AN EVALUATION OF THE AGULHAS BIODIVERSITY INITIATIVE'S (ABI) INVASIVE ALIEN CLEARING PROJECT IMPLEMENTED BY THE FLOWER VALLEY CONSERVATION TRUST 2013 TO 2020

By

Contour Enviro Group

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ACRONYMS AND ABBREVIATIONS

ABI - Agulhas Biodiversity Initiative

AIPs – Alien Invasive Plants

AIS – Alien Invasive Species

AP – Agulhas Plain

CBAs – Critical Biodiversity Areas

CBNRM – Community-Based Natural Resource Management

CEG – Contour Enviro Group

DEA – Department of Environmental Affairs

DFFE – Department of Forestry, Fisheries and Environmental Affairs

EPWP – Expanded Public Work Programme

ESA – Ecological Support Areas

FPA – Fire Protection Association

FTE – Full Time Equivalent

FVCT – Flower Valley Conservation Trust

GIS – Geographic Information Systems

GOFPA – Greater Overberg Fire Protection Association

IDP – Integrated Development Plan

INRM – Integrated Natural Resource Management

K2C – Kruger to Canyons Biosphere Region

LUG – Land User Group

LUI – Land User Incentive

MOU – Memorandum of Understanding

NDP – National Development Plan

NGO – Non-Governmental Organisation

NPO – Non-Profit Organisation

NRM – Natural Resource Management

ODM – Overberg District Municipality

SANBI – South African National Biodiversity Institute

SANParks – South African National Parks

SDF – Spatial Development Framework

SMMEs – Small, Medium and Micro Enterprises

WfW – Working for Water

WIMS – Water Implementation Management Systems

DEFINITIONS

Alien Invasive Species: These are any species that are not native to an area, but which are able to establish themselves and often spread quickly, causing environmental or economic damage (International Association for Open Knowledge on Invasive Alien Species, 2019).

Biodiversity degradation: A decrease in biodiversity within a species, an ecosystem, a given geographic area, or earth as a whole (Rafferty, 2019).

Geographic Information Systems: A computer-based application for urban planning, weather reporting, geological and demographic studies such as mapping and analyzing geographic phenomenon that exist and events that occur on earth (Alibrandi, 2003).

Sustainable harvesting: A method of harvesting that provides a constant supply of wood resources throughout the landscape, with future timber yields unaffected or improved by current harvesting methods (Rhode Island Woods, 2021).

EXCUTIVE SUMMARY

Scope of the project

The purpose of the evaluation is to compile what has been learnt during this project, to modify and adapt the model to have greater impact for the Agulhas Biodiversity Initiative (ABI) as it puts plans in place for the next 10 years, with much focus on dealing with the alien invasion crisis. The scope includes a full evaluation of the work completed within the Alien Clearing Project between 2013-2020. This evaluation includes a review of the project impact, performance and recommendations to guide future programmes.

Methodology

This study adopted an integrated research design that consists of field, qualitative and quantitative research methods. The qualitive aspects of the evaluation were assessed using both structured and semi-structured interviews. The Annual Plan of Operations (APOs), GIS data and reports were used to determine the quantitative aspects such as wages paid, area cleared and ecological impact.

Results and recommendations

1. Design of the project in relation to other projects with similar objectives within a regional and international context

When comparing the ABI Alien Clearing Project to other projects, it was found that the model used by the project was in line with the fundamental structures in place in similar projects both locally and internationally.

A key challenge identified was the status of ABI and FVCT. ABI is a voluntary association and FVCT an NGO, and therefore both have limited legitimacy in terms of their mandate. It was found that the conservancies are the backbone of this project and need to be strengthened and supported.

Key recommendations

- The ideal model should incorporate at least three levels of organisation to enable strategic and tactical decisions, as well as practical implementation, at the same time maintaining transparency and legitimacy, yet allowing the decisions to be made at the lowest-level possible.
- High-level strategic and governance co-ordination: The creation of a Biosphere Reserve could strengthen legitimacy and transparency.
- Landscape representation and decision making: Conservancies should be enhanced and strengthened.

- Implementation: Conservancies and/or implementers could provide support to landowners and contractors (resource development).
- Create contractors and community forums to ensure representation.

2. Social impact of the project

Respondents involved in the project at all levels indicated that the project has by and large had a positive impact. 76 percent of landowners felt that their property values have increased.

A total of 192 744 person days were worked, providing jobs that were not previously available in the landscape.

Personal training and development are perceived to have had a positive impact and a total of 6 983 training person days were achieved by the project from 2013 to 2021. Most of the training was functional and 60 percent of the workers felt it enabled them to find other work.

Over the period evaluated (2013 to 2021), a total of R 21 836 732 was paid in wages directly to workers. The negative impact was primarily related to the stop and start nature of the project, as well as the annual late starts in the second cycle.

Key recommendations

- Develop and facilitate an entrepreneurship SMME Development Programme
- Find ways to improve the wages
- Broaden income streams to include other aspects of natural resource management
- Find funding to fill the “gaps” in funding cycles.

3. Ecological impact of the project

It was difficult to assess the overall impact of the project due to inconsistent data. The project met all the standards as laid out in the project plan of 2018 (Watson et al) in terms of planning parameters. Despite the challenges, the project was able to maintain its gains and focus on areas important to biodiversity.

Key recommendations

- The use of fire should be incorporated into planning and execution
- Different techniques and resources not limited to the WfW model should be used
- The current principles that guide the priorities, as determined by the FVCT, should be maintained and fire should be included in the prioritisation system.

- The project should continue with follow up of NBALs as an objective to reach maintenance phase.

4. Key successes and success factors of the project

The structures, roles and responsibilities were clear. However, a shift is required in the structures to move from cooperation and coordination to rather integrate various role players' activities in a way that complements each other and does not compete.

The use of conservancies and LUGs were vital to the success of the project.

The project created structures to involve landowners and beneficiaries in managing the landscape.

In terms of outputs, a total of 149 835 person days were worked and 49 952 ha were cleared and followed up. The project additionally brought R 27 877 732 into the landscape successfully to clear alien vegetation. Additionally, capacity was developed in contractors and landowner's ability to clear.

5. Shortcomings of the project

- A key challenge for NGOs/NPOs is the scale of a project such as the WfW project. This project has financial implications for organisations that they need to maintain. As such, the nature of WfW puts these smaller implementers at risk.
- The top-down nature of the WfW project combined with the stop and start nature of the project.
- Lack of capacity of the project for implementation.
- Poverty relief wages.
- Even though there was good cooperation, there is a need to integrate operations between the role players better.
- Data management, collection and curatorship was a major shortcoming.
- The focus on alien clearing only.

Key recommendations

- Improve and maintain data management capacity.
- Broaden the horizons of the teams and funding streams to address broader NRM issues.
- Formalise relationships in the landscape
- Use multiple funders to achieve objectives.

6. Project leverage of greater impact in collaboration, compared to similar initiatives

The contributions given by funders assisted greatly in supporting the infrastructure required to implement this project during the second-funding cycle. Contributions enabled the project not only to continue but to

improve on its planning and deliverables.

Key recommendations

- The review of ABI's role in the landscape presents a unique opportunity to review and enhance its partnerships.
- The ABI project identifies a suite of partnerships that would support its implementation infrastructure.
- That long-term funding be obtained to maintain and develop its implementation and infrastructure.

7. External factors that have changed during the project that could enable or restrict future opportunities

- The unannounced change from an LUI to a "normal" WfW project.
- Changes in standards that affected the norms after the project MOU was signed, changing outputs considerably.
- Unreasonable data and auditing standards implemented by DFFE.
- The impacts of Covid-19.
- The economic situation impacting on communities, landowners, funders and government departments.

8. Future model/role of the ABI invasive alien clearing management project partnership

- The pursuit of a Biosphere Reserve in the Agulhas Plain could be beneficial.
- ABI should play a similar role to the Australian LandCare project in the landscape to support and facilitate from the ground up.
- Data management required to manage the landscape effectively (based on science) should be improved and ABI's ability to find funding for these projects should also be improved and maintained over the long term.
- ABI should create the formalised agreements and MOUs with all the relevant role players and parties to tackle broader environmental issues and coordinate outputs in a focused direction.
- ABI could better support CBNRM in the landscape.

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1. Introduction

The Agulhas Biodiversity Initiative (ABI) Invasive Alien Clearing Project is a landscape-wide collaborative project that has been coordinated by Flower Valley Conservation Trust (FVCT) since 2013. The purpose of the project is to source and implement funding for the clearing of alien invasive vegetation across nine different land user groups (LUGs) in the Agulhas area for the restoration of fynbos. The project has had different approaches applied to execute the work. It started as a land-user incentive (LUI) model mostly driven by the landowners from 2013 to 2016. The primary funder is the Department of Forestry, Fisheries and Environment (DFFE), and with fiscal changes, the funding implementation changed into what is more akin to the DFFE Working for Water (WfW) model from 2017. Furthermore, as ABI undergoes a revisioning process with ABI partners, the evaluation of the alien invasive vegetation clearing project is necessary. It is the largest ABI project in terms of number of people involved and partners collaborating across the landscape.

ABI's aim is to provide a platform for organisations in the Agulhas Plain (AP) to work collectively. Since 2003 ABI has provided the framework to enable partnerships and collective management of natural resources in the area. ABI holds the view that the partnership approach is inclusive of environmental, social and economic aspects, and is feasible for the conservation landscape in the Overberg. The aim of the ABI Invasive Alien Clearing Project is to apply for and coordinate funding to different land user groups towards alien clearing treatments to meet the objectives of ABI. In keeping with the ABI goals, the assumption is that by working through partnerships, greater funding sources and added value for the treatment of alien invasive species will be secured, which is a preferred and sustainable model in order to retain gains made for conservation.

Contour Enviro Group (CEG) was appointed to evaluate the current clearing project in August 2021 to resolve key conservation concerns. It aims to ensure that natural resources are used sustainably, and threats are addressed holistically.

Note on structure of the document:

For the ease of reading, most of the data collected, graphs and technical data are in Annexures A to I. The findings are summarised in the discussions.

Conclusions as well as recommendations on each aspect evaluated are summarised as conclusions and recommendations in Section 7.

The main findings and recommendations are summarised in conclusions and recommendations.

1.1 Natural Resource Management (NRM)

As the global population increases rapidly, so too has the demand for natural resources. As a result, unsustainable use has reduced the quality and quantity of the natural resources, species have gone extinct, others are threatened, and habitat degradation continues. There has also been severe fragmentation across the landscape (Kaplan and White, 2002). As demand and the need for natural resources rapidly increases, their availability is decreasing. As a result, there is a need for sustainable management of these resources. Kaplan and White (2002) highlighted that NRM has become more and more constrained and complex due to several interactions between factors such as ecology, politics, socioeconomics, demography and different behaviours. However, NRM refers to the management of natural resources such as land, water, soil, plants, and animals, particularly how management affects the quality of life to benefit both present and future generations (Sharma, 2019). NRM deals with the management of the interaction between people and the natural environment, thus blending land-use planning, water management, biodiversity conservation and the future sustainability of industries like agriculture, mining, tourism, fisheries and forestry (SciTechnol, 2018).

The SciTechnol (2018) added that there are various approaches applied to NRM, which include:

- Top-down management
- Community-based natural resource management (CBNRM)
- Adaptive management
- Precautionary approach
- Integrated natural resource management (INRM)

According to Gruber (2010), CBNRM is an approach to NRM that seeks to support long-term sustainability through broad participation of community members and resource users in decision making. This approach is centered on empowering rural communities to better manage natural resources that are tied to the quality of their livelihoods (Thakadu, 2005). Through the implementation of CBNRM, the quality of life improves for individuals within the community, as their commitment increases to ensure that resources are conserved. CBNRM has a number of organisational principles, namely public participation and mobilisation, resources and equity, public trust and legitimacy, devolution and empowerment, and conflict resolution and cooperation.

NRM Principles

According to Amede *et al.* (2004), there are key elements of NRM. This central dimension exists when environmental resources interact within and among themselves, and how their management and interaction relates to people and livelihoods. These are:

- **Biodiversity:** Representing natural, uncultivated ecosystems (e.g., forests)
- **Agricultural biodiversity:** Representing ecosystems used in agriculture
- **Soil:** Supporting living entities such as biological diversity and retains moisture and minerals for use by living organisms
- **Water:** Depending on availability, quantity and quality
- **People and livelihoods:** At the centre of all NRM components

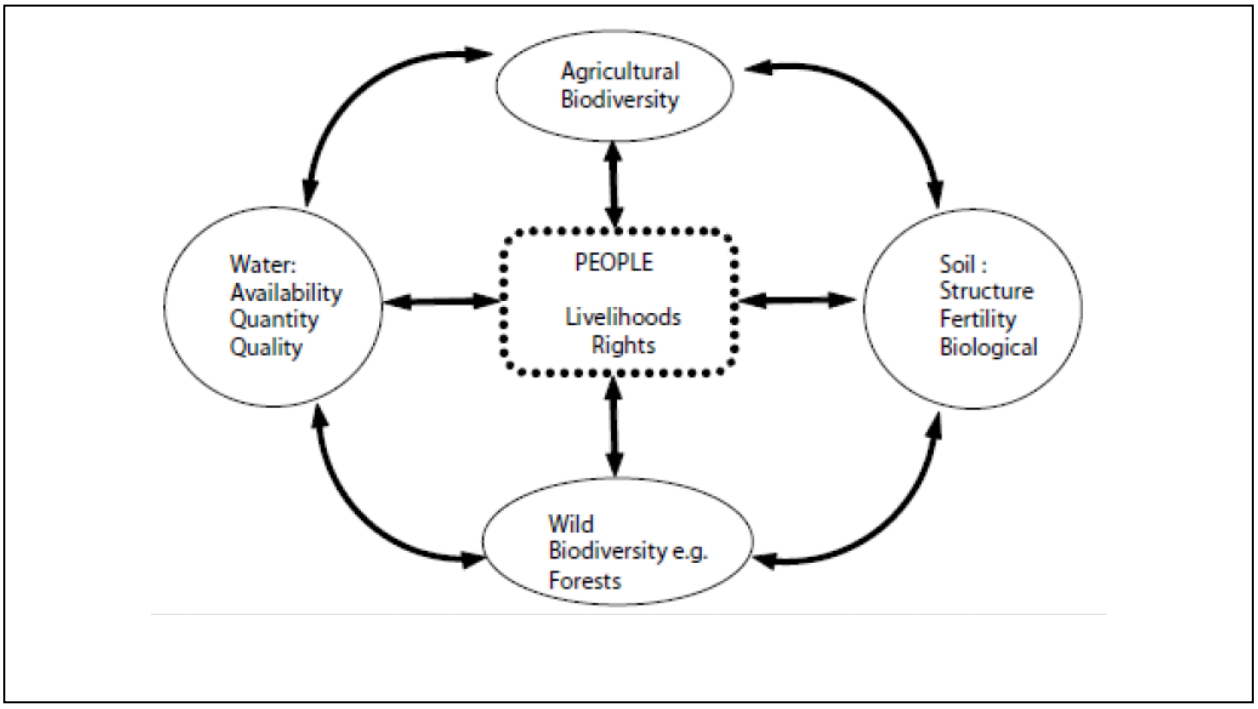

Figure: 1 Key elements of NRM (Amede *et al*., 2004)

At the centre of NRM are people, their needs, their livelihoods and their rights, and how these needs interact with management of the natural resources. Any use of natural resources must, however, be within the framework of sustainability, and people need to be involved in their management and conservation (Amede *et al*., 2004). The key elements of NRM and complexity of interactions within its domain gives an indication of how broad and important natural resources are. These key elements are governed by principles. The South African NRM principles (in the context of governance) below were sourced from Weston and Goga (2016) and Lockwood *et al*. (2010).

