How to realise a sustainable development analysis?

Chair on Eco-advising evaluation grid : User's guide

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FOREWORD

• In this document, the masculine form is used for simplicity purposes.

• The contents of this document, while it is the propriety of its authors, is the result of the work of numerous volunteers and university students in the Saguenay–Lac-Saint-Jean region (Québec, Canada), Strasbourg (France) and elsewhere around the world. Distribution is not restricted and those who wish to obtain the document can visit our Website at **http://ecoconseil.uqac.ca/**.

• Anyone wishing to use the analytical method described herein shall be allowed to do so as long as they give the source reference: **Villeneuve, C. et Riffon, O. (2012). How to realise a sustainable development analysis? Chair on Eco-advising evaluation grid: User's guide. Département des sciences fondamentales, Université du Québec à Chicoutimi.**

• Please feel free to send your comments and suggestions which could help us improve the method or the contents of this guide to: olivier_riffon@uqac.ca

Introduction: What is sustainable development?

Humans have the ability to see themselves in the future, to anticipate certain events, certain needs. For hundreds of thousands of years, this ability to anticipate events and solve problems has made it possible for us to evolve, to adapt our behaviours and tools to live better in nature.

At all times, in all eras, and in all cultures, at various levels, humans have taken interest in their future. Therefore, the question of sustainability in human activity is nothing new. However, since the industrialisation of our societies, three dimensions created increased pressure on both renewable and non-renewable resources, and led to ecosystems, and even populations being threatened:

- Population growth

- Increased life expectancy

- Increased individual consumption

This pressure on resources has forced humanity to rethink its development, and the idea of sustainable development has made significant progress on the international and local levels, and within organizations.

But what is sustainable development?

The most universal definition of the notion of sustainable development comes from the Brundtland Commission report: "*Humanity has the ability to make development sustainable to ensure that it meets the needs of the present without compromising the ability of future generations to meet their own needs."* (Our Common Future: Report of the World Commission on Environment and Development). The report highlights the fact that two concepts are inherent to the notion: The concept of need, and especially the essential needs of the most destitute, which must receive top priority; and the idea that our social techniques and organisation place limits on the capacity of the environment to meet our current and future needs.

While it is widely agreed upon, the above definition may seem vague and difficult to put in practice in an organization. It does not specify which needs must be met, or the scope of its application within an organization and/or a society. But it does provide a sound basis for action, for it gives some direction as to what could be done to ensure the integration of more sustainable ways to develop:

- See to fundamental needs first (housing, education, food), meaning to also alleviate the precarity of marginalized populations.

- Avoid taking from nature what it cannot give and dumping more waste than it can withstand.

- Equitably distribute the benefits of scientific, technical, and social advancements.

- Take precautionary measures and make sure future generations will have the latitude they need.

- Ensure optimum resource management so that everyone can benefit.

Sustainable development is a complex, encompassing idea that evolves over time. It cannot be conceived from technical, economic and material aspects only. It requires a richer, broader concept. It requires imagining a development that:

- Integrates intellectual, affective, moral, and ethical dimensions.

- Considers multiple scales of action, from local to global.

- Includes short- and long-term objectives.

- Looks to maximize local benefits while minimizing negative impacts on the local, regional, and global scales.

- Is concerned with culture and equity.

Hence, what may have been considered sustainable development fifty years ago is not necessarily so today. And what is sustainable development today may no longer be so at some future date. To this end, Di Castri (1998) reminds us that: "The only things that can be considered sustainable in the history of life are change and adaptation."

The problems and solutions of sustainable development are therefore complex. However, that complexity is a conscious choice; we have decided to include multiple opinions and to exchange ideas in an effort to make better decisions. That is why we need to establish a consistent dialog among the actors of development. And that is what we ask that you keep in mind, as a backdrop, as you go through this evaluation grid.

1 — Why this evaluation grid?

To give direction to sustainable development projects or frameworks, to fill the gaps, or to assess progress, proper tools are required. Three components in particular argue in favour of using tools that allow for the operational integration of sustainable development:

- Sustainable development perceived only as an ideology will not necessarily lead to a pragmatic, accountable approach in the field and answer to the legitimate and immediate needs of communities (Di Castri, 2002[1]).

- The term has been hackneyed to such a point that developing tools to make sure projects, through stringent methods, comply with certain basic sustainable development principles has become essential.

- Sustainable development has nevertheless become unavoidable, and the first step of implementation resides in the desire to do things differently, and acceptance of the questioning it requires, a questioning that has to be directed.

The Eco-advising Chair's sustainable development evaluation grid addresses those three components. It is an analytical tool based on five dimensions (ecological, social, economic, ethical, and governance), and which is used to assess to what extend an organizational project or framework can lead to improved human conditions through the leverage it provides. It provides its users with a means of situating themselves and presents ways for them to improve their project or framework, with a view to continuous improvement. The analysis can also be used to set objectives, find indicators, make more knowledgeable decisions, and/or find compromises that facilitate the social acceptability of a project.

The evaluation grid is built from principles, themes, and objectives drawn from the literary review of the proceedings of international conferences and conventions (World Conservation Strategy, Brundtland Commission, Strategy of Sustainable Living, Agenda 21, etc.). The objectives set out for each dimension are used to build a qualitative index that measures the capacity of a project to comply with the conditions of sustainable development. The approach has the advantage of considering at once global concerns and the more local types of impacts, limited in both space and time.

The grid comprises five tables (refer to the evaluation grid[2]), each putting forth a principle and a number of themes. The themes filter down into objectives which can be weighted and assessed relative to their application (action, project, framework, etc.). For each objective, explanations, justifications and examples are entered directly in the computer file of the grid for ease of use (accessed by the red triangle in the upper right-hand corner).

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[1] Di Castri, F. (2002*). Les conditions gagnantes du développement durable.* Actes du colloque de Dakar, Francophonie et développement durable, quels enjeux, quelles priorités, IEPF.

