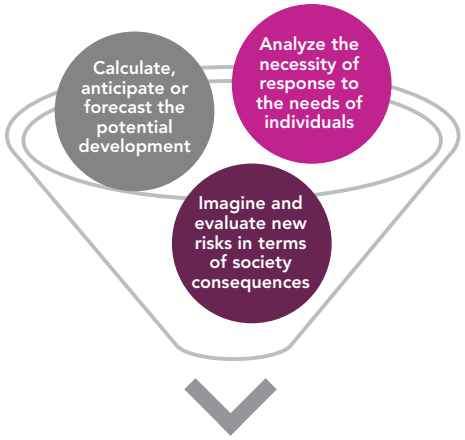
[4] Mathe, H. and Pavie, X. (2014). *L'innovation, élan du XXIème siècle. Innover dans l'économie de la connaissance et des services.* Paris : L'Harmattan

RESPONSIBILITY IN INNOVATION

Stemming from the classic innovation process, a responsible innovation strategy incorporates a questioning of the innovation project's impacts at each step of development, from design to post-launch. This revolves around one central issue: the uncertain nature of innovation. Since innovation allows no certainty but remains absolutely necessary for the organization, it is necessary to anticipate future challenges and opportunities emanating from the project by creating risk hypotheses[5]. This ensures that responsibility for the innovation is integrated throughout the entire lifecycle.

Therefore, the question is not to determine whether an innovation is responsible or not, but rather to question the related issues linked to the project and monitor their impacts throughout its lifecycle.

INNOVATION, RESPONSIBILITY, SOCIETY



CREATE VALUE THROUGH INNOVATION WITH RESPONSIBILITY

PAVIE - ESSEC 2010

Three axes help to identify the issues linked to responsible innovation[6]:

AXIS 1

Question the solutions to develop in response to individual needs.

Should we meet all consumer needs as they are detected?
Air conditioning was patented in the 1950s, at a time when the ensuing environmental impacts were not questioned. Today, most cars are equipped with an air conditioning system which generates more pollution than standard cars. Aside from buses, trains and ambulances, should this need also be addressed in all private cars?

AXIS 2

Monitor and manage the direct impacts of the innovation

The innovator's incapability to calculate and accurately predict the consequences of their product/service launch on the user (direct impacts).
The exact impacts of the waves emitted by our mobile phones on our brain has not yet been accurately proven. When the first smartphones were launched, it was suggested that earphones should be fixed directly onto the phone in order to avoid a close proximity between the user's brain and the device. In the end, no measures were put into place to deal with a potential health risk.

AXIS 3

Consider the indirect impacts of the innovation.

The introduction of new risks with societal and daily consequences on individual lifestyles (indirect impacts).
Certain socks contain nano-particles in order to guarantee freshness for the user's feet all day long. However, from the very first wash, these nano-particles are released into the water. They are so fine that it is unlikely that they are eliminated during the waste water treatment and may therefore end up in the seas, thereby impacting the wider ecosystem.

[5] Pavie, X. (2012). *Innovation responsable. Stratégie et levier de croissance des organisations.* Paris : Eyrolles

[6] Ibid

DEFINITION

As mentioned earlier, responsible innovation is an emerging concept, whose precise definition is still evolving. Within the framework of the KARIM project, responsible innovation was addressed through the following three definitions:

> "Responsible innovation qualifies the approach which consists in taking into account the various social, societal, economic and environmental issues throughout the innovation process with the aim of creating environmental and social value to ensure economic performance"[7]

> "Responsible innovation is an iterative development process which combines a step-by-step impact analysis of a project with the imperatives of creativity stimulation throughout development phases. Social, economic and environmental performance impacts are monitored throughout the entire lifecycle and corrective actions are anticipated accordingly through re-integration into previous development phases"[8]

> "Responsible research and innovation is a transparent, interactive process by which societal actors and innovators become mutually responsive to each other with a view to the (ethical) acceptability, sustainability and societal desirability of the innovation process and its marketable products (in order to allow a proper embedding of scientific and technological advances in our society)"[9]

[7] Centre Francilien de l'Innovation (2013)

[8] Scholten, V., Pavie, X. and Carthy, D. (2013). *Responsible Innovation in the Context of the KARIM Project. A Guiding Document for SME and Policy-Makers*. Available at: http://www.karimnetwork.com/karim-guiding-document-to-responsible-innovation/

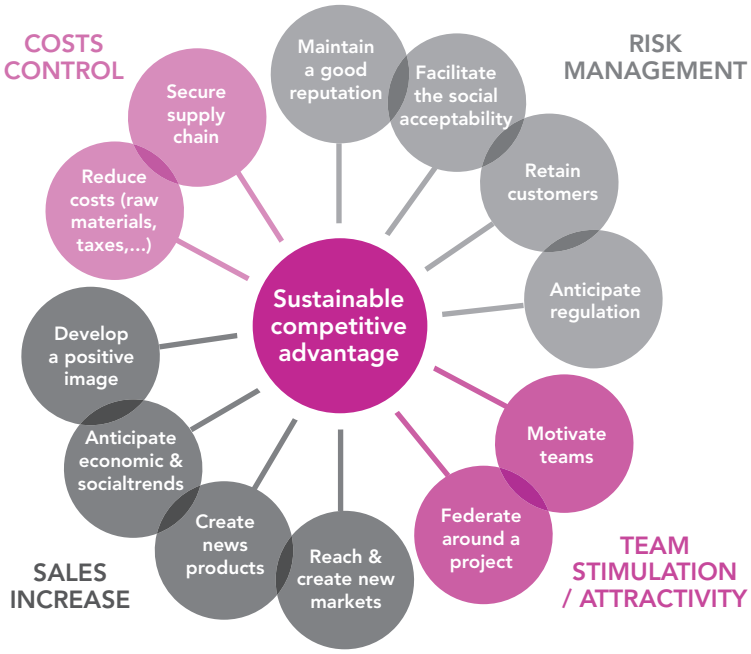
[9] Von Schomberg, R. (2011). *Prospects for Technology Assessment in a Framework of Responsible Research and Innovation. In: Technikfolgen abschätzen lehren: Bildungspotenziale transdisziplinärer Methode*. P. 39-61, Wiesbaden: Springer VS

WHAT ARE THE OPPORTUNITIES FOR SMES?

Regulations about sustainability may seem daunting and restrictive to the entrepreneurial spirit from an outsider's perspective. However, responsible innovation specifically focuses on nurturing innovation abilities while ensuring the organization is aware of its responsibility in terms of impacts. In fact, SMEs have a number of characteristics which provide significant opportunities for them to engage in responsible innovation successfully, including:

- **Ability to adapt quickly, if resources allow**
- **Personal values and mindset of the owner/manager**
- **Less hierarchical organizational structures**
- **Engagement in various creativity-boosting tools such as open innovation through supply chain or regional support, Design-Thinking, Biomimicry, etc.**
- **Better ability to enter niche markets, less addressed and neglected by larger companies**
- **Proximity with users and other stakeholders that could be easily involved to identify opportunities**

It is important to note that a series of factors are increasingly gearing SMEs towards becoming more responsible. Indeed, regulations are becoming increasingly strict (REACH, WEEE, etc.) and favoring a more preventative than corrective approach, which may dangerously affect the creativity needed for an effective innovation process. Furthermore, the company's real costs may be significantly reduced by adopting a more responsible approach to business – studies suggest that adopting a strategy geared towards responsible innovation contributes to developing a competitive advantage[10]. In parallel, consumer power is increasing at a steady rate along with the influence of society on business.



The latter is held more and more accountable for actions and corporate reputation can very rapidly become tainted on a global scale through digital media. Responsible innovation therefore suggests an approach which embraces the company's need for innovation as well as the need for responsibility.

[10] Pavie, X., Scholten, V. and Carthy, D. (2014). *Responsible Innovation, From Concept to Practice.* Singapore: World Scientific Publishing

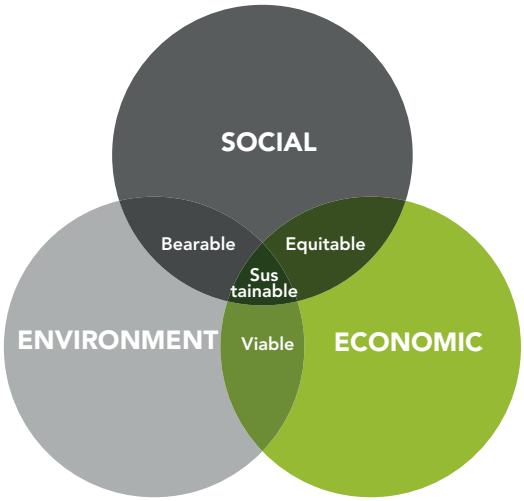
RESPONSIBLE INNOVATION diagnostics

KEY DIAGNOSTIC CONCEPTS

Responsible innovation ensues from a standard innovation process or, at each phase in a project from concept to market release. Questions are asked concerning responsibility - i.e. on the impact of decisions, actions and the ability to address responsibility issues.

A successful and solid initiative considers the following 4 key elements:

The 3 pillars of sustainable development

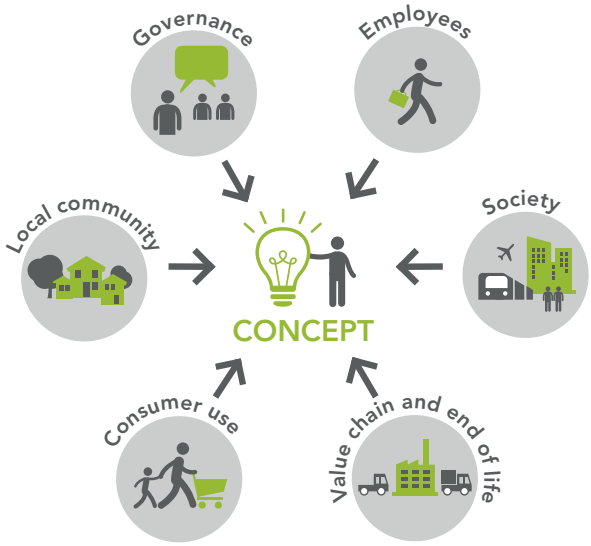


A development which addresses present needs without compromising the ability of future generations to address theirs.

The product/service's life cycle

All environmental, social and economic impacts should be analyzed throughout the life cycle of the product/service (multi-stage process, multiple criteria, environmentally friendly and socially responsible design, etc.). Monitoring each stage of the life cycle ensures better expectations for responsible products, services and processes.

Stakeholders



To identify and understand the expectations and interests of all participants, individuals or groups, actively or passively engaged in a project, enables decisions to be taken in full knowledge of the consequences.