1. **Legitimacy:** Promotes the integrity and commitment of all stakeholders, obligates the governing body and its members to have legitimate, democratically mandated authority as well as a long-standing cultural attachment to the area.
2. **Transparency:** Decisions must be taken in an open and transparent manner, and access to information must be provided in accordance with the law. Processes, institutions and information are clear and directly accessible.

3. **Accountability and Responsibility:** The accountability and responsibility of all stakeholders in the process should be clarified for each stage of the NRM strategy, regarding information provided, decisions taken and implementation requirements. Governments, the private sector and civil society organisations should be accountable to the public or the interests they are representing.
4. **Involvement and Participation:** All citizens, both men and women, should have a voice directly or through intermediate organisations representing their interests throughout processes of policy and decision-making. Broad participation hinges upon national and local governments following an inclusive approach.
5. **Fairness:** Costs and benefits are equitably shared; legal frameworks are fair and enforced impartially; human Rights and cultural practices are respected; local livelihoods are not adversely affected; there is recourse to impartial judgment in the case of conflict; legal assistance is available to all stakeholders.
6. **Equity:** All groups in society, both men and women, should have opportunities to improve their well-being.
7. **Integration:** Environmental management must be integrated, acknowledging that all elements of the environment are linked and interrelated, and it must consider the effects of decisions on all components of the environment and all people in the environment.
8. **Coherency:** The increasing complexity of natural resource issues, appropriate policies and actions must be considered so that they become coherent, consistent and easily understood.
9. **Adaptability:** The process should be flexible and adjust to the realities, issues and circumstances of the activities under review, without compromising the integrity of the process; and be iterative, incorporating lessons learned throughout the activity life cycle.
10. **Responsiveness:** Institutions and processes should serve all stakeholders and respond efficiently to changes in demand and preferences, or other new circumstances. Needs of all stakeholders are considered.
11. **Ethical Consideration:** Natural resource governance must be based on the ethical principles of the society in which it functions, for example by respecting traditional water/land rights and preventing corruption.
12. **Predictability:** There should be predictability of the political and administrative governance system, in that all role players know the rules and accept that these will be applied consistently.
13. **Direction:** Establish a strategic vision enabling broad and long-term perspectives on good governance.
14. **Performance:** Needs are met while making best use of resources; all stakeholders have capacities to engage in governance; financial sustainability of processes and results; power and decisions rest at the lowest level; the governing body can be flexible, learn and adapt.

Context of the WfW project

The evaluation of the ABI Alien Clearing Project is about evaluating the implementation of the project, not the WfW model. However, it must be noted that the context of the WfW project must be considered, as they were the primary funders and had a considerable impact on the project. The WfW programme is an NRM initiative that was implemented at a national-scale, government-sponsored and became apparent or prominent after the South African apartheid regime and has brought significant social benefits (Holden and Grossman, 2013). The WfW initiative was established to control alien invasive plants (AIPs), skills development and job creation. As a result, the initiative has gained a lot of support and buy-in from the public and private sector as well as from various communities and non-governmental organisations (NGOs) (Holden and Grossman, 2013). Van Wilgen and De Lange (2011) added that the economic cost of alien plant invasions in South Africa is estimated to amount to R6.5 billion annually and the prevention of such losses, especially those associated with loss of water resources was the primary reason for initiating WfW. However, the programme takes a top-down governance approach, but also demonstrates cross-sectoral cooperation across various government institutions.

The initiative started in 1995 with funding from the National Reconstruction and Development (RDP) fund of the government (Holden and Grossman, 2013). In 2001, there was a sum of R1 billion that was invested in the programme (Holden and Grossman, 2013). The programme adopted a comprehensive approach to IAP management that is characterised by several distinctive features. The programme combines mechanical and chemical control of all IAPs in priority or target areas with the provision of employment to people from poor or marginalised rural communities as its primary purpose (van Wilgen *et al*., 2012). The methods of control or removal of IAPs varied by location, technical expertise and target species (Reid and Satterthwaite, 2005). For example, when working in mountainous terrains, previously unskilled, unemployed people receive training in basic mountaineering techniques which also includes abseiling and equipped with the necessary kit to enable them to reach areas that are not easily accessible (Holden and Grossman, 2013). Marais *et al*. (2001) stated that the WfW programme creates extra jobs through the harvesting and processing of plant material from AIPs, thus reducing the net cost of clearing thereby contributing to the sustainability of the WfW programme and minimising potential negative environmental impacts such as fire damage, by leaving less biomass behind after clearing. Mothapo (2011) concluded that the WfW programme has given clear illustrations of the connectivity between combating desertification and poverty alleviation through training, job creation and other economic opportunities.

Van Wilgen *et* al. (2012) highlighted that there are relatively few countries that have implemented projects like the WfW programme and none have assessed the efficacy of such a project at a national scale over approximately two decades. The WfW programme has kept documented information such as records of

expenditure per species and geographic area since the year of 2002, therefore the ability to address questions regarding the effectiveness of its operations is limited because the programme has not implemented an effective system of monitoring and evaluation (van Wilgen *et* al., 2012). Nevertheless, van Wilgen *et al*. (2012) noted that great progress has been made so far which includes:

- The development of biological control options that target selected priority alien plant species
- The promulgation of legislation that requires landowners to deal with the problem
- The encouragement of systems of payment for ecosystem services that will generate funding to support control programmes.

Van Wilgen et al. (2012) estimated that if no control had been carried out, the annual economic losses from alien plant invasions would have been as high as R41.7 billion (instead of R6.7 billion). A substantial portion of these savings (between 5 percent and 75 percent, depending on the group of plants) arose from the biological control of invasive aliens and the approximately 20 000 employment opportunities were created annually over 15 years in impoverished areas, where there would otherwise have been none. Van Wilgen *et al*. (2012) argue that the strategic approach of a comprehensive programme such as WfW that attempts to target many IAPs in many areas, using poverty relief funding, needs to be reassessed if progress is to be made. Wittenberg and Cock (2001) also argue that legal frameworks should where possible support the use of incentives to promote active participation by indigenous and local communities and landowners and that the WfW programme provides an excellent large-scale example of such an approach.

However, the top-down nature of the WfW project is further exacerbated by the fact that the project is governed by public finance restrictions, government budgeting process and strict auditing processes as is expected of any transparent government.

1.2 FVCT and ABI background and history

FVCT is a non-profit organisation (NPO) that works to ensure a fynbos-filled future for life and livelihoods. The FVCT (2020) highlighted that roughly 45 000 ha of the AP is infested by IAPs. As a result, the ABI Alien Clearing Project was launched in 2013 to address this problem. The FVCT has coordinated a Land User's Incentive (LUI) Programme in the Overberg since 2013, called the ABI Alien Clearing Project (Watson *et al*., 2018). The project prioritises the removal, control, and management of all Category 1a and 1b species according to the species listed on the National Environmental Management: Biodiversity Act (NEMBA) Act no. 10 of 2004 (Watson *et al*., 2018). In addition, the ABI programme which follows well-established CBNRM guidelines, became a long-term initiative that promotes strong ownership by participants to meet the programme's objectives (Watson *et al*., 2018). The ABI programme has been funded by the former Department of Environmental Affairs (DEA), land users, and by other funders like the Fynbos Trust, LandCare,

Millennium Trust and Drakenstein Trust. There are numerous partners and stakeholders involved in the project, namely nine Land User Groups (LUGs) representing around 100 land users and 25 small business contractors who employ people from local communities, rural areas and small towns in the Overberg (Watson *et el*., 2018). The programme was established to strive and improve ecosystem functions through Alien Invasive Plant (AIP) eradication, management and clearing, while creating socio-economic opportunities such as job creation and social upliftment, to name just a few (FVCT, 2020).

The key focus areas of the project are:

- To facilitate the effective control of Alien Invasive Species (AIS)
- To identify opportunities and promote empowerment of local communities within the green economy
- To engage landowners, partners, and agencies in applying best NRM practices
- To promote research and development for mitigating impacts of Alien Invasive Species
- And to raise awareness on challenges and advancements within the industry, and advocate for action and accountability.

According to the FVCT (2020), the project has several deliverables, which are:

- To clear invasives for the first time on a site (initial clearing)
- To undertake follow-up clearing (sites already cleared in the past)
- To provide both accredited and non-accredited training (including herbicide, first aid training and a course on snake awareness)
- And to create employment opportunities for project participants.

DFFE runs the project over a three-year project period (FVCT, 2020). About 29 000 ha of 100 000 ha were cleared between 2013 and 2015 (Watson *et al*., 2018). According to Bailey (2017), in 2016, the last contract was completed in March, with new funding arriving only in November 2017. It was anticipated that this gap would cause an intense strain on the project, stakeholders and beneficiaries in trying to ensure that financial gains from the previous funding cycle were kept until the new contract commenced (Bailey, 2017). Bailey (2017) added that nine LUGs, 23 contractors and 2 230 beneficiaries were involved, and 25 344 ha were cleared during the period between 2013 and 2016. ABI was awarded a one-year contract worth R4 334 260 during the 2017/2018 financial year to continue with its alien clearing operations (Bailey, 2017). The target for employment was 17 contractors creating jobs for 204 project participants, and a total of 12 947 ha to be cleared (Bailey, 2017). Furthermore, with the FVCT and ABI trying to improve the alien clearing project operations and facilitating good land management for landowners, a database of baseline information about alien invasions was being developed and monitored (Bailey, 2017). The database included property info, IAP

species, IAP categories (NEMBA listing), IAP population extent (ha), IAP densities, IAP clearing records, fire history, veld age, project participant information, clearing costs and person days. In 2018, the FVCT expanded its work opportunities beyond the scope of the alien clearing project, to also include alternative support mechanisms to support good NRM (FVCT, 2020).

Watson *et al*. (2018) stated that all work will be completed according to the WfW standard operating procedure. As a result, administrative and operational requirements had to be put in place in accordance with the requirement of DFFE, which included:

- Field assessment and clearing site registration with DFFE
- Registration of contracting teams and beneficiaries
- Training completed (Health and Safety, First Aid and Herbicide application)
- Medical checks performed on 168 project beneficiaries
- Clearing contract generation with DFFE

Project prioritisation and scope

Species selection

The project prioritised the removal, control and management of all Category 1a and 1b species according to the species listed in the NEMBA Act 10 of 2004.

Area selection

The project prioritied areas where initial and follow-up clearing had occurred in the past funding cycles to maintain gains in AIP eradication and control. Areas that have invasions of less than five percent were not included in the DEA funding cycle, as this was considered a density that is appropriate for the landowner to manage. This does not mean that the project did not provide further assistance in other ways to maintain gains made in clearing AIP, for example the introduction of bio-control or other sources of funding. Additional areas were selected based on the conservation status (biodiversity) of the natural vegetation, and the contribution of the area to improve the health of water catchment systems (ecosystem function). Consideration was given to the socio-economic status of where clearing investments were made on the property, whether this resulted in an increase of AIP clearing activities in the long term and still contributed to conservation objectives as mentioned above. Examples of these socio-economic activities are tourism, beekeeping, or flower harvesting.

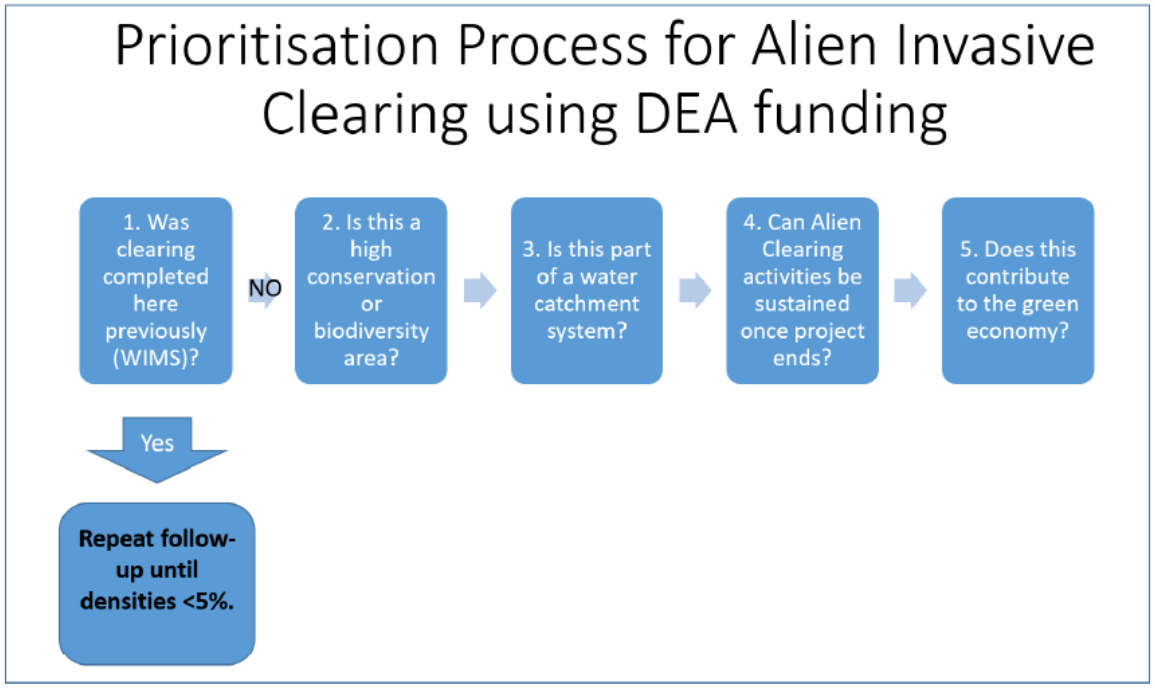

Figure 2: Prioritisation Process

1.3 Assessing Alien Vegetation Management

Strategic assessments of WfW have repeatedly expressed concern about the efficiency of the programme at various levels of operation (Common Ground 2003; Van Wilgen *et al*., 2012; Van Wilgen & Wannenburgh 2016). Recommendations put forward by these assessments included the prioritisation of IAP species and areas for management (i.e., better planning), improved coordination, efficiency and professionalism of interventions, and the development and implementation of a monitoring programme (van Wilgen *et al*., 2012).

The effectiveness of control measures in particular need to be assessed against the goal of the management, with such assessments based on regular monitoring of outcomes. However, while almost all alien plant control projects in South Africa have an implicit goal of reaching a "maintenance level," this goal is seldom stated explicitly in terms of the desired final extent or density of invasion (van Wilgen *et al*., 2016; Fill *et al*., 2017). The concept of a maintenance level recognises that, for most invasions, eradication is infeasible, but that invasions can be reduced to a level where the negative impacts are negligible and control costs are relatively low in perpetuity.

