The Eco-Furniture Programme
An Evaluative Review

November 2017

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Nicola Jenkin & Dandira Mushangai
Acknowledgements

This study would not have been possible without the innovation, commitment and hard work of the people both supporting and working within the Eco-Furniture Programme. Many of these people willingly gave of their time and provided valuable insights, access to documents and made introductions without which we would not have been able to progress. In particular, we would like to thank Dr Guy Preston and the team working with him in the DEA. We would like to thank the many people at SANParks who have obviously put so much into this programme and were so willing to provide input into this review. Thank you also to the many people at the Eco-Furniture Factories including managers, contractors, workers and private sector partners who shared their experiences with us – this report would not be as rich without your work and input.

We would particularly like to thank the Jobs Fund for their guidance and support in developing the framework for this review and for their insights at the beginning of review process. Finally, we would like to acknowledge the role that Grant Trebble played in setting up meetings and site visits. This support saved us many days of time and helped us to navigate our way through the complexity of the programme.

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### Overview

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### Total Expenditure

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Executive Summary

The National Development Plan charts a way forward for South Africa that seeks to eliminate poverty and reduce inequality. Key to this plan is the notion of a capable and developmental state that plays an active role in bringing about sustainable transformation in the country’s economic, environmental and social conditions. Linked to the developmental state in South Africa is the recognition that government, business, labour and civil society will need to work together in a social compact to achieve this sustainable transformation. These broad ideals are reflected in many initiatives in South Africa including the Extended Public Works Programme (EPWP) and the Jobs Fund. This review sets out to better understand the efficiency, impact and sustainability of one specific project, the Eco-Furniture Programme, that has been developed within the EPWP framework with support from the Jobs Fund. More specifically, this review examines the context within which this project has been developed and implemented, the outcomes of the project as reflected in the different perspectives of key stakeholders, and importantly, the different ideas and institutions that shape these perspectives.

Three broad contexts were identified within which the Eco-Furniture Programme is located. These are the environmental risks caused by invasive alien plants (IAPs). These risks include a reduction in water security, increased risk of fire linked to IAP biomass, reduced biodiversity and the degradation of productive agricultural land. The second broad context that is considered is the furniture sector – the name of the programme suggests the programme is located here. This sector faces a number of systemic challenges at global, national and local levels. These include changing trade regimes, innovations in terms of manufacture and distribution, the dominance of large global players, poor policy support, limited cooperation within the sector and declining skills development for the sector.

The third and overarching context is what the NDP refers to as the triple challenge of poverty, inequality and unemployment in South Africa. Despite some successes, less progress has been made in addressing these three challenges than is targeted in the National Development Plan. It is within these contextual factors that the Eco-Furniture Programme has sought to: add value to IAP biomass and thus subsidise the clearing of IAPs; create sustainable jobs including jobs in the furniture sector; and alleviate poverty through the provision of short-term employment.

The outcomes or achievements of the Eco-Furniture Programme with regard to its objectives (and in fact even the objectives themselves) are perceived in very different ways by different individuals and institutions. By reviewing over fifty documents linked to the programme and conducting more than 25 interviews and site visits, this review provides insight into some of the different perceptions related to the efficiency, impact and sustainability of the Eco-Furniture Programme. To structure these many different insights, an Integrated Thinking and Reporting Framework has been used. This framework supports a deeper understanding of the value that is created, maintained or destroyed by a particular initiative across several dimensions. More specifically, insights have been clustered around: the business model including governance; financial capital, infrastructure capital; intellectual capital; social and relationship capital; human capital; and natural capital.

In terms of the business model, there is broad support for the vision and mission of the Eco-Furniture Programme. In the context of the negative environmental impact of IAP biomass and the need to address poverty and unemployment, the programme enjoys very broad support. However, at the levels of governance and management capacity, many respondents raised significant issues. While the commitment and dedication of senior managers within the DEA, SANParks and the EFP was praised, the structure, delegations of authority and resourcing were singled out as requiring urgent attention. Although this was often expressed as a need to establish a new ‘trading entity’, this review suggests that higher level governance including the establishment of a knowledgeable, skilled, diverse and independent governing body/ board needs to be a priority for the programme to enhance efficiency,
impact and sustainability. This board would need to consider the recommendations of the TA report and guide the establishment and focus of a new trading entity.