The long term (potential and expectation)

Currently pressure for short-term project profits can be a source of unsustainable development and compromise longer term economic value and business expansion. Being unaware of long term or unexpected risks and opportunities can be harmful to company strategy. In time, it can even threaten the company's very survival. This is all the more apparent when speaking of innovation. By its very nature, it is uncertain and does not allow any sense of certainty on evolution or outcome. Furthermore, sustainable development is a potential channel for disruptions that businesses must anticipate. The challenge comes in detecting and anticipating the different direct and indirect impacts on a project, but also the constraints and evolutions to come in terms of markets, social and economic tendencies and legal requirements. All these elements are required to maximize an innovation's success and to stay ahead of the competition.

ANALYSIS PROCESS

1 TO IDENTIFY COMPANY GOALS

These can be various according to the challenges and difficulties that the company encounters. To find new areas for innovation, to secure its innovation project/reduce risks, obtain funding, target sustainable development markets, address a social need, be in harmony with its values, differentiate from competitors, reduce costs, anticipate regulations, have sound communications on sustainable development, etc.

2 TO CARRY OUT PROJECT DIAGNOSTICS

- **Ask questions** on its project's economic viability, on the requirements it addresses and on its consequences for the environment and society
- **Seek to evaluate the consequences of its innovation and project initiative** on the environment, society and economy against an overall approach. Take the whole life cycle and stakeholders into account while developing a long term strategy
- **Identify the specific challenges** for its project
- **Look for solutions** to eradicate negative impacts, prevent risks and reinforce positive impacts

3 TO IMPLEMENT IDENTIFIED SOLUTIONS

There is no dedicated tool to implement these solutions. Problems may be very varied in nature and require tools in line with sustainable development as much as more standard and known tools.
Examples: standard management tools for innovation, standby & forward planning, strategy tools, life cycle analysis, environmentally friendly and socially responsible design, stakeholder management, biomimicry, risk management, creative tools, etc.

This analysis may be carried out throughout the innovation process from the idea to the implementation phases and follow-up through study and design stages.
However, it is advised to go as far upstream in the process as possible and to redo the analysis regularly in an upfront, constructive initiative, rather than restrict use to a critical post mortem analysis. In fact, critical observations must be overcome to generate concrete proposals for improving the project and creating value. Finally, this analysis is particularly pertinent when there are choices to be made. It can be used as a tool to help decision-making.

RESPONSIBLE INNOVATION GRID ANALYSIS

An analysis grid with 24 criteria has been developed to carry out these diagnostics well. It is an "assistant" to translate the sustainable development objective into an innovation project. It helps to identify the looming questions and margins for potential progress. It shows the way forward by questioning users on the potential changes to keep or paths to take. The grid should offer an opportunity to create a project dynamic and to develop corrective actions.

ANALYSIS GRID

The grid's 24 criteria have been established by considering:

- Direct and indirect project **IMPACTS** on the 3 pillars of sustainable development. By impact, we understand a potential effect, expected in implementing an innovation against considered criteria, *e.g. 50% reduction in use of natural resources*.

- Integrating responsibility in **the overall project APPROACH**. The analysis no longer has a bearing on the innovation itself, but on the way in which the project is developed or managed.

Responsible innovation criteria		Assessment level					This project offers high added value against this criteria	Subject not discussed	Manual page
		Low / Not at all	Unsatis-factory	Not relevant / no opinion	Good	Very good			
Environmental impact	Water management								P20
	Materials management								P21
	Energy management								P22
	Pollution (water, air, soil)								P23
	Greenhouse effect								P24
	Biodiversity								P25
	Waste management								P26
Social impact	Health								P27
	Safety								P28
	Quality of life								P29
	Solidarity								P30
	Commons								P31
Economic impact	Product's life cycle costs								P32
	Economic longevity								P33
	Creation and sharing of economic value								P34
	Economic model								P35
	Macro-economic impact								P36
Project Approach	Stakeholder management								P37
	Standby/Network /Expectations								P38
	Risk management								P39
	Responsible value chain								P40
	Ethics and transparency								P41
	Responsible product design								P42
	CSR strategy								P43

The grid is used as a support within a broader dialogue with the entrepreneur on innovation management.
You can view an example of a support document in **annex**.

ASSESSMENT OF CRITERIA

Assessment level of criteria

The assessment level of a given criterion corresponds to an assessment of its nature and the relevance of all committed voluntary actions:

- to assess, reduce negative effects or increase positive effects of an innovation.
- to strengthen an innovation's success by projecting ahead in the short, medium and long-term.

E.g. performance of a toxicology test, carbon footprint, life cycle analysis, stakeholder consultation, implementation of responsible buying criteria, choice to use recyclable materials, commitment to an R&D program with the goal of getting rid of a toxic component, etc.

It is relatively easy to understand the degree to which to take the criteria of the project approach into account. This is the case for impact criteria on the environment, society and the economy. There can, however, be confusion between an assessment of the project's impact and actions taken towards an impact.

As this grid's primary intention is to identify paths for improvement, the bias is not to assess the impact level of each criterion, but rather **to evaluate the actions necessary to confront the impact level under consideration**. The impact level is thus still assessed, but it is only addressed in the report if the extent to which it has been taken into account is unsatisfactory. When an impact is particularly negative or positive, three types of situation can arise:

- **The project presents a very negative impact, which has been well taken into account. The necessary actions have been taken and are relevant**: The level at which a criteria has been considered will be noted as good or very good. There will not be any particular recommendation. Thus none will appear in the report.
- **The project presents a very negative impact, which has not been taken into account, or the actions undertaken are not satisfactory/relevant.** The assessment level of the criterion will be noted as unsatisfactory, low or not at all. Recommendations should be made and will appear in the project summary.
- **The project presents a particularly positive impact**. The information will be written in the column "This project offers high added value".

Grid's limitations

This grid remains a generic tool. The varied project range that can be handled inevitably leads to limitations. It is therefore important not to take each criteria at face value. You have to adapt the questions to the subject matter at hand. It relies on project understanding. To reduce its subjective nature, we invite the user to ask questions on the soundness of his appreciation (tangible elements? life cycle approach? degree of certainty: possible, probable, certain...).

RESPONSIBLE INNOVATION

guide to criteria

Water management

DESCRIPTION

Water management involves planning, development, distribution and management to ensure the best use of resources. This criterion also includes rational management of natural water resources, i.e. enabling water to be replenished and conserved in a sustainable manner, without being under the threat of excessive exploitation.

Water is becoming a precious natural resource. Its wealth is to be shared with all life on our planet. As a finite and unevenly distributed resource, it should be used sparingly and cleaned before its return to Nature. Flooding and drought risks are two other major concerns in water management.

SAMPLE QUESTIONS

- Does your project address one of society's challenges? If yes, which, to what extent and how?
- Waste water quality (drinkable, not drinkable)? Is water from the mains supply or a natural resource? Is water sourced from an area where it is scarce?
- Reuse of treated wastewater? Rainwater collection?
- What is the water consumption during the life cycle? Are there any significant savings in relation to existing costs? How much? How (collection, change in process, usage to exact measurement, leak measurement and detection, etc.)?
- What proportion of total water use does recycled water represent? How is this checked?
- Does your project measure or assess an impact against this criterion?
- Have you thought of any solutions in terms of industrial ecology? If yes, which?

Keywords:
Origin, consumption, measurement and assessment, fit to drink, hygiene, catchment

Links with other criteria:
Pollution, health, responsible design

Good practices

- Design or adapt products/ process to reduce/optimize water consumption throughout the life cycle.
- Improve efficiency through recycling and re-use
- Set up a resilient system
- Minimize aquifer pollution
- Measure and minimize water consumption during production (products, raw materials)
- Recycle water during rinsing cycles
- Implement closed circuit systems

Indicators: By sources / No. of supply sources significantly affected by water demands / % and total volume of recycled and re-used water / Volume of water "lost" (leaks, etc.) / Volume of water used per unit manufactured / Volume of water used per rinse cycle (surface treatments) / Salinity / Flow rate / % blue water compared with household wastewater / Coverage / Characteristic water parameters (suspended matter, chemical oxygen demand, biological oxygen demand, turbidity, pH, temperature) / Bacteriological parameters (E.coli and enterococcus) / Biological Diatom Index (BDI) / % Nitrates, phosphates.

Materials management

DESCRIPTION

Materials management consists of designing the product by choosing materials that have as little impact as possible (type and quantity) while offering durability (possibilities for repair/maintenance and re-use).

This criterion also includes rational management of natural resources, i.e. enabling such resources to be replenished and conserved in a sustainable manner, without the threat of overexploitation.

Keywords:
Type/quality, consumption, recycling/ re-use

Links with other criteria:
Pollution, waste, responsible design

SAMPLE QUESTIONS

- Does your project address one of society's challenges? If yes, which, to what extent and how?
- Do materials come from renewable resources or fossil origins? Renewable or non-renewable materials? Recyclable or non-recyclable materials?
- What are your criteria for choosing or buying materials? Have alternative materials been considered?
- How much/many materials are used during the life cycle? (raw materials, consumables) Any significant difference compared with the existing situation? To what extent/ratio? How do these come about? (decreases in weight, consumables or packaging, increase in product life?)
- How has the consumption of materials been reduced?
- Material wastage (different categories). Measures taken or to be taken?
- Quality and quantity of packaging? Integration of packaging use (single/ multiple)? End product packaging yield factor? Reasoning behind the complete packaging system as a safeguard against transferring impact (primary, secondary, tertiary packaging)?
- Has the change in materials led to a transfer of impact? (increase in energy consumption, etc.).
- Easier sorting and collection? How? (Reduction in the number of materials, easier disassembly, choice of a renewable material or one with less impact).
- Have you thought of any solutions in terms of industrial ecology? If yes, which?

Good practices

- Reduce depletion levels of non-renewable resources
- Improve material productivity costs (develop closed loop systems, etc.)
- Provide sustainable alternatives to non-renewable resources
- Reductions in packaging materials
- Product balance sheet initiative, ecofriendly design

Indicators: Consumption of materials in weight or volume/unit produced / % of recyclable materials used / Made from natural products / Packaging weight compared to product weight / % of wasted raw materials (scrap, surplus, etc.).

Energy management

DESCRIPTION

There are two distinct types of energy source. A primary energy source is a natural form of energy that cannot be used without conversion. It has to be converted into a secondary energy source for use.

Thus, the energy industry makes a distinction between primary energy generation, its storage and transportation as a secondary form of energy and the use of the energy output.