[2] The grid can be downloaded from the Ecoadvising Chair Website: http://dsf.uqac.ca/eco-conseil

Each dimension considered in the grid corresponds to those specific principles and aims to address precise needs:

- The ecological dimension is understood to be the management of ecological conditions by which species and ecosystems can continue to evolve and maintain the level of ecological services they provide for humanity.

- The economic dimension aims to maintain and improve the mechanisms that allow human societies to meet their needs through the exchange of comparative benefits.

- The social dimension aims at improving the quality of life and cohesion of societies.

- The ethical dimension hopes to establish equity among individuals and nations, as well as the sharing of wealth, all the while making sure future generations will have the latitude they need.

- The governance dimension looks for the commitment, participation and responsibilization of the greatest possible number of stakeholders to lead sustainable development projects.

These five dimensions are tightly woven and the decisions made to favour any one of them can add stress to another.

Finally, the grid can be used in two modes, gross analysis and detailed analysis. The choice of one over the other depends on the nature of the project and the aims of the analysis. Graphical representation tools and a methodology for reporting the results of evaluations are also included.
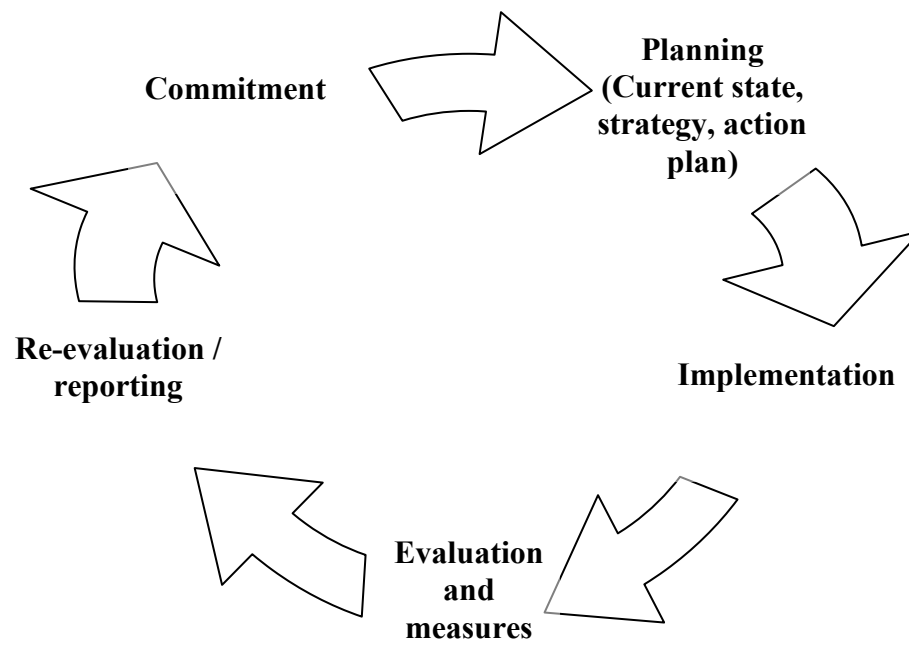
2 — Prior to using the evaluation grid

2.1 — When to use the grid

The sustainable development evaluation grid should above all be considered a continuous improvement process. **For a project**, such an approach involves making regular evaluations to make sure it continues to evolve in the desired direction:

- The pre-project evaluation is used to make sure the knowledge acquisition and needs analysis are complete, and to verify which elements may be under-represented or missing.

- During project implementation, the evaluation is used to check the relevance of the plan, to direct actions, to look for compromises, and to formulate priority improvement courses of action.

- Post-project evaluations allow validating the overall direction of development. It reviews the actions in place to make sure they do not produce counter-intuitive effects. It can also be used to gather information for the improvement of future projects.

As concerns **organizational frameworks**, the sustainable development evaluation grid can also be used to pursue continuous improvement at every step of the management cycle, as illustrated below.

Commitment

Planning
(Current state,
strategy, action
plan)

Implementation

Evaluation
and
measures

Re-evaluation /
reporting

- At the commitment stage, the evaluation identifies the priority objectives and principles that set the foundations of the approach. It defines the major stakes and needs the approach must address. The evaluation can be the basis from which an organizational sustainable development policy is developed.

- The next step is planning, which involves three sub steps: current state, strategic planning and action plan. Planning involves raising questions as to the positioning of the organization in its environment.

  - The organization's current status can be determined by analyzing the sustainability of all organizational activities in an effort to identify the positive and negatives.

  - Strategic planning helps to identify the SD stakes, direction, and objectives, which can be determined and prioritized using the evaluation grid.

  - The SD action plan makes the strategy definitive for the development of indicators and objectives. The evaluation grid can be used to verify if the actions, taken separately or together, can help the organization meet its sustainable development objectives.

- Implementation involves carrying out practical actions and, in many cases, looking for compromises, which can be found by conducting sustainable development analyses.

- The evaluation and measurement phase involves following up on indicators and searching for ways to improve. The evaluation grid can be used to develop these indicators and prioritize some of the improvement possibilities.

- The reporting phase involves communicating that the objectives have been achieved. The sustainable development evaluation grid presentation tools allow presenting the results of frameworks or projects.

- Re-evaluation means reviewing the experience and reflection process for the continuation of the project. Overall assessment of the approach using the evaluation grid yields the progress made and helps to establish new priorities.

2.2 — Preconditions to the analysis

Beyond the painstaking research leading to the design of the Eco-advising Chair evaluation grid, having the right tools for sustainable development project or framework analysis is not enough. The tools must be used stringently, with particular attention to the following three elements: scope of the analysis, needs assessment, and knowledge acquisition.

2.2.1 — Scope of the analysis

To measure progress in sustainable development, it is important to first determine the scope of the analysis. The limits of the process or project must be identified in order to limit the amount of information needed. The difficulties encountered in sustainable development are often due to the fact that the analytical team did not properly and unanimously define the scope of the analysis. Use of the grid first requires asking how it is to be applied, and what are the objectives of the analysis. Several application examples are described in Fact sheet 6.