The above indicates that there is a limited basis from which to derive broad conclusions about the effectiveness of control measures ensuring that the existence of multiple goals does not lead to confusion over priorities; developing methods to reduce the under-estimation of the costs of control; adherence to

best practices and standards; simplifying the currently complex contracting and employment models; and using a variety of methods to resolve or reduce conflicts over species that have commercial or have other value, but cause significant environmental damage.

Addressing these challenges will be difficult but this is essential if plant invasions in South Africa and the Agulhas Plain are to be brought under control. In most of South Africa's government-funded alien plant control projects, the indicators used to monitor progress and set targets include:

- The amount of money to be spent
- The number of people to be employed
- Areas to be treated

These are input or output indicators, rather than outcomes in terms of changes in the levels of plant invasions (Wilson *et al*., 2018). In the absence of a comprehensive monitoring programme that is focused on outcomes, it is difficult to assess effectiveness objectively. This is true in the case of the evaluation of the ABI Alien Clearing Project, as there are data gaps and there is a lack of long-term data custodianship and management that was undertaken in a consistent manner. This has impacted on the ability of the project to extract valid data for planning, strategising and reporting. Data is also a vital tool when planning new projects or developing funding applications.

2. Study area

2.1 Location

Cape Agulhas is located in the Overberg District Municipality (ODM), within the Western Cape Province of South Africa. Two local municipalities divide the Agulhas Plain, the Cape Agulhas in the eastern half and the Overstrand towards the western parts. Furthermore, there are five major settlements found in the Agulhas Plain namely Struisbaai, Gansbaai, De Kelders, Pearly Beach and Agulhas. The municipal economic priorities include basic service provision, human capital development, environmental management, tourism and job creation (Cilliers and Withers, 2013).

The natural environment remains the major contributor towards the local economy through:

- Livestock and crop farming
- Fishing and aquaculture (including commercial faming of abalone and crayfish)
- Fynbos species growing and harvesting (for the cut flower industry)
- Forestry
- Tourism which contributes through whale watching and great white shark cage diving.

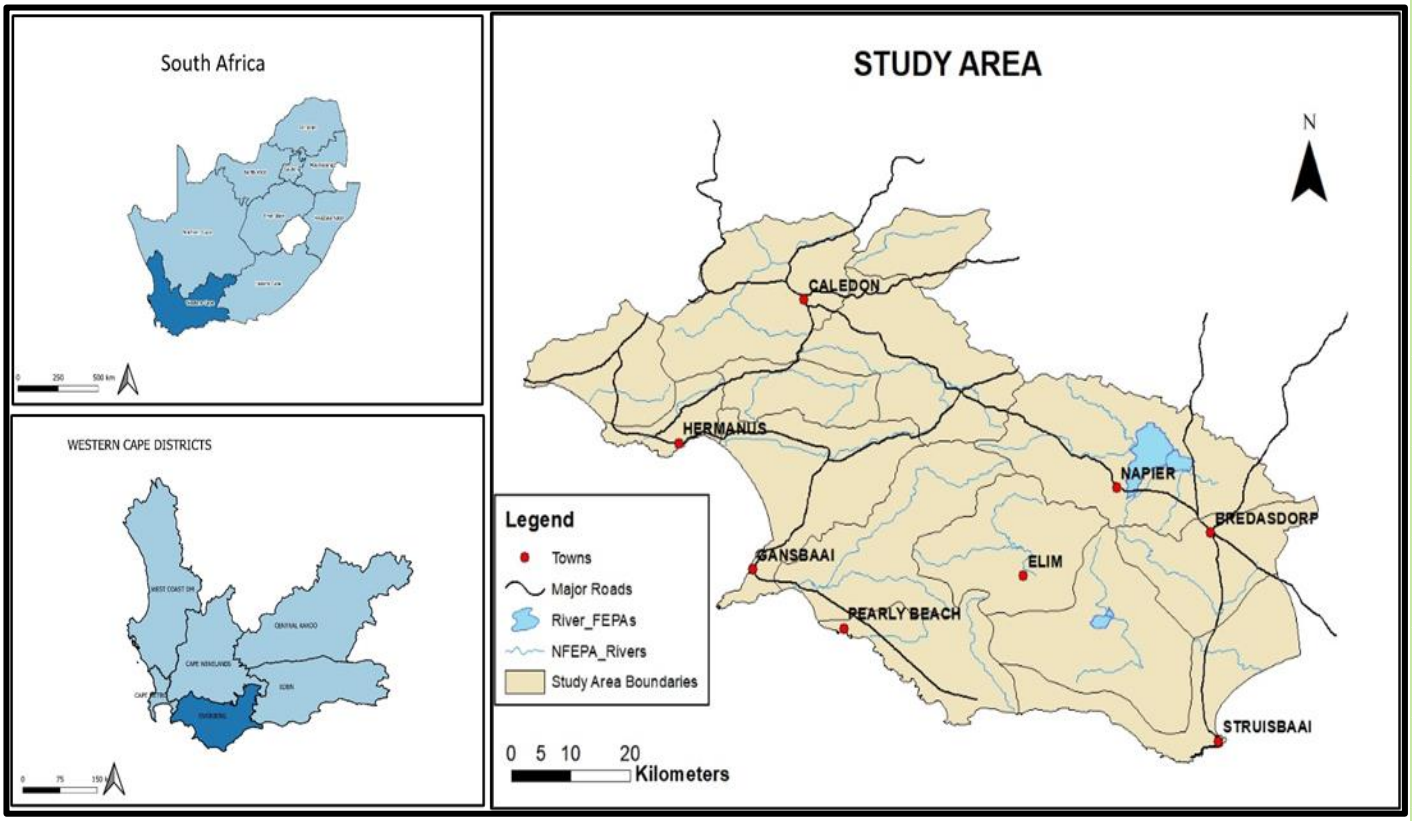

Figure 3: Map of Study Area

2.2 Climate and weather

The Cape Agulhas region experiences a Mediterranean climate with prolonged cold wet winters and hot dry summers. The highest average temperatures are 26 and 6°C in summer and winter respectively (Erasmus, 2015). Prevailing winds are westerly in winter and south-easterly in summer and are controlled by winds that blow from the Atlantic Ocean's cold Benguela Current. According to Kraaij *et al*. (2009) and Erasmus (2015), the Cape Agulhas is the windiest stretch of coastline throughout the year along the South African coast. Mist and precipitation in the eastern and southern mountain terrains at high altitudes during summer, is brought by the south-easterly clouds. In summer, upwelling may also occur, giving rise to a steady decline in surface sea temperatures (Kraaij *et al*., 2009). On the other hand, frost generally occurs between two to three days per annum (Cilliers and Withers, 2013). Fog generally occurs approximately 20 days in a year, and snowfalls have not been recorded (Kraaij *et al*., 2009). The area receives most of its annual rainfall in winter and ranges from an average of 450mm along coastal areas and 650mm on gently sloping expanse hills extending outwards from the foot of a mountain slope towards the north (Erasmus, 2015). As a result, the climate in the region is consistently mild with no extremes in temperatures or precipitation in the form of rainfall (Kraaij *et al*., 2009).

2.3 Vegetation and geology

According to Erasmus (2015) and the Sustainable Harvesting Programme (2021)**,** the Agulhas Plain (AP) has been identified as one of the most ecologically sensitive regions in South Africa and a biodiversity hotspot area with various types of vegetation which include extremely rare fynbos vegetation types growing on different soils, endemic plants and plants that are unique to the area. As a result, the AP is regarded as an important component of the Cape Floral Kingdom. According to the South African National Parks (SANParks) (2021) some of the vegetation types that occur in the area are:

- Endemic Elim Ferricrete (laterite) fynbos
- Limestone fynbos
- Acid sand proteoid fynbos
- Neutral sand proteoid fynbos
- Restioid fynbos
- Wetlands

Furthermore, there are high levels of endemism and high concentrations of rare and endangered plant species. The coastal areas are dominated by the western strandveld, while the sandstone, limestone and ferricrete fynbos types make up the interior (Erasmus, 2015). Renosterveld occurs on fertile soils (Winter *et*

al., 2007). The area also has early milkwood forests that are susceptible to intense fire and alien vegetation invasion and infestation. Alien vegetation invasion is happening inland, to the east of the Walker Bay Nature Reserve. Up to date, around 31 percent of the Agulhas Plain is invaded by alien vegetation (Erasmus, 2015). Furthermore, the area is famous for its series of wetlands that are extremely rare coastal lakes. There is also a series of freshwater wetlands and peatlands which are fed by the Heuningnes and Nuwejaars River Systems (Erasmus, 2015).

The Cape Agulhas is part of the Cape Supergroup, which consists of clastic sediments that were deposited along a passive continental margin that occurred during Cambrian-Ordovician periods (Booth *et al*., 1999). Kraaij *et al*. (2009) identifies five major land systems on the AP:

- Die Dam system
- Moddervlei system
- Elim system
- Hagelkraal system
- Bredasdorpberge system.

2.4 The role of veldfires

Five fire climate zones, also termed ecozones, have been identified in the Western Cape. Each ecozone has a distinct potential for veldfires that is defined by the regional climate. The AP falls within the southwestern coastal zone, where the potential for fire is highest in the summer months. Fires occur mainly in summer under extreme conditions. Fires have also been known to occur in winter under bergwind conditions (van Wilgen and Forsyth, 2008). Amongst IAPs that dominate the AP, pines, hakeas, and most Acacia species are broad types that are killed and regenerated from wind-dispersed seeds or soil-stored seeds released into the postfire environment (van Wilgen *et al*., 2007). These species multiply in the areas they occupy and increase in density after each fire.

Fynbos being a fire-driven ecosystem means that areas that are infested with alien species, and have burnt in recent years, need to be prioritised, as there can be additional costs of maintenance of these areas if fires are not planned for. Based on the action taken, cost comes in different forms, first being germination of alien invasive seeds post-fire and an increase in infestation density (Wilgen *et el.,* 2007). Hence, it is necessary to control these flushes of seedlings to prevent them becoming dominant within the first 18 months after a fire. According to Martens *et al*. (2020), fire management and the management of IAPs are inextricably linked. The role of wildfire is central to planning IAP control as it presents both a threat to IAP management operations and an opportunity for IAP control. Wildfire management is necessary to reduce fire hazards and

control unscheduled wildfires that threaten property, crops, infrastructure and IAP management investments already made. In the absence of IAP control, successive wildfires in areas invaded by IAPs lead to densification and further invasion. This in turn increases fuel loads and rate of spread, fueling a vicious cycle. Uncontrolled wildfires often defeat the purpose of mechanical and biological control. Only once a sound level of wildfire management is in place should alternate IAP control strategies be implemented and integrated.

Opportunity fire, with appropriate management, is a cost-effective IAP control method. Fire can be used to control IAPs and maintain optimal water yield in catchments. It is critical to understand the effect of fire as a driver in fynbos and other fire-driven systems and recognise that fire may be used as an effective management tool. Integrated planning is required to coordinate the management of fire and IAPs to take advantage of the opportunities and limit the threats. Planning firebreaks (fuel breaks) and treatment blocks and being adequately prepared are essential for successful fire management.

Land users should devise a joint strategy guided by both legal and practical management requirements. An understanding of fire ecology and the natural processes will further enhance land users' wildfire management capabilities. There are significant benefits to membership of a Fire Protection Association (FPA), which promotes and supports fuel-load management. To set up integrated fire and IAP management, it is necessary to identify management units that can be subjected to planned burns. Management actions can then be scheduled in these units to optimise both ecological burning and IAP management at the right time. It is important to note that too frequent or unseasonal fires can have a significant negative ecological impact. It is also crucial to strive for a mosaic of different veld ages across the greater landscape.

Table 1: Table of Invasive species that are stimulated by fire.

Species	Life form	Interaction with fire
Acacia baileyana	Medium tree	Soil-stored seeds stimulated to germinate by fire
Acacia cyclops	Medium tree	Soil-stored seeds stimulated to germinate by fire
Acacia longifolia	Medium tree	Soil-stored seeds stimulated to germinate by fire
Acacia mearnsii	Medium tree	Soil-stored seeds stimulated to germinate by fire
Acacia melanoxylon	Tall tree	Soil-stored seeds stimulated to germinate by fire
Acacia saligna	Medium tree	Soil-stored seeds stimulated to germinate by fire
Arundo donax	Tall grass	Unknown, but fire probably of minor importance
Eucalyptus camaldulensis	Tall tree	Survives fires by sprouting; fire probably of minor importance
Eucalyptus lehmannii	Medium tree	Not known
Hakea drupacea	Tall shrub	Adults killed by fire and fire is the major trigger for spread
Hakea gibbosa	Tall shrub	Adults killed by fire and fire is the major trigger for spread
Hakea sericea	Tall shrub	Adults killed by fire and fire is the major trigger for spread
Lantana camara	Shrub	Fire not important
Leptospermum laevigatum	Medium tree	Poorly studied, but spread probably facilitated by fire
Paraserianthes lophantha	Medium tree	Soil-stored seeds stimulated to germinate by fire
Pennisetum clandestinum	Grass	Not known
Pinus halepensis	Tall tree	Adults mostly killed by fire and fire is the major trigger for spread
Pinus pinaster	Tall tree	Adults mostly killed by fire and fire is the major trigger for spread
Pinus radiata	Tall tree	Adults mostly killed by fire and fire is the major trigger for spread
Populus canescens	Tall tree	Survives fires by sprouting; fire probably of minor importance

(The above table was extracted from van Wilgen, 2007).

2.5 Hydrology

The study area falls within the Breede Gouritz Water Management Areas and is divided into 14 Qutinarary catchments and river systems.

Table2: List of Catchments

Water Management area	River System	Catchment no
Breede	Bot	G40 G
Breede	Klein	G40F
Breede	Breede	H60G
Breede	Ratel	G50A
Breede	Heiningnes	G50 F,C,E,B,D
Breede	Uilenkraals	G50M
Breede	Onrus	G40H

According to Kraaij *et al*. (2009), the AP is unique, with a wide range of wetlands occurring per unit area. These include freshwater springs, flood plains, estuaries, lakes, vleis and closed drainage pans. The major wetland systems in the area are the Groot Hagelkraal, Ratel, Melkbospan and Vispan, Waskraalvlei and Voëlvlei. Moreover, the area is also drained by the Hagelkraal River on the western parts, the Ratel River towards the east of Hagelkraal River, the Nuwejaars River which flows into Soetendalsvlei and the Kars River which forms a floodplain north east of Soetendalsvlei and flows into the Heuningnes River which drains Soetendalsvlei south of the Kars River.