Keywords:
Energy type, consumption, storage, distribution, efficiency, measurement and assessment

Links with other criteria:
Greenhouse effect, responsible design

SAMPLE QUESTIONS

- Does your project address one of society's challenges? If yes, which, to what extent and how?
- Is energy from renewable or non-renewable sources? Does it contribute to renewable energy development?
- Any reduction in energy consumption from fossil origins? What priority level has been given to low energy consumption or using renewable energy in manufacturing processes?
- How much energy is used during the life cycle? Does your project bring any significant difference compared with the existing situation? Is energy efficiency better? To what extent/ratio? How?
- What are the impacts of the transporting people, products, other goods and materials used in the project?
- Any monitoring or detection of excessive consumption? Knowledge and use of tools to help control the impacts of energy ?
- Have you thought of any solutions in terms of industrial ecology? If yes, which?
- ICT: Any contribution to lowering data centers' PUE?

Good practices

- Design and adapt products/ processes to reduce energy consumption or replace non-renewable resources with renewable resources
- Create renewable energy stocks and streams
- Establish systems for energy recovery

Indicators: Energy (joules or calories) / Wattage / Direct or indirect energy consumption broken down by source of primary energy (kWh, m3 of gas per unit produced, kWh per cycle of use), / Energy savings through greater efficiency (kWh per annum) / Energy efficiency indicator (PUE: power usage effectiveness) / COP (Coefficient of performance) / Quantity of energy used per unit produced / % of renewable energy in total consumption / Transport: km travelled per unit transported, fuel used per unit transported.

Pollution (water, air, soil)

DESCRIPTION

A pollutant is a contaminant of one or more ecosystem components (air, water, soil) and/or an organism affecting the ecosystem, beyond an acceptable threshold or standard. They can take a variety of forms (solid, liquid or gas), have a variety of origins (mineral or organic, or radiation (X-rays, ultraviolet, radioactivity), industrial).
A pollutant is characterized by its effect, target and dose as much as by the nature of the substance or emission in question.
Emerging pollutants are new pollutants whose impacts may be poorly recognized (hormone disrupting chemicals, small quantities of pesticides in the air for instance).

- Toxicity = a measurement of the capacity of a polluting agent to harm and jeopardize the health or survival of any form of life
- Ecotoxicity = a measurement of the effects of polluting agents on ecosystems, whether of manmade origin (including medicinal products, hormone disrupting chemicals, etc.) or natural agents, the distribution and/or cycles of which are altered by man in various biosphere components

SAMPLE QUESTIONS

- Does your project address a social issue connected with this criterion? If yes, which, to what extent and how?
- What waste types will there be throughout the life cycle? How much? Any difference compared with the existing situation? What are the pollution risks? Any risks of pollution transfer between different environments?
- If there is a reduction in the impact or risks, by how much and how is this achieved?
- Preventative or remedial actions? Any contribution to water recycling?
- Contribution to outlining better quality or quantity backgrounds (analyses, flow rate, …) ?
- Soil : Identifying the pollution source, transfer risk towards a target (health for man, biological resources, water collection)
- Does your project have an impact on internal air quality?
- Have you considered industrial ecology solutions? If yes, which?

Keywords:
Pollution type, Preventive or remedial treatment, measurement and evaluation

Links with other criteria:
Health, greenhouse effect, waste, biodiversity, responsible design

Good practices

- Do not discharge persistent pollutants into the environment
- Comply with the European REACH regulations and the Basel, Rotterdam and Stockholm Conventions on toxic wastes, hazardous chemicals and persistent organic pollutants (POPs)
- Reduce the level of pollution by using less or non-hazardous alternatives
- Concentrate waste before any treatment to reduce the quantity of reagents needed
- Capture volatile organic compounds on activated carbons
- Extract heavy metals from the ground by phytoremediation
- Prioritize closed loop operations

Indicators: • Water: Total Suspended Matter (TSM) / Containing organic matter that is not easily biodegradable = COD (Chemical Oxygen Demand) - BOD5 (Biochemical Oxygen Demand for 5 days) / pH / Presence of nitrogen (ammonia, nitrates, nitrite) / Pesticides / Heavy metals / Temperature / Number of piped drinkable water catchments outside safe sanitation standards due to phytosanitary (plant health) products • Air: Quantity of NO_2, O_3, SO_2 and PM10 particles / Bio-indicators • Soil: MeTox (measurement unit for eight metal and metalloid pollutants: arsenic, cadmium, chromium, copper, mercury, nickel, lead and zinc) / Bio-indicators / PAH: polycyclic aromatic hydrocarbons) / % of polluted and treated sites and soils.

Greenhouse effect

DESCRIPTION

Greenhouse gases are gaseous components in the atmosphere that contribute to the greenhouse effect.

The main greenhouse gases are:
- carbon dioxide (CO_2)
- methane (CH_4)
- nitrous oxide (N_20)
- ozone (O_3)
- HFC refrigerants, that do not pose a risk of damaging the ozone layer, but that do contribute to the greenhouse effect

Industrial greenhouse gases include heavy halocarbons (chlorofluorocarbons including CFCs, HCFC-22 atoms like FreonTM and perfluoromethane) and sulphur hexafluoride (SF_6).

Keywords:
Emissions, storage, compensation, measure and assessment

Links with other criteria:
Energy management, pollution, responsible design

SAMPLE QUESTIONS

- Does your project address one of society's challenges against this criteria? If yes, which, to what extent and how?
- Are you aware of your project's impact on GHG emissions? Any quality data? How much? At what life cycle stages?
- Taking project activity and the target market into account, are emission levels likely to be significant? Do emissions offer any significant difference against the sector's current norm, or from processes, products and methods in current use?
- What actions have been implemented to reduce this impact? Within your organization or by your suppliers?
- What are the impacts of transporting people, products, and other goods and materials used in the project?
- Sample measures: impact on reducing greenhouse gas emissions (e.g. compared with a French household: 8 tonnes CO_2 per year)?

Good practices

- Processes with lower CO_2 emissions
- Optimized logistics (e.g. local suppliers, local distribution, etc.)
- Transport with reduced greenhouse gas (GHG) emissions
- CO_2 capture investment in GHG reduction and capture projects
- Modeling measurements, monitoring emissions, measuring systems and training/awareness
- Carbon finance
- Optimizing distribution
- Assessing carbon footprint
- Increasing car sharing

Indicators: Total direct or indirect emissions from greenhouse gases in terms of weight (toxic equivalent (TEQ) CO_2) / Tonne CO_2 against turnover / CO_2 per unit produced / CO_2 per duty cycle / Transport: CO_2 emissions per unit transported, kms covered/unit transported / CO_2 footprint / Emissions reducing the ozone layer in weight terms (per unit produced) / NO_X and SO_X emissions and other major airborne emissions (by type and by weight).

Biodiversity

DESCRIPTION

The term "biodiversity" is a contraction of "biological diversity" and is defined as "the variability among living organisms from all sources including, inter alia, terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part: this includes diversity within species, between species and of ecosystems." (Convention on Biological Diversity, 1992. United Nations. Article 2)

For this criterion, we only consider projects that:

- have a direct impact on biodiversity (e.g. cosmetics with natural products, etc.)
- are directly implicated in an ecosystem's destruction (e.g. road construction, wind turbine installation, etc.)
- focus on biodiversity (e.g. reforestation)

SAMPLE QUESTIONS

- Does your project address one of society's challenges? If yes, which, to what extent and how?
- Does your project take into account its impact on flora and fauna? How? What action is taken to mitigate any impact?
- Does your project measure or assess its impact on biodiversity?
- Have you considered the site's landscape in planning the layout? Have you taken any steps to improve its integration into the landscape?
- Have you considered industrial ecology solutions? If yes, which?

Keywords:
Emissions, storage, compensation, measurement and assessment

Links with other criteria:
Pollution, waste, health, responsible design

Good practices

- Avoid overexploiting soil
- Do not harm soil quality, the countryside
- Contribute to an increase in the number of interactions between species in a given ecosystem
- Local agency partnerships to protect biodiversity

Indicators: Cf http://biodiversity.europa.eu/ ; http://www.bipindicators.net/

Waste management

DESCRIPTION

Waste is defined as any substance or object that its owner gets rid of, or intends or is obliged to get rid of. Designated as household or business waste.

Waste is classified in the following main groups:

- Hazardous waste: with one or more dangerous properties (explosive, inflammable, toxic, corrosive, etc.) requiring separate treatment. (E.g. hospital waste, agricultural waste, electrical and electronic waste (WEEE), batteries, print cartridges, etc.)
- Non-hazardous waste: without hazardous physical, chemical and biological characteristics. E.g. Cardboard, plastic, packaging, etc. Inert waste (paving, sand, rubble, concrete). It may come from building sites and public works, etc.
- Biodegradable waste: Non-hazardous, biodegradable or compostable waste (e.g. green waste, sewage sludge, food waste, etc.). Such waste can be recovered from biomass by various means (bioenergy, biofuels, composting/ soil improvements/fertilizer, etc.)

The waste is classified as:

- "Ultimate" waste cannot be treated under currently available technical and economic conditions. Only this type of waste can be dumped
- Recyclables via reuse, recycling, energy recovery, (e.g. construction materials, metals, plastic, etc.)

SAMPLE QUESTIONS

- Does your project address one of society's challenges? If yes, which, to what extent and how?
- Recycling, reuse or energy recovery?
- Do you know what impact your project has in terms of waste production? Any quality data? How much? At what life cycle stages?
- What collection and recovery chains do you have? Any significant difference by comparison with the current situation?
- What has been implemented?
- Ecofriendly design initiatives to reduce waste volume and type, or facilitate disassembly?
- Have you considered industrial ecology solutions? If yes, which?
- Could a waste product become a secondary material within its own or another organization?
- Could a waste product from another local business be used in production?

Keywords:
Waste quantity and type, collection/ sector, recovery (electricity, heat, gas, reuse, etc.) recycling

Links with other criteria:
Pollution, Materials management, Health, Responsible product design

Good practices

- Monitor the regulations on waste
- Keep an up-to-date register on waste products and their management methods
- Track chemical reduction, reuse and recycling
- Explore the potential of using waste as a resource
- Apply closed loop processes (waste and its by-products reused as a product)

Indicators: Waste type: Common industrial waste, hazardous waste, clinical waste, domestic waste / Total waste by type and method of treatment (kg of waste/tonne produced or per turnover) / % of recyclable/recycled product per tonne produced / % of biodegradable or compostable product / % of recycled or reused packaging per product category.

Health

DESCRIPTION

This criterion concerns all the project's health impacts on employees, users and local residents. Both physical and mental well-being is understood by "health". Actions can be preventative or remedial.

- Treatments: new preventative and remedial treatments, for improving health
- Strengthening quality sanitation and associated preventative care: preventative treatments, paperless communication to reduce the risk of spreading infections, etc.
- Reducing toxicity/harm: substitution or a reduction in toxic substances in the process or product, elimination of hazardous products, pollution mapping, detection, information, good practices, procedures, integrated design, etc.
- Reducing exposure to stress and RSI (Repetitive Strain Injuries): fitness training, improving sleep quality, ergonomics in the workplace, information, diagnostics, etc.
- Reducing exposure to radiation and noise: soundproofed walls, passive antennae, electric motors, etc.