The six capitals and the perception of value creation or destruction across these capitals revealed substantial differences of opinion. These differences of opinion in turn suggest underlying ideas and related structures that shaped both the perception of different stakeholders and potential of the Eco-Furniture Programme to achieve its objectives. Understanding and reporting on the outcomes of the Eco-Furniture programme thus required an iterative process of moving back and forward between the context, the underlying ideas, and the perceptions of value with regard to outcomes. To navigate this process, the theoretical framing provided by Realistic Evaluation was used and more specifically, what are called Context-Mechanism-Outcome configurations. Mechanisms here refer to the underlying ideas about how change will be achieved in the world and thus enable an engagement with the underlying ideas, interests, incentives and institutions that enable or frustrate this change. In order to use the inputs from the document analysis and interviews to develop both a rich picture of the perceived outcomes and the underlying mechanisms, this review reports first on the expressed outcomes and then explores the mechanisms that emerged from these perceptions of the outcomes. The CMO configurations are then brought together in the concluding section of the review. It must be noted that detailed quantitative analysis across the six capitals remains a complex undertaking and would require more resources than were available for this review. The qualitative analysis developed in this review provides ample evidence for the evaluation insights and recommendations contained in this report.

Given the importance of financial reporting, it is not surprising that this area of the project attracted considerable attention and was highly contested. At one level, it is relatively clear that the investment in the project has been very substantial (over R359 970 000 over two years) and is significantly more than the R200 433 000 originally contracted. The additional investment has come from the DEA and the sale of products. This investment achieved 87% of the 3 025 promised ‘permanent’ jobs and has resulted in the delivery of 203 430 desks during the Jobs Fund project support. At one level, these figures reveal substantial inefficiencies illustrated by the fact that the desks produced cost 2.5 times more than the sales prices and more than four times what it costs the private sector contractor within the Programme to produce a school desk. However, these figures ignore the fact that the EFP was processing IAP biomass as opposed to plantation timber, was employing previously unemployed and largely unskilled labour, invested significantly in training, was committed to transformation at the level of factory management and contractors, and needed to operate within the confines of sometimes unresponsive procurement requirements. These factors point to the need to consider a range of capitals but also to significant differences in underlying ideas informing the programme as captured in this brief quote from one person interviewed: “At the outset it was a very noble idea because they were doing alien clearing, creating jobs, skilling, and using biomass for a sensible product…[now] the programme is being run almost as a private, money making entity, and I think unless that model changes then the vision will not be realised”.

The second capital considered was related to the development of the infrastructure and particularly the development of the eco-furniture factories themselves. The original proposal to the Jobs Fund suggested that 18 factories would be established at a cost of over R100 million. Over the period 2015 to 2017, R123 159 000 was spent on the establishment of seven factories. The reduction in number of factories was a response to: suggestions in the initial assessment of the plan by transaction advisors; pressure from the furniture sector bargaining councils; the availability of biomass feedstock; and the availability of suitable sites. It was also evident from the review that the initial budgeting for the establishment of the factories had been based on assumptions that on occasion suggested conflicting
priorities. By way of example, some stakeholders felt that existing and underutilised infrastructure should be used; however, appropriate facilities of this nature were seldom available in the areas with the highest IAP infestation and thus viable biomass feedstock. This has resulted in higher costs per factory and now raises issues about the efficiency and sustainability of these factories in relation to ongoing accessibility of IAP feedstock. This challenge is exacerbated by poor enforcement of legislation requiring landowners to remove invasive alien plants and the inefficient use of existing biomass. Significant potential exists to extend the efficiency, impact and sustainability of the existing investments through increasing access to existing IAP biomass, efficiently using biomass material that is currently going to waste, and linking more effectively into the furniture and other sectors through collaborative agreements and public-private partnerships.

