# Methodology for Project Impact Assessment Using Sustainability Indicators

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# 1. Background

*Project Impact Assessment and Sustainability Indicators*

Project impact assessment measures the outcomes of a project intervention in isolation of other possible factors, in other words, it demonstrates and evaluates to what extent the effects are attributable to the project intervention. Project impact assessment is a powerful tool in assessing appropriateness and effectiveness of projects (Baker, 2000). Impact assessments deem to be technically complex, may be politically sensitive and time consuming, and because impacts may involve longer-term changes, and it may take months or years for such changes to become apparent. Notwithstanding these potential difficulties, project impact assessment represents a vital stage of a project, while entailing a relatively small investment, compared with overall project costs and project duration. Indeed, the knowledge gained from project impact assessment can provide critical input for future designs of programs and projects, it may facilitate their cost-effectiveness and indicate how to best address intended project objectives. Further, project impact assessment provides opportunities for stakeholder feedback, especially beneficiaries, on the project, facilitating willingness to learn from experiences and to adapt to changing needs. It may also, promote and celebrate the project by highlighting accomplishments and achievements, building morale and contributing to resource mobilization (IFRCRCS, 2011).

Project impact assessments focus on the effects, rather than on project management and delivery. Impact assessments typically occur after project completion, although impacts may be measured during longer project implementation and when feasible (IFRCRCS, 2011). Figure 1 summarizes key evaluation questions which distinguish between project monitoring and impact assessments. Although both monitoring and project impact assessments are integrally linked, the main difference is their timing and focus of assessment. Monitoring is ongoing and tends to focus on what is being carried out. On the other hand, project impact assessments are conducted at specific points in time to assess what difference the project made and to what extent. Monitoring data is typically used by managers for ongoing project implementation, tracking outputs, budgets or compliance with procedures. Impact assessments may also inform implementation but they are usually less frequent and examine larger changes (impacts) that often require more methodological rigour in analysis.