2.6 Socio-economic context

In 2019, the Overberg region population was 299 841. The region consists of different ethnic groups, 32 percent of the population is Africans, 17 percent White, 50 percent Coloured and 0.41 percent Asian (ODM, (2020). The socio-economic risks are housing demand, increased inequality and deteriorating education outcomes. There are also several pressures experienced in the Overberg. These include intense wildfires, water scarcity, depleting water quality, unemployment and biodiversity degradation. They can be addressed through a coordinated approach between alien vegetation and wildfire management. The coordinating bodies consist of ABI and other partners. The National Development Plan (NDP) 2030 highlighted that, economic activities in the Overberg area rely heavily on agriculture, aquaculture, mainly abalone farming, light industrial or manufacturing such as agri-processing, tourism (which leads to vibrant construction, financial and business services, retail, catering, and accommodation sectors), property development including the retirement market, government services and social grants also contribute (ODM, 2020). ABI's

own projects include the sustainable harvesting of wildflowers, clearing of alien invasive species and other financed projects that bring out positive changes to people's lives while protecting the environment and linking local communities to national development goals (Ashwell *et al*., 2006). Ashwell *et al.* (2006) added that ABI continuously investigates how biodiversity in regions such as the Overberg can be used in a sustainable manner so that it can benefit the present generation of local communities as well as future generations. Furthermore, some key strategies or key performance areas incorporated in the Overberg Integrated Development Plan (IDP) include:

- Going green
- Develop environmental management tools
- Establishment of Training Centre for capacity building and skills development
- Interact with landowners on integrated fire management
- Educate communities on building fire breaks
- Poverty alleviation or job creation initiatives
- Implementation of Regional Economic Development and Tourism Strategy
- Investigate central tourism coordination
- Ensure skills development and Skills Transfer Policy
- Implementation of Regional Economic Development and Tourism Strategy

2.7 South African legislation regulating IAPs control, eradication and management

The spread of IAPs in the South African context is governed by various laws, regulations and other legal requirements or obligations. Below are some of these laws. The information below was extracted from Martens *et al*. (2021), *Practical Guide to Managing Invasive Alien Plants*. The environmental right enshrined under section 24 of the Constitution of the Republic of South Africa No. 108 of 1996 which creates or provides a legislative basis for environmental laws in South Africa.

The list below relates to all relevant legislation that relates to alien invasive control:

- The National Environmental Management Act No. 107 of 1998 which makes provision for specific environmental management acts and ensures compliance with environmental laws
- The National Environmental Management: Biodiversity Act No. 10 of 2004 lists invasive species into four different categories
- The Conservation of Agricultural Resources Act No. 43 of 1983 lists AIP into categories which may vary from one province to another and suggests methods of control
- The National Water Act No. 36 of 1998 regulates water uses relevant to IAPs which may either be triggered by listed activities such as mechanical removal along riverbanks, planting etc.

- The National Forests Act No. 84 of 1998 declares some trees (including IAPs) as champion trees. Those trees are protected and are illegal to cut down
- The Fertilizers, Farm Feeds, Seeds and Stock Remedies Act No. 36 of 1947 regulates the use of fertilizers, feeds and remedies in agriculture and includes chemicals used for treating IAPs. This Act also contains requirements for registration, proper use and handling of such chemicals
- The Occupational Health and Safety Act No. 85 of 1993 promotes the health and safety of workers in the workplace, stipulates the duties of employers and employees to ensure safe working conditions and contains provisions that may be relevant to handling IAPs that are detrimental to human health and wellbeing
- The National Heritage Act No. 25 of 1999 protects South African heritage resources and IAPs growing on heritage sites
- The National Veld and Forest Fire Act No. 101 of 1998 regulates wildfire prevention and gives landowners an obligation to maintain firebreaks by ensuring that they are free of flammable material where there is a potential that a fire may start or spread.

3. Purpose and requirements of the report

The purpose of the evaluation is to gather the learnings from this project to modify and adapt the model to have greater impact in the next 10-year ABI strategy to deal with the alien invasion crisis. The scope will include a full evaluation on the work completed within the Alien Clearing Project between 2013-2020. This evaluation includes a review of the project impact, performance and recommendations to guide future programmes.

The following roles are included in the evaluation:

1. The DEA
2. The FVCT
3. ABI
4. The nine LUGs
5. The landowners
6. The contractors
7. The workers in the contractor teams
8. Funders of the project

The key questions that need to be answered through the evaluation are:

1. How does the design of the project relate to other projects with similar objectives within a regional and international context?
2. What has been the social and environmental impact of the ABI Alien Clearing Project within the Agulhas region?
3. What are the key successes and success factors of the project?
4. What are the shortcomings of the project?
5. What are recommendations for a future model and institutional arrangements?
6. Did the partnerships leverage greater impact in collaboration compared to similar initiatives?
7. What should the role of the ABI partnership be?
8. What are the external factors that have changed during the project that could enable new or restrict future opportunities?

4. Methodology

4.1 Methodological approach

This study adopted an integrated research design that consisted of field, qualitative and quantitative research methods. Myeza (2014) argues that the use of combined research paradigm consisting of qualitative and quantitative methods is highly prescribed because it:

a) Enables the study to complement the strengths and weaknesses of each method
b) Gives broader and intuitive information about the social impact of the project under study
c) Helps to overcome any bias that may be because of using a single method.

Qualitative research refers to empirical information about the world in the form of words (Cresswell, 2016). This research design allows the researchers to understand and analyse personal perspectives, perceptions and experiences of the respondents. On the other hand, quantitative research provides objective measurements and statistical analysis of qualitative data.

Heydenrych (1999) argues that:

a) Semi-structured interviews give access to valid and reliable data that is authentic and trustworthy
b) Open-ended questions allow for the perspective and experience to be the empirical focus of the conversations
c) Interviews should allow for interactions between the researcher and respondent to be on an intimate and trustworthy level, ultimately a friendly interview that will give deeper understanding of the respondent's personal experiences and establish trust and rapport between each other.

Questionnaires were formulated and interviews were conducted to investigate the various aspects of the project.

A review was conducted of all project data provided by the FVCT and ABI. Data reviewed included Annual Plans of Operation, budgets, reports, audits, and Geographic Information Systems (GIS) data. Spatial project data was evaluated by reviewing basic GIS and reviewing existing NBAL data, reports and other operational data.

In terms of how the design of the project relates to other projects with similar objectives within a regional and international context, projects were selected to allow for a review of the project from operational, practical as well as strategic points of view. The projects were reviewed in the context of papers by Amede *et al.* (2004) *NRM in Practice*; and by the South African NRM principles (in the context of governance) which were sourced from Weston and Goga (2016) and Lockwood *et al*. (2010) and discussed in the context of data

assembled through the evaluation process.

4.2 Data collection

4.2.1 Secondary data/project data

Matebese (2019) highlighted that secondary data forms an essential component of the literature review and conceptual part of the study. As a result, the secondary data used relevant scientific journal articles, social studies, books and official papers from research reports. Secondary data was undertaken to review:

a) The data provided by ABI to investigate the macro environment, opportunities and barriers associated with the alien vegetation or NRM contractor model in South Africa in general and the ABI projects
b) Existing projects with similar objectives and comparison of their strengths, weaknesses and opportunities and threats (SWOT) through an analysis of data provided, various published and unpublished papers, scientific reports, scientific research papers and operational reports on these projects and
c) Planning of the operations in terms of biodiversity priorities and community risk for veldfires obtained from existing available data such as project annual plan of operation (APOs), reports and GIS data.

4.2.2 Sampling

According to Field (2005), a sample can be defined as a collection of elements that are drawn from a larger population for measurement to establish facts, data, details etc. regarding that population under study. The sample must be representative of the population being studied to obtain generalisable results (Myeza, 2014).

Samples can either be drawn or extracted using non-probability or probability methods and/or the combination of both. Therefore, for this study, both methods were used. Probability sampling is a method in which samples are assembled in a way that offers all the individuals in the population equal opportunities of being selected (Alvi, 2016). According to Wagenaar and Babbie (2001), the basic sampling method used to conduct probability sampling is the basic random sample used in statistical techniques and calculations. The random sampling method was used in the study to select workers in each team of sampled contractors randomly using the project beneficiary list provided and for selecting landowners under each LUG. Another method that can be used is non-probability sampling where samples are collected in a manner that inhibits individuals in the population to gain equal chances of being selected. For the qualitative part of this research, purposive sampling was used to select contractors and supervisors or team leaders to understand the extent to which challenges encountered influence their successes to start viable businesses or be employable after project completion, assess the applicability of the offered training programmes within the project as well as

select other participants, who were convenient and appropriate for the study.

According to Patton & Cochran (2002), purposive sampling is a non-probability technique that is used depending on the features of a population and the purpose of the study. A simple illustration is the fact that the sample chosen was made up of individuals that were intentionally selected based on their knowledge and expertise to obtain crucial information relevant to the subject matter at hand. This sampling method was used in conjunction with snowball sampling. A snowball sample is a sociological sampling technique that is employed when the researcher experiences problems in locating the participants of a population (Babbie, 2013). These two sampling techniques are relevant to identify informants or respondents that will give relevant facts to answer the research questions. Merriam (1998) argues that qualitative research methods will thus allow the researcher to study subjects in-depth and thoroughly, while the quantitative research method is a conventional, impartial, orderly process in which mathematical data is deployed to acquire information. Myeza (2014) argues that it is impractical and uneconomical to involve all members of the population in a research project. Thus, for this study, the sampling methods were utilized to select the relevant respondents for FVCT/ABI officials, funders, LUG representatives and other key role players such as the FPA. The sample size was also influenced by the availability of the target population and allocated timeline of the project.

The sample sizes were:

- 9 Contractors
- 20 Workers
- 17 Landowners
- 9 LUG Representatives
- FVCT/ABI Officials
- Funders

In addition, discussions were held to obtain additional insights with role players such as:

- The Greater Overberg FPA
- The representative from the ODM Local Economic Development and Tourism
- Regenerative Space Invasive Alien Biomass Project

Table 3: Sample Size Summary

Group	Sample	Sample Size 20-30 %	Done	%
Workers	108	32,4	20	18,52%
Contractors	18	5,4	9	50,00%
Landowners	106	31,8	17	16,04%
Funders	5	100	5	100,00%
LUG	9	100	9	100,00%
Key Staff	3	100	3	100,00%

4.2.3 Interviews

In qualitative research, interviews are one of the primary ways in which data is collected. The data collection process used a combination of structured interviews in the form of assisted questionnaires with more quantitative, closed-ended data aspects, while semi-structured interviews had open-ended questions in the qualitative aspects.

These methods worked well to obtain feedback on how the project has impacted on their perceptions and attitudes. The interviews provided all respondents an opportunity to freely voice their views on the following: what change the implementation brought to their land, how to improve the project in terms of its social and environmental impacts and what needs to be improved in relation to planning and other important aspects of the project.

A structured interview is a type of quantitative interview that makes use of a standardised sequence of questioning to gather relevant information about a research subject (Formplus, 2021). In a structured interview, the researcher creates a set of interview questions in advance and these questions are asked in the same order so that responses can easily be placed in similar categories (Formplus, 2021).

For workers, face-to-face structured interviews were conducted using a questionnaire with closed questions, but allowing the researcher to ask follow-up questions. Field visits were conducted to perform the face-to-face interviews with contractors and the workers as well as observe the landscape to determine changes to understand environmental impact of the project.

A semi-structured interview is a type of qualitative interview that has a set of premeditated questions, yet allows the interviewer to explore new developments during the course of the interview (Formplus, 2021). In some way, it represents the midpoint between structured and unstructured interviews. In a semi-structured interview, the interviewer is at liberty to deviate from the set interview questions and sequence if he or she

remains with the overall scope of the interview (Formplus, 2021). In addition, a semi-structured interview makes use of an interview guide which is an informal grouping of topics and questions that the interviewer can ask in different ways (Formplus, 2021). Project implementers (FVCT/ABI), funders, LUGs representatives, landowners and contractors were approached for interviews to understand their attitudes, expectations and challenges at this level. This gave respondents an opportunity to freely voice their views on how and what change the implementation brought to their land and how to improve the project in terms of its impact and contribution to its target areas. The researchers were able to capture data practically while observing the emotions and attitudes of the respondents on their perceptions and attitudes towards the project implementation on their land.

Zoom interviews were held with FVCT/ABI, funders and LUG representatives. The landowners were interviewed telephonically because of the number and locations. All contractors were interviewed face-to-face. All semi-structured interviews were conducted using relevant questionnaires that made provision for follow-up questions.

In addition, informal discussions were held with other various role players such as the Greater Overberg FPA to obtain further insights as to activities in the landscape.

4.2.4 APO reports and budgets

Considering the condition and accuracy of the data provided, it was difficult to conduct an in-depth assessment of the project outputs and deliverables versus the actuals. In some cases, data was missing and data was extrapolated to get an average result. In other cases, it was impossible to do a complete in-depth and objective assessment, particularly when determining the ecological impact. The viability and veracity of the data was also assessed and summarised. However, the indicators of success, failure and shortcomings could be evaluated in terms of section 5.1, titled “Evaluating the success of an Alien vegetation project,” as well as the project objectives as far as possible

4.2.5 GIS

The GIS data was interpreted with the data from 2017 to 2021 only, as there was insufficient data for the 2013 to 2016 funding cycle. The challenge was that the attribute tables (i.e., the values and data behind the image) did not have the NBAL data as required. Thankfully, the data for 2017 to 2021 was reviewed by the ABI GIS specialist and limited interpretation was done.

It is worth noting that the findings of the ecological impact, based on data provided, will not be fully objective but an indication of success or failure and improvement. To fully achieve measuring ecological impact, a reviewed dataset will have to be obtained to properly capture the entire duration of the project. This will require the recapture of the GIS spatial data and clearing data for the 2013 to 2016 period. The data was then compared to the Implementation Plan for the AIP Project (2018 – 2020) (Watson *et al.*, 2018) and findings discussed.

4.3 Analysis

4.3.1 Statistical data analysis of interviews

Data obtained from questionnaires were uploaded and put on a Microsoft Excel spreadsheet. Various codes were used and assigned to responses for categorisation to give meaning to the responses. Responses for each question were grouped and the comparisons for the datasets were scrutinised. This enabled the researcher to make use of the numbers to distinguish between the individual responses for each of the questions that were asked in the study. Subsequently, the researcher was able to also analyse the data from the Excel spreadsheet using tables, pie charts, bar and column graphs. Thematic analysis was employed to summarise the various answers that came out of the open-ended questions. Conclusions were drawn from content and comparative analysis.

4.3.2 GIS, APOs and reports

The data provided and gaps are reported in Table 4: Project Data breakdown below**.** The lack of consistent data and data management throughout the project, as well as changes in the data systems as the project migrated to the stricter WfW systems such as the Water Implementation Management System (WIMS), limited the evaluation.

Data 2013 – 2018 cannot be used for any analyses of the ecological impact for the reasons described above. Data from 2018 onwards was interpretable, however, the time span was too limited to be able to make a complete assessment and to draw any real conclusions. Additionally, there were conflicts between the APO's data reviewed from the GIS layers. For example, the APOs and reports for 2019/20 differ from what is in the GIS data, however these were minimal, and trends could be evaluated. Data from 2018 – 2021 improved vastly. However, limited analysis of longer-term trends could be extracted for the period, including longer-term trends such as percentage of follow-ups versus initial clearing and number of follow ups obtained. Additionally, there is a variation between the APO and the GIS data final numbers, which was a concern. However, this was minimal and is suitable for broad interpretation. There was also the issue in the second cycle of moving to the WIMS system whereby old follow-up tasks were registered as initial work on the

system.

The NBALs registered on the WIMS system according to the GIS data provided by the FVCT were overlaid on the South African National Biodiversity Institute's (SANBI) Critical Biodiversity Areas (CBAs) and Ecological Support Area (ESAs) layers for the Overberg data and the percentage overlap was reviewed to determine if the execution of the work was within the planning parameters of the project implementation plan of 2018 (Watson *et al*., 2018).