Part of the mandate of the Jobs Fund is to unlock new job opportunities through supporting innovations that overcome existing market challenges or inefficiencies. The use of invasive alien plant biomass in ways that generate value thus represents important intellectual capital that is being explored and piloted within the Eco-Furniture Programme. In fact, the current name is a misnomer since the programme is developing and trialling several innovative products including furniture, toys, laminated timber board, fibre board, wood-plastic composites, erosion control products, etc. There is also potential to increase the range and efficiency of these products through the refinement of linkages within the woody biomass value chain. This would include significantly reduce currently inefficient transport between factories by developing integrated, industrial symbiosis and circular economy inspired value chains. This will require more focused and strategic planning and investment in intellectual capital. It also suggests the need to work more closely with government departments such as the DTI, private businesses who are innovating in this area and academic and research institutions.

It is this building of relationship capital through the linkages with others who do and could support the other capitals and the governance of the Eco-Furniture Programme that currently presents significant successes, challenges and opportunities. Many of the people interviewed spoke of the ability of senior DEA officials to build strategic relationships that had enabled the Eco-Furniture Programme to achieve as much as it has. One example of this was the securing of the order for 274 000 school desks from the Department of Basic Education. However, these relationships are often complex and the failure to engage more proactively with the furniture sector has further undermined trust in a sector that faces several challenges. The imminent agreement between the South African Furniture Initiative and the DEA has the potential to create value for all involved including the sharing of skills, the creating of employment and the manufacture of a range of products from IAP biomass. These relationships, however, will depend partly on a deeper understanding of the ideas and institutional structures that underpin different organisational perceptions and mandates. The section on mechanisms probes some of these underlying ideas and thus provides a basis for the building of relationship capital within the Eco-Furniture Programme.

In order to address unemployment and to grow the potential of sectors such as the furniture sector, there is a sense that human capital needs to be built through employment opportunities and skills development. The efficiency and impact of this human capacity development and the sustainability of the skills created and thus employment potential of participants was acknowledged as an important part of the Eco-Furniture Programme. However, the actual information available on skills development was extremely poor. Although numbers of people trained suggested that the programme was meeting its targets, it was not possible to track progression and much of this information relied on anecdotal evidence. Interviewees gave many examples of people who had remained within the programme for many years and had received training that had equipped them
with appropriate and transferable skills. The challenge in terms of reporting was that there is a strong assumption within the EPWP that it is there to provide short term employment. This results in poor structures for tracking and supporting the development of participants who remain in the programme for many years as is the case with the majority of the EFP participants. This is an issue across the EPWP and some work is now being done within the DEA to address this limitation. More importantly, it is fundamental to the way that most public works programmes are conceptualised and in the context of persistent and increasing unemployment, there is an urgent need to carefully consider a few assumptions about the temporary nature of EPWP job opportunities and the associated skills development. The EFP with its ability to generate income and thus provide longer term employment, that could be further enhanced by integrating several related industries in the woody biomass sector, provides an excellent opportunity to pilot new approaches to skills development and sustainable job creation.

Finally, the protection and restoration of natural capital, or the many environmental services, on which our societies and economies depend, is becoming increasing important. Persistent droughts, periodic flooding, wild fires, soil quality and erosion, biodiversity loss and the degradation of agricultural land are all impacted on by invasive alien plants. In fact, it is estimated that IAPs cost the South African economy R6.5 billion annually (2008 figure) and that these losses could have been as high as R41.7 billion without IAP control. Although difficult to calculate due to market failures regarding the valuing of environmental services, these figures point to the importance of IAP removal. However, although substantial work is being done on calculating the value of clearing IAPs, little research could be found on the value of actually removing the biomass from the field. This is likely to change with the recent fires across South Africa fuelled partly by IAP biomass. The Working for Water Programme (to which the EFP is linked) is globally recognised as a pioneer in the field of natural capital restoration. The opportunity exists to capitalise on this reputation and the experience accumulated since 1995 to build the economic (broadly understood) models to calculate and recognise the value created through IAP clearing. This will be important for sustaining this activity into the future. The lessons being learned in the Eco-Furniture Programme will be an important contribution to the protection and restoration of the natural capital, including water, on which our society and economy depends.