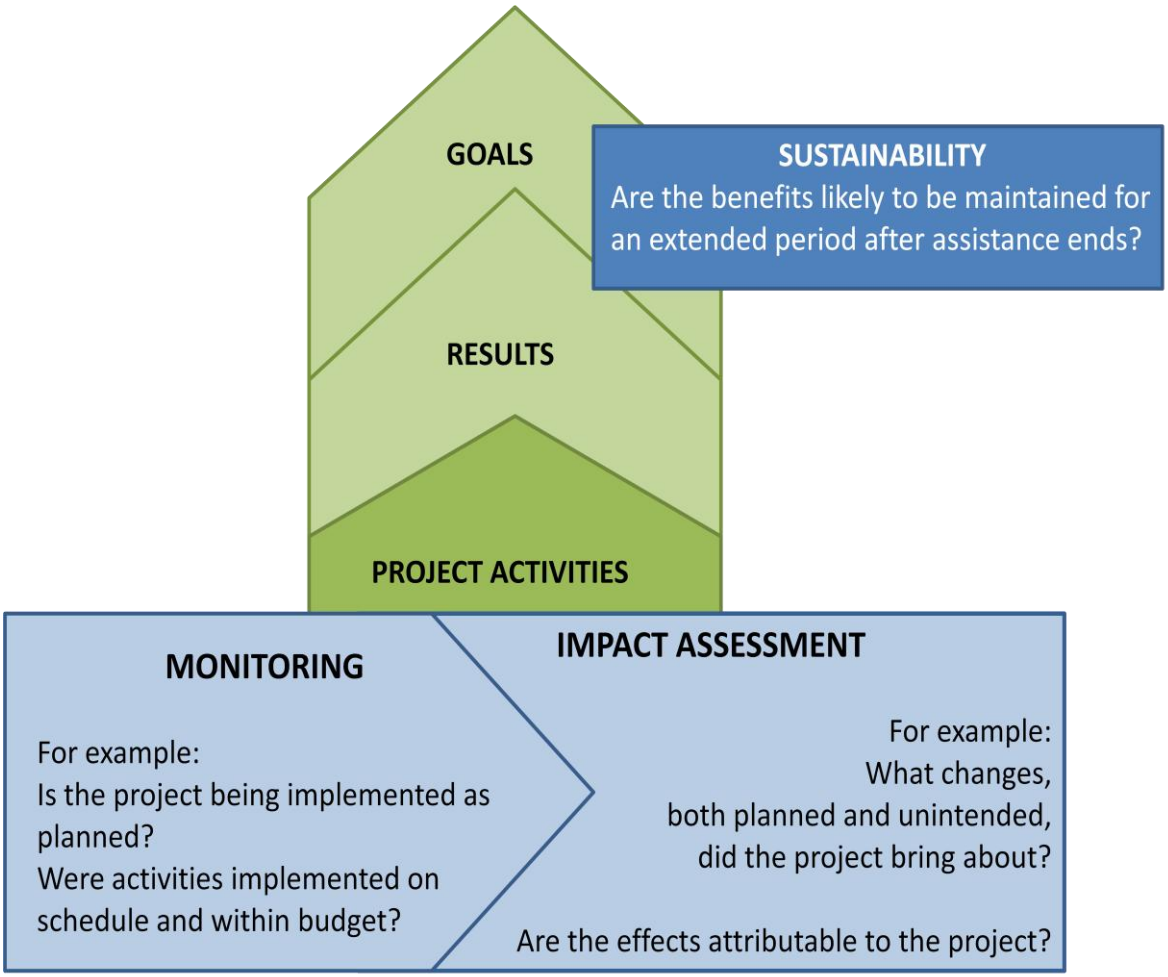


Figure 1. Project monitoring and project impact assessment.

Notwithstanding the differences between the monitoring and impact assessments, they are integrally linked: *monitoring typically provides data for assessment, and elements of assessment occur during monitoring*. For example, monitoring data may show that 200 community facilitators were trained (what happened), but it may also include post-training tests (assessments) on how well they were trained (IFRCRCS, 2011) and what change it brought (impacts) as compared to a situation if the project did not happen. When assessing project impacts, such monitoring information may be used to assess any difference the training made towards the overall objective or change the training was trying to produce (IFRCRCS, 2011), e.g. increased number of trees, and whether this was relevant in the reduction of soil degradation (impact).

Regardless of project type or questions being addressed, each project impact assessment is unique and depends on factors, such as: availability and quality of data, local capacity, time constraints and budget concerns (Baker, 2000).

Project impact assessment may be performed using sustainability indicators. Indicators of sustainability measure characteristics or processes of the human-environmental system to ensure their future continuity and functionality. Sustainability indicators show scientifically verifiable trajectory of maintenance or improvement in system functions (Hak et al., 2007). Given, however, that sustainability indicators are intended to report on sustainability, the most difficult definition is that of sustainability itself (Hak et al., 2007). Over the last decades a number of definitions of sustainability have been proposed (Dresner, 2008). Almost every article or book on sustainability bemoans the concept of sustainability is broad and lacks consensus, usually followed by authors´ own preferred definitions. The term *sustainable development* emerged in the World Conservation Strategy from 1980 of the International Union for Conservation of Nature and Natural Resources, and was defined as *the integration of conservation and development to ensure that modifications to the planet do indeed secure the survival and well-being of all people* (Dresner, 2008). However, probably the most well-known definition is of the World Commission on the Environment and Development (WCED) – *Our Common Future* – The Brundtland Report (Box 1).

Sustainability has also recently been put into the frames of ´Sustainability Science´ wherein it is defined as an attempt to bridge the natural and social sciences for seeking creative solutions to complex challenges (Komiyama et al., 2011).

Below are just a few examples, by no means indicative, of the range of definitions (Bell and Morse, 2008).

**Box 1. Some definitions of sustainability**

General definitions of sustainability include the following:

… the capacity of a system to maintain output at a level approximately equal to or a greater than its historical average, with the approximation determined by the historical level of variability (Lynam and Herdt, 1989)

… maximizing the net benefits of economic development, subject to maintaining the services and quality of natural resources over time (Pearce and Turner, 1990)

Definitions of sustainable development:

…development that meets the needs of current generations without compromising the ability of the future generations to meet their needs and aspirations (WCED, 1987)

… development that improves the quality of human life while living within the carrying capacity of supporting ecosystems (IUCN, 1991).

Box 1. Selected definitions related to sustainability. Adopted from Bell and Morse (2008).

Broadly speaking, sustainability is the capacity of any system or process to maintain itself indefinitely and thus sustainable development indicate human, social and economic systems, which are able to maintain themselves indefinitely in harmony with the biophysical systems of the planet (Hak et al., 2007). Intuitively simple, yet the dynamic concept of sustainability pose challenges in practical implementation as well as to be measured by sustainability indicators.

There is a range of sustainability indicators published by different organizations and proposed by different groups (Bell and Moorse, 2008). The selection and use of indicators will depend on a range of factors. For example, some of the crucial aspects to be assumed are temporal and spatial scales of assessment (sustainable 'where' and for 'how long'). Also, one cannot use every indicator that can be potentially available, and an element of simplification, while at the same time maximizing unique and relevant information, is essential. Because sustainability indicators attempt to encapsulate complex and diverse processes in a relatively few simple measures, the selection of sustainability indicators may be subject to discussion and there is not a silver bullet solution that depicts the best choice of the indicator. There is a wide range to choose from and the choice will depend on multiple factors including availability of resources, feasibility of measurement, time constraints, data availability, among others.