2.2.2 — Needs assessment

The second prerequisite concerns the needs to be addressed by the project or framework. Sustainable development can target any number of stakes and objectives. Indeed, there are numerous more or less relevant indicators depending on the needs to be fulfilled by the approach. Hence, a specific sustainable development approach can lead to the identification of compromises to be made in order to meet the most basic needs of the greatest number of people, prior to fulfilling the secondary needs or preferences of the few. The needs assessment is essential to fully grasp the nature of the compromises the stakeholders will need to make as they commit to a sustainable development project or framework.

2.2.3 — Knowledge acquisition

Finally, the last prerequisite to the analysis requires the best possible understanding of the issue or situation that has motivated the project or framework. This is done by searching for the specific knowledge/information that can lead to the achievement of project or framework objectives. This knowledge can be technical, legal, moral, social, economic, environmental, etc. Indeed, together, these dimensions affect the project's sustainability and social acceptability. Lack of information in one or another of these dimensions can be detrimental to the project. Furthermore, lack of sufficient knowledge, real or perceived as such, is often a last resort argument to justify leaving things as they are. And while encompassing knowledge is not possible, asking the right questions is, and leaving them on the table if satisfying answers have not been found is strategically sound. And together, these open questions will become guidelines throughout the project or framework when comes the time to find follow-up indicators and theories to put to the test.

3 — Evaluation grid methodology

The grid can be used in two modes, gross analysis and detailed analysis. The choice of one over the other depends on the nature of the project and the aims of the analysis. Depending on the mode chosen, the scope of required knowledge can be quite different. Initially, the gross analysis is used to determine the strengths and weaknesses of a given project, while detailed analysis is a process that is used throughout a project, from end to end.

3.1 — Gross analysis

A gross analysis can be conducted by qualitatively evaluating the performance of a project or framework with regard to the sustainable development objectives set out in the grid. These objectives are not quantitatively weighted or evaluated. The aim of a gross analysis is to verify the overall direction of a project relative to sustainable development principles.

The gross analysis consists in evaluating how a project or framework answers to the sustainable development objectives set out in the grid.

For each objective, ongoing or planned actions that address that objective can be brought out.

At the same time, it is desirable to propose avenues of improvement for each objective deemed relevant in areas where project performance is wanting.

The gross analysis is useful to initiate reflection on the significance of each aspect and to identify ways to improve the project by seeking out shortcomings. The gross analysis is the starting point of an improvement and consultation process. The following items are among the advantages of a gross analysis:

- Allows spotting missing elements;

- Leads to a wider ranging questioning process;

- Allows identifying positive results and determining if the project is on the right track;

- Is low-cost in terms of time and resources;

- Can be conducted without the help of the promoter or professional resources;

- Allows for quick comparison between alternatives for the fulfillment of a need

However, while this type of analysis gives insight into the project, it cannot fully assess project performance or prioritize the avenues of improvement, or even monitor project evolution over time, as does the detailed analysis.

3.2 — Detailed analysis

The detailed analysis, as opposed to the gross analysis, is an in-depth exercise requiring more resources and a greater number of iterations, making it possible to discern the more subtle concerns. Each objective is weighted quantitatively prior to being evaluated, quantitatively also.

Weighting is used to calibrate the grid relative to the relevance and significance of each project objective. For example, the protection of biodiversity is more important for an industrial project located in a riparian area than the construction of a school. When completed, this type of analysis allows prioritizing the actions with regard to the significance and performance of each objective. However, the detailed analysis preferably requires the input of an eco-advisor who is trained to understand and avoid the shortfalls. The complete detailed analysis process (weighting and evaluation) is described in Fact sheet 1.

The following are some of the advantages of detailed analyses:

- Conduct more in-depth investigations;

- Set priorities;

- Establish indicators;

- Assess the progress of a continuous improvement process, as weighting usually does not vary much over time;

- Widen the scope of representations;

- Build a tetrahedron and follow its evolution over time;

- Provide stakeholders with knowledge and understanding of sustainable development stakes.

However, the detailed analysis has some shortcomings. It is a long-term and usually costly process, and, ultimately, it can put into question de soundness of a project.

3.3 — Obligation to consider all the objectives as a whole

One of the particularities of this evaluation grid is that it compels to look at all the objectives together, as a whole. Even though some objectives may seem on the outer fringes of project scope, they cannot be eliminated from the equation, as each of the proposed elements can raise sustainability issues. This is meant to avoid leaving some stakeholders out of the questioning process. The analytical approach must therefore remain an all-inclusive assessment.

4 — Analysis results

Following a detailed analysis, graphical representations of project/framework performance are derived. Images, geometrical figures, and mathematical equations are abstractions that make it possible for people to grasp complex realities and build metaphors in order to communicate. Over the past two decades, several attempts have been made to illustrate the sustainable development concept. The history of these attempts and further explanations are provided in Fact sheet 7.

The principal tool used to illustrate the results of analyses is the tetrahedron, which presents the percentage evaluation of the ethical, social, and economic dimensions in the form of radar charts (weighted average of all the objectives of each dimension, as per the computation shown in Fact sheet 3). The tetrahedron is assorted with a governance index, expressed as a percentage, resulting from the weighted average of all the objectives included in that last dimension.

Finally, five radar charts are presented (one for each dimension). These represent the weighted averages of the evaluations of objectives for each theme of a dimension. These graphs make it possible to assess the following elements:

- Overall project or framework performance;

- The balance between the dimensions of sustainable development;

- The performance of each dimension;

- The performance of each theme.

Moreover, a report writing methodology is proposed, in which the actions are prioritized with regard to the significance and relevance of each project or framework objective. The report allows assessing, in particular:

- The performance of each theme;

- The performance for each objective;

- The overall performance of weighted objectives 1, 2 and 3.

