

SUSTAINABLE LIFE CYCLE MANAGEMENT:



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Selection of Sustainable Rural Agriculture Projects in South Africa: Case Studies in the LandCare Programme



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The South African LandCare programme



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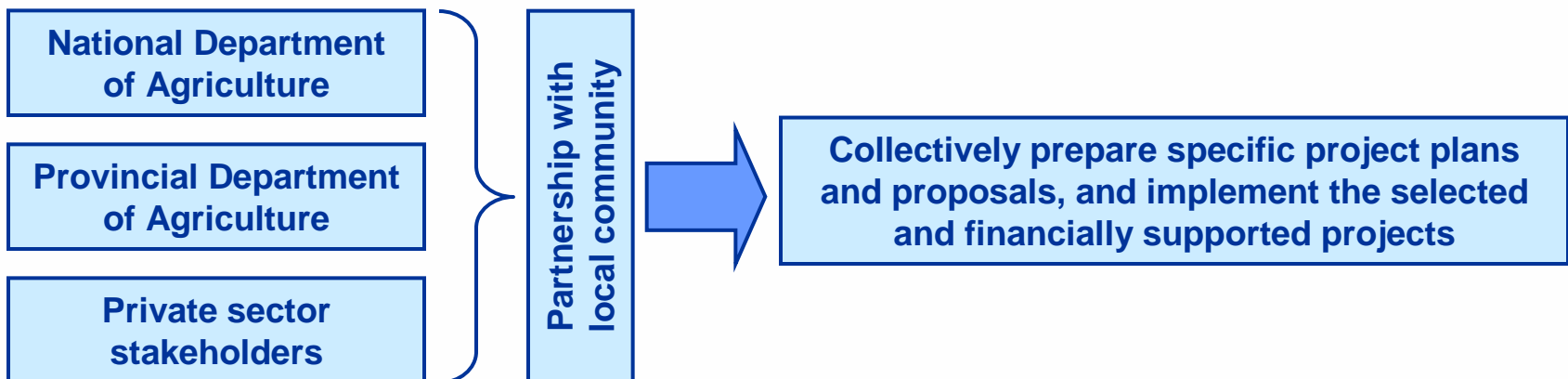
OBJECTIVES