The crucial aspect of selection is whether the sustainability indicator, reviewed over time, may tell something about the sustainability of the context over history and ideally as projected into the future. This is important because sustainability intrinsically involves the maintenance or continuity of project outcomes over time. In that, for example, if proposed sustainability indicator relates to a short-term gain (such as yield increase due to massive fertilizer input), such an indicator will quickly become redundant when the project ceases and fertilizer is no longer available. Therefore it is crucial to provide a project with sustainability indicators that are collectable, viable and feasible for longer period (Bell and Morse, 2008).

Because project impact assessment needs to take into account both positive and negative outcomes, there is need to tie these with sustainability indicators. For example, new crop or animal breeding could lead to cultural erosion and social exclusion (for non-project beneficiaries) may be considered negative outcomes.

*The Project – ´Produzir e Conservar´*

In 2009, the Conservation International – Brazil (CI-Brazil) and Monstanto launched a broad program of biodiversity conservation. The overall goal of this program is to conserve biodiversity in agricultural landscapes, aiming mainly to contribute to preventing deforestation, species extinction and facilitate compliance with environmental laws by landowners. This 5-year project engaged with farmers in Brazil with the aim to transform their activities to a more 'sustainable production' tied with ecological restoration and conservation of water resources.

This program was developed in order to advance towards the following long-term principles:

- **Zero Deforestation**: by encouraging the production on degraded land and permanent protection of remnant native plants;
- **No illegal property**: contribute to farmers´ compliance with environmental legislation, via market incentives and support for the registration and restoration of Legal Reserves and Permanent Preservation Areas and any selling restrictions to owners who do not prove their legality;
- **Zero Extinction**: to help preventing the extinction of species, supporting studies on the ecology of endangered species conservation and encouraging them in private reserves.

This program therefore intended to point out ways to move toward above listed goals and test them in the field. Two areas were chosen: the region of Mata Atlantica and

Cerrado (Brazilian savannah). These two biomes were selected on the account of their emergency situation with respect to biodiversity; both are hotspots, the world regions richest in number of species and the most endangered by human actions. Indeed, one of the biggest challenges for Brazil is to promote social and economic development without destroying its immense natural capital. Brazil has six major terrestrial biomes and alongside Indonesia is the most biodiverse nation of the planet. It is estimated that in total there are about 1.8 million species in the country, of which science knows less than 10%. The expansion of Brazilian economic activity in the last 50 years however resulted in alteration by human activities of almost 50% of Brazil's natural ecosystems. Despite all the efforts of society, Brazil is still rapidly losing its biodiversity and currently, 776 animal species and 1,538 plant species at risk of extinction.

Cerrado, in the centre-east of Brazil represents an important agriculture frontier of the country for soybean and cotton. According to the Brazilian Institute of Geography and Statistics, East of Bahia concentrates 92% of the production of grains in the state (IBGE). This area is also expected to experience future expansion of agricultural production on the account of available area and good conditions of soil and climate. As per above, at the same time, east of Bahia is an important region for biodiversity conservation. If maintained at the current rate of degradation, the Cerrado may disappear by 2030. Many species of plants and animals are already at risk of extinction, such as the Armadillo, the Maned Wolf and the Eagle-Gray, and in need of interconnected and continuous natural habitats. Here, within the project farmers were encouraged to promote protection of biodiversity, to monitor use of the soil, to promote management of degraded areas and to protect the species at their farms through environmental education in local communities.

The second focus area of the project aimed to establish biodiversity corridors within the remnants of Atlantic Rainforest that stretches from the northeast to the southern Brazil. A biodiversity corridor is a regional planning unit consisting of a network of protected areas (public and private) that are immersed in landscapes managed to mitigate the negative effects of human occupation, making development activities compatible with the conservation of biodiversity and ecosystem services.

Similarly, the project closely collaborated with farmers to establish protection areas within farmlands. The project therefore incorporated the interdependencies and synergies involved in land use and has been underpinned by the concept of ‘ecosystem approach’, which is believed to be paramount for long-term success of any restoration or conservation project.

The environmental compliance on farms is essential to the preservation of natural heritage, as each native remnant land enables connectivity within protected areas, ensuring gene flow species besides environmental services. Recovery efforts of Permanent Preservation Areas and Legal Reserves of registration are fundamental to the preservation of species diversity.

One way to demonstrate long-term commitment to the environment is to give the permanent character of the remaining native reserves on farms, turning them into Private Natural Heritage Reserves (PRNP), if possible. This protected area is created from the will of the land owner, who is committed to preserving nature. RPPNs are important in the formation of biodiversity corridors and many of them have special role in protecting endangered and endemic species of plants and animals.