This criterion also concerns all action towards health access for all (those in poor health), or the fight against epidemics, obesity, alcohol, drugs, AIDS, rare diseases, etc.

Keywords:
Prevention, screening, treatment, toxicity

Links with other criteria:
Pollution, safety, life quality, responsible design, stakeholders

SAMPLE QUESTIONS

- Does your project address one of society's challenges? If yes, which, to what extent and how?
- Does the project have any effects on operators' or patient health? Any prevention? What treatment? Risk/benefit ratio?
- Do the product or production processes create any toxic substances for man or biodiversity? Any prevention?
- What credibility does your project have? (links with specialist facilities, working with health associations, experts, etc.)
- How do you carry out your product test phase?
- How do you ensure the long term monitoring of your product's secondary effects?
- Do you have training in place for operators?
- Do you run awareness campaigns, supply information to consumers? Transparency on user risks?
- What type of indicators do you use (measure objective, subjective feelings expressed by the patient, diagnostics by a professional, etc.)?

Good practices

- Comply with European REACH regulations on chemicals
- Establish prevention schemes where possible
- Establish good production practices
- Training of operations staff
- Patient information
- Work in partnership with patients
- Set up a scientific and ethics committee
- Partnerships with medical facilities
- Contactless procedures (e.g. avoiding contact with carbon nanotubes…)
- Paperless communications
- Patient autonomy

Indicators: Life expectancy / Death rate per pathology / Infant death rate / Number of people affected by a pathology / Rate of occurrence (relationship between the number of new cases and the number of people who are likely to be affected by the issue / Prevalence rate (relationship between the number of existing cases and the number of people likely to be affected by this issue) / Indicators of care quality in facilities (hospital-borne infections, quality of patient care, satisfaction of patients in hospital care) / European Core Health Indicators (ECHI) / Healthy Life Years (HLY) indicators / Exposure indicators: risk factors, behavior/habits, environment (radiation, noise, air, water, biological risk, etc.) / Measurement of consequences : deficiency (functional or structural loss), incapacity (reduction in capability), (social) disadvantage, Lden noise indicator.

Safety

DESCRIPTION

User safety concerns all safety impacts surrounding project activities for users, local residents, employees, etc.
It can involve various risks such as explosions, fire, chemical or biological risk, but also physical safety (work accidents, electric shocks, burns, etc.), public safety and road safety.
Necessary actions for:

- Product or service design: technology choice, creating sound products, reduction in use of solvents
- Product or service use: detection, protection, monitoring, diagnostics, campaigns and information
- Project process: risk analysis, certification, choice of service providers, standards compliance, procedures, etc.

Keywords:
Risks, hazards, prevention

Links with other criteria:
Health, life quality, responsible design, stakeholders, risk management

SAMPLE QUESTIONS

- Does your project address one of society's challenges? If yes, which, to what extent and how?
- Are you aware of the safety regulations on each aspect of your project?
- Do you comply with product standards?
- Does your project affect the safety of employees, users and local residents?
- What prevention measures are in place (information/consciousness-raising/ training, principle of precaution, user instructions, etc.)? How do you plan to handle these?
- Are you designing your product with a view to reducing an operator or client risk?
- What management/risk prevention are in place (Active/passive safety, operational safety in normal or abnormal conditions (accidents, explosion, etc.)?
- What communications, awareness-raising and information have you set in place?
- How do you monitor during production?
- Do you have any user feedback? Do you have technical support?

Good practices

- Expected actions: Air quality sampling, noise analysis, training, etc.)
- Carry out tests on those exposed to risk
- Carry out risk feasibility studies Trained, empowered personnel
- Establish procedures
- Comply with standards and safety audits
- Choose lower risk technology
- Choose strong and self-supporting material, appropriate detergent, substitute or reduce risk of a hazardous chemical product
- Sound and self-governing facilities, detergent choice, substitute or reduce risk of a hazardous chemical product
- Strengthen insulation, fireproofing
- Reduction in risky maintenance functions
- Information hubs (traffic, accidents, etc.)
- Carry out measurement campaigns

Indicators: Number of work stoppages / Number of first aid incidences / Number of serious work accidents and work-related illnesses / Frequency rate and levels of seriousness / Number of preventative measures carried out.

Quality of life

DESCRIPTION

This criterion takes account of the well-being of personnel, users and local residents around project activity and the project's impact on quality of life in general:

- Nuisance factors (noise, smells, visual, temperature, humidity and dust)
- Comfort, ergonomics, difficult working conditions (use of intuition, automation, simplification, etc.)
- Stress reduction
- Transport, remote working, time saving
- Living environment: factoring in different paces of life (working hours, opening hours, frequency of public transport, etc.), green spaces, sustainable city, habitat, etc.
- Social life
- Customer commitments
- Empowerment, mobility
- Workplace welfare (atmosphere, turnover, organization, etc.), structure, career management

Keywords:
Living conditions, working conditions, health at work, work/life balance

Links with other criteria:
Pollution, health, responsible design

SAMPLE QUESTIONS

- Does your project address one of society's challenges? If yes, which, to what extent and how?
- Is this project able to influence way of living? Does it improve living conditions? Does it improve working conditions?
- Does your project have a negative effect on the quality of life of your employees? What actions have you set in place to measure this effect? To reduce this effect?
- Does your project have a negative effect on the quality of life of your end-users? What actions have you set in place to measure this effect? To reduce this effect?
- Does your project have an impact on the quality of life of local residents or other stakeholders? What actions have you set in place to measure this effect? To reduce this effect?
- How do you include end-users in product/service design?
- Do you have any user feedback? Do you have an after sales department or a follow-up team for any problems encountered?

Good practices

- Reduce nuisance factors (soundproofing, smells, dust, temperature, etc.)
- New products (visual comfort lighting, living wall gardens, etc.)
- Overall information (water access points, home search services, traffic conditions, etc.)
- Introduction of robots (reduction in repetitive strain injuries (RSI)
- Reduced handling, simplified ergonomics, use of intuition
- Reduction in transport/journeys, remote working, workshare tools
- Automation of administrative tasks
- Working position, reduction in difficult working conditions, adapting working conditions
- Reduced maintenance and assembly, redesigning production processes
- Reduction in handling delays
- Use of ICT and paperless systems to foster empowerment

Indicators: Absenteeism / Turnover / No. of complaints / Poor physical health / Poor mental health / Quality of social network / Poor accommodation / Difficult working conditions / Lack of economic and personal security / Work-related psychosocial risks / Work/life balance / Long working hours / Better Life Index (OECD) / Sense of life satisfaction / Suicide rate / Public services to local green spaces.

Solidarity

DESCRIPTION

Social cohesion involves all effects on social cohesion, solidarity surrounding project activity (personnel, users, local residents, society, etc.)

- Assistance to those in precarious situations: exclusion, addiction, the elderly, disabled, neighbourhoods, diversity, rural areas, etc.
- Access to care and food
- Access to education (fight against academic failure, training for delinquents, literacy schemes, etc.)
- Access to training/employment (fight against discrimination)
- Access to accommodation, water, utility services, transport
- Fight against the digital divide
- Social inclusion: social diversity, links, dialogue
- Accessibility, empowerment, dependence
- Access to a fair living wage (fair reward, job security, etc.)
- Solidarity: intercultural activities, citizens' initiatives, fight against living withdrawn existence within own narrow community
- Isolation and countryside (isolated areas, remote solutions) neighbourhoods (nuisance, prices, etc.)
- Fundamental rights for the bottom of the pyramid (subsistence crops, wages, promotion of women, etc.)

Some industries have a natural social calling, e.g. social/professional integration, fair trade, micro-finance, etc.

SAMPLE QUESTIONS

- Does your project address one of society's challenges? If yes, which, to what extent and how?
- To what extent does your project promote social cohesion?
- Does your project help certain groups in particular?
- What are the arrangements for social dialogue (consultation, conciliation, etc.)?
- Does your project promote the emergence of citizens' initiatives?
- Does it favor social integration, living together, social inclusion?
- Does it favor intergenerational links and those between neighbors, etc.?
- Is the project accessible to those lacking in independence?

Keywords:
Integration, disabled, dependence, discrimination, education/training, fundamental rights

Links with other criteria:
Responsible design, stakeholders, risk management, ethics and offer transparency

Good practices

- Implementation or subcontracting of production calling for professional or disabled inclusion
- Adapted ergonomics for the elderly
- Remote management of services for a dependent parent
- Design for all
- Teaching standards adapted to student level
- Digital education think tank
- Access to energy services in remote areas
- Conference calls/paperless communications
- Promotion of women
- Reduction in nuisance factors in disadvantaged neighbourhoods

Indicators: % men to women / % disabled workers/elderly / Unemployment rates / Proportion in full-time education / Academic level / Those on housing waiting list / Population living in overcrowded accommodation / Percentage of accommodation costs against total household expenditure / Financial assets per family / Degree of dependency / Poverty level / Poor access to energy / Household debt / Leisure spending / Rate of household internet access / Wage differences / Number in precarious financial situations / Voluntary work / Targeting of welfare recipients in difficulty or those barely solvent / Wealth sharing.

Commons

DESCRIPTION

By Commons, we are referring to the common use of resources, and to the shared access to and the sustainability of inherited resources or those created by a community. Citizens, associations, companies and various organizations are encouraged to organize themselves in a responsible way to ensure access, use and sustainability of resources in the public interest, concern for the common good and future generations. Common property makes community interests prevail over those of the individual, cooperation over competition and use over possession. It can occur at different levels, e.g. in a neighborhood, city, nation, in the world, or even throughout humanity.
This criterion refers to the collective added value generated by the project, i.e. to concepts of participation, cooperation and collective creation. It relates to material or intellectual, natural or cultural property as diverse as:

- Open access to knowledge, to scientific and medical data
- Free software
- Open source
- Natural resources (water, air, etc.)
- Culture, languages, heritage, traditional knowledge
- ...

The most common current practices associated with Commons are barter, community forestry management, car sharing, couchsurfing, crowdfunding, complementary currencies, etc. These practices are becoming increasingly important. New sites for open innovation are appearing such as living labs, medialabs or fablabs. These are promoting the emergence of new forms or public participation. They reward individuals' competence and creative abilities, civic expertise, collective public intelligence and popular knowledge.

Note: public property is supported by the state, while Commons are supported by communities. Commons are a tool to access fundamental rights.