4.4 Limitations of the study

Various challenges were encountered during the process of data collection by the researchers. The sample size was influenced by the availability and willingness to participate in the study. Those that did not participate gave either:

- No response or reply
- Contact details were not working or not contactable
- Did not want to be interviewed or were unavailable

The literacy level of some of the respondents was noted. The use of English was another barrier, since most of the respondents were from rural areas, where the home language was either isiXhosa or Afrikaans. The limitation was, however, mitigated, as the researchers had to explain the questions in a language preferred by the respondent so that they were able to understand clearly, enabling them to engage more during conversations.

There were inconsistencies on the GIS data and APOs which may have been influenced by inconsistent formats due to project changes and unexpected upscaling in the 2016 to 2020 period and gaps in the data for the entire period limited the consultant's ability to objectively assess some aspects of the project. These limitations are discussed in depth in Section 4.1 and Table 5 below.

4.5 Ethical considerations of the research

The researchers made it clear to participants that taking part in the study was voluntary and gave the option that they may withdraw from the study when they wish to do so. The participants were told that they were given the right not to disclose their identification details as they were not obliged to and may remain anonymous. This helped in gathering more trustworthy and insightful information when sharing negative thoughts about the project. The purpose of the study was explained in simpler terms before the involvement of the participants. The researchers carried out the research without causing any harm or

posing a risk to any of the participants. As a result, the researchers gathered and conveyed data accurately without any biases or prejudices.

5. Results

Detailed results are captured in the following annexures for ease of reading.

Annexure A: Worker results

Annexure B: Contractor results

Annexure C: Landowners

Annexure D: Land User Groups

Annexure E: Funders

Annexure F: Project Team FVCT

Annexure G: Review of project data from the Geographic Information System and project data of the project

Annexure H: Map of areas cleared vs CBAs and ESAs

Annexure I: Discussion document how the design of the project relates to other project with similar objectives

6. Discussion

6.1 Design of the project in relation to other projects with similar objectives within a regional and international context

The projects are discussed in terms of the key elements of CBNRM a discussed in section 1.1 of this document Amede et al. (2004).

Table 11: Project Selection Rationale

Project	Rational
Grootvadersbos Conservancy	The Grootvadersbos Conservancy is one of the oldest conservancies in the Western Cape and is well established, therefore serves as a good example to compare implementation through the conservancy structures, that the ABI Alien Project aspired to achieve.
Kruger To Canyons Biosphere Region	The Kruger To Canyons Biosphere Region was selected as an example of implementation through a biosphere concept, and to look at the scientific service levels obtainable.
Australian Landcare Programme	The Australian LandCare model was selected as an example of landscape-level restoration at a national level to present a possible scenario that has been proved successful and involves government as wells as other funders.

See Annexure I: Discussion document how the design of the project relates to other project with similar objectives

Table 12: Comparison of projects with similar objectives

(Yes= meets criteria as in aspects, No = does not meet criteria, Partial = Elements of the model meet the criteria.)

Aspect	ABI Alien Clearing project		Australian LandCare Programme		Kruger To Canyons Biosphere region		Grootvadersbos Conservancy	
Legitimacy, Transparency, Accountability and Responsibility	**Partial**	The conservancies provide legitimacy; not all conservancies are fully functional or declared. however, ABI is an NGO. Limiting legitimacy.	**Yes**	National legislation and policies. Bottom-up approach.	**Partial**	High level legitimacy, opportunities for grass roots transparency limited.	**Yes**	The declared conservancies provide legitimacy, through legislation. Structures allow accountability
Involvement and Participation:	**Yes**	Landowners represented in LUG, ideally contractors and communities could be better represented.	**Yes**	Strong community approach and structures	**Partial**	Facilitation of grass roots structures and community forums.	**Yes**	Primarily represents landowners
Fairness and Equity	**Yes**	Structures in place to ensure fairness, equity is a strong component in the project at all levels	**Yes**	LandCare policies committee and structures allow for equity and representation	**Partial**	Forums do not necessarily represent all components of the landscape	**Yes**	Structures in place to ensure fairness, equity is a strong component in the project at landowner level
Integration and Coherency:	**Yes**	LUG and structures are in place	**Yes**	Community presentation and support a strong component	**Partial**	Integration at strategic level	**Yes**	The grass roots participation of landowners provides
Adaptability and responsiveness	**Partial**	Structures allow for adaptability but the WfW project limits this	**Yes**	Community level decision making allows for adaptability and flexibility	**Partial**	Adaptivity at strategic grass roots is limited.	**Partial**	Structures allow for adaptability but the WfW project limits this.
Ethical Consideration:	**Yes**	LUG and ABI and FVCT has the structures in place at	**Yes**	Strong community grass roots groups	**Yes**	The K2C is bound to international best practice and legislation**.**	**Yes**	The landowner driven structures ensure ethical

		various levels to ensure ethical considerations		ensure ethical consideration				consideration and rights are respected
Predictability:	**Partial**	Structures allow for adaptability but the funder WfW limits this	**Yes**	Programmes are grass roots driven however structures allow for consistency in planning and funding	**Yes**	Projects are higher level and longer term	**Partial**	Structures allow for adaptability but the funder WfW limits this
Direction:	**Yes**	Strategic vision well established through structures and landowner participation	**Yes**	Strong policies and structures ensure direction	**Yes**	Direction well established at strategic level	**Yes**	Strategic vision well established through structures and landowner participation
Performance:	**Partial**	The WfW project has impacted on financial sustainability	**Yes**	Projects funded at strategic level and structures set, but decisions happen at local level	**Partial**	Projects not implemented by this agency directly. But provides for long term financial stability and sustainability.	**Yes**	A single conservancy has the staff and direct landowner involvement to ensure that decisions are taken at lowest level and there is financial sustainability

Wittenberg and Cock (2001) suggest that, to establish a successful strategy to combat IAPs, the initial step is to establish a common vision, goals and objectives and integrate the strategy itself with greater national commitment to sustainable use and an action plan for conservation of the nation's biodiversity.

The nature of the projects requires not only high-level legitimacy but also grass roots (landowners, contractors and communities') participation, but also, stability, predictability and transparency.
The ABI Alien Clearing Project did well to create the structures that speak to CBNRM principles as in Amede et al. (2004).

In comparing the project to other projects, it was concluded that there needs to be three levels of management structures at the very least to meet all the requirements of CBNRM.

The comparison table above reveals that the design implemented for the project was close to ideal. The limiting factors were the lack of legitimacy of the project as an NGO and the top-down nature of the WfW project that limited adaptability, responsiveness and predictability of the project.

The Australian LandCare model ticks most of the boxes and would be ideal as a localised model for the ABI project and brings implementation to the lowest-level possible. However, the lack of existence of a similar South African model, despite the Department of Agriculture's programme having elements of this, is limiting.

The Biosphere Region model has a number of partial matches, however, from a strategic management point of view, this would be the ideal platform to have an overarching strategic approach to the landscape and to ensure legitimacy and accountability. Additionally, the Biosphere status would go a long way to support landscape initiatives and leverage funding.

In terms of conservancies, throughout the assessment they were praised as a solution. This structure is vital to coordinate on implementation level. The shortcoming at this point is the effective management and management support of the conservancies and the large number of them. The Grootvadersbos Conservancy experienced similar issues when implementing the WfW project. However, the fact that they were well established with permanent staff partially paid for by membership fees made a fundamental difference in implementation. The scale of the Grootvadersbos project also was a factor.

The top-down approach brought about by the WfW project was disruptive to these principles and

structures, especially when dealing with contractors, who do not have a legitimately established forum. The FVCT did make an effort to be inclusive, but this needs strengthening and democratisation.

Some key role players with legitimate mandates (e.g., municipalities and FPAs) are not formal partners which limits integration. These relationships need to be formalised to move from cooperation to full integration of outputs of the various role players. The ideal model should incorporate at least three levels of organisation to enable strategic and tactical decisions as well as practical implementation, at the same time maintaining transparency and legitimacy, yet deriving the decisions to the lowest-level possible.

The model implemented by the ABI Alien Clearing Project works in theory, however major funders have too much influence. Therefore, the structures need to be strengthened to weather these influences.

6.2 Social impact of the project

6.2.1 Workers and contractors

a) Age group distribution

There were 20 workers interviewed from Elim, Bredasdorp, Gansbaai and Stanford. They consisted of nine Coloured and 11 African participants. The age groups for the workers and contractors were categorised into under 20 years, 20-29 years, 30-39 years, 40-49 years, 50-59 years and 60 and above. One was under 20 years, five between 20-29 years, eight between 30-39 years, four between 40-49 years and two between 50-59 years.

From the workers' responses, there were more youth between 18-39 years and fewer people above 40. Matsila (2018) argues that youth are more effective in terms of production compared to adult people, hence the majority of the contracting teams are made up of youth.

There was no one under 18 years because constitutionally it is unlawful to employ someone under the age of 18 years unless consent is sought from the relevant department and granted. On the other hand, 50 percent of the contractor population was sampled and were from Struisbaai, Bredasdorp, Elim, Pearly Beach, Gansbaai, Stanford, Caledon and Spanjaarsdkloof. There were three contractors between 40-49 years and six between 50-59 years.

b) Gender distribution

The worker population consisted of 15 females and five males. Therefore, the project was successful in meeting the requirements of the Extended Public Works Programme (EPWP) regulations for target groups for the teams. For contractors, there were a total of six males and three females. The project needs to review

the contractor database and evaluate whether they are meeting the relevant regulations in terms of the target group. Therefore, based on the results, the gender composition for contractors did not meet the objectives of the EPWP regulations aimed at empowering women from poor communities, more especially those who are heads of a household.

c) Educational level

In obtaining the educational history and background of the workers and contractors, the results were given five classifications: Grade R-3, Grade 4-6, Grade 7, Grade 8-11, Grade 12, and post-matric qualification. Forty-five percent were between Grade 8-11, 20 percent between Grade 4-6, 15 percent completed Grade 7, 10 percent completed Grade R-3 and 10 percent completed Grade 12. On the other hand, one contractor completed a post-matric qualification, two completed Grades 12 and six fell between Grade 8-11.

The workers and the contractors interviewed filled the following positions: Supervisor, Health and Safety Representative, First Aider, Herbicide Applicator, Chainsaw Operator, Driver and General Worker. Matsila (2018) stated that poor quality and low-education levels in the Agulhas region is influenced by the surrounding farmers who employ youth to work on their farms during their early teenage stages and would be focused mainly on getting money for survival or to support their households. This leads to communities having relatively low literacy and educational levels. Out of 20 respondents for the workers, nine depend on the project for constant employment because of their level of education, companies hire internally, many jobs are never public, positions are highly competitive and companies are over selective.

d) Position in the household

The objective of the project is to target poor or marginalised communities where the beneficiaries can earn an income and improve their household's living conditions. The WfW project requires that only one member of a family from the community can benefit from the project (Matsila, 2018). As a result, individuals and the entire community rely solely on the ABI Alien Clearing Project to survive. Fifty percent of the workers had work experience either from similar work or from other activities they had undertaken to earn a living and the other 50 percent did not have any experience.

The workers' previous experience ranged from alien clearing (i.e., WfW), administration, housekeeping, flower picking, farm work and maintenance (building, plumbing, road works, electrician, etc.). Eighty percent of the worker respondents indicated that they were recruited by the contractor, 15 percent by friends and family and five percent from employees involved in the project.

The workers had on average three dependents per worker, with most receiving the child support social grant

as another form of income in the household. The majority of the youth had at least one child. This gave the impression that the communities comprise of young parents who are also breadwinners at the same time. On the other hand, most the contractors indicated that they were doing something to earn an income before joining the project and while they are part of the project, they do not have other sources of income besides work. The contractors stated that they were either approached by ABI, heard about the opportunity from friends and family, or applied to join the project.

e) Marital status

The marital status was categorised into divorced, married, or single. Most of the workers that participated in the survey were single parents. This may be due to having children out of wedlock at a very young age. This means that they may have seen having children as crucial to enable them to qualify for child support and have a bit of income for the household (Matsila, 2018). The contractors indicated that three were divorced, five were married and one was widowed. This means that their partners are not working as they indicated that they do not have other income other than work.

f) Wages

The workers earn very little because of their low education levels, lack of alternative employment, tedium and stigma associated with unemployment. Some of the workers supplement their salaries through the child support grant, meaning that without this type of grant, the families would barely survive.

Over 60 percent of the workers had no current contracts and had to wait between one to six months in between contracts. The remaining 30-40 percent were fortunate to have contracts linked to their respective contractors, either private work on farms or with LandCare. During the times where there were no ABI contracts, some of the contractors would allow the workers to work on their farms or other projects as a means of giving them income to get them going while waiting for a new contract and tried to find work with landowners. Other contractors would lend their workers money on the hope that a new contract would be coming.

Ninety percent of the workers enjoy the work they do in the project and 85 percent of them are proud of the work they do because they also understand the importance it and feel that their perception of conservation has changed since working in the project.

Very few respondents from the workers argued that with the current state of the economy it is better to receive money from the government, even though that money would not be sufficient to cover costs. However little, though, it is still sufficient to keep one going, more especially during times where there are

no contracts because employment opportunities are very rare in small towns. As a result, most of the worker respondents were too reluctant to look for work during times where there were no contracts and would rather relocate for better opportunities.

Some also considered becoming contractors in the future, but were concerned about their low levels of education, low literacy levels and lack of personnel management skills. In addition, most of the contractors indicated that they would earn more in the project if there was long-term employment of up to a year. Only one of the contractors also indicated that the capital build-up is better with ABI compared to other projects. The remaining contractors indicated that lack of capitalisation was an issue.

A review of the project data showed that, in terms of income of the beneficiaries, the following was summarized from the Annual Plans of Operations, budgets and reports. From 2013 to 2021 the entire duration of the project, the lowest percentage of budget provided by the Working for Water project that went directly into wages was 56 percent while 72 percent was the highest. This is well within the norms of NRM project implementation. Therefore, this is a positive impact in the landscape.

Additionally, the wage payments by the project in the first cycle were R11 189 978 while the 2017/18 one-year funding paid R2 569 530 and the last three-year cycle came to R8 077 224. Thus, total wages disbursed to the local communities was **R21 836 732.** The average annual wage payment over the years funded was **R3 119 533.**

According to the Overberg 2020/21 IDP Review, the Overberg Municipal District's general economic out-performance of the Province indicates that the District is more resilient than other districts within the Western Cape, despite electricity shortages, declining commodity prices and policy uncertainties in South Africa. The Theewaterskloof and Swellendam municipal areas maintained relatively constant growth rates from 2010 to 2014. Thus, direct payment in wages has had a positive economic impact in the area, particularly that the funds are additional, coming from outside the District's municipality, contributing above and beyond the normal economic activities.

g) Project duration

Generally, all the respondents from the workers and contractors stated that they do not want to leave the project, although the fact that their employment is short time causes unhappiness. Work in the project only starts after funding has been made available by DFFE and contractors receive order numbers (Matsila, 2018).

One of the main complaints around the duration of employment was that participants must work for three months and wait of roughly eight months for a new contract.

The workers argue that the income they get from the project is sufficient for them to put food on the table, pay bills and cover other expenses. But, having to wait that long is problematic for them because they go return to the conditions they experienced prior to joining the project, whereas the project's objective is to create jobs, uplift society and alleviate poverty or improve their standard of living. This currently only happens when they have a contract either with the ABI Alien Clearing Project or other projects. As a result, 70 percent of the workers felt that they can do other work as well and not just alien clearing, but they do not have full exposure to other aspects of veld work.