To reverse the situation of threat to Brazil species diversity and ecosystem services is not just a national legal commitment, but also an international commitment, given the fact that Brazil has taken responsibility of significantly reducing the loss of biodiversity in line with the goals of the United Nations. Brazil adhered to the "Millennium Development Goals", which stipulate various policies to be met by countries by the year 2010. Among the Millennium Development Goals set for the environment is the critical need to reduce the adverse environmental impact of agriculture, including the restoration of depleted lands and protection of natural ecosystems. Brazil is also a signatory of the Convention of Biological Diversity (CBD) and aims to reach the Aichi Biodiversity Targets[1]. Thus, the Biodiversity Conservation Program by CI-BR would directly contribute in measurable way to fulfil international commitment to biodiversity conservation.

'Produzir e Conservar' involves a multitude of actions performed by a range of stakeholders including various universities, governmental institutions, NGOs, such as, CEPAN, AMANE, IBOPE, Bioeste, Universidade Estadual da Bahia to exemplify just a few of them. These actions are summarised in Annex I.

*Impact Assessment of ´Produzir e Conservar´*

CI-Brazil requested the International Institute for Sustainability (IIS) to design a methodology for project impact assessment of ´Produzir e Conservar´ using sustainability indicators. The overall aim was to estimate medium- to long-term (approximately 10 years) impacts of ´Produzir e Conservar´ project on the future ecosystem services, (water, biodiversity, carbon) as well as socio-economic conditions.

Between January 2012 and May 2012 there were various dialogues between CI-Brazil and IIS which facilitated data acquisition and in-depth insights into the activities within ´Produzir e Conservar´ and this was necessary for the design of methodology. In January 2012, IIS and CI-Brazil organized a two-day workshop within which major participatory

1 In October 2010, twenty new objectives called Aichi Biodiversity Targets (2011-2020) were adopted as a part of the Strategic Plan for Biodiversity during the 10th meeting of the Conference of the Parties (CoP) in Nagoya, Aichi Prefecture. For example, the Targets aim to half or where feasible, bring to zero the rate of loss of the world's natural habitats.

groups of Cerrado and Mata Atlantica took part, as well as the group responsible for communication of the results of the project with the wider community (though, for instance, photo exhibitions) and shared their up-to-date progress, scope of activities and future plans. The ´flag ship´ actions were discussed in depth as well as limitations and constraints to the project. The participants gave their insights and observations on activities within the project (e.g. successes and difficulties) and exchanged suggestions on how to further improve the project. During the meeting, communication channels were established and follow up correspondence was put in place to share the data.

Between January and March 2012, IIS received all the data needed (details on actions, reports, analysis, commentaries, proceeding materials, manuscripts etc). Also, there was communication between IIS and the groups in the field, addressing questions or doubts with respect to the data. The smooth interaction between IIS and groups in the field was facilitated by CI-Brazil. In March 2012 the was an intermediary meeting with CI-Brazil on the project's progress while the final draft of the proposal on preliminary selected sustainability indicators and methodology was consulted in the beginning of May 2012. All data were analysed and reflected upon in the context of up to date literature review of scientific articles, policy and industry proceedings.

IIS recognizes the importance of expert opinion (e.g. Krueger et al., 2012) and practical experiences and therefore undertook a number of internal and external consultations. Hence during the design of the methodology, other scientists[2] and representatives from governments and the private sector were thoroughly consulted. For example consultations were made during scientific conferences and meetings such as the Planet Under Pressure London (26-29 March 2012, London, UK), Florestas Nativas workshop – sustainability indicators group, University of Sao Paulo, (04-05 May 2012, Piracicaba, Brazil), Rio+20 United Nations Sustainable Development Conference (20-22 June 2012, Rio de Janeiro, Brazil), and at the 18th Annual International Sustainable Development Research Conference the Hull University (24-26 June 2012, Hull, UK).

Indicators were selected upon participatory approach with a range of stakeholders, such as groups in the field and experts with respect to the objectives of the study and objectives of this project impact assessment, and were communicated with the members throughout the project.

Conceptual framework for methodology design is presented in Figure 2.