A few deeply held ideas were evident within all the inputs on the outcomes of the EFP and summarised using the integrated reporting framework. These ideas shaped the perceptions of stakeholders on whether value was being created or destroyed and thus to what extent the EFP had been efficient, had a positive or negative impact and ultimately whether it was sustainable over the long term. Given the influence of these ideas and their ability to enable or hinder particular kinds of change in specific contexts, they are often referred to as mechanisms. As one analogy goes, it is not possible to understand how a clock works by looking at the hands of the clock. It requires an understanding of the ‘mechanisms’, the cogs and springs, to really understand what is going on and what needs to be done if the clock slows down or stops. Pushing the hands may deal with the symptoms but to really make significant and long-lasting change is going to require an understanding and engagement with the underlying mechanisms. Three key clusters of ideas emerged during the review as being particularly influential among the stakeholders interviewed. These also reflected a larger engagement with these ideas at a national and in fact, international level.

The first idea that appeared to result in very different perceptions from the stakeholders engaged with during this review was the role of the state. Should the state, and in this case the DEA and Jobs Fund, be intervening in a sector such as the furniture sector? Here the notion of a developmental state has been particularly influential in government policy in South Africa since 1994. The history on this
concept can be traced and located within a range of policy and planning documents including the Reconstruction and Development Plan (RDP), the Growth, Employment and Redistribution (GEAR) strategy, the National Growth Path (NGP), the National Development Plan (NDP) and most recently, the ANC discussion document on economic development. Closely linked to the notion of a developmental state has been the idea of a social compact that requires government, business, labour and civil society to work together to achieve ‘sustainable development and growth’ in South Africa. This linking of a developmental state with a social compact is relatively unique to South Africa and there are certainly tensions across these two discourses, but they are both evident within the conceptualisation of the Eco-Furniture Programme and the perceptions of its efficiency, impact and sustainability. A discussion on the developmental state and its emerging form provides insights into these perceptions and how the EFP may position itself better going forward.

The second mechanism that emerged as being significant for the programme within the context of persistent poverty, inequality and unemployment is the overarching concept of public works programmes and their role. More specifically, it is the expectation that these programmes will provide temporary income to people in need, will add value to public assets through the work being done and will support human development through training and work experience that underpins the EFP. Some of these assumptions are, however, increasingly being challenged by the context in South Africa and particularly, the resilience of poverty, inequality and unemployment. This, in turn, is leading to useful discussion on whether in fact public works programmes may need to be reconceptualised as longer-term interventions and the implications that this would have for financing, skills development and a range of other factors. The EFP has demonstrated that there are benefits from longer term employment in terms of developing the skills needed to work in the factories. There is substantial potential to extend this into a more integrated value chain. However, the current assumptions linked to the EPWP are undermining this potential by, for example, limiting the structuring of career paths and learning pathways due to current reporting and planning being based on temporary (often one month) employment contracts.

The final cluster of ideas is linked to an emerging discourse globally and in South Africa and is broadly referred to as the green economy. In reality, this phrase encompasses a wide range of ideological positions. This review tracks some of the underlying assumptions related to the notion of ‘economy’ and emerging critiques of the current narrow focus on GDP growth. These critiques are opening up space for what some authors have referred to as ‘safe and just spaces for humanity’ and are linked to definitions of the green economy as ‘low carbon, resource efficient and socially inclusive’. There is obviously synergy between the EFP and an economy that is restorative of natural capital, inclusive of marginalised and resource-poor communities and generative in terms of financial and infrastructure capital. However, the EFP could more clearly align itself with this discourse and thus benefit from some of the emerging thinking including (older but still relevant) ideas such as industrial symbiosis and newer concepts such as the circular economy. These ideas have the potential to position the EFP as an innovative and important space for understanding and developing new approaches to the ‘economy’. This will include a need to rearticulate and recognise value across all six capitals discussed in this review.