The training and experience they received is however limited, but they are keen to explore other options such as firefighting and flower picking. Most of the contractors stated that they generally find work during times when their contracts have ended with ABI, whilst a few indicated that they do not find alternative employment. In the Agulhas Region there are very few or limited economic prospects or opportunities. In most cases, the contractors may be unable to find other opportunities in their current fields of work in alien clearing or natural resource management, or outside conservation-related work. This may be because they are too reluctant to leave the security of the ABI Alien Clearing Project as it may be the only employment opportunity in the area for unskilled labour. This is more apparent in poor communities.

Due to the nature of the contract system or type of employment, there is no sustainability of livelihoods for the participants because of the amount of time they spend without income in their households. However, De la Fontaine (2013) argues that communities become dependent on a project and the individuals employed by WfW tend to become reliant on the programme.

Nevertheless, the ABI Alien Clearing Project is not perceived as a long-term employer. Simultaneously respondents indicated that the project has been beneficial to some extent thanks to the training that was provided, that enabled beneficiaries to secure or find other employment opportunities after the end of a given contract.

Inconsistencies in the project funding and implementation were two-fold: firstly, there was a gap year in funding 2016/2017 which heavily impacted upon the consistency desired by the beneficiaries. In addition, the 2017/18 one-year funding would have created uncertainty and consternation with workers expressing a high level of fear due to the uncertainty for both the contractors and beneficiaries. This limited small business development and capitalisation efforts by the contractors.

Secondly, most years the project started months after the 1 April starting date. This limited the time to complete the project, and necessitated the recruitment and/or development of additional contractors, placing a heavy burden on the FVCT implementer and once again creating uncertainty and preventing small business development. Despite this, a few contractors took the initiative and were able to find work. However, this was limited to less than 60 percent of contractors. These factors negate the positive effect of the direct wage income and create a negative environment to function in for all parties and role players. This maintains a sense of insecurity for the beneficiaries.

h) Training interventions

The workers indicated that they now understand the ecological value of indigenous vegetation and negative impacts that alien invasive plants have on the environment. One of the workers mentioned that, before joining the ABI project, she had no idea about alien vegetation, and thought that the infested areas or "forests" were important. Some made several examples that, after clearing, one can see the difference aesthetically and how the fynbos grows when the aliens have been cleared. One also mentioned that they feel guilty when seeing seedlings of alien invasive vegetation along the road when walking to town, and they end up uprooting all of them along the way.

De la Fontaine (2013), in assessing the values and impacts of invasive alien plants on the livelihoods of rural land-users on the Agulhas Plain, stated that working on alien clearing programmes appeared to enhance individuals' intrinsic value for nature. During the implementation of this project several training interventions were provided to the beneficiaries.

Training has contributed significantly towards equipping the beneficiaries with the skills necessary to perform their duties. However, it is difficult to venture into new opportunities for growth into other careers or aspects of Natural Resource Management.

The training that was provided and experience both had a positive impact in the community. For example, health and safety training raises awareness on safety and hazard identification; and such information can easily be passed on to the next person. Herbicide applicator training combined with field experience increase knowledge on practicing safety, alien plant identification, different types of herbicide and their impact on the plant and ecosystem.

However, two of the respondents representing workers mentioned that the First Aid Level 1 is too basic for someone to be employed elsewhere. The quality of training should rather be improved.

Some of the contractors received non-functional training from their previous employers such as SANParks, which include business management, computer skills, financial management and the construction of gabions, concrete structures and boardwalks. Furthermore, De la Fontaine (2013) highlighted that there should be methods in place to maximise people's chances to remain employed. Even though the participants have increased employment opportunities combined with knowledge and experience, this is limited predominantly to alien vegetation clearing in the ABI Alien Clearing Project, to the specific line of work.

During project breaks few beneficiaries looked for alternative employment, whilst other beneficiaries waited for the project to resume. Based on the interview survey, 11 respondents from workers showed affection and value towards the project and indicated the importance of conservation and skills they have acquired. On the other hand, 66 percent of the contractors were able to find alternative ecologically related employment during projects breaks, whilst 34 percent of them were not able to. However, training from their previous employers encouraged independency and growth of small, medium and micro enterprises (SMMEs). Unfortunately, the project only provided functional training. Coetzer (2010) argues that the form of training offered to contractors should include education, training and development processes that are specifically designed to assist the contractors to develop skills they need as well as programme activities that will include mentoring and networking.

The contractors stated that they need support on the following:

- Administration (COIDA registration etc.)
- Business management
- Vehicle support or a system to build up capital
- Constant work

In the view of most parties interviewed, contractors need to become more independent with less support from project managers. This means that ABI needs to evaluate the contractor training needs and the contractors need to evaluate their needs to further develop small business and contractor growth. This will improve linkages with the green economy and is considered by the participants and role players as a more holistic and desired approach for natural resource management. In addition, a broader skill set will enable the contractors to expand and grow their SMMEs. Based on the results, the contractors suggested the following short courses:

- Business training which includes business management and administration
- Geographic Positioning System (GPS) mapping tools
- Bookkeeping
- Computer skills

- Financial management

These short courses should be seen as sufficient for making contractors aware of the importance of the skills they have acquired from the project and their role in business (Coetzer and Louw, 2012). Thus, training should be prioritised as a development tool that is inherent to the programme, and not seen as a non-wage benefit that accompanies participating in the project, because business operation skills are declared the major components for achieving entrepreneurial success.

In terms of training opportunities to beneficiaries and contractors, the project records show that, in the first cycle a total of 4 255 training person days were provided. The one-year funding produced 271 training person days, and the second cycle produced 2 457 training person days. The total training person days for the project from 2013 to 2021 was 6 983 training person days. That decrease in training days is to be expected given that in the first cycle a pool of beneficiaries with the required training were in the landscape and could be recruited. Additionally, because the training budget needed be sourced separately to the DEA contract, and due to delays in project start, operational days were prioritised as this created the highest risk of penalties from the DEA for non-performance.

Training overall has had a positive impact on people's employability and income, with a large number of people trained. However, training that enhances people's ability to develop business should be considered and is desired at most levels.

6.2.2 ABI/FVCT, LUGs, landowners and funders

Fifty-five percent of the FVCT key role players indicated that the ABI Alien Clearing Project has had positive social impact and 54 percent of the LUG representatives also agreed with this. A significant 62 percent of the landowners indicated that their income has improved, 76 percent feel that their property values have increased after clearing or removing IAPs. Most (62 percent) of the landowners see the positive impact the project has on their communities, whilst 33 percent remained neutral and only five percent feel that the project has a negative impact on the communities. However, these distinctive responses may be linked to the sustainability and inconsistency issues linked to the project.

More than 14 percent (14.3 percent) of the funders stated that the project is not sustainable because of inconsistency in funding. Overall, this means that the project has done well in creating job opportunities and up-skilling poor communities as most of the workers and contractors indicated that it is better to have someone working in a household, regardless of the nature, form, or type of employment and it is better to earn less than nothing at all.

As a result, 28.6 percent of the funders indicated that job creation remains the priority for government, with 18.2 percent and eight percent of FVCT role players and LUG representatives respectively adding that the project has not had significant impact socially. This is primarily viewed by most interviewed to be due to the inconsistencies in the project implementation, short-term employment, low income, project breaks and the beneficiaries' inability to find alternative work during project breaks.

6.3 Ecological impact of the project

57.1 percent of the funders of the project stated that they have significant ecological impact. 18.2 percent and 8.5 percent of FVCT role players and LUG representatives respectively indicated that there has been significant ecological impact by the project.

All the landowners indicated that they see improvement in the ecosystem, with 90 percent adding that the removal of IAPs has reduced the risk of veldfires on the natural vegetation. All 21 landowner participants indicated that their land was cleared using funding from the ABI Alien Clearing Project and landowners themselves.

Private landowners are obliged by South African environmental laws to manage AIPs found on their land. Martens *et al*. (2003) highlighted that there are many landowners facing problems associated with alien invasive plants and that the costs of clearing increase annually, therefore, the chances of receiving financial assistance in the form of funding to clear their properties are slim. Most of the landowners who participated in the project are attempting to meet such an obligation.

When these landowners joined the project, most of their properties required initial clearing, with some areas cleared to follow-up or maintenance levels. In addition, the workers and the contractors also indicated that ever since they started working in the project, they could see the difference in how fynbos plants grow once the site is cleared versus a site that is not cleared of IAPs. All the workers and contractors do not want to leave the project due to the ecological impact of the work they do on.

The FVCT staff results show that 38 percent agree that collective management or participation has been outstanding, 31.3 percent indicated that the conservancy model works and 25 percent believe that the project has upskilled people to make them more employable.

On the other hand, the LUG representatives results show that 61.1 percent indicated that the conservancy

model works, 27.8 percent feel that ABI/FVCT is doing a good job and 11.1 percent felt that the project has brought work to the area.

Most importantly, the ABI Alien Clearing Project has managed to get the buy-in from willing landowners to manage IAPs on their properties, primarily through the conservancy structures. This has stimulated a sense of ownership of IAPs by landowners, and has helped establish relationships between landowners, contractors and workers. It has also supported sustainability in IAP management as well as the sharing of costs of clearing between landowners and the ABI Alien Clearing Project. Collective management efforts are a result of all stakeholders being identified at the early stages of the project planning or preparation, and structures that were put in place. This is also an indication of their level of involvement throughout the project's implementation.

Wittenberg and Cock (2001) highlighted that all stakeholders must be involved in a given strategy from the beginning to avoid a situation whereby stakeholders veto actions late in the process on the grounds that they were not informed. All the respondents value the necessity of having conservancies facilitate the planning and implementation process, and sought co-operation from landowners to enlist them. Subsequently, the ABI/FVCT role players indicated that the LUGs have done well in coordinating the project's efforts at that level and landowners provided personal reasons for their involvement in alien invasive plant management. This somehow underlines the LUGs commitment to what the ABI Alien Clearing Project is about and stands for.

Comparing the data to the prioritization data as captured in the implementation plan of 2018 (Watson et al., 2018) as described in section 1.1 above, found that despite the administrative challenges presented to them, they were able to maintain clearing within the parameters of the plan with very few exceptions.

Species selection

As the data did not include species, this is not possible to ascertain. The focus remained on these species throughout according to the APO, and numerous reports.

Area/Site selection

Conservation status of the NBALs cleared was evaluated by overlaying the NBAL history from 2018 onwards as it is registered on the DFFE, WIMS system, with the SANBI Critical Biodiversity Areas (CBAs) and Ecological support Area (ESA) layers. This revealed that only three NBALs lie outside of these areas. Of these, only one had received a treatment (two treatments) totaling 57 ha. Considering that the project NBALs cover 43 071 ha and that there are 529 NBALs, this number is almost irrelevant.

All three NBALs were in natural veld and at the head of a small water system, and all of them bordered on the CBAs and ESAs. There were some NBALs that overlapped outside of the CBA areas but this logical in terms of dealing with and entire property of an infestation. Thus, the criteria of selecting areas based on the conservation status (biodiversity) of the natural vegetation, and the contribution of the area to improve the health of water catchment systems (ecosystem function) was met.

See Annexure H: Map 1: NBALs in relation to the CBAs and ESAs and the number of follow-up prioritisation of follow-up work.

The trend indicates that in broad terms some NBALs were registered on the WIMS system as initial even though the previous project had cleared them, as is the norm in the WIMS system.

Using GIS data from 2018 onwards only provides an indication of where the project was in terms of following up on the APOs. It is understood that the project focused primarily on follow up and low-density areas with few or no adult plants, to maintain a low person day cost.

In summary the project seems to have done well from the available data in maintaining its gains and keeping it in the ecological parameters of the project. However, there were missed opportunities through the follow-up of burn scars and use of fire in an integrated manner to manage data. This is evident in the lack of veld age and burn scar data.

Key findings of APO budget and GIS data review

- Mapping and special data collection prior to 2018 was appropriate for the parameters of the project at the time.
- However, in an ideal world it would have been advantageous to have started with a suitable mapping and information database at this stage to assist with planning, execution and monitoring.
- With the emigration to the standard WfW model, considerable work had to be done to change the data to the appropriate level. This further enabled improved strategic and tactical planning.
- Good verifiable data further assisted with project planning and funding applications.
- There is a discrepancy in anticipated standards of accuracy of the handheld GPS's that most implementers used, compared to the high accuracy mapping tool used by the WfW project. This is an unrealistic expectation from the WfW project.

- The mapping standard expected by WfW was unrealistic for an implementation agent the size and scale of the FVCT/ABI implementers and considerable capacity is required to be effective.

6.4 Key successes and success factors of the ABI Alien Clearing Project

Successes are discussed in each of the aspects investigated and to avoid duplication, factors not fully discussed in these sections are discussed below.

The FVCT role players results show that 38 percent agree that collective management or participation has been outstanding, 31.3 percent indicated that the conservancy model works and 25 percent believe that the project has upskilled people to make them more employable. On the other hand, the LUG representative results show that 61.1 percent indicated that the conservancy model works, 27.8 percent feel that ABI/FVCT is doing a good job and 11.1 percent felt that the project has brought work to the area.

The funders indicated that the project has created jobs (5.3 percent), the conservancy model works (10.5 percent), and ABI is doing a great job (15.8 percent). 10.5 percent of the funders applaud the working relations between the various stakeholders and 57.9 percent highlighted the inconsistency of processes, funding, rates and standards. In addition, the ABI Alien Clearing Project has managed to get the buy-in from willing landowners to manage IAPs on their properties. This has stimulated a sense of ownership of IAPs by landowners, and has helped establish relationships between landowners, contractors and workers. It has also supported sustainability in IAP management as well as the sharing of costs of clearing between landowners and the ABI Alien Clearing Project. Collective management efforts may have resulted in that all stakeholders were identified at the early stages of the project planning or preparation. This is also an indication of their level of involvement throughout the project's implementation.

In terms of outputs, a total of 149 835 person days were worked and 49 952 ha were cleared and followed up. The project additionally brought R 27 877 732 into the landscape successfully to clear alien vegetation. Additionally, capacity was developed in contractors and the ability of landowners to clear.

Wittenberg and Cock (2001) highlighted that all stakeholders must be involved in a given strategy from the beginning to avoid a situation whereby stakeholders veto actions late in the process on the grounds that they were not informed. All the respondents value the necessity of having conservancies facilitate the planning and implementation process, and sought co-operation from landowners to enlist them. Subsequently, the ABI/FVCT role players indicated that the LUGs have done well in coordinating the project's efforts at that level and landowners provided personal reasons for their involvement in alien invasive plant management.

This somehow underlines the LUGs commitment to what the ABI Alien Clearing Project is about and stands for.

Structure

The structures created to implement the project emulated a multi-tiered management system that addresses the strategic and operations in an inclusive manner of most of the role players.

The fact that the project assisted in creating nine LUGs of which most have become declared conservancies has had a major impact on the landscape and perceptions of landowners in terms of conservation of resources. Additionally, it creates the platform for engaging and stimulating conservation in green economy development.

The establishment of the conservancies and the support structure provided by ABI as well as the project was the primary success factor in the project.