2 E.g. Dr Dorice Agol, Project Impact Assessment, University of East Anglia, United Kingdom

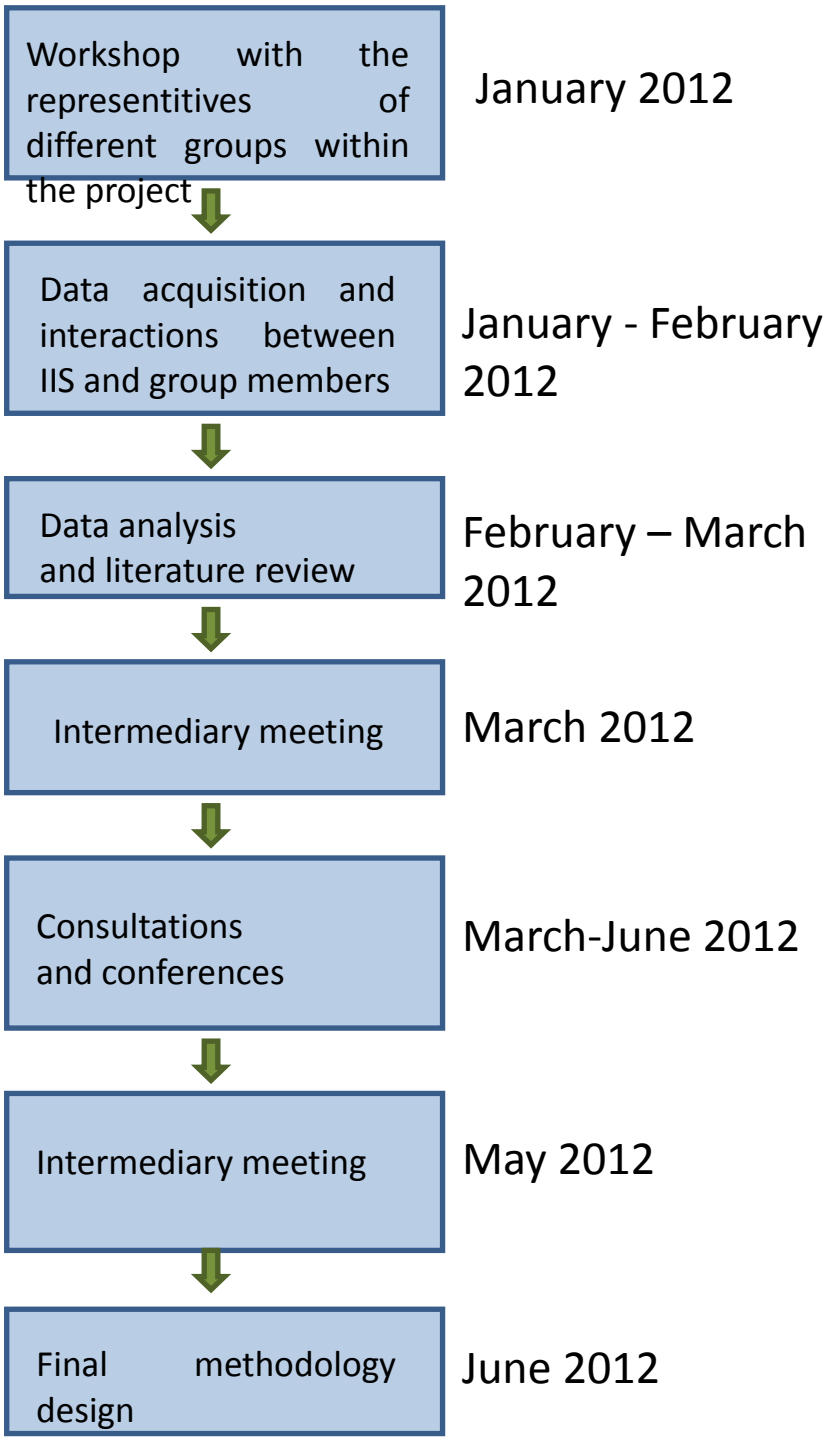


Figure 2. Designing methodology for ´Produzir e Conservar´ project impact assessment.

## 2. Methodology for ´Produzir e Conservar´ impact assessment using selected sustainability indicators

*Selection process and rationale*

Because the project consisted of multitude of activities dispersed over different communities spatially separated and because the subsequent project assessment would be limited in time, the design of methodology must have taken these two factors into consideration. Due to future project impact assessment time constraints, not all of the impacts of actions could be assessed. In addition, it would neither be feasible nor rational to assess impact of all activities within the project on all aspects (for example, impacts of reforestation on all stakeholders, over different time and space scales, on soil, on water, on atmosphere, economy etc). Because of the priorities of the assessment and limitations, the following criteria were taken into account:

- Indicators can be re-applied over time within this project (the aspect of sustainability as per section I of this document);
- Indicators are general and can be used for other projects;
- The use of indicators and the methodology do not in general require any special training;
- Capacity building was one of the most important objectives of the 'Produzir e Conservar' and even though capacity building may be difficult to capture and measure (Templeton, 2009; Hailey and James, 2003), the methodology of impact assessment was designed to best capture these impacts;
- Different methodologies were designed for two project areas due to different local contexts (Mata Atlantica: conservative smaller scale famers, unfamiliar with farming innovations, cautious, informal relation; Cerrado: large-scale innovative farmers);
- Mixing of quantitative and qualitative approaches (direct measurement, interviews, modelling);
- Selection was subject to data quality and availability.