Optimise productivity and ensure sustainable use of natural resources



IMPLEMENTATION MODEL

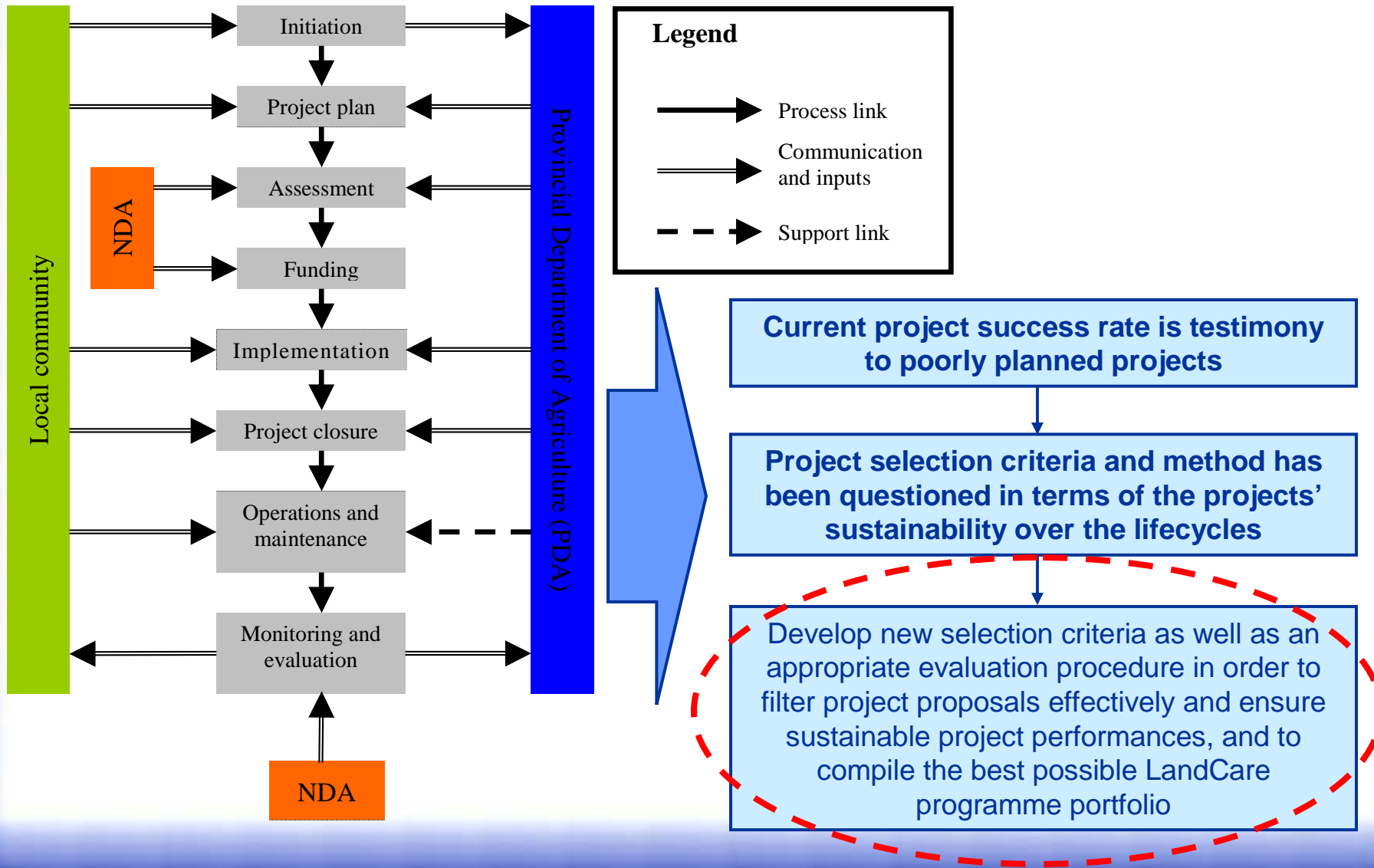
Community-based projects that follow a Community/Public/Private Partnership (CPPP)



Typical lifecycle of LandCare projects and the objectives of this study



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Approach to compile a set of appropriate criteria



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- **Critical analysis of existing criteria and indicators**
 - The current LandCare criteria
 - Proposed Clean Development Mechanisms (CDM) project evaluation criteria (Heuberger, 2003; Brent et al., 2005)
 - The World Bank's indicators of land quality and sustainable land management (Dumanski et al., 1998);
 - Criteria for assessing the sustainability performances of industries (Labuschagne et al., 2005)
 - Proposed methodologies to assess the sustainability of land use management practices in rural areas (Bosshard, 2000)
- **One-on-one interviews**
 - Nine provincial LandCare coordinators
 - Implementation of projects, facilitation with communities, and support to the implemented projects
 - Established the factors that are perceived by stakeholders actively involved in the LandCare programme as critical for project success

Proposed project selection criteria



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Social sustainability	Economic sustainability	Environmental Sustainability	Technical feasibility
<p>Representation</p> <p>Community participation</p> <p>Leadership</p> <p>Household food security</p> <p>Employment opportunities</p> <p>Skills development</p> <p>LandCare awareness and education</p>	<p>Return on investment</p> <p>Return on environment</p> <p>Community contribution</p> <p>Management level</p> <p>Profitability</p>	<p>Air resources</p> <ul style="list-style-type: none"> • Air quality • Noise <p>Water resources</p> <ul style="list-style-type: none"> • Quantity • Quality <p>Soil resources</p> <ul style="list-style-type: none"> • Soil loss • Soil condition <p>Plant resources</p> <ul style="list-style-type: none"> • Biodiversity of plant species • Plant production • Plant management <p>Animal resources</p> <ul style="list-style-type: none"> • Biodiversity of animal species • Animal production • Animal management <p>Waste management</p> <ul style="list-style-type: none"> • Waste generation • Waste disposal 	<p>Project plan</p> <ul style="list-style-type: none"> • Work breakdown structure • Schedule • Budget layout • Quality management • Risk management • Plans and specifications <p>Appropriateness of technology</p> <p>Address prime causes</p>

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Proposed procedure to evaluate LandCare project according to the criteria