6.5 Shortcomings of the project

The funders identified the following:

- In terms of funders, 57.9 percent highlighted the inconsistency of processes, funding, rates and standards and lack of knowledge on how to properly manage aliens
- Poor planning and coordination and inconsistency (leading to short-term planning)
- WfW/government-type projects bring red tape that is negative or rigid standards that are incompatible with outputs
- Insufficient data collection and coordination
- Poor quality management
- Underestimation of capacity required to manage large administration projects.

The FVCT respondents identified the following shortcomings:

- Negative impact of poverty relief rates and standards
- Short-term implementation and funding
- Poor planning and coordination because of unclear roles and responsibilities and loss of identity
- FVCT staff feel that managing a government EPWP within the constraints of the administrative, data and financial standards is complicated, and they may not have the capacity or personnel and finances to undertake the project
- WfW or government-type project bring red tape and rigid standards have a negative impact on the workers and contractors

- Poor communication or lack of transparency between some funders and the implementers and LUGs and as a result the departments and organisations were working in isolation which caused clashes in priorities
- WfW is just alien or water focused whereas ABI's vision is beyond alien clearing and is centered around establishing green teams
- Voluntary nature makes planning and standards of the project difficult to implement strategically.

Lack of capacity to implement the project was a key shortcoming. The recommended standard by the WfW project is one project manager to seven teams. In the case of the ABI project, the average was 14 teams and at times this increased to 21 teams when the project was forced to catch up on the APOs due to delays in the start of the project annually.

Additionally, in the first cycle there was a lack of data management and curatorship. The mapping capacity which was rectified in the second cycle. This would have led to poorer decision making and monitoring.

The respondents indicated that ABI and FVCT have lost their identity by trying to meet the requirements and objectives of DFFE. In many countries like South Africa, the responsibility for AIP management is shared between several government departments, agencies, and institutions (Wittenberg and Cock, 2001). Wittenberg and Cock (2001) further states that this often leads to weak or no coordination framework to establish a connection between these departments, agencies and institutions because the goal for every initiative is to preserve, protect and restore the natural environment. This means that the responsibility to facilitate this process should be given to one existing organisation in the landscape that coordinates and leads the process.

6.5.3 LUGs

The respondents from LUG representatives shared similar shortcomings which included the following:

- Low wages or contractor payments
- Inconsistency and poor planning and coordination
- Teams need improvement
- Unclear roles and responsibilities
- Fear of loss of independence in decisions and prescriptive actions on farms

Wittenberg and Cock (2001) argue that the responsibility for AIPs management should be assigned to one agency to reduce competition for funding. If not, there should be measures in place to have clear definitions

of roles and responsibilities for all parties involved and a formal arrangement for coordination of their activities.

6.5.4 Landowners

All the landowners feel that they have enough knowledge to deal with contracting teams. 42 percent of them indicated that the support given by ABI and FVCT was insufficient and 61 percent say that the project did not have sufficient communication. The statements indicate that communication is among the shortfalls of the project. This may have been caused by unclear roles between ABI and FVCT. As a result, 38 percent of the landowners think ABI should play a coordination role, plan and provide all the necessary support, and 11 percent of the landowners were unsure on the kind of role ABI should play, whereas five percent recommended that ABI should play a role in conducting research and development, and five percent indicated that ABI should remain as it is. Urgenson *et al*. (2013) stated that effective communication to provide landowners with clear expectations on the level of IAP maintenance is key because it enhances their understanding of the values informing their perceptions and their responsibility in stewardship. Moreover, according to the WfW circular published in 2008 titled "Approach to work on private land", private landowners are unwilling to participate in conservation because of the challenges attached to it, which include:

- Financial limitations
- Time constraints
- Prefer not work with government directly due to exclusion and sense of distrust
- Differing values between landowners and government in conservation.

However, with enough funding and support, the results indicate that FVCT holds the potential to make conservation affordable for landowners over time. Urgenson *et al*. (2013) argues that the issue of landowner participation in alien clearing is an important challenge in South Africa because the majority of the land is privately owned. Thus, without the support of landowners, IAP management would not be successful. Therefore, the responsibility of IAP management on private land should be shared among the landowners and the government.

One of the major shortcomings was the lack of consistent data management and storage. Data was difficult to interpret over the entire evaluation.

A review of the APO, budget, reports and GIS data indicated that, prior to the advent of the WfW project, the FVCT was aiding landowners, however the scale and nature of the project did not at that stage require

detailed data collection and maintenance of spatial and landscape data, although it would in retrospect have been an advantage.

Without a complete set of data since 2013 it is not possible to make an objective assessment of the ecological impact over the long term. It was not possible to determine explicitly from the data provided if all the follow ups were completed, as the 2013 to 2016 data was not available.

In the period 2013 to 2017 the FVCT used a standard GPS combined with Google Earth digitizing which created tracks not polygons. At the time they did not follow natural features or the cadastral boundaries, but mapped the infestations and what was cleared. Again, at the time this was mostly appropriate for the nature of the project being focused on landowner support. However, at that stage the system can be described as a tool and not a database of information, which is the case for the current system.

Since the standard WfW model was implemented in 2017 which brought considerable change, the Project Verification Report of 24 April 2017 detected several anomalies that needed rectification (Pisang, 2017).

6.6 Project leverage of greater impact in collaboration, compared to similar initiatives

In the first cycle, 2013-2016 the overall indirect co-financing commitments from the nine participating LUG landowners was R 6,8 million and the direct co-financial contribution was R 224 678 over the period.
The FVCT as implementing agent contributed R 1 425 000 directly to the project over the period.

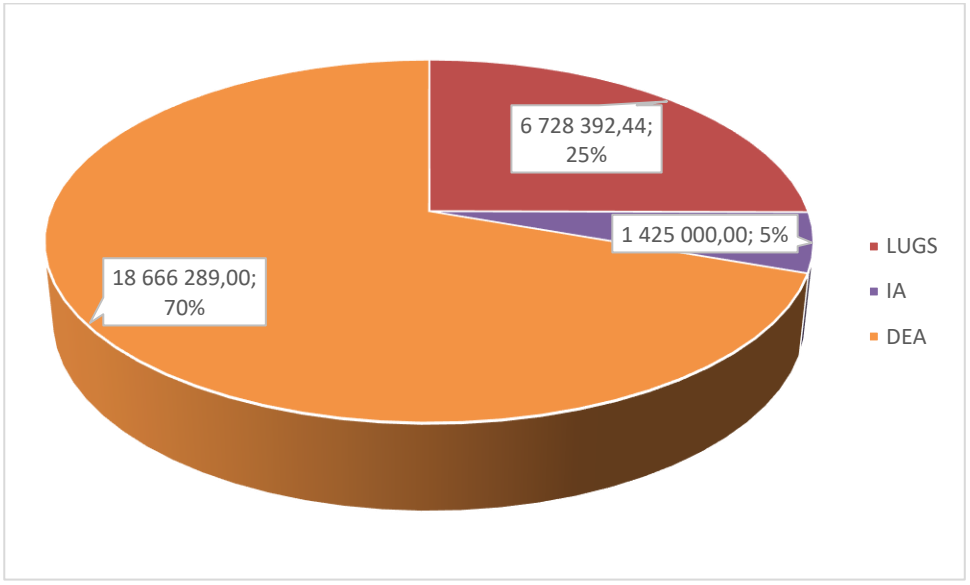

Figure 4: Project Percent Contribution 2013/2016

No data of co-contributions of LUGs and FVCT is available for the 2017/18 year. However, FVCT did make significant contributions to the project. No data for the 2018/2021 cycle of co-contribution of LUGs and FVCT is readily available. However, FVCT did make significant contributions to the project. Contribution by funders assisted greatly in supporting the infrastructure required to implement such projects in the second funding cycle.

The Millennium Trust annually contributed R 660 000 (as in 2019/20) for the mapping technician, administration support and oversite. In the 2019/20 financial year this reflected 11 percent of the budget. The Drakenstein Trust contributed approximately R 550 000 annually to mapping and development of the Natural Resource Management database and administrative and operational oversite. Since 2017 these contributions translate into 32 percent of the entire DFFE budget in that period. Additionally, the Fynbos Trust funded interventions such as chainsaw operator training and support to specific sights. These contributions enabled the project not only to continue but improve on its planning and deliverables.

ODM Local Economic Development and Tourism

Discussions with the Local Economic Development Manager, Gina Mentoor at the ODM indicated that they have participated in the ABI processes and are responsible for small business development and tourism. The ODM has programmes focused on small business development and promotes small business local economic development. The opportunities have not been fully exploited in terms of tourism and business development.

In addition, the ODM IDP strategies or key performance areas as listed in section 1.1 include: Development of small businesses, going green, capacity building, tourism development and integrated fire management.

Although there is information sharing, at this stage there is not full integration in the contractor development and green economy opportunities. A shift from coordination and cooperation needs to be made to an integration of outputs where the ABI project and the ODM support one another. A willingness by ODM was expressed to formalise this relationship.

Greater Overberg FPA

Discussion with the Greater Overberg FPA Manager Louise Wessels concluded that the Greater Overberg FPA agrees that there is scope for teams that have a broader ability, particularly in cutting fire breaks and block and stack burning as well as support to landowners for suppression. However, there is some concern about competition with other small businesses that are already in the landscape and the ability to compete with them.

The challenge identified by the Greater Overberg FPA is that formally the mandate does not lie with ABI as it does with government structures. The FPA proposes that ABI becomes the service provider to the ODM to align with their strategic objectives and explore signing an MOU. The alien clearing only (WfW model) limits opportunities and funding applications should focus on climate change too.

Regenerative Space Alien Vegetation Biomass NPO

The utilisation of alien vegetation biomass is a vital element in the landscape and there are obvious synergies and ways to offset alien clearing costs using the cleared biomass as long as sites meet the key requirements for biomass:

- Volume of biomass
- Species
- Accessibility and product requirements
- Data and mapping must be updated regularly.

Biomass removal will require labour and there is room to integrate this with the existing teams. The contractor pool that the ABI Alien Clearing Project has developed is ideally placed to participate in this and the structures exist, thus there are strong synergies.

Involvement in biomass removal is an opportunity for contractors to develop further and broaden their income streams, while enhancing independence and participation in the green economy. Additionally, the contractors will be able to work within a reasonable industry wage, improving their income. This provides opportunities for work outside of the WfW-funded projects especially in the times when funding has been delayed due to WfW administrative issues.

Partnerships and collaborations are key to successfully managing IAPs (Tyrer, 2020). The South African NDP clearly states the need for change on how natural resources are managed and highlights the expansion of ecological reserves and wider support for conservancies and stewardship programmes (Tyrer, 2020). Foxcroft (2001) states that the management of alien invasive species requires an integration of knowledge from various disciplines and stakeholders. As a result, the ABI Alien Clearing Project effort has been applauded by the funders, LUGs and landowners in bringing about a united front and coordinating AIP management in the Agulhas region.

Most of the participants including the funders, ABI/FVCT, LUG representatives and landowners mutually agree that the conservancy models work. This means that the conservancies have done well in acting as cross-

sectoral groups that advocate the development, objectives and prioritisation of focus areas for the ABI Alien Clearing Project across the Agulhas Plain and ultimately they get the buy-in from private landowners. The organisational and operational contributions by the LUGs were instrumental in reducing clearing costs and enabling more areas to be cleared.

Tyrer (2020) argues that such partnerships require a combination of the government's limited resources, hence the strong advocacy and need for long-term planning and funding. With all the stakeholders involved in the project, it was clear that one of the key issues is unclear roles and responsibilities. Wittenberg and Cock (2001) emphasise that all stakeholders must be identified at the beginning of the project planning stages, be involved throughout all the phases of the project's cycle (making them aware of the commitment to address of IAPs) and define roles and responsibilities for each member. Furthermore, most of the respondents from the FVCT and LUGs stated that ABI has lost its identity because it is mainly focusing on meeting the requirements of DFFE. This means that the DFFE's priorities are not ABI's priorities. Wittenberg and Cock (2001) stated that stakeholders that are willing to join forces must have common and mutually beneficial objectives.

The Millennium Trust and Drakenstein Trust provided the capacity to continue with the WfW project and meet the increased administrative demands. The leverage that this provided was vital and contributed directly to the success factors of the project.

From the discussions above and feedback from the Agulhas area, there is good collaboration between the role players. However, to be truly effective the role players and partnerships need to move from collaboration to integration. To achieve this, role clarification is required, and memorandums of understanding defining the roles and responsibilities should be drawn up. This should include formalisation of longer-term planning for projects as well as annual plans of operation to complement each other.

6.7 External factors that have changed during the project that could enable or restrict future opportunities

Interviews provided the following inputs

LUGs

- Lack of funding
- Covid-19 disruption
- Climate change effects
- Current economic situation

- Most landowners, FVCT staff and contractors felt there was a poor understanding by DFFE officials of the realities on the ground
- Limited resources of landowners

Funders

- Covid-19 disruption
- Current economic situation
- Change in landowner awareness

The deteriorating financial health of households and individuals under the weight of economic pressures, specifically between 2011 and 2015, resulted in an increase in the poverty levels, according to the Poverty Trends in South Africa report released by Statistics South Africa in 2017. The report cites rising unemployment levels, low commodity prices, higher consumer prices, lower investment levels, household dependency on credit and policy uncertainty as the key contributors to the economic decline in recent times. These recent findings indicate that the country will have to reduce poverty at a faster rate than previously planned (2018 Socio-economic Profile: Overberg Municipality).

The combination of the current global and South African economic situation, the Covid pandemic combined with the changes in the WfW funding model from a land user's initiative to the stricter model, as well as the realities of public funding has in the words of the FVCT director created the "perfect storm" that the project ended up in.

Additionally, the unexpected changes to the model by WfW and budget reductions had a negative impact. This combined with arduous government administrative requirements in the second cycle of the project had a negative impact.

6. 8 Future model/role of the ABI Alien Clearing Project Partnership

Participant inputs into the future model indicated:

a) FVCT

The FVCT role players stated that the role of ABI should focus on:

- Capacitation in the landscape
- Stakeholder engagement and gathering, providing access and presenting crucial information about AIPs
- Leading planning, data collection and monitoring

b) LUGs

The LUG representatives stated that ABI's role should focus on:

- Representing landowners in dealing with funders
- Coordinating and managing teams in the conservancies
- Finding funding
- Providing structures to implement
- Supporting the enforcement of law

c) Funders

The funders stated that ABI's role should focus on:

- Representing the constituents of the area with relevant government departments
- Convincing/informing/providing information/guiding landowners to be legally compliant
- Leading/facilitating the planning/including data collection
- Finding funding
- Providing structures to implement
- Filling the gaps left by bigger projects such as Working for Water and Working for Wetlands
- Creating and vetting and supporting a pool of contractors

d) Additional comments

- The FVCT/ABI should conduct an annual review of the planning processes and marketing plan by comparing it with the project's success in achieving set objectives
- The FVCT/ABI should create a platform where all its members, stakeholders and/or role players will discuss their satisfaction and frustrations, thus promoting transparency and accountability.