Table 1 summarizes a framework and main data collection instruments we suggest for impact assessment (general methodologies to be used), while table 2 and 3 show specifically which method we suggest for each region and each activity within ´Produzir e Conservar´.

Table 1. Framework and main data collection instruments for project impact assessment.

| Project's objective/output | Method use to assess impact | Sustainability Indicator | Assumption, scope and limitation |
|---|---|---|---|
| Strengthened capacities of local farmers to conserve farmland biodiversity | Observations<br>Direct measurements<br>Animal/plant surveys (e.g. transect walks)<br>Questionnaires<br>Interviews<br>Document analysis | Eg.<br>Area set aside for biodiversity<br>Area covered by natural habitats (forest/woodland cover)<br>Plant/animals diversity (e.g. No of tree/mammal species in farmland<br>Etc. | Assumptions; --- Farmers willing to participate and give accurate information<br>Availability of baseline data –e.g. an assessment was done on farmlands on status of biodiversity before the Project began<br>Limitations:<br>Limited data<br>Expensive to measure things<br>Limited time<br>Etc |

| Objective | Method to collect the data | Indicator | Assumptions, scope and limitations |
|---|---|---|---|
| Align with the project goals | Direct measurement | E.g. Number of regenerates, number of species, emitted pollution | E.g. Method biases |
| Within limited time assess the highest number of project beneficiaries , reaching a wide sample | Interviews, Questionnaires, focus groups, observations | A range of qualitative and qualitative indicators can be obtained upon surveys | E.g. Can be expensive and time consuming, although repeatable - not generalizable |
| Triangulation and a mix of qualitative and quantitative measures | Questionnaire versus case study | Number of yes/no answerers | The quality of responses highly dependent on the clarity of the questions |
| Based on available data | Document analysis | Vital quantitative and qualitative data (e.g. insight into issues to be further investigated, evidence of actions, changes, impacts) | Can be time consuming |
| Consult internally and externally | Expert opinion | Qualitative data on impacts, comparison, ideas | Can be time consuming |

Table 1 and 2 were constructed taking into consideration following criteria:

Selected actions played on highest number of people thus with the same *N* it will be possible to measure multiple effects of sustainability (economic, social, environment).

Indicators can be repeated in time and methodology is fairly simple, does not require special modelling or training (and can be done for example during the follow up meeting with the farmers).

Effects are believed to last after the project finishes in 2013.

The profile of farmers and communities in Mata Atlantica is different from those in Cerrado. Mata Atlantica are smaller scale, more conservative farmers while Cerrado are generally more commercial, modern and large scale open to new approaches.

Throughout the process the IIS followed a participatory approach, including all stakeholders that were coordinating the project on the ground into the selection process and methodology design, their suggestions and expertise.

Table 2. Assessing impacts of ´Produzir e Conservar´ in Mata Atlantica region (In Portuguese).

| Ação para avaliação dos impactos | Indicadores de sustentabilidade | Metodologia | Principal aspecto da sustentabilidade ‡associado às medidas - depois será associado aos objetivos específicos do PeC | Observações |
|---|---|---|---|---|
| **Implementação dos fogões** | medição de poluição | medição direta | sociais - bem estar | Selecionar as ações que foram 100%, ou quase, feitas por causa do projeto PeC. |
| | medição do uso de lenha | medição direta | sociais, ambientais | |
| | medição de melhoria do bem estar | abordagem participativa (grupos de foco) | sociais, ambientais, econômicos | "grupos de foco" e sugerido devido ao perfil dos participantes deste projeto (pessoas que não se sentem à vontade com assuntos oficias, etc.). Nosso desenho inicial inclui uma pesquisa no campo, bem informal, com os participantes do projeto. Um ou dois dias poderá ser o suficiente, dependendo do número de participantes.<br><br>Medimos impactos das múltiplas ações na mesma comunidade (por exemplo, podemos selecionar para a pesquisa o grupo de foco da comunidade de Murici, porque |

‡ it should be noted that often the difference between social, economic and environmental is vague

| | | | | |
|---|---|---|---|---|
| | | | | durante a mesma pesquisa podemos medir os impactos dos fogões e também os impactos do programa de educação e outros que foram conduzidos pela AMANE, Cepan ou grupo de comunicação na MA. |
| | evitar emissões | modelo | sociais, ambientais, econômicos | CO2 calculaçoes |
| | evitar desflorestamento / degradação | medição direta / relatorios de grupos | ambientais, sociais | - |
| **Ações de Restauração Serra do Urubu, Suape, Japungu, Miriri** | medição de cobertura | medição direta / relatorios de grupos | ambientais | - |
| | medição de número de espécies nativas plantadas | medição direta / relatorios de grupos | ambientais | - |
| | densidade de regenerantes | medição direta / relatorios de grupos | ambientais | - |
| | postos de trabalho criados por hectare | medição direta / relatorios de grupos | sociais, econômicos | - |
| | evitar emissões | modelo | sociais, ambientais, econômicos | CO2 calculaçoes |
| **Criação Núcleo do Pacto** | capacitação | medição direta / relatorios | sociais, ambientais, econômicos | - |