Fact sheet 2 presents complementary information needed to draw the full potential out of the analysis results, in the form of an analysis report writing guide.

5 — Following up on the analysis

The Eco-advising Chair evaluation grid is first of all a questioning tool. It aims to add range to the reflection process and to stimulate discussions regarding a project or framework by integrating new sustainable development stakes. Beyond the questioning process, it is also a decision-making tool as well as a project assessment and planning tool. The results of an analysis illustrate the concerns that need to be taken into account to ensure sustainable development. In is important to note that a sustainable development analysis challenge the relevance of a given project, for example, because it does not adequately address the needs identified.

A sustainable development analysis is not an end in itself. Once the sustainable development analysis has been completed, it should be followed by improvement avenue proposals for the most critical objectives derived by the analysis. Fact sheet 4 lists a series of potential improvement avenues for a fictional recycling project.

Then, determining which elements are measurable (indicators) is the next step, allowing stakeholders to agree on improvement objectives for a given objective. For example, if the objective of reducing GHG emissions is initially evaluated at 10%, what would indicate that it could later be re-evaluated at 60%, 80%, even 100%. To this end, developing indicators associated with grid objectives is the key. Fact sheet 5 presents a series of indicators that can be applied to the fictional recycling project described in Fact sheet 4.

Improvement avenues, indicators, and objectives developed through an analysis can be used to better monitor and assess the improvements made within a project or framework. This approach helps to quickly determine the shortcomings in the implementation of certain improvement avenues and to bring about corrective actions.

Conclusions

Sustainable development is an invitation to change paradigms, as expressed by the Brundtland Commission in 1987. But if a change has occurred since then, it is surely not that which was hoped for in "Notre avenir à tous"[3]. World population has grown by a further billion people whom we have the duty to feed, care for, and educate in order to comply with the first principle of sustainable development. Meanwhile, rain forests have continued to regress, the amount of CO_2 in the atmosphere has continued to climb, the ozone layer is not restored, and the gaps between rich and poor countries have continued to expand. Are we farther than ever from achieving sustainable development?

Maybe! Indeed, various practical initiatives have been put in place around the world. Humanity is learning to comprehend the complex issues of sustainable development. Reports published by the UN Commission on Sustainable Development within the Rio+10 Summit show us the progress made since the Rio Conference[4], but more importantly the daunting task ahead.

There is still so much work to do before promoters, institutional as well as private, are capable of integrating all the issues inherent to sustainable development into the design, achievement and follow-up aspects of projects. Many of these elements, while legitimate, are often thought to be outside de scope. The fact that the answers to these questions are essential to knowledgeable decision-making must be emphasized, as this helps to give better direction to development efforts, making it more viable.

Given the varying interests within groups working on sustainable development projects or frameworks, disagreements can occur. In such cases, the grid can be used to realign the interests of every member towards performance improvement in terms of sustainable development. The tool can then be used to rally the different role players towards shared objectives.

Sustainable development objectives evolve. They need to be modulated with regard to the reality of a given environment, to the values of a given society, and to its developmental stage. This analytical tool is therefore perfectible. With repeated use in differing contexts and by people who are very familiar with their environment, we will see if it is capable of achieving the objectives for which it was designed.

Economic, ecological, ethical, social and governance considerations are taken into account in the analysis. The grid helps to find compromises on the way to reaching the objectives within each dimension. Consequently, asking the right questions leads to taking the actions that favour sustainability in all its dimensions.

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[3] Commission mondiale sur l'environnement et le développement (CMED), (1988). *Notre avenir à tous*. Les Éditions du Fleuve, 432 pages.

[4] www.johannesburgsummit.org

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Fact sheet 1: How to conduct a detailed analysis

A detailed analysis involves weighting the objectives before they are evaluated, and searching for avenues for improvement. This type of analysis allows prioritizing actions in the form of percentages. The process is described below.

Weighting the objectives

Initially, each objective should be weighted relative to its significance within the project or framework. With use, weighting becomes an initial discussion and consensus exercise within a group of analysts from different horizons. By agreeing on the relative importance of various project objectives, or specific situation, analysts assimilate the values, postulates and terminologies of their counterparts.

The analytical team needs to determine the significance of each project or framework objective through a weighting process. The following questions apply to every objective:

Is this objective essential, necessary or desirable for the success of this type of project?

Values of 1 to 3 are used to qualify the significance of a given project objective:

> - 1   Corresponds to a desirable project objective: achieving this objective is not deemed important, or it has low priority.
>
> - 2   Corresponds to a necessary project objective: achieving this objective is deemed important to project or framework success.
>
> - 3   Correspond to an essential project objective: achieving this objective is deemed essential to project development, achievement, and even continued existence.

It should be noted that the value 0 cannot be used in the weighting process because every objective in the grid is a relevant part of applied sustainable development. Consequently, all objectives are subject to evaluation and improvement.

Weighting also serves to calibrate the grid. Indeed, daycare and industrial projects cannot be assessed on the same bases. On the other hand, similar type projects (educational, industrial, energy production, etc.) should have similar weighting, and only local aspects weigh in as characteristics for differentiation.

For example, in a daycare project it may be that "evaluating the potential for replacing non-renewable resources" or "promoting species with symbolic value" would not weigh in very strongly. They would be rated 1, meaning that it would be desirable to consider these dimensions, but not necessary or essential. On the other hand, "giving access to individual and collective goods to the greatest number" and "provide basic safety training" are essential and should be rated 3.

Hence, analysts will know for a fact that the project requires explicit actions aimed at achieving those objectives. As concerns the desirable objectives, naming the daycare centre "The little tree frogs" could be seen, in the end, as an avenue for improvement by planning educational activities on that theme, which could correspond to a small step in promoting a "symbolic species".

Evaluation of the objectives

Once weighted, each objective is evaluated by answering the following question:

How does the project address this objective?