Keywords:
Cooperation, collective civic creation, open innovation, diffusion of knowledge and skills

Links with other criteria:
Responsible design, stakeholders, risk management, responsible value chain

Good practices

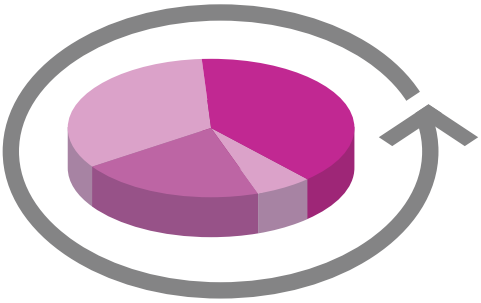
- Result sharing
- Availability of open source applications
- Car sharing
- Open innovation
- Collaborative platforms
- Including end-users in product design / participation initiative

SAMPLE QUESTIONS

- Does your project address one of society's challenges? If yes, which, to what extent and how?
- Do you offer teaching, raise awareness or do training for your clients, consumers and employees?
- How do you ensure increased competence in your associates and suppliers?
- Does your project have an impact on education, learning and increased competence in a population?

Indicators: Access to natural resources / % free software / % open source / % knowledge/competence diffusion / % free software / Rate of population's access to culture, languages, heritage, traditional knowledge.

Overall product cost



DESCRIPTION

The overall cost or life cycle costs (LCC) is the total cost of a product throughout all phases of its life cycle, design and end of life. The terms total cost of ownership (TCO), life cycle cost analysis or overall cost are also used to describe the life cycle cost. The analysis and assessment of this cost is a decision-making management tool guiding design choice, calculating cost price and defining the best business model.
The LCC consists of fixed, variable (e.g. energy consumption) and random costs (e.g. machine breakdowns). It includes the costs of acquisition, ownership (use and maintenance), decommissioning or service withdrawal, which can have negative costs in the reuse or resale of some elements.
The organization has a responsibility with regard to project costs it runs up for its client or for another project stakeholder. It is thus preferable to analyze these different costs by differentiating the cost to the business, to the end-user and for other stakeholders.

The total cost of ownership takes into consideration the following in the case of a computer system:
- Direct costs such as the cost of materials (for a computer, infrastructure, networks, etc.) as well as software (license costs, etc.), or recurring costs (consumables, electricity, air conditioning, renting dedicated premises to host the system, etc.)
- Indirect or hidden costs referring to costs spread across different functions (maintenance, administration, training, support services...) and costs relating to shortfalls (opportunity costs)

In the case of software, we often talk about total cost of use or total leasing costs, as software is used under license.

SAMPLE QUESTIONS

- What factors are taken into account in assessing short, medium and long term costs?
- What is the initial investment for the business? For the end client?
- Do the calculations include all short, medium and long term externalities? Installation and start-up costs? Energy costs? Operating costs (manpower, wages, training, etc.)? Maintenance and repair costs? End of production costs? Decommissioning and removal costs? Costs related to the environment (pollution, site degradation, GHG, biodiversity, etc.)? Supply costs, acquisition of goods and necessary materials?
- What is the economic impact on the user, the recipient and other stakeholders?
- What are the associated unknowns and risks?
- Are you aware of another organization on the market with the same issue as you and with which you could work to optimize your costs?

Keywords:
Direct or indirect costs, costs of acquisition, use, maintenance, end of life, fixed costs, variable costs, random fixed costs

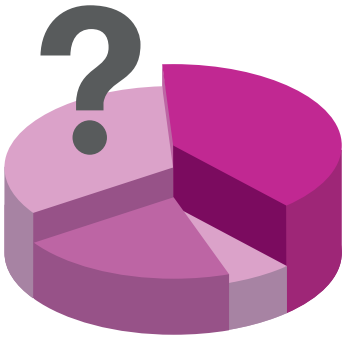
Links with other criteria:
Risk management, economic model

Good practices

- Assessing performance of safe functioning (operational reliability, maintainability and availability), which have a direct bearing on product cost
- Work out an overall cost from the earliest studies
- Standard XP X 50-155, December 1997, "Life cycle costing management"
- Standard ISO 15686-5 "Life cycle cost approach"

Indicators: % fixed costs/variable costs / Externalities / Supply costs/Production/Distribution/Use/End of life / Maintenance costs / Start-up costs / Costs of decommissioning and removal / Environmental costs.

Project's economic longevity



DESCRIPTION

The economic longevity of a project is assessed from four angles:

- Credibility of the funding plan (sound assessment of product LCC, appropriate business model, etc.)
- Project impact on the organization's economic sustainability:
  - Ensure profitability for fair risk compensation and ensure investment (increase turnover, optimize costs)
  - Increase capital to ensure a fair price and the organization's continuation and sustainability
  - Serve as leverage and a springboard for subsequent economic performance
- Organization's ability to handle the project in terms of finances, but also in terms of manpower and materials
- What are the unknowns and risks associated with the project?

Keywords:
Earnings and savings, leverage, risk analysis

Links with other criteria:
LCC, business model, value creation and sharing, risk management, stakeholders, risk management, standby/expectation

SAMPLE QUESTIONS

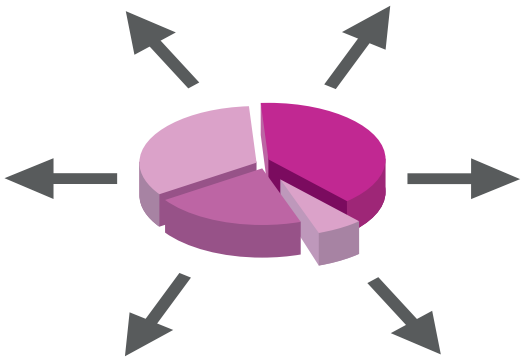
- What factors are taken into account in assessing short, medium and long term costs and profits?
- What sources of funding do you have? Own funds? self-financing ability?
- What is the break-even point? Repayment deadline on invested capital?
- Do you have enough resources and skills for the project?
- What is the economic impact of the project on the organization?
- Does the project lead to increased turnover (new product developments, improvements in existing product lines, expansion in client base, etc.)
- Does the project lead to optimized costs and increased profit margin (reducing or eliminating products with poor profit margins, managing with lower resource consumption, ensuring efficient, profitable production, etc.)?
- Does the project allow for valuation of the organization's intangible assets? (branding, patents, etc.) and materials (production tools, etc.)?
- Will the project allow you to ensure or increase equity and quasi equity? Ensure short term debt financing (supplier, state, etc.) through good client management, sufficient cash flow?
- Could there be a multiplier, leverage or springboard effect? Under what conditions?
- Can the organization handle project expansion financially?
- What are the associated unknowns and risks (market, tech, finances, etc.)? Have you done a risk analysis?

Good practices

- Seek different funding sources to avoid any financial default (in short, medium or long term)
- Do a risk analysis
- Have a diverse client base
- Develop and maintain a brand image
- Strengthen financial resources
- Develop new products

Indicators: Turnover / Evolution/distribution margin / Investment capacity / Induced financial savings; Cash-flow.

Value creation and sharing



DESCRIPTION

The concept of value creation and sharing is essential to the success of a project. There are two elements:

- What is the value created by the project for the company and stakeholders? How do you assess it?
  - The value created for the business may be financial (turnover, profit margins, etc.), but it can also be related to intangible assets (intellectual property, image, brand visibility, skills, new client/market, etc.)
  - The value created for other stakeholders (employees, supplier, client, distributor, financier, user, etc.), may be economic (price, perceived value, etc.), or in its use, but it can also have value for society (client satisfaction, employee pride, etc.)

  This value is assessed against the state of the art, via tests, customer feedback, market research, etc. There are some tools such as the "Intangible Capital Thesaurus" (measuring non-financial and financial value of intangible business assets) or SROI (assessing social return on investment).

- How is this created value assessed and shared between stakeholders? For a project's sustainability and for good stakeholder relations, it is essential to be fair and in a win-win situation. The issue of distributing value is all the more essential within the framework of a collaborative project (open innovation, crowdsourcing, etc.)

SAMPLE QUESTIONS

- What is the value created for the business? (differentiating factor, growth factor, new market, image, extent of innovation, intellectual property, turnover generated, skill creation, etc.)?
- What is the value created for employees (pride, extra income, job satisfaction, safety, health, etc.)?
- What is the value created for the user? For the beneficiary (price, usefulness, rarity value, service, perceived product value, knowledge creation)?
- What is the value created for other stakeholders (suppliers, investors, etc.)?
- How do you assess this value? What does the assessment rest on?
- How do you share this value in the project? Have you reflected how this element can be integrated into your business model to best effect? Are you in a win-win situation with some stakeholders? If yes, how?
- Are you working on a collaborative project? If yes, have you really thought through this concept of value creation with your partners?

Indicators: Number of filed patents.

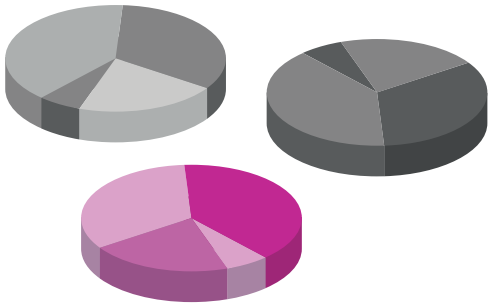
Keywords:
Creation, assessment, sharing

Links with other criteria:
Stakeholders, risk management, standby/expectation/network, responsible value chain, ethics and transparency

Good practices

- Employee profit sharing
- Social and environmental investments
- Existence of rules in financial ethics
- Employees as shareholders in the business
- Use of tools: Intangible Capital Thesaurus, SROI

Project's business model



DESCRIPTION

New sustainable business models are a potential vector of differentiation or even a strategic break from the competition. They allow you to combine profit with environmental and social benefits. Different types of business model are used today. Here is a non-exhaustive list recognizing that a project's business model is often a combination of different models:

- Social economy and solidarity allows you to reconcile economic activity with social usefulness (bottom of the pyramid (BOP) models, fair trade, micro-credit are well-known examples). They are primarily defined by reasonable profit-making (balanced budget) and public and private funding
- Circular economy takes a life cycle approach from "cradle to cradle". An industry's waste is transformed into raw material for another industry or within its own. The scarcity of resources increases the economic opportunities of the circular economy
- Functional economy aims to move from the concept of selling goods to the sale of a service or usage. This entails a reduction in the consumption of resources and energy. It creates positive externalities for society and the environment (e.g. in selling a decrease in energy consumption rather than volume of consumed energy)
- Collaborative economy relies on new forms of exchange and collaboration, in consumption (e.g. sharing, exchange or bartering goods, services and privileges such as co-working, apartment rental, etc.) as much as in production (e.g. Fablab, client-supplier joint investments, etc.)
- Low cost economy
- Frugal innovation: design better with less

SAMPLE QUESTIONS

Question the business model's credibility:

- How have you conceived your business model (market research, opportunity, prospects, etc.)?
- What is/are the reason(s) for your choice of business model?
- What is your customer base? What value do you bring to the client? What client need does your project seek to address?
- What mode of distribution? B2B, B2C, B2B2C? How will you attain your customers?
- What are the key activities and resources you need to develop to bring value to the client (e.g. skills, resources, strategic partnerships, IP, etc.)?
- Bring new perspectives (How do you capture the delivered value better and in a sustainable way against your competition?)
- How can you create new value for the client? Is there an alternative to meet the client needs (product v. service)?
- How can you innovate to access the market?
- Have you considered working with another organization with the same issues to optimize costs (e.g. by buying waste from another company to use as raw material, circular economy, etc.)?
- Risks and associated unknowns

Keywords:
BM credibility, value capture

Links with other criteria:
Stakeholders, risk management, responsible value chain, ethics and transparency

Good practices

- Market research, business plan
- SWOT-type analysis
- Bottom Of the Pyramid Models (direct model, innovation model, private-public partnership model)
- Functional economy (Product-Service System)
- Circular economy
- Business Model Canvas analysis

Macro-economic impact

DESCRIPTION

Project impacts on the area, sector and industry:

- Job creation, preservation and relocation either directly or indirectly (via subcontractors), hiring local staff, export
- Sector development (technology or sector promotion, possible revenue for the sector)
- Economic and/or sustainable development or another kind of development for the region: planning, heritage promotion (history, culture), non-relocatable activities (e.g. home services)
- Complementary local activities, means and knowledge pooling, partnerships

Project impact on public services:

- Reduction in public expenditure (energy costs, internal costs, other expenses)
- Improved efficiency of public services: reduction in nuisance factors, improving road networks , transport, waste management, decision-making, congested hospital services, etc.

SAMPLE QUESTIONS

- Does your project have a recruitment catchment area? Does your project generate jobs? If yes, how many? What kind of jobs? In what area? Does your project preserve or relocate jobs? If yes, how?
- Do you know the economic, social and environmental externalities (costs and advantages) of your activity in the area?
- Does your project promote existing economic activities?
- Does your project promote entrepreneurship?
- Is your project in line with the area's development policy?
- Is your project of major public interest? Does your project optimize or reduce public spending? Does your project improve the quality of public services?

Keywords:
Local development, short circuits, job, relocation

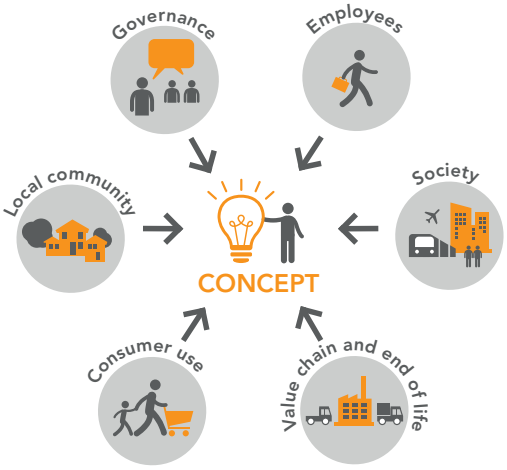
Links with other criteria:
Stakeholders, responsible value chain, commons

Good practices

- Setting up a contact office and local distribution network
- New sales channels for a sector
- Innovative technology for a complete sector
- Reduced pricing making the offering accessible to SMEs
- Local recruitment
- Project visibility within the area (awards, institutional support, etc.)

Indicators: Direct and indirect job creation / Number of jobs created, preserved or relocated / % of permanent contracts / % reduction in public spending (energy, tuition, filing, paperless communication, monitoring, home services) / Improvements in public services.

Stakeholders



DESCRIPTION

A stakeholder is an individual or group (organization), actively or passively involved in a decision or project; i.e. whose interests can be positively or negatively affected by the execution or non-execution of the project. It can be internal (management and employees) or external (clients, suppliers, NGOs, associations, citizens, local and regional authorities, shareholders, etc.).

- Key stakeholders = those for whom business cannot avoid involving in its operations or survival (sustainability)
- Secondary stakeholders = those who are not essential to the company's operations or survival

It is thus important to identify them, perceive their expectations and interests in order to make decisions in full awareness of the potential consequences of these decisions on stakeholders.

Keywords:
Identification, factoring in, dialogue, partnerships/collaborations

Links with other criteria:
All

SAMPLE QUESTIONS

- Do you know the stakeholders affected by your project? What are the priorities?
- To what extent are you using dialogue with them to identify their expectations, interests and possible win-win strategies?
- Are some of them actively involved in the project's development? In what way (collaborative innovation, open innovation, etc.)? At what stage in the project process (upstream, on completion)?

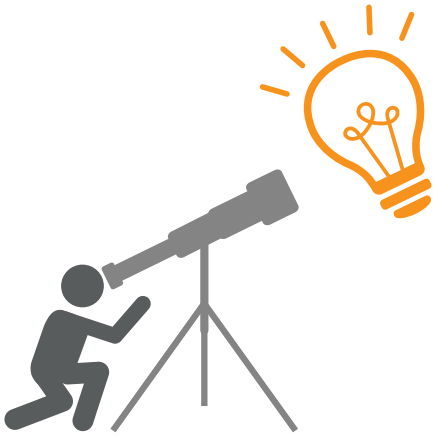
  Particular attention should be paid to:
- Users/clients /beneficiaries:
  To what extent is each of them involved in the project survey, meetings, working groups, collaborative innovation?
- Suppliers:
  Simply service providers, collaborative product design, profit sharing, etc.
- Partnerships:
  Have you established a win-win strategy (Knowledge sharing, profits, IP, etc.)? Do you have an agreed partnership agreement? How are responsibilities defined towards risk (deadlines, quality, costs, accidents, etc.)? Are there any payment or results obligations between partners? Do you share key information/techniques? What protection do you have? Do your partners have any protection?

Good practices

- Roadmapping with stakeholders
- Collaborative product design
- Develop open innovation or collaborative innovation into the project
- Knowledge sharing
- Profit sharing
- Ecofriendly and socially responsible design
- Engage in a dialogue with stakeholders
- Put win-win strategies into place with the supplier or the client
- Organize enquiries, working groups

Indicators: Cooperation contracts / Surveys / Consultations / Working groups with relevant stakeholders.

Monitoring/Networks /Expectations



DESCRIPTION

To enhance an innovation's success, it is important to anticipate legal requirements, evolving markets, technology and social and economic trends.
The key challenge is to detect possible current and future obstacles to your innovation's development and thus secure a competitive edge by being the first to succeed.

For these constraints to become real innovation opportunities, it is important to:
- Monitor and take part in the formulation of regulations
- Carry out forward planning, an initiative which involves preparing today for tomorrow's changes. Numerous methods exist enabling you to formulate credible scenarios (statistical analyses, projective analysis, trend studies, etc.)
- Work on developing solutions with other companies including competitors

All this knowledge is of strategic importance to making the right decisions for your company.

SAMPLE QUESTIONS

Legal requirements:

- Are you governed by any particular regulations?
- How do you identify and anticipate legal, regulatory and other requirements related to your product/service?
- Do you have a regulatory monitoring mechanism?
- How proactive are you (participation in focus groups, conferences, clusters, etc.)?

Markets, technologies, trends:

- Does the organization collect technological and competitive intelligence?
- How proactive are you (market research, attending trade shows, events, network membership)?
- Do you know your current competitors and potential market entrants?
- What is your analysis of market trends? Current strengths, weaknesses, opportunities and threats (SWOT)?

Keywords:
Monitoring/Anticipation/Forward planning

Links with other criteria:
Risk management, stakeholders, strategy

Good practices

- Set up regulatory and patent monitoring
- Take part in the formulation of regulations and standards
- Join networks, clusters, etc.
- Carry out projective analysis, trend and market studies
- Study the competition closely
- Work with competitors to develop solutions for a sector or industry

Indicators: % of time spent on monitoring / Study scope (geographical, theme-based) / Number of studies / Events / Subscriptions / Databases.

Risk management

DESCRIPTION

It is difficult to develop a new product/service by measuring its consequences, given the uncertainty surrounding innovation.
We speak of responsible innovation when the organization does its utmost to master and control its product/service development throughout the life cycle and above all how it evolves after market launch.
Risk management endeavors to identify and prioritize risks, i.e. potential and quantifiable losses, inherent to a situation or activity associated with an event.
Secondly, it endeavors to put in place prevention and follow-up measures (targeted monitoring, research into alternative solutions, countermeasures, etc.).

SAMPLE QUESTIONS

- Code of practice and ethics:
  Have you identified an ethical or code of practice issue in your project? Is there a debate within society on the subject (GMO, nanotechnologies, data protection, etc.)? Is the project acceptable to the population and local residents? How do you manage it? Could there be an ethical issue with the client (opt-out terms, cost, addiction, etc.)? Have you ascertained that there is no deviation in the marketing and use of the product/service?
- Principles of precaution and prevention:
  What preventative measures have you put in place for the major risks identified? When faced with uncertainty, do you put the precautionary principle in place (precaution is used towards risks where the extent or probability of occurrence cannot be calculated with any certainty, given current levels of awareness. Examples: GMO, electromagnetic waves)?
- Does the project take into account economic, social and environmental risks? Does the project factor in changing needs in capacity, scaling and the consequences of any resizing operation? Is the project flexible enough to put in place alternative solutions in case of a sudden change in circumstances?

Keywords:
Code of practice and ethics, principles of precaution and prevention

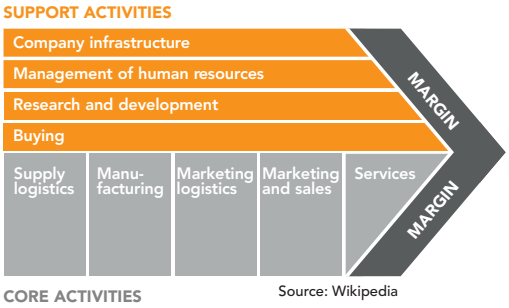
Links with other criteria:
All

Good practices

- Implementation of the principles of precaution and prevention
- Identifying/Evaluation
- Risk management/control
- Project critical risk matrix (Impact/Probability)

Indicators: On a case-by-case basis depending on the risk.

Responsible value chain



Source: Wikipedia

DESCRIPTION

An organization manages its choices and relationships by promoting sustainable development to parties both upstream and downstream in the value chain, particularly:

- With suppliers (integrating sustainable development criteria into product and service specifications (e.g. ecolabels, LCA, etc.)
- In the choice of its suppliers or service providers (e.g. ISO, CSR, etc.)
- In its awareness-raising activities/communications, support for more responsible practices (audit, communication, etc.)