| | | | | |
|---|---|---|---|---|
| **Centros de Educação para a Conservação da MA** | medição de melhoria do bem estar, aspectos sociais, ambientais e econômicos, capacitação | abordagem participativa (grupos de foco) | sociais, ambientais | - |
| **Rede de Gestores de Unidades de Conservação** | capacitação | medição direta, abordagem participativa (grupos de foco), documentação pronta | sociais, ambientais | Para selecionar ações para avaliação dos impactos é melhor escolher grupo de pessoas que recebeu o mais amplo numero de ações |
| **Planejamento PSA** | número de participantes | medição direta, grupo de foco | sociais, ambientais, econômicos | ações em Urubu, Murici, juntar avaliação em um grupo de foco |
| **Cursos de Captação** | número de participantes | medição direta, grupo de foco | sociais, ambientais | - |
| **Viveiros** | protocolo | medição direta, protocolo pronto | ambientais | - |
| **Reintrodução das espécies** | número de espécies, número de espécies endemicos e ameaçados | medição direta | ambientais | - |
| | | | | |
| **COMUNICAÇÃO** | | | | |
| | | | | |
| **Exposição Fotográfica** | número de visitantes | medição direta, protocolos prontos | educação, social, ambiental | - |

| | | | | |
|---|---|---|---|---|
| **Concurso Espécie Símbolo** | número de participantes | medição direta, protocolos prontos | educação, social, ambiental | Capacitação pode ser medida por número de pessoas que participaram, porém o ideal é um *follow up* para se conhecer a opinião dos participantes |
| | | | | |
| **POLÍTICA AMBIENTAL** | | | | |
| **Sistemas Estaduais de UC** | | medição direta | ambientais, sociais | - |
| **Criação de unidades de conservação** | número de RPPNs criadas protocoladas, APA | medição direta | ambientais, sociais | - |
| **Engajamento Setor Produtivo** | Numero dos eventos | observaçoes | ambientais, sociais | Capacitação, discussão do código florestal, restauração com alta diversidade e PSA; maior envolvimento do setor nos eventos ambientais da região |
| | | | | |

Table 3. Assessing impacts of ´Produzir e Conservar´ in Cerrado region.

| Ação para avaliação dos impactos | Indicadores de sustentabilidade | Metodologia | Principal aspecto da sustentabilidade[§] associado às medidas - depois será associado com objetivos específicos do PeC | Observações |
|---|---|---|---|---|
| **Restauração de APP** | número de hectares de áreas restauradas degradadas | medição direta / documentos prontos | ambientais | linha base - *control group* - outros fazendeiros que participaram no diagnóstico mas não participaram do PeC |
| | densidade de regenerantes | medição direta / documentos prontos | ambientais | - |
| | proporção de árvores exóticas | medição direta / documentos prontos | ambientais | - |
| | trabalhos certos por hectare | medição direta / documentos prontos | sociais e econômicos | - |
| | serviços ambientais | pesquisa - questionário anônimo | sociais, ambientais, econômicos | ´´questionário anônimo´´ e sugerido devido ao perfil dos participantes: grandes fazendeiros |

[§] it should be noted that often the difference between social, economic and environmental is vague

| | | | | |
|---|---|---|---|---|
| | número de espécies nativas | medição direta / documentos prontos | ambientais | - |
| | área em terras agrícolas dedicadas à conservação | medição direta / documentos prontos | ambientais, sociais | - |
| | carbono sequestrado | medição direta / documentos prontos | ambientais | - |
| **Festival de sementes** | número de alunos e professores que se envolveram | medição direta | sócio ambiental, capacitação | - |
| **Oficinas de Educação Ambiental** | número de participantes | monitoramento feito | sócio ambiental, capacitação | - |
| **Coletores de sementes** | número de participantes | medição direta / protocolos prontos | sociais, ambientais, econômicos, capacitação | - |
| | trabalhos criados per hectare | medição direta | sociais, ambientais, econômicos, capacitação | Linha base com outros que não participaram |
| **Curso de Restauração de áreas degradadas** | Número de participantes nos módulos do curso e disseminação das técnicas apresentadas na região | medição direta | ambientais, sociais | Para selecionar ações para avaliação dos impactos é melhor escolher grupo de pessoas que recebeu o mais amplo numero de ações - medir com um evento de questionário |