Values of 0% to 100% are used to determine project performance with regard to a given objective. The table below serves as a guide for the evaluation.

0% to 10%: An n objective that is not considered in the project.
10% to 25%: An objective on which the project has indirect effects; that are not tied to project outcomes.
25% to 40%: An objective that is marginally addressed by the project (as defined by measurements).
40% to 60%: An objective that is moderately addressed by the project, much like other similar projects, the objective is accorded a certain amount of attention.
60% to 75%: An objective that is taken into account, but with suggestions for improvement.
80% to 90%: The project stands out for innovation and the degree of consideration for a given objective and the choices made in that respect.
90% to 100%: The project or framework is a model of innovation with regard to a given objective.

Analysts can then derive the average of their respective scores or agree on an overall score based on the results of their discussions. The latter is recommended because it fosters the exchange of viewpoints, potentially leading to better understanding of project dimensions. A third option consists in making individual evaluations and only discussing divergent results.

One must keep in mind that despite recourse to quantitative evaluations, the weighting and evaluation of the objectives within a project or framework is a highly subjective undertaking, or rather, one that favours intersubjectivity.

Improvements and comments

The comments of analysts and avenues for improvement that were envisioned and brought forth during the analysis must be briefly entered in the appropriate boxes of the evaluation grid.

Comment files can also be completed for each project objective requiring avenues for improvement. Each objective should have a separate file. Each file should comprise four sections. The items included in the last three sections should be reflected upon by the analysts during the evaluation process.

- Project and objective identification;

- Identification of the actions envisioned by the promoter to meet the corresponding objective;

- The negative effects these actions could have on other grid objectives;

- Suggested improvement actions (if needed in the case of a low score) or comments regarding a given objective.

Fact sheet 2: Interpreting analysis results

An analysis report should be produced every time the grid is used. The report principally aims to determine which objectives should be prioritized to improve project performance in terms of sustainable development, but also to highlight the successes of the project or organization. You will find below a list of items that could be highlighted in a detailed analysis report.

Project balance and overall performance: tetrahedron, governance index and radar charts

The report should provide an overall assessment of the project in terms of sustainable development. The tetrahedron, governance index, and radar charts are graphic representation tools, visual presentations of the scores awarded to each dimension (5) and each theme (32). All scores are computed automatically by the spreadsheet (see Fact sheet 3 for equation details). Each score is a project performance indicator for a given sustainable development dimension or theme. These indicators do not have scientific values, but are used to compare performances between dimensions and themes, and between projects/frameworks. Below is a qualitative assessment of scores that could be awarded to a dimension or project.

Between 80% and 100%:	Dimension or theme strongly considered in the project;
Between 60% and 80%:	Dimension or theme considered in the project;
Between 40% and 60%:	Dimension or theme moderately considered in the project;
Between 20% and 40%:	Dimension or theme insufficiently considered in the project;
Below 20%:	Dimension not considered in the project.

Sustainable development projects should also provide balance in terms of meeting needs, according to the four dimensions. Projects with scores below 40% have little chance of sustainable development success and should be redesigned.

The evaluation grid thus helps to easily identify the overall strengths and shortcomings of projects or frameworks, through the performance of dimensions or themes, as illustrated by the graphic representation tools, and to implement an improvement process.

Priority stakes

For an organization, priority stakes are the themes for which the weighting averages of objectives are equal to or above 2.3. This weighting average is computed automatically by the spreadsheet, for each theme, in the table corresponding to the results page.

Successes and failures

In an analysis report, the successes and failures of a given project should be highlighted.

- Successes are the actions that justify an evaluation score of 85% or better for a given objective (regardless of weighting).

- Failures are objectives that receive evaluation scores below 15% (for weightings 2 and 3).

Prioritizing objectives

In order to turn efforts to the most relevant improvement avenues, determining priority objectives is essential. In general, the more significant an objective is deemed to be (high weighting score) and the poorer its performance (low evaluation score), the more urgent is the need to act and implement corrective actions. The figure below shows a prioritizing method for objectives needing improvement.
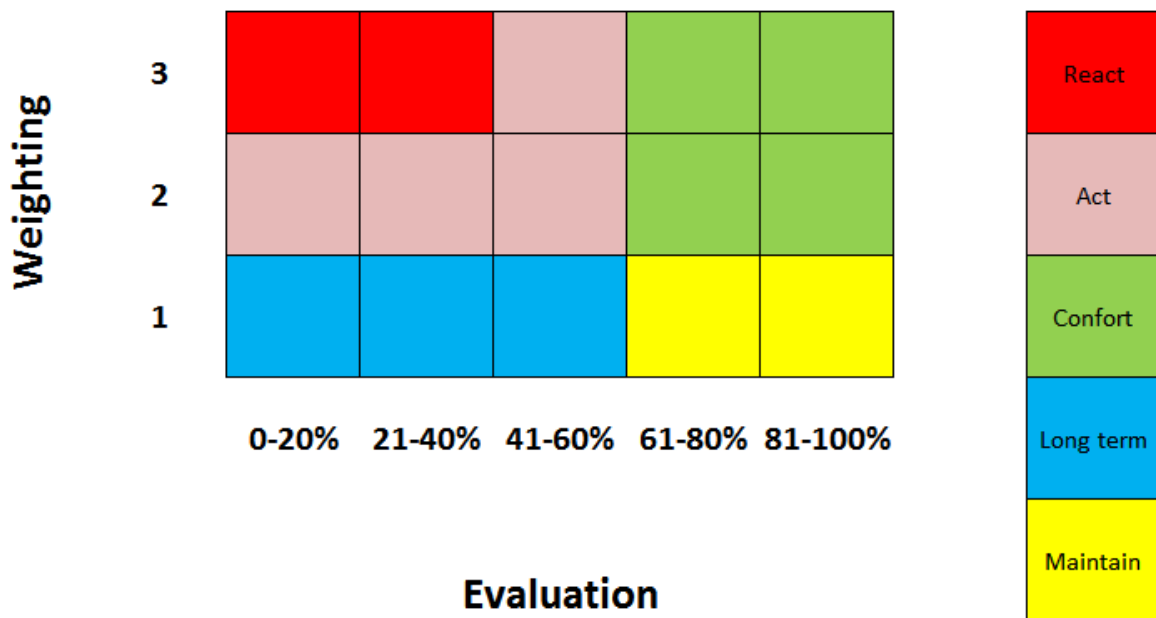
- The priority objectives, those needing to be addressed immediately by the organization or project committee, are those with a weighting score of 3, but with an evaluation score below 40 %.