SAMPLE QUESTIONS

- Does the project encourage environmentally friendly management? Does it seek to improve its social impact through its value chain?
- What is your position in the overall value chain?
- What criteria do you apply when choosing components and raw materials to set your purchasing policy?
- What criteria do you apply when choosing your suppliers, service providers, products and services?
- Does your choice of products and services rely on quality labels?
- Do you organize awareness-raising/communication seminars on this subject?
- Do you encourage collection, recycling, energy management through your project?
- Do you work with your suppliers to improve sustainable development performance of their product, service or organization?
- How could collaboration with your partners be improved?
- Do you have an initiative for industrial ecology?
- What are the risks and opportunities to implementing management of a responsible value chain?

Keywords:
Supplier, intermediaries, clients, product/service buying criteria, awareness-raising, good practices

Links with other criteria:
Stakeholders, risk management, responsible value chain, ethics and transparency

Good practices

- Set up loyalty schemes
- Supplier's adherence to a sustainable development charter
- Support the supplier in sustainable development initiatives
- Good practice guidelines for the client and supplier
- Put a win-win strategy in place with the supplier to encourage good practices
- Audit the supplier
- Set up an awareness-raising strategy for the client base

Indicators: Specification requirements / Supplier/subcontractor/product audits / Quality labels / Communications support / Partnerships.

Ethics and transparency

DESCRIPTION

This criterion considers several factors in the project:
- Contract ethics and transparency on setting rates
- Confidentiality and data protection
- Quality of aftersales service and support
- Responsible and transparent communication on products, services and commitment. There are the following challenges: What messages can the company communicate or not? How effective are they? How can it achieve this? Which media? How can these activities be measured?

SAMPLE QUESTIONS

- What content for communications?
- Does the company inform consumers on appropriate product use?
- Does the company communicate publicly on its initiatives or product?
- What concrete, qualified, quantifiable information does it provide to its clients, suppliers or partners?
- Do you use quality labels, charters, etc.? How credible are they (self-declaration)?
- Do you hold confidential or third party data? How do you ensure data confidentiality and protection?
- After product launch, do you have a follow-up system, information feedback from users? Have you set up an aftersales system/support?

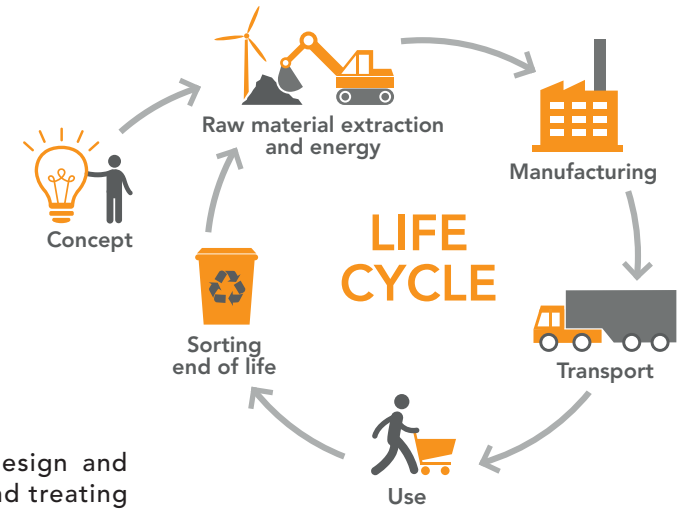
Links with other criteria:
Stakeholders

Good practices

- Set up a contract with refund clauses, cancellation and clear and accessible returns
- Clear, comprehensible invoicing
- Set rates in use
- Inform the client about any data use
- Guarantee data protection/ confidentiality
- Positioning of any communication should be in line with the organization's actions
- Communications should be based on verifiable facts and results
- Communicate on sources for improvement and product risks
- Avoid greenwashing
- Adhere to charters
- Education, tutorials, training

Indicators: Ability of the entrepreneur to pass on data to its clients, to stakeholders / Soundness of publicly disclosed sustainable development arguments (figures, supporting studies) / Sound contract/invoicing / Product labeling/claims.

Responsible product design



DESCRIPTION

The organization adopts a responsible initiative in the design and marketing of its products/services. This means analyzing and treating the project impact in a comprehensive way and not restricting it to one criterion, stage or stakeholder.
The analysis is carried out against all the sustainable development criteria throughout the life cycle and taking the expectations of all stakeholders into account. The more control there is over the life cycle and the more stakeholders are integrated, the more an innovation can be said to be responsible. It is all about anticipating the end of the product life cycle and increasing the product's usage value.

Remark: this criterion does not take into account any impact related to the product or service's purpose, instead it focuses on the project development approach.

SAMPLE QUESTIONS

This criterion is assessed using impact analysis:

- Do you factor in the different impacts your product or service may have throughout its life cycle?
- How do you envisage your products and services evolving to factor in environmental and social aspects? Is your approach a proactive or reactive one?

Environmental pillar:

- Have you factored in the transfer of potential impacts? Are the basic principles of environmentally friendly design integrated into product development (life cycle, functionality, multicriteria)?
- What approach has been taken into account for product design? Is the design focused on durability (long life, repair and maintenance potential)? Focus on optimizing functionality? Focus on reuse, recovery and recycling?
- Paperless communications? Biomimicry? Circular economy? Industrial ecology?

Social pillar:

- Have you considered your project's impact on different social criteria and different stakeholders?

Keywords:
Multicriteria, multi-stage, environmentally friendly and socially responsible design

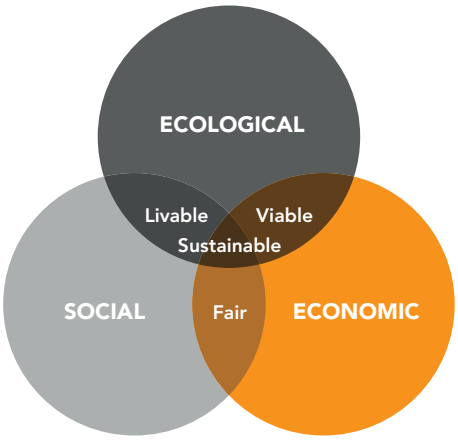
Links with other criteria:
Stakeholders, all

Good practices

- Carbon footprint
- Water footprint
- Ecological footprint
- Environmentally friendly and socially responsible design process
- Life cycle analysis
- Environmentally friendly packaging design
- Cradle to Cradle process

Indicators: Entrepreneur's ability to choose the method used: LCA, checklist, simplified LCA, environmental analysis, carbon balance, socially responsible design.

Corporate Social Responsibility strategy



DESCRIPTION

An approach to Corporate Social Responsibility (CSR) that transcends the project framework and places sustainable development at the heart of the company's strategy.
A key aspect of CSR is in the way companies interact with their internal and external stakeholders (employees, clients, neighbors, NGOs, public authorities, etc.).
CSR can be exercised at various levels. They can range from simple environmentally friendly gestures to the introduction of ISO standard 26000 (formerly SD21000), which integrates all aspects of the triple bottom line.

Different maturity levels:
1/ Goals set at the organization's level on the 3 pillars of sustainable development 2/ Established action plan 3/ Indicators and action plan follow-up 4/ Oversight

Main criteria:
Kinder modes of transport, environmentally friendly gestures, building management, supplier/subcontractor/service provider policy, responsible product/service purchasing, internal training, transparency and responsible communication, wage policy (jobs, recruitment, remuneration, gender, equity, diversity, etc.), employee benefits (profit and capital sharing, travel card, private health insurance, etc.)

SAMPLE QUESTIONS

- What does sustainable development mean for your business (growth opportunities, integrated part of processes, employee incentive, a concept ill-suited to your business, financial constraints, a fad)?
- Have you adapted a sustainable development strategy into your organization? Is it based on an existing frame of reference? Have targets been set on one or more criteria?
- What 10-year vision for change do you have for your clients? For your company?

Keywords:
List of above criteria

Links with other criteria:
Stakeholders

Good practices

- Quality labels, certifications, charters
- Setting up environmentally friendly gestures
- Financial or natural advantages (savings scheme, profit sharing, access to capital), insurance scheme, holiday bonus, training plan, restaurant vouchers
- Set up of formal CSR approach
- Consumption management (water, energy, etc.)
- Set up a responsible purchasing policy
- Systematic employment of the unemployed
- Philanthropy (involvement in an association, skills sponsorship, etc.)

Indicators: Standards (ISO 26000, 9001, 14001, OHSAS 18000, etc.) / Certifications / CSR report / Oversight tools / Environmental policy (environmentally friendly gestures, transport, energy choice, environmentally friendly design, responsible buying, etc.) / Internal social policy (diversity inclusion, training, employment contracts, social climate, flexible working, remote working, etc.) / External social policy (collaboration and listening to external stakeholders, non-discriminatory access to products, subcontracting respecting working rights and social cohesion, etc.).

Biomimicry, a tool for RESPONSIBLE INNOVATION

WHAT IS AND WHY USE BIOMIMICRY ?

New approaches working across disciplines and sectors have become essential to confront global social and environmental issues. These aim to reconcile economic prosperity in society, conserve resources and reduce the adverse effects of human activity in the longer term. Within this context, Biomimicry (bio = life, mimesis = imitate) offers one of the most promising approaches.

Recent estimations suggest there are 10 million eukaryotic species on Earth. Over 3.8 billion years, natural selection has constrained living organisms (from single cells to pluricellular) to solve the challenges of feeding, moving, surviving and reproducing within sustainable ecological systems in dynamic environments. Evolution has thus selected the most efficient systems based upon locally renewable and abundant energies and materials. Waste is always used as raw material for other systems. The biological and ecosystem optimization is global and not limited by sub-systems. In many fields, living organisms outperform man-made solutions and biomimetic ones are thus widely regarded as not only being ingenious, but also being ecologically sound, resilient, and low-risk. These expectations are shared by the public and media, but also by the majority working in the field.

Bio-inspiration was referenced in some of the earliest scientific writing. Its first and most famous applications are illustrated in sketches by da Vinci. Bio-inspiration expanded during the 1950s into the fields of aeronautics, naval and vehicle engineering, as well as into cybernetics and complex systems modeling. In the 1980s, bio-inspiration was extended to the micro- and nanoscale and rapidly developed in biotechnology. The term biomimicry was introduced in the late 90s (Benyus, 1997) and, contrary to “bio-inspiration”, “biomimetics” or “bionics”, biomimicry focuses on sustainability issues.

Biomimicry is thus of high potential for several key levers of responsible innovation:

ENERGY

- Consumption reduction through efficient use
- Renewable (mostly solar), decentralized and diversified sourcing
- Efficient distribution

WATER MANAGEMENT

- Consumption reduction through efficient use
- Harvesting
- Efficient distribution

GREEN CHEMISTRY

- The use of alternative synthetic pathways as enzyme catalysis
- The use of alternative reaction conditions (moderate temperature and pressure, water as a solvent)
- The design of safer chemicals that are less toxic than current alternatives or inherently safer with regard to accident potential (abundant atoms C,H,O,N,P,S ; biocompatible and biodegradable molecules)

MATERIALS

- Resource efficient
- Self-assembly
- Self-healing
- Multifunctional
- Responsive and adaptable
- ...