| | | | | |
|---|---|---|---|---|
| | 33 participantes; 1 hectare com muda e 1 hectare com a técnica da muvuca durante o curso; início do monitoramento da área restaurada | medição direta | ambientais, sociais | - |
| | número de hectares restaurados com a técnica da muvuca de sementes | medição direta | ambientais, sociais | observar custos - dados de baixo custo de produção para fazendeiros depois de implementação do projeto |
| **´REDD readiness´** | Ações de base para REDD | **estudo técnico completo** para a região do Cerrado do Oeste da Bahia como uma ferramenta para estabelecer medidas de adequação ambiental e promoção do mercado de serviços ambientais, fortalecendo parcerias com governo e proprietários privados | sociais, ambientais, econômicos, capacitação | - |
| **COMUNICAÇÃO** | | | | |
| **Expedição e Exposição Fotográfica** | número de participantes | medição direta, capacitação | sociais, ambientais | - |

| | | | | |
|---|---|---|---|---|
| **Concurso Espécie Símbolo** | número de participantes | medição direta, capacitação | sociais, ambientais | - |
| **Divulgação na Mídia** | número de participantes - estimativa | medição direta, capacitação | sociais, ambientais | - |
| | | | | |
| **POLÍTICA AMBIENTAL** | | | | |
| **Apoio à Secretaria de Meio Ambiente Municipal de LEM** | Tempo de permanência dos processos na Secretaria | medição direta | sociais, ambientais, econômicos | - |
| **compensação de reserva legal** | mais dados por favor | medição direta | sociais, ambientais, econômicos | planejamento para compensação de reserva legal |
| **pesquisa do IBOP** | relatório pronto | medição direta | sociais, ambientais, econômicos | - |

*Limitations*

- Not all actions can be assessed with respect to their impacts - need for prioritization due to multitude of activities within the project;
- Many sub-actions within the regions, involving different stakeholders, dispersed over many actors and regions;
- For some actions there was no baseline collected and there was no control group selected. Ideally, there should be monitoring in place at the beginning of the project to be followed up within the project impact assessment in order to compare the situation at before project implementation to the end and assess if and to what extent project influence the final outcome. In the absence of that, assessment may be done comparing the results with a scientifically rigorous selection of group of farmers that did not take part in the project;
- Some actions in the Mata Atlantica region were added on the top of already existing and therefore in may be difficult to precisely separate specific contribution of 'Produzir e Conservar' to the final effects.

**3. Recommendations for project impact assessments using sustainability indicators**

**When designing future projects it is advisable to do it in a manner that enables future impact assessment.** Therefore it is recommended that in the beginning of a project a baseline is collected (an analysis describing the initial conditions before the start of a project, against which progress can be assessed and comparisons made of data, to determine impact towards project objectives) and a control group (not affected by the project) is established in order to be able to distinguish which effects can be attributed to the project.

**Monitoring should be performed and rigorous data should be collected at certain intervals to aid subsequent project impact assessment.** Quantitative data and observations from monitoring are critical not only for a successful running of a project but also, in case of long term projects, can be used to make decision to change the course of the project, if the expected results are not observed. Monitoring that delivers good quality data over the duration of the project can be also used for modelling and anticipating future impacts of the project. This is especially important as most of the project do not have feasibility and budget separated for a long-term follow up. This is crucial in the context of *sustainability*.

**It is important to receive the feedback from project coordinators in the field, incorporate their observations and comments.** It is critical to know the program well for the project impact assessment.

**Be eclectic about the data.** Sources of information can be both formal, such as reports from monitoring or quantitative data from representative samples but also informal such as observation or unstructured interviews with the participants of the program (include the views of the project staff, partners and other local groups working in the project area and project

beneficiaries).

**Indicators should take into account heterogeneity of program participants.** For instance, outcomes may differ depending whether a certain actor is educated or not. It may not be possible to observe the impacts of the project unless heterogeneity is controlled for.

**It is advisable to combine in project impact assessments both qualitative and quantitative information.** When used together, qualitative methods can uncover issues during the early stages of a project that can then be further explored using quantitative methods, or quantitative methods can highlight particular issues to be examined in-depth with qualitative methods.

**Triangulate data collection sources and methods (combine different sources/methods to obtain desired information, to increase credibility and data quality).** Triangulation is using different sources and/or methods for data collection. Combining different sources and methods (mixed methods) helps to cross-check data and reduce bias to better ensure the data is valid, reliable and complete.

**Choices of the indicators should be anchored to the prior knowledge about the program, for instance overall program objectives.**

**Direct measurement for project impact assessment can be supplemented with other useful data, for example from geographic datasets.**

**Acknowledge biases and other limitations of the assessments.**

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## 6. List of Annexes

Annex I – Activities of year 2 and 3 of Produzir e Conservar

Annex II – The matrix of monitoring and project impact assessment indicators