Through the linkages across the context, perceived outcomes and the mechanisms that inform, and have the potential to shape these outcomes, several recommendations are made at the end of this review. These recommendations include:

1) **Repositioning the Eco-Furniture Programme as a broader Invasive Alien Plant Value Chain** – The EFP is a misnomer for the vertical and horizontal integration of the current programme. This results in the programme risks being narrowly conceptualised and the potential for
further integration being overlooked. This recommendation includes the need to build cross-departmental relational capital that includes the direct involvement of DTI, DST, small business development and the Department of Economic Development. This in turn will require a much stronger positioning of the programme within the developmental state and the social compact discourses.

2) **Different components of the value chain need to be strategically clustered along the lines of industrial symbiosis** – The current focus on eco-furniture is missing many opportunities for the creation of synergistic advantage. Greater integration regarding the use of residual materials, energy, water, assets, logistics, expertise, etc. needs to be done strategically as part of the overall design of the programme. This process will reduce current transport costs, the accumulation of waste and loss along the value chain.

3) **The potential of sustainable public supply chain management needs to be unlocked** – Given the many market failures in valuing the environmental and social benefits of the programme and the potential to create positive externalities through the value-added industries, there is a need to secure procurement support. This in turn will require close collaboration between DEA and National Treasury. By positioning the programme within the green economy discourse and highlighting the value creation across multiple capitals, it should be possible to move beyond the current tendency to focus narrowly on price.

4) **Formal recognition of the longer-term employment within EPWP and thus opportunity for more cumulative training and capacity development** – The current format of the EPWP is not aligned with the persistent and increasing unemployment in South Africa. The extended value chain associated with IAP biomass has the potential to develop new models of longer term employment as well as education and job progression within an integrated cluster of industries.

5) **Strengthening private-public sector partnerships through existing DEA initiatives, the South African Furniture Initiative, and the broader timber industry** – There is significant support from all sectors for the broader Eco-Furniture Programme especially when linked to the key imperatives of reduced environmental risk, including water security, and sustainable job creation. Building positive linkages between the public and private sectors is needed to enhance the potential for sustainable job creation based on economic, social and environmental value creation.

6) **Focus initially on getting the corporate governance right and then refining the strategic business model** – An operation of this size needs a board with the knowledge, skills, diversity and independence to guide the strategic development of the programme. This is more important at this stage than the actual structure of the trading entity.
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<td>ABC PIMP</td>
<td>Activity Based Costed Project Implementation Management Plan</td>
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<td>AsgiSA</td>
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</table>
Project Background and Context

Invasive Alien Plants (IAPs) pose a significant threat to South Africa’s biological diversity, water security, the ecological functioning of natural systems and the productive use of land. In so doing, they increase human and ecological vulnerability to the effects of climate change including floods, drought and wild fires. The reduction of the costs and risks associated with IAPs was one of the main motivators behind the establishment of the Working for Water (WfW) Programme in 1995. This programme has cleared over one million hectares of IAPs and has provided jobs and training to more than 20 000 people per annum from amongst the most marginalised sectors of society. The Working for Water Programme is part of a larger suite of programmes implemented by the Natural Resources Management (NRM) section within the Department of Environment Affairs (DEA). These programmes aim to create significant value through the creation of jobs, the development of human capital and the protection and restoration of natural capital. However, this work requires significant funding particularly where the value of key benefits such as the restoration of arable land to agriculture, the release of additional water and the reduction of fire risk are not directly paid for by the users of these resources. (DEA 2017)

A brief consideration of water security emphasises the importance of the Working for Water Programme. The National Water Resource Strategy notes that South Africa is the 30th driest country in the world and it is estimated that by 2030 demand for water will outstrip supply by 17%. Even though this shortfall is significant, it is likely to be an underestimate as it excluded uncertain impacts of climate change and declining water quality in the country. This means that the surface water availability and its remaining development potential will not be sufficient to support a growing economy and associated developmental needs in full. One response to these challenges is to promote a green economy that reduces carbon emissions, increases resource efficiency and enhances social inclusivity. Alien invasive plants are estimated to currently reduce the yields of dams and river supply by 695 million m$^3$ per annum, or 7% of the water that can be abstracted at high assurance from surface water resources. Clearing of IAPs is thus recognised as a significant and appropriate response to water security issues in South Africa. The potential to use the biomass generated from this clearing to develop a range of benefits including decent jobs, skills development, reduced fire risk and useful products and new business opportunities lies at the heart of this review.