- Objectives weighted 3 and evaluated at 40-60%, and those weighted 2 with evaluations below 60% must be acted upon.

- Objectives weighted 2 or 3 and evaluated above 60% should be consolidated.

- Objectives weighted 1 and evaluated above 60% should be considered over the long terms by the organization or project committee.

- Objectives weighted 1 and evaluated above 60 % are not considered priority objectives.

In each objective table, one row is used to designate which objectives must be addressed immediately, acted upon, or consolidated, in the case of long-term, non-priority objectives. This prioritization can only be done on a per-objective basis, and has no meaning for cumulated values (weighted and evaluated) of themes and dimensions. The radar charts however make it possible to establish priorities for themes and dimensions.

Prioritizing improvement avenues

The report should, finally, include a prioritized list of suggested improvement avenues. These avenues are those proposed for objectives that should be addressed immediately or acted upon by the organization.

Important note

Despite the avenues proposed in this analysis interpretation method, it is nevertheless essential for analysts to conduct their own interpretation of the results. Users of the grid should not solely rely on what the analysis suggests. One should keep in mind that contextual elements can strongly influence the true priorities of an organization or project committee.

Moreover, each project is assessed according to its own weighted value, what matters most is its progress, not its starting point. The approach allows avoiding falling into the trap of comparing or rating a project in relation to another. Indeed, while community garden projects and industrial projects can be analysed using the grid, comparing their performances one against the other would be inappropriate.

However, if it is done carefully, projects of same nature can be compared if the weighting of each objective is similar. In the best of cases, the grid can be used to compare a project with itself, to follow its evolution. It is, in essence, a dashboard containing relevant performance indicators for project monitoring and testing hypotheses.

Fact sheet 3: Computing overall results (dimensions and themes)

Once all grid objectives have been evaluated, the Excel spreadsheet automatically computes the project's or framework's score for each objective.

Each objective's score is obtained by multiplying the evaluation score by the weighting score. Then, the weighting score is multiplied by 100 to derive the potential maximum score of the objective (based on weighting). For example, if an objective has been weighted 2 in importance, and has received a 40% evaluation, its total score is 80 (or 2 * 40) of a potential maximum of 200 (or 2 * 100), therefore 80/200. The calculation is then repeated for each objective.

Examples
• An objective weighted 1 and evaluated 40 will have a score of 40 of a potential 100.   • An objective weighted 2 and evaluated 70 will have a score of 140 of a potential 200.   • An objective weighted 3 and evaluated 20 will have a score of 60 of a potential 300.

The overall result of a dimension (or theme) is the weighted average of the scores of all the objectives within that sustainable development dimension (or theme).

To get the weighted average, the total of all objective scores is divided by the total of all potential maximums of all objectives.

Based on the three objectives of the above example, these scores would be:
An overall score of 240 (40+140+60)   Of a potential maximum of 600 (100+200+300)   For an overall result (weighted average) of 40% (240/600)

That is how the overall results of the five sustainable development dimensions are derived, as are the results of the 33 themes. These results are subsequently illustrated using the tetrahedron, governance index, and five radar charts.

Fact sheet 4: Examples of improvement avenues

The following are examples of improvement avenues for certain grid objectives, taken from the analysis of an institutional recycling system implementation project.

Implementing actions targeting the neediest within a community:
- o Forward the savings from landfill fees and income from refunds to social agencies
- o Tender contracts to reintegration organisations

Look to develop partnerships
- o Create a network with other institutions to make certain collection services economically viable

Innovation potential
- o Carefully follow up on the comments from various users
- o Plan the installation of source separation bins for problem waste (batteries, ink cartridges, etc.)

Plan for the judicious use of renewable resources
- o Raise awareness regarding paper source reduction

Assess the possibilities for replacements
- o Stop the sale of bottled water
- o Eliminate plastic wrap and Styrofoam containers from the cafeteria

Increase the sense of belonging
- o Communicate the results of recovered materials and recycled waste

Provide access to individual and collective goods to the greatest number of people
- o Implement the system in all organizational buildings and facilities
- o Install bins outside for passers-by and visitors

Ensure product sustainability
- o Re-evaluate the criteria for the construction of future bins, to make them more robust

Foster the sharing of competencies
- o Broadcast the implementation process and operation of the system on the Web so that other organizations may benefit from the experience

Fact sheet 5: Examples of performance indicators developed from the objectives

The following are examples of indicators for certain grid objectives, taken from the analysis of an institutional recycling system implementation project, associated with the improvement avenues put forth in Fact sheet 4.