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- **A scaling factor (-1 to +1) is assigned to each criterion**
 - **Based on an introduced ‘class’ change in a community after project implementation**
 - **Community members and the PDA jointly determine the current baseline class, regarding the state of the criterion in the community**
 - **The community’s needs regarding the criterion class are then identified through a process of participation**
 - **Thereafter, the project’s impact on the criterion is determined, i.e. how the project would affect the class of the criterion.**
 - **A single class difference indicates a moderate change, while a class difference of two or more indicates a significant change.**
 - **The conformance of the class change to the community needs is assessed on a similar scale.**

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Water quality sub-criteria as an example



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Scale factor to evaluate water quality & Classification to evaluate water quality



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Scale factor	Description
1	Significant increase in water quality
0.5	Moderate increase in water quality
0	No change to baseline
-0.5	Moderate decrease in water quality
-1	Significant decrease in water quality

Description	Class
Suitable for human consumption	I
Suitable for animal consumption	II
Suitable for use on crops and other plants, but has a negative impact on animals	III
Negative impact on plants	IV
Unsuitable water quality	V

Establishment of weighting values of the selection criteria and indicators



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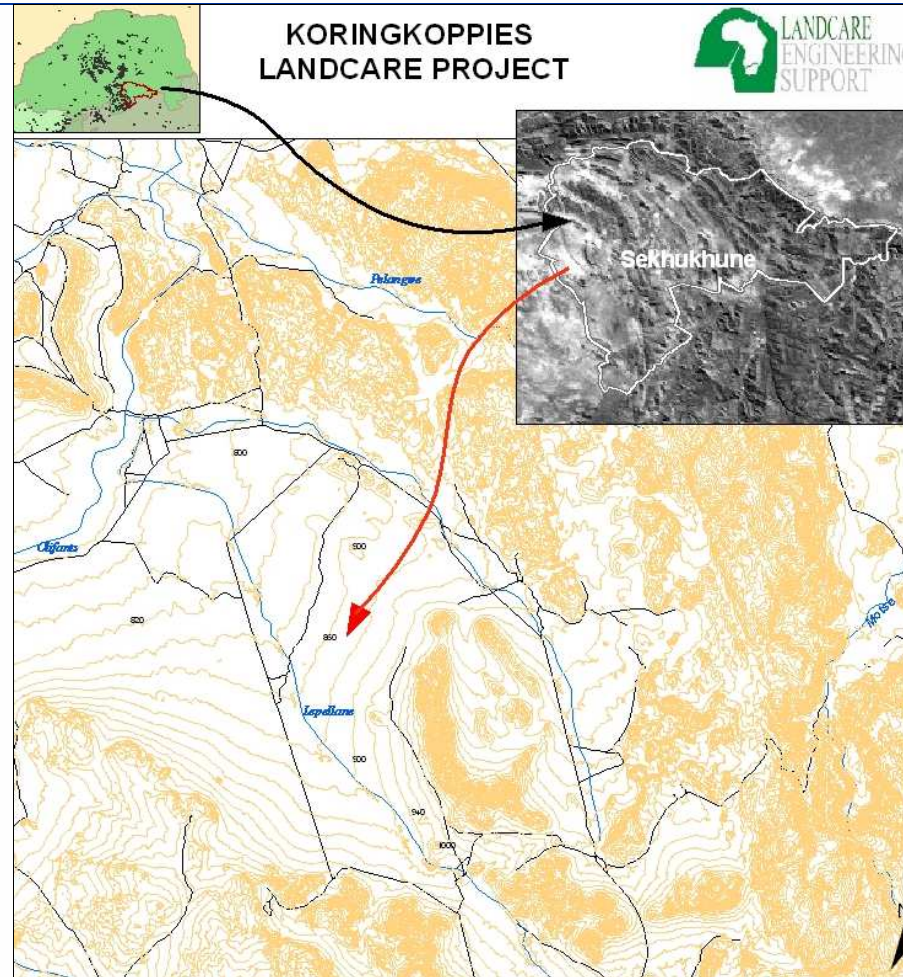
- **Analytical Hierarchy Process (Saaty)**
 - A known multi-attribute weighting method for decision support
- **Workshop to discuss and weight the selection criteria according to perceived importance**
 - LandCare coordinators and representatives from all nine provinces of South Africa
 - Members of the LandCare secretariat attended the workshop where the selection criteria were discussed
 - A total of 20 officials participated in the workshop
- **All the consistency indexes of the comparisons were below 10%**
 - As recommended by the AHP method
 - Environmental sustainability 58%
 - Social sustainability 23%
 - Economic sustainability 19%