INDUSTRIAL ECOLOGY AND CIRCULAR ECONOMY

- Closed loops
- Zero waste
- Resilient
- Adaptable

NEW BUSINESS AND MANAGEMENT MODELS

- Mostly collaborative
- Optimized rather than maximized
- Collective intelligence
- Feedback loops

GLOSSARY

- **LCA**
  Life cycle analysis provides an effective and systematic means to assess the environmental impacts of a product, service, company or process. Following life cycle's logical reasoning, the fundamental goal is to perceive and to be able to compare a product's pressure on resources and the environment throughout its life cycle thanks to:
  - A procedure, i.e. a series of standardized steps
  - A mathematical transformation model enabling streams to be changed into potential environmental impacts

- **LCCA**
  Life Cycle Cost Analysis, working out and assessing all costs related to the product throughout its life cycle. The purchase price very often only reflects a tiny fraction of true costs.

- **Biomimicry**
  an approach inspired by Nature for finding solutions and inventions (materials, shapes, processes and properties) observed at different scales within the ecosystem and transfer their benefits to human activities.

- **Bottom of the Pyramid (BOP)**
  models developing commercial opportunities by giving access to the disadvantaged or weak in developed or emerging nations to water, energy, health and financial resources, etc.

- **Fair trade**
  this initiative uses trade as a lever for development and reducing inequality, ensuring producers get a fair payment.

- **Life cycle**
  Different phases in the life of a project. There are 5 phases: supply, production, distribution, use and end of life. These phases can be affected by the project according to different impact criteria.

- **Ecodesign**
  Ecofriendly design is an approach which takes environmental impacts into account in design and product development and integrates environmental aspects throughout the life cycle (from raw material to end of life via manufacturing, logistics, distribution and use).

- **Eco-innovation**
  innovation which aims to reduce environmental impact.

- **Environmentally friendly and socially responsible design**
  Ecofriendly and socially responsible design is a solution that includes all aspects of sustainable development in design concept. It is aimed not only at reducing social and environmental damage throughout a product's life cycle but also to create positive externalities.

- **Fab Lab**
  (contraction from English of fabrication and laboratory) is a place open to the public where all sorts of tools are made available, especially computer-run machine tools for the design and creation of items.

- **Open Innovation**
  is an innovation method based on sharing and cooperation between companies. It is also compatible with a market economy (via patents and licenses) or economic intelligence. However, this approach also gives rise to initiatives based on ethical or sound alternatives (solidarity economy) for free sharing of modern or traditional knowledge and savoir-faire. It particularly refers to the use of free licenses in a spirit called ODOSOS (meaning Open Data, Open Source, Open Standards).

- **Open Source**
  The open source or "open source code" meaning applies to software licenses respecting the criteria clearly laid down by the Open Source Initiative, i.e. allowing the potential for free redistribution, source code access and creation of derivative products.

- **Digital divide**
  The digital divide between the generations and cultures gives rise to strong opinions in society on Internet use. This divide has come about because a whole new generation has been born into the Internet world. They are called "digital natives", while the older generations are called "digital immigrants". This cross-generational digital divide can also be called the new digital divide as opposed to the geographical and social digital divide relating to Internet access rather than pure usage.

- **Social Innovation**
  innovation initiative that aims to address a social challenge.

- **REACH**
  in English: Registration, Evaluation, Authorization and restriction of CHemicals — is a European Union regulation, which was adopted in December 2006. It updated European legislation on chemical substances and set up a single, integrated system for the registration, assessment and authorization of chemical substances within the European Union. Its goal is to improve the protection for human health and the environment, while maintaining competitiveness and strengthening the spirit of innovation in the European chemical industry.

- **CSR**
  Corporate Social Responsibility is a concept in which companies integrate social, environmental and economic concerns into their activities and interactions with stakeholders on a voluntary basis.

- **SWOT**
  SWOT analysis or matrix (from Strengths, Weaknesses, Opportunities, Threats) is a corporate strategy tool to determine foreseeable strategic options within a Strategic Business Unit (SBU).

- **RSI**
  Repetitive strain injury is a general term for various musculoskeletal disorders. It is used to describe the pain from soft tissue (muscles, nerves and tendons). It is the most prevalent, job-related disorder in developed countries at the current time.

- **Usage value**
  Usage value describes the value of goods or a service for a consumer through the usefulness he gains from it personally, in meeting his needs and knowledge in given circumstances.

- **Intention/Service provided**
  Service provided by implementing a project, using innovation to address its challenges. Some projects have the intention to address a challenge in society. These "great challenges" surround various concerns today, such as climate change, ageing population, energy supply, depletion of natural resources, transportation and mobility, waste, unemployment, exploitation, safety, health, poverty, invasion of privacy, etc.

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To find out more about the work and activities de KARIM on responsible innovation, you can find videos and articles on our website: http://www.karimnetwork.com/slider/responsible-innovation/

Other related European projects:

DESUR / Developing Sustainable Regions through responsible SMEs

FARINN / Facilitating Responsible Innovation in South East Europe countries

FRIICT / Framework for Responsible Research and Innovation in ICT

FUSION / Innovative and sustainable entrepreneurs

GREAT / Governance for Responsible innovation

PROGRESS / Towards a European normative model for Responsible Research and Innovation globally, using constitutional values as a driver to inform societal desirability

RESAGORA / Governance Framework for Responsible Research and Innovation

RESILIENT WEB / Innovate for a sustainable business

RESPONSIBILITY / Global Model and Observatory for International Responsible Research and Innovation Coordination

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ANNEX

RESPONSIBLE INNOVATION

flash diagnostic

- **Name of the company:**

- **Name of the project:**

- **Description of the project:**

- **Date:**

- **KARIM attendees:**

- **Company’s attendees:**

Characterization of the innovation project

	Status			Reliability			Comments
	To undertake	In progress	Undertaken	High uncertainty	Moderate uncertainty	Low uncertainty	
Marketing feasibility (needs, competition, marketing, added-value, positioning…)	☐	☐	☐	☐	☐	☐	
Technical feasibility (Research, prototype, pilot, experimentation…)	☐	☐	☐	☐	☐	☐	
Financial feasibility (budget, financing plan, estimated profitability, subsidies…)	☐	☐	☐	☐	☐	☐	
Organisational feasibility (project manager, team adapted to the project, external collaboration…)	☐	☐	☐	☐	☐	☐	
Legal feasibility (regulation, intellectual/industrial property)	☐	☐	☐	☐	☐	☐	
Distribution / Commercialisation	☐	☐	☐	☐	☐	☐	

Coherence Project/Company

	Yes	No	Comments
Project in the core-business or in the market of the company. Consistent with the company's vision	☐	☐	
Project's size adapted to company's size	☐	☐	
sufficient financial resources of the company with regards to the project	☐	☐	

Expressed needs and expectations

Technology (advice, orientation, search…)	☐	Team / HR / internal organisation	☐
Offer /Value proposal / Economic model	☐	Search of strategic partners	☐
Competition / Market	☐	Legal (orientation)	☐
Sustainable development	☐	Project engineering	☐
Industrial / Intellectual property strategy	☐	Financing	☐
Europe / international	☐	Biomimicry (training, advice, diagnostic)	☐
Other need (to be detailed) :			
Detailed needs / Comments :			

Responsible Innovation analysis

Assessment criteria **(*) The level of consideration of a criteria** is defined as the evaluation of the type and relevancy of the set of actions started in order to : - Assess, limit the negative effects or enhance the positive effects of the innovation - Strengthen the success of the innovation by anticipating in the short, mid and long term.		Level of consideration of the criteria (*)					This project presents a **high value** with regards to the criteria	**Not addressed**
		Little / Not at all	Insufficient	Not relevant / Divided opinion	Well	Very well		
Project approach	Management of stakeholders	☐	☐	☐	☐	☐	☐	☐
	Prospective / Network / Anticipation	☐	☐	☐	☐	☐	☐	☐
	Risk management	☐	☐	☐	☐	☐	☐	☐
	Responsible value chain	☐	☐	☐	☐	☐	☐	☐
	Ethics and transparency of the offer	☐	☐	☐	☐	☐	☐	☐
	Responsible design of the product	☐	☐	☐	☐	☐	☐	☐
	Corporate social responsibility	☐	☐	☐	☐	☐	☐	☐
Environmental impacts	Water management	☐	☐	☐	☐	☐	☐	☐
	Materials management	☐	☐	☐	☐	☐	☐	☐
	Energy management	☐	☐	☐	☐	☐	☐	☐
	Pollution (water, air, soil)	☐	☐	☐	☐	☐	☐	☐
	Greenhouse gas effect	☐	☐	☐	☐	☐	☐	☐
	Biodiversity	☐	☐	☐	☐	☐	☐	☐
	Waste management	☐	☐	☐	☐	☐	☐	☐
Social impacts	Health	☐	☐	☐	☐	☐	☐	☐
	Safety	☐	☐	☐	☐	☐	☐	☐
	Quality of life	☐	☐	☐	☐	☐	☐	☐
	Solidarity	☐	☐	☐	☐	☐	☐	☐
	Common good	☐	☐	☐	☐	☐	☐	☐
Economic impacts	Product's life cycle cost	☐	☐	☐	☐	☐	☐	☐
	Economic sustainability	☐	☐	☐	☐	☐	☐	☐
	Value creation and sharing	☐	☐	☐	☐	☐	☐	☐
	Business model	☐	☐	☐	☐	☐	☐	☐
	Macro-economic impacts	☐	☐	☐	☐	☐	☐	☐

Vocation of the project

Generally according to you, does the project allow to answer to?	Totally disagree	Disagree	Divided opinion	Agree	Totally agree	Comment
• A major environmental need (1)	☐	☐	☐	☐	☐	
• A major social need (2)	☐	☐	☐	☐	☐	

(1) Ex of major environmental challenge: climate change, energy supply, resources scarcity, pollution, wastes…

(2) Ex of major social challenge: ageing population, employment, exploitation, security, health, poverty, privacy, integration, transport and mobility…

Overall view on the innovation project (Strong points, improvement axis, recommendations)

Orientations (Contacts / Connections / Useful information…)

Biomimicry as a tool for responsible innovation

Training	☐	Diagnostic	☐
Connection	☐	Advice	☐
Not concerned	☐		

karim knowledge acceleration responsible innovation meta network

PARIS REGION ENTREPRISES

INTERREG IV B - 207G - KARIM
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