<u>Implementing actions targeting the neediest in the community:</u>
- o Annual amounts given to social agencies
- o % of contract values turned over to social economy enterprises

<u>Look to develop partnerships</u>
- o Number of partners in the compostable matter collection network

<u>Innovation potential</u>
- o Number of innovations resulting from user comments
- o % of hazardous materials kept out of landfill

<u>Plan for the judicious use of renewable resources</u>
- o Number of source reduction awareness raising actions

<u>Assess the possibilities for replacements</u>
- o % of waste deemed non-recyclable as a ratio of total waste generated

<u>Increase the sense of belonging</u>
- o Make the recycling system known and appreciated within the organization
- o Number of actions aiming to communicate results (system performance)

<u>Provide access to individual and collective goods to the greatest number of people</u>
- o Number of bins available in organizational buildings and facilities

<u>Ensure product sustainability</u>
- o Number of repairable damaged bins per year
- o Number of bins having to be replaced due to damage per year

- <u>Foster the sharing of competencies</u>
  - o Number of hits on the Website describing the implementation process
  - o Number of organizations asking for information about the implementation process via the Website

Fact sheet 6: How the grid has been used

The evaluation grid described herein is the result of numerous projects conducted over the past twenty years, under the direction of Claude Villeneuve. The grid has already been used in the analysis of various project phases, from design to completed projects. While it has been developed for project applications, the grid can also be used for policies, programs, concepts, and even with other analytical tools. Finally, it can be used to evaluate continuous improvement processes.

The grid has been tested in numerous contexts and yields results that meet the demands of users wanting to engage in sustainable development. The following is a list of the contexts in which the grid has been used:

Gross analyses conducted by the Eco-advising Chair

- Le Massif Project

- Îles de la Madeleine waste management

- Comparison of carbon offset tools

- Montreal Science Centre

- National Assembly

- Cascades yearly report

- City of Montreal transportation plan

Detailed analyses conducted by the Eco-advising Chair

- Ashuapmushuan Assi

- Récupère-Sol

- Grand défi Pierre Lavoie

- Comparison of contaminated soil restoration systems

Analyses conducted by students within the framework of their Eco-advising study program

- Gross and detailed analyses of the environmental impact of major projects

- Gross analysis of the contents of a sustainable development book

- Partial detailed analyses of an institutional recycling project implementation scheme

- Detailed or gross analyses of projects conducted by sponsors

- Plus multiple uses during professional on-the-job training

Fact sheet 7: History of graphic representations of sustainable development

At the end of the 1980s Barry Sadler published a model using circles to represent social, environmental and economic needs, the intersecting point of the circles being sustainable development (Sadler, 1990 and Jacobs & Sadler, 1991). The model subsequently inspired the triangle model (Villeneuve, 1990), which in turn laid the foundations for the tetrahedron model described hereinafter. Jean-Pierre Revérêt, at a Quebec economist conference in 2004, and later Corinne Gendron proposed the following hierarchical model:

"*… sustainable development relies of a hierarchical scheme of its three poles — environmental, economic and social— through which development respects environmental integrity by preserving the major ecological regulators (climate, biodiversity, water, etc.), effectively contributing to social and individual wellness, and instrumenting the economy to this end. In short, ecological integrity is a condition, economy, a means, and social and individual development, an end of sustainable development, while equity is at once a condition, a means and an end. The implementation of sustainable development furthermore implies a system of governance which ensures the participation of all to the decision-making process and allows for the expression of an ethics of the future through which future generations are taken into account.*" (Gendron, 2005)

Starting in 1991, the Sustainable Development Laboratory Region worked at defining an analytical framework in an effort to qualify sustainable development projects. That is how the sustainable development secretariat, and later the project analysis committee were given the mandate of developing a practical model and evaluation grid for that purpose. The tetrahedron (Villeneuve, 1992) was submitted and thereafter used to assess various proposals.

Claude Villeneuve applied the model and published the results with the Quebec public hearings commission, in the fulfillment of various mandates, including analysis of Quebec's forest policy, energy efficiency studies, and the Quebec Government's ministry of natural resources energy review table[1].

The tetrahedron, as developed, is a representation of the qualitative assessment of the sustainability of development projects. It takes up the scores of each of a project's poles found in the evaluation grid and represents them without aggregation. The use of a tetrahedron figure within a tetrahedron can be even more interesting. Using the radar chart function of Microsoft EXCEL™, visualization of the balance between the poles is made easier. The scores derived by the grid are entered directly into the graph, yielding a barycentric representation that is easy to interpret and which can represent measured values as well as projected ones.

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[1]— Table de consultation du débat public sur l'énergie, 1996, <u>Pour un Québec efficace</u>, Gouvernement du Québec Ministère des Ressources Naturelles du Québec, 150 pages

The method builds a graphic representation in which the outer tetrahedron is the ideal sought. The sustainable development project is thus recognizable as it is lined up with the outer margins of the tetrahedron. Hence, a small tetrahedron with acute angles represents unbalanced situations. In such a representation, a project that is lacking in all aspects yields a small figure that is distant from the idea of "completeness". The poles that must be given priority are those that appear farthest from the objectives.

However, tetrahedron representations are arbitrary and rely on the data supplied by those who conducted the evaluation, their understanding of the project, and their specific skills. Analyses conducted by separate groups can yield different figures. In any case, it has the advantage that it brings together the viewpoints and the examination of a number of criteria that may not necessarily be considered with traditional analytical methods. The improvement process consists in identifying the elements that should be integrated into the project or the compromises needed for the project to reach its objectives, particularly for the poles with the lowest results. When the compromises and/or integrations have been identified, they are validated and presented to the promoter, and a new figure can be produced if the promoter agrees with the recommendations. This process is subjected to regular re-evaluations to closely monitor the advancement towards the objectives for each type of project need.

Note that building a balanced tetrahedron is much easier in the early stages of a project. That is why the evaluation grid must be used throughout the process to represent a project as it progresses.

The tetrahedron is a representation that can be used in four areas of tsustainable development:As a tool to clarify project needs and search for compromises;

- As an analytical and improvement tool for projects and/or policies;

- As a project or development policy design model;

- As a mediation tool.

For all these uses, representations serve as explanatory supports. At any rate, combining the tetrahedron and evaluation grid is useful to make sure the needs of the current generation are being met without compromising those of future generations.

Fact sheet 8: History of the Eco-advising Chair evaluation grid

The current tool is the outcome of the work of numerous professionals, volunteers and university students in the Saguenay–Lac-Saint-Jean region of Quebec, Canada, Strasbourg, France, and elsewhere around the world.