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Case studies to demonstrate the evaluation procedure with the proposed criteria



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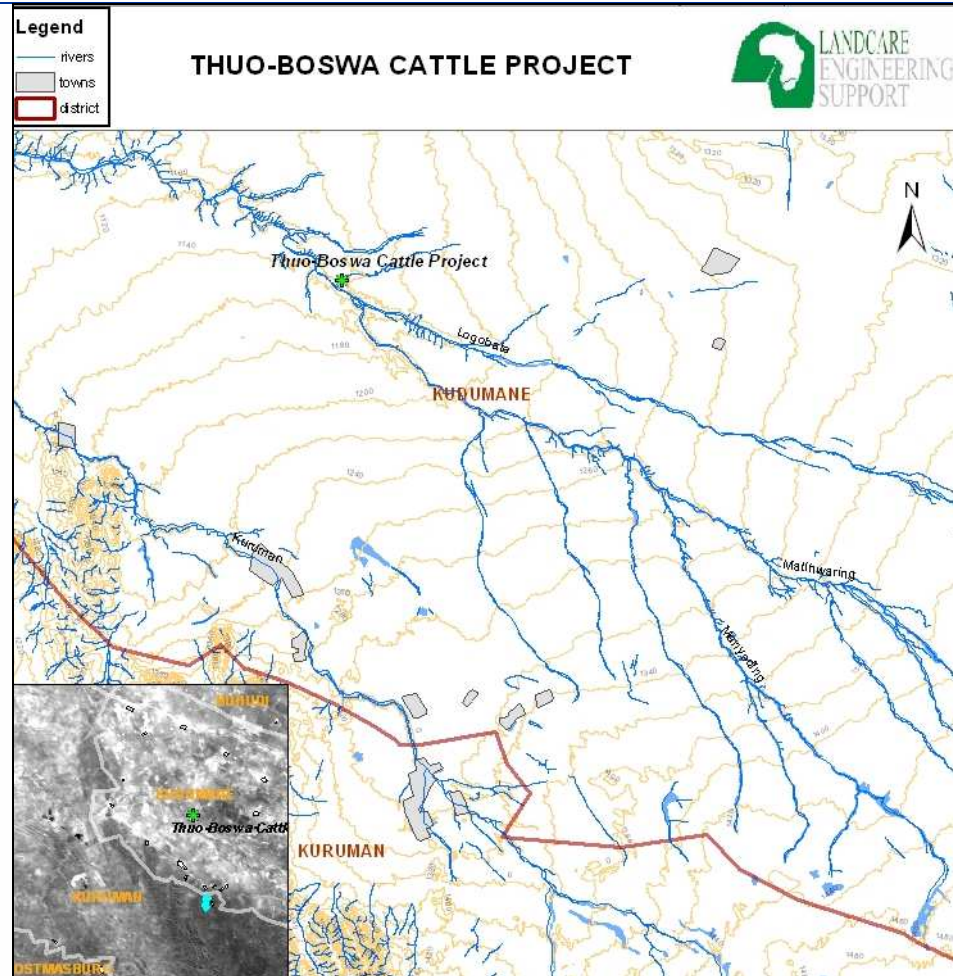


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Case studies to demonstrate the evaluation procedure with the proposed criteria