7. Conclusions and Recommendations

7.1 Design of the project in relation to other projects with similar objectives within a regional and international context

Key findings

- The model used from 2013 to present was sound and most of the key elements of CBNRM were in place and the multi-level application worked well.
- The project mostly mirrors the key concepts of the strengths of each model it was compared to.
- Limitations experienced were primarily due to inconsistency and the top-down approach of the WfW project.
- The multi-level of management of the project enabled participation of most role players.
- The fact that both ABI and FVCT are NGOs limits their legitimacy and effectivity.
- The current structure reflects common practice locally and globally and is a structure to address all the elements of the principles of CBNRM and should be enhanced and maintained.
- The conservancies are the backbone of this project and need to be strengthened and supported.

Recommendations

The ideal model should incorporate at least three levels of organisation to enable strategic and tactical decisions as well as practical implementation, at the same time maintaining transparency and legitimacy, yet allowing the decisions to be made at the lowest-level possible.

The ideal model would be to have a three-tiered structure that addresses each of the shortcomings listed in Table 12 above.

- High level strategic and governance coordination: The Biosphere Reserve could strengthen legitimacy and transparency.
- Landscape representation and decision making: Conservancies should be enhanced and strengthened.
- Implementation: Conservancies and/or implementers could provide support to landowners and contractors (resource development).
- Create contractors and community forums to ensure representation.

7.2 Social impact of the project

Key findings

- Respondents at all levels to the project indicated that the project has by and large had a positive impact.
- Seventy-six percent of landowners felt that their property values have increased
- At the same time there was also the view that the nature of the WfW project, particularly the late starts annually and gaps in funding as occurred in 2016/2017 and 2017/18 had a negative impact on all parties involved from workers to landowners and the implementers. The contractors and workers were impacted the most and expressed fear due to the uncertainty. Unfortunately, this has been the most negative aspect of the project.
- Over the period evaluated, 2013 to 2021, a total of R 21 836 732 was paid in wages directly to workers. The projects were in rural small towns and there were between 100 and 200 workers at any given time. The average additional income per annum over the period came to R 11 329.
- Funding has gone to the most vulnerable and needy in most cases with an estimated 850 dependants and family members being directly and indirectly supported by the project when it was operating.
- Most of the funding (between 56 percent and 72 percent) went to wages.
- The key concern expressed by all parties was the low rates of the EPWP project which were seen as unsustainable despite it assisting households with income that they would not have had if the project had not existed.
- At total of 192 744 person days were worked providing an average of 275 person days per beneficiary per year theoretically. However it may not have been the same workers due to losses in teams because of the stop-start nature of the project.
- Personal training and development are perceived to have had a positive impact and a total of 6 983 training person days were recorded for the project from 2013 to 2021. Most of the training was functional and 60 percent of the workers felt it enabled them to find other work.
- However as far as contractors are concerned there is a lack of training, particularly in business and green-economy related matters. The key focus remained on alien clearing while broader training would have enhanced the capabilities of the workers and contractors.
- Approximately 850 dependants were supported by workers (estimated from interviews).

Recommendations on social aspects of the project

- That the ABI Alien Clearing Project prioritise communication to reach as many as possible communities and develop effective communication channels to engage with potential beneficiaries
- The interest of the contractors and beneficiaries in the landscape needs to be represented and a democratic forum should be developed for them

- Project planning and budgets should be a minimum of a five-year period to ensure consistency and a steady income
- A more market-related wage should be pursued through diversification of funders and pursuit of broader NRM and green-economy opportunities should be undertaken to ensure worker progression and retention
- Financial and administrative processes of funders need to ensure timeous start dates of projects to avoided inconsistent income and work opportunities
- Facilitate the times when there are "gaps" in funder payments or processes with alternative funders or activities should be activated
- Develop and facilitate an entrepreneurship programme. According to Coetzer (2010), empirical studies and research suggests that the main outcomes associated with effective entrepreneurship programmes are the following:
    - Increased knowledge about running a business
    - Improved skills for running a business
    - Increased likelihood of entrepreneurs starting their first business
    - Increased likelihood of entrepreneurs starting multiple businesses
    - Improved business performance
    - Increased motivation required for entrepreneurship
    - Increased positive entrepreneurial attitude
    - Improved skills for developing and utilising networks
- Youth should be encouraged to further their studies to increase their chances of finding better opportunities that may enable them to earn better income to sustain their lives
- Courses or training offered to the workers should be accredited and market-based to give workers opportunities to advance and increase their chances of employment from other organisations and in other fields
- The project needs to review the contractor database and evaluate whether they are meeting the relevant regulations in terms of target groups
- ABI should develop a database evaluating contractors and their skills and link potential clients to contractors as a service
- Increase awareness of and access to secondary industries and use of invasive alien species and providing training and support to tap into secondary industries. This will empower and capacitate communities to earn an income that will supplement what they receive from the project.

7.3 Ecological impact of the project

Key findings

It is noted that limited evaluation of the ecological impact could be made due to data deficiencies, however the following was concluded:

- Funders involved believed that there was a positive ecological impact generated by the project
- Conversely implementers and landowners had a more negative view and did not feel that they had a genuine impact. Most cited the stop and start nature of the project and limited funding
- Workers and contractors enthused that they have gained insights into the ecology and its importance to the area which is a positive social ecological impact
- The ecological parameters that could be interpreted from the data determined by Watson et al in the 2018 implementation plan were met, according to the review of the data that was available:
    - Data showed that at any given time at least 89 percent of the work was follow up work (versus initial clearing)
    - Despite issues with managing WfW, the project has maintained its gains in most cases
    - In terms of areas worked there were extremely limited NBALs outside of SANBI's CBA and EBA areas (one NBAL on the boundary of a CBA)
    - From the APOs only sites with Category 1a and 1b species according to the species listed on NEMBA Act 10 of 2004 were cleared
    - The focus on low densities was uncertain from the data but seemed to be maintained
    - A total of 104 853 ha were cleared (note that this included follow ups on the same NBALs)
- Despite the view of landowners and the uncertainty of the funding from the WfW project there has been a positive environmental impact
- However, the non-inclusion of fire in data collection, planning and using it as a tool limited potential additional positive impact
- The decision-making process on where to work was correct and positive with the exception of excluding fire as a driver. The lack of incorporation into planning and clearing techniques limited additional possible gains.

Recommendations

- The conservancies should be strengthened and formalised to make on the ground tactical operational decisions.
- The use of fire should be incorporated into planning and execution of work.

- Different techniques and resources not limited to the WfW model should be used.
- The current principles as determined by the FVCT of the priorities should be maintained and fire should be included in the prioritisation system
- Continue with follow up of NBALs as an objective to get them to maintenance phase.

7.4 Key successes and success factors of the ABI Alien Clearing Project

- The FVCT team must be complemented on dealing with the project and upscaling it in the second period. (The administration and management aspect of the project is enormous.)
- FVCT has upgraded its mapping and monitoring systems to capacitate the WfW and other projects. This also enhances planning.
- FVCT must be complemented in their achievement in managing the project under changing and trying circumstances and bringing about improvement in standards.
- The conservancy model works well to meet the needs of sound CBNRM management criteria and should be enhanced and maintained.
- The structures, roles, and responsibilities were clear, however, a shift is required in the structures to move from cooperation and coordination to integration of various role players' activities to complement each other and not compete.
- The project created structures to involve landowners and beneficiaries in the management of the landscape.
- In terms of outputs, a total of 149 835 person days were worked and 49 952 ha were cleared and followed up. The project additionally brought R 27 877 732 into the landscape successfully to clear alien vegetation. Additionally, capacity was developed in contractors and landowner's ability to clear.

7.5 Shortcomings of the project

- The scale of the project and the financial implications to sustain the organisation is a challenge for NGOs/NPOs. The requirements of WfW puts smaller implementers at risk as they cannot carry the financial burden of implementation. Appointing FVCT as an implementor is well within the norm of WfW project implementation.
- Pre-2016 the project used the landowner bottom-up approach for monitoring and evaluation, which was preferred. However, it became a top-down approach due to the main funder.
- Landowners want flexibility in timing and technique, but WfW does not allow for this.
- WfW is an alien clearing project focused solely on alien invasive clearing and poverty relief when the

requirement is a broader landscape restoration project.

- The poverty relief model does not allow for SMME development and critical issues such as capitalisation for vehicles becomes problematic.
- The EPWP wages are considered a barrier to the development of participants and worker retention.
- The standards of WfW are at times excessive. We heard comments such as: “How can these small businesses establish themselves if a normal business cannot easily comply?”
- Quality of the teams and work was not well established in the first period.
- WfW does not facilitate small business development and entry into the broader green economy, which was a primary goal.
- WfW norms used to determine the value of contracts is not always accurate particularly in the coastal areas.
- Data management must be improved, curated, and mutually managed to gather long-term data, with all role players participating.
- The project implementers were under-capacitated in the first cycle and despite improvements in the second cycle, the capacities still need improvement to be efficient.
- Functional training was strong, however contractor/SMME development was lacking

Recommendations

- Green economy is the way to go
- Invest in teams/training opportunities for small businesses
- Funding and project planning must be long term
- Long-term employment for teams
- The project should be LUG driven
- The project must be linked to secondary industries (biomass etc.)
- Research new effective ways of doing things
- Integrated planning on operational aspects between all funders geographically and temporally as well as outputs such as fire management, biomass management, wetland restoration etc.
- Flexibility in operations which must consider landowner activities
- Clear memorandum of understandings (MOUs) with roles and responsibilities agreed upon the outputs and criteria
- Use multiple funders for various outputs e.g., climate change and biodiversity
- There should be detailed planning on properties
- Improved planning and coordination between departments is important

- Integrate fire and alien clearing
- Integrate, coordinate and plan: Divide the landscape with funders geographically and functionally
- Clarify roles and responsibilities
- Outputs must broader habitat management and not just aliens and jobs
- Use multiple funders for various outputs
- Broaden the work methods to include biocontrol, aerial spraying and researching effective none-labour intensive methods for appropriate areas
- ABI must be self-sustaining
- ABI and FVCT must each have their own identity
- Use farm and area-wide planning mechanisms
- Develop and coordinate the relevant monitoring data collection to facilitate the planning of fires
- Research new effective ways of doing things
- Open channels of communication between the ABI, FVCT, LUGs and landowners. Engage them. Landowners should understand their needs, address their concerns, raise awareness, and collaborate effectively.

7.6 Project leverage of greater impact in collaboration compared to similar initiatives

In the first cycle, 2013 – 2016 the overall indirect co-financing commitments from the nine participating LUG landowners was R 6,8 million and the direct co-financial contribution was R224 678 over the period. The FVCT as implementing agent contributed R 1 425 000 directly to the project over the period. No data is available regarding co-contribution of LUGs and FVCT for the 2017/18 years. However, FVCT did make significant contributions to the project. No data for the 2018/2021 cycle of co-contribution of LUGs and FVCT is readily available.

Contribution by funders assisted greatly in supporting the infrastructure required to implement such projects in the second funding cycle.

The Millennium Trust contributed R 660 000 annually (2019/20) for the mapping technician, administration support and oversite. In the 2019/20 financial year this reflected 11 percent of the budget. The Drakenstein Trust has contributed approximately R 550 000 annually to mapping and development of the Natural Resource Management database and administrative and operational oversite. Since 2017 these contributions

translate into 32 percent of the entire DFFE budget in that period. Additionally, the Fynbos Trust funded interventions such as chainsaw-operator training and support to specific sights. These contributions enabled the project not only to continue but improve on its planning and deliverables.

Key recommendations

- The review of ABI's role in the landscape presents a unique opportunity to review and enhance its partnerships
- The ABI project identifies a suite of partnerships that would support its implementation infrastructure
- That long-term funding should be obtained to maintain and develop its implementation and infrastructure.

7.7 External factors that have changed during the project that could enable or restrict future opportunities

- The unannounced change from an LUI to a "normal" WfW project
- Changes in standards that affected the norms after the project MOU was signed, changing outputs considerably
- Unreasonable data and auditing standards implemented by DFFE
- Impacts of Covid-19
- The economic situation impacting on communities, landowners, funders and government departments.

7.8 Future model/role of the ABI Alien Clearing Project Partnership

Most sustainable mechanisms to deal with the complexities in the landscape when dealing with AIPs and NRM community needs would be a combination of the three models discussed above addressing each of the levels of activity that support one another.

- The K2C Biosphere Region model to ensure strong legitimate structures and a platform to engage with international funders and best practice
- The Australian model should be applied within the ABI landscape as an overarching group that focusses on the integration and co-ordination of the various role players and activities required to practice landscape-level integrated management and act as a platform for role players

- The conservancies to represent the local landowners and to some extent communities and to implement actions within the landscape in a flexible localised manner within the framework of legitimacy provided by the two higher-level mechanisms.

To achieve the above the following is recommended:

- The pursuit of a Biosphere Reserve in the Agulhas Plain could be beneficial.
- ABI should play a similar role to the Australian LandCare project in the landscape to support and facilitate from the ground up.
- Data management required to manage the landscape effectively (based on science) should be improved and ABI's ability to find funding for these projects should also be improved and maintained over the long term.
- ABI should create the formalised agreements and MOUs with all the relevant role players and parties to tackle broader environmental issues and coordinate outputs in a focused direction.
- ABI could better support CBNRM in the landscape.

Strengthen and formalise the conservancies by:

- ABI and FVCT maintaining and enhancing support services to them
- Longer-term planning including management unit clearing plans and natural resource management activities for the conservancies
- Mapping and data collection services
- Detailed planning that is flexible and localised
- Providing training to landowners and staff
- Ensuring coordination of outputs
- Using the platform to move from cooperation to integration

Teams to be capacitated into broader Natural Resource Management teams:

- ABI and FVCT should maintain their current relationship but focus on the development and capacitation of SMME NRM teams for landowners and institutions
- That the teams are developed as a pool of contractors for landowners and institutions
- Teams must be enabled to participate in multiple aspects of the green economy in a sustainable manner

ABI is to create the long-term institutional arrangements to facilitate natural resource management between the key role players and landowners.

- Division of projects into the landscape geographically to meet each institution's outputs (e.g., Landcare vs WfW)
- Medium and annual operational planning between parties at conservancy and landscape level merging outputs to mutually agreed goals to complement each other
- Work closely with a Department of Agriculture area-wide planning and farm planning as a baseline
- That ABI sources and its partners develop three to five year funding plans to implement projects envisioned in the conservancy planning from multiple funders. The "horses for courses" principle must be used, e.g., Working for Wetlands , Landcare etc.
- That annually all the role players from FPAs to Landcare prepare an annual plan of operations for the landscape that addresses the needs of the landowners.

WFW: The way forward

Even though the WfW Land Users' initiative seems to have changed fundamentally back to a WfW project it would not be wise to not continue working with WfW.

Way forward:

- If financially viable complete the three-year contract with WfW, focus on maintaining the gains and getting as many work sites into maintenance phase as possible
- Prior to the next funding cycle of WfW, capacitate the teams and source funding through willing landowners and other funders to "fill the gap" in the times WfW is not functioning
- Over the next period ween the project off WfW as the primary funder and reduce risk
- Review the capacity requirements to implement the above and cost it prior to any further commitment.

Annexures

Annexure A: Worker Results
Annexure B: Contractor Results
Annexure C: Landowners
Annexure D: Land User Groups
Annexure E: Funders
Annexure F: Project Team FVCT
Annexure G: Review of project data from the Geographic Information System and project data of the project
Annexure H: Map of areas cleared vs CBAs and ESAs
Annexure I: Discussion document how the design of the project relates to other project with similar objectives

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