The following are a few milestones in the development of the analytical tool, the history of which is closely tied to the Chair on Eco-advising Research and Intervention and the many types of training in its wake.

1988: Reflection on the application of the sustainable development concept in a defined geographical context. Following the Brundtland Report analysis in a university framework, the Saguenay–Lac-Saint-Jean region was proposed as a sustainable development laboratory, meaning that the characteristic elements of the region had to be determined along with its evolution in terms of development, so as to establish hypotheses on ways of making its development more sustainable.

1991: First international Francophone summer university on sustainable development. Search for the indicators that would allow comparing two regions, in order to qualify their level of developmental sustainability. Initial per-project analysis framework.

1992: The "equity and justice" dimension is added to the laboratory region sustainable development model.

1993: Third international Francophone summer university on sustainable development. First proto-grid: "The right questions". The four-pole model and the laboratory region model are presented to UNESCO in Paris (MAB program).

1994: Initial version of the project evaluation grid tested at the Strasbourg Eco-advising Institute.

1995: The evaluation grid is tested with 196 projects from the Saguenay–Lac-Saint-Jean region for the Montreal Eco-Summit.

1997: The aboriginal/native dimension and weighting are added to the grid. The grid is presented at the Nikan International Congress on territorial applications of sustainable development.

1998: Publication of the four-pole model in "Qui a peur de l'an 2000?".

1999: Publication of the first official version of the grid and utilisation in University of Sherbrooke Master's of Environment courses.

2000: Analysis of the design of the Boreal Diversity Conversation Centre.

2001: Eco-advising programme started at UQAC. The grid is adapted for teaching purposes.

2002: Dakar International Sustainable Development Symposium, amendments relative to cultural dimensions are made to the grid.

2003: New version of the grid for the third Eco-advising cohort at Chicoutimi. The Eco-advising Chair is created; the grid is used for the Chair's purposes and enriched by the experience.

2004: Utilisation of the grid in Chair projects. Adaptation of the grid for the "Villes et villages en santé" network and the Government of Canada's sustainable community development program.

2005: ACFAS ØØ project designed using the grid. International symposium: "Sustainable development: What progress, what tools, what training?".

2006: New version of the grid with minor modifications (automated computations, etc.).

2007: Major update of the user's guide and modifications to the visual aspects of the grid. Simplified version tested at the Sherbrooke University sustainable development rendezvous.

2008: Creation of the Master's applied sustainable development short program and course 1ECC808, using the evaluation grid as reference tool.

2009: Publication of an article about the grid in the 4D encyclopaedia.

2010: Comparative analysis of three tools (including the Chair's grid) to assess the coherence of Quebec's contaminated land management policy.

2011: Major update of the grid, including the new governance index and automated report writing methodology. The user's guide is updated. Start of the testing period of the new versions with the general population.

2012 : First translation in English.

Further developments to come…

Fact sheet 9: Update of the themes and objectives according to the principles issuing from the Quebec Sustainable Development Act

The Government of Quebec's National Assembly unanimously adopted a sustainable development act in 2006. The act applies firstly to all public administration offices: Public corporations, government departments and organizations; 150 government-run departments, organizations and companies. The act will eventually be applied to municipal organizations, schools, and health and social service institutions.

The act imposes a new management framework at the administrative level. The organizations concerned have to adopt sustainable development action plans that will impact their policies, programs, and activities. These action plans are to be monitored and reported.

The act puts forth 16 sustainable development principles which must be accounted for to better integrate sustainable development research in an organization's fields of activity. These principles were drawn from the United Nation's 1992 Rio Summit. All the principles are to be applied to all public administration actions.

The table below matches the elements of the Quebec sustainable development act with the themes and objectives found in the grid. The table can be used as a guideline by professionals in charge of applying the act who may want to use the grid for their own analytical and evaluation purposes.

Principles of the act:

A. Health and quality of life

B. Social equity and solidarity

C. Environmental protection

D. Economic efficiency

E. Participation and engagement

F. Access to knowledge

G. Subsidiarity

H. Intergovernmental partnerships and cooperation

I. Prevention

J. Precaution

K. Protection of the cultural heritage

L. Conservation of biodiversity

M. Respect for the carrying capacity of ecosystems

N. Responsible production and consumption

O. Polluter pays

P. Cost internalization

Principles of the sustainable development act	Concerned themes and objectives of the Eco-advising Chair evaluation grid
A. Health and quality of life	Ethical: Theme 1 Social: Themes 1, 2, 4, 5 & 6
B. Social equity and solidarity	Ethical: Themes 2 & 3 Social: Theme 5 Economic: Themes 1 & 6 Governance: Theme 4, Objective 6.3
C. Environmental protection	Ethical: Theme 3 Ecological: Themes 1 to 7 Social: Objectives 1.3 & 1.4 Economic: Theme 3
D. Economic efficiency	Economic: Themes 1 to 7
E. Participation and engagement	Ethical: Theme 5 Social: Themes 4, 5 & 6 Governance: Themes 2, 4 & 5
F. Access to knowledge	Social: Theme 3 Economic: Objective 7.2 Governance: Themes 4
G. Subsidiarity	Governance: Themes 4 & 5
H. Intergovernmental partnerships and cooperation	Ethical: Themes 4 & 5 Governance: Theme 2
I. Prevention	Governance: Objective 6.1
J. Precaution	Governance: Objective 6.2
K. Protection of the cultural heritage	Social: Theme 7 Governance: Theme 4
L. Conservation of biodiversity	Ethical: Theme 3 Ecological: Themes 1, 4, 5, 6 & 7
M. Respect for the carrying capacity of ecosystems	Ethical: Theme 3 Ecological: Themes 1, 2, 4, 5 & 6
N. Responsible production and consumption	Economic: Themes 3 & 7
O. Polluter pays	Economic: Theme 3, Governance: Objective 5.2
P. Cost internalization	Economic: Objective 3.2