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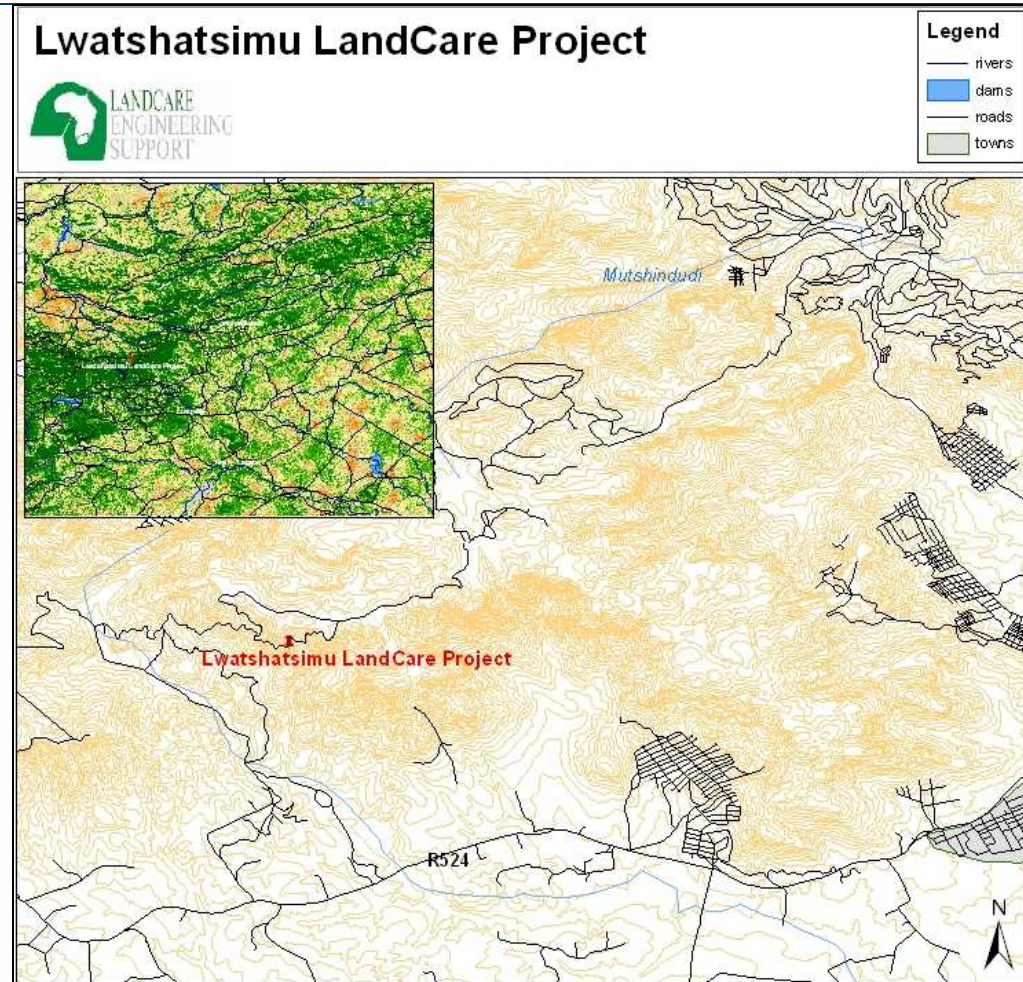


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Case studies to demonstrate the evaluation procedure with the proposed criteria



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Case studies to demonstrate the evaluation procedure with the proposed criteria



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- **Cases differ significantly in their focus**
 - **But they are representative of the majority of LandCare projects**
- **Reasons for the choice of these three cases:**
 - **Significant amount of information was available for each**
 - **Sufficient and relevant information was captured in the project plans of each project, thereby allowing for proper evaluation**
 - **Since all three case study projects have been completed, it was also possible to verify the results of the research on site**

Evaluation of the three projects



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- **The data needed for the selection criteria and indicators were collected on site by means of interviews and observations**
- **Needs analysis (of the proposed evaluation procedure) may not be an accurate presentation of community expectations prior to project implementation**
 - **None of the case study projects included proper needs analysis before project commencement**
 - **Comments from community members and LandCare coordinators obtained during on-site evaluations were used as reference points to rate the community needs**

Case study results



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Component	Koringkoppies		Thuo-Boswa		Lwatshatsimu	
	Project score	Needs score	Project score	Needs score	Project score	Needs score
Social	0.16	-0.05	0.17	-0.03	0.19	0.02
Economics	0.10	-0.03	0.14	0.01	0.04	-0.01
Environment	0.32	-0.08	0.36	0.14	0.16	0.10
Project total	0.58	-0.16	0.66	0.12	0.39	0.11

Conclusions



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- **A successful LandCare project portfolio consists of projects that are dedicated to all components of sustainable development in rural areas**
 - **Sound selection criteria and evaluation procedures will ensure the correct assembly of a project portfolio**
- **This study showed that the developed selection criteria could be used to evaluate project proposals effectively**
 - **The incorporation of both overall project impact as well as conformity to community needs in the procedure facilitates more informed decisions.**



Closure and questions