In order to contribute to the sustainable management and control of IAPs, the DEA NRM section and particularly the Working for Water programme embarked on the value-added industries (VAI) programme in 1998. Since 2002 this programme has expanded substantially and now has three primary objectives:

- maximising the positive economic benefits of the WFW programme, by creating extra jobs through the harvesting and processing of plant material;
- 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 removing biomass after clearing (DEA 2017).

A flagship programme within the broader VAI programme is the Eco-Furniture Programme (EFP). The objectives of the Eco-Furniture Programme are directly aligned to those of the VAI programme above and seek to “capitalise on the latent value of the IAPs by manufacturing products in line with government needs while maximising job creation and skills transfer opportunities”. In much of the literature associated with the EFP, there is a focus on ‘government’s needs’ and the aim is to “produce high-quality products at costs lower than if government buys them on the open market”. (DEA 2017)
In 2010 the DEA responded to a call for proposals by the Jobs Fund and submitted a project concept note that focused on the establishment of viable furniture factories that would create 3025 jobs making products needed by government. The factories would create school desks (or equivalent wood products) from invasive alien plants. The process to manufacture desks included harvesting trees and processing them into finished products for sale. As the programme evolved, it was recognised that large amounts of waste were being produced in this process (so-called ‘waste products’). In response innovative products including erosion blankets, packaging material and fibre boards are increasingly being developed for sale in conjunction with the desks. These secondary products also extend the size of timber that can be removed from the field, thus increasing the viability of harvesting, extraction and manufacturing processes. As will become evident in the theory of change implicit within the Activity Based Costed Project Implementation Management Plan (ABC PIMP) submitted to the Jobs Fund, the project was narrowly conceptualised in terms of establishing factories, creating jobs and training. This is not surprising given the focus of the Jobs Fund (see below) but it has reduced the project’s ability to articulate a broader orientation to value creation evident in the objectives of the Value-Added Industries programme. The project was finally approved 4½ years after the original project submission and commenced on 1 April 2015.

The objective of the Jobs Fund is to co-finance projects by public, private and non-governmental organisations that will significantly contribute to job creation. It seeks to do this by overcoming some of the barriers to job creation related to demand for labour, supply of labour and broader institutional environments. More specifically, the Jobs Fund has been designed to overcome these barriers by providing public funding though four ‘funding windows’ namely: Enterprise Development; Infrastructure Investment; Support for Work Seekers and Institutional Capacity Building (www.jobsfund.org.za). Although the Jobs Fund has a focus on sustainable jobs, there is very little reference to the environmental and social dimensions of sustainable development. This does lead to some difference in emphasis between the intention of the Value-Added Industries programme and the objectives of the Jobs Fund.

A recent master thesis (Mander 2017) citing Polonsky (2015), Miller (2015) and Braack (2016) suggests that “if government and private sector financial institutions are to support the establishment of [VAIs], a better understanding is required of how these enterprises should be structured for sustainability and maximum developmental and natural capital impact”. This review seeks to contribute to this enhanced understanding by evaluating the Jobs Fund funded project related to the Eco-Furniture Programme. In addition to how the programme is structured, this evaluation also develops a deeper understanding of the underlying ideas and institutions that inform the programme and different people’s perspectives on the success or failure of the programme. By exploring these underlying ideas or mechanisms, it becomes possible to address some of the causes of success or failure rather than only focusing on the symptoms that are more easily visible.

**Project Theory of Change**

The following Theory of Change has been developed by the review team through a synthesis of several sources. These include the Project Concept Document (DEA 2015), the ABC PIMP developed for the Jobs Fund application and a covering letter to the Minister outlining the developmental impacts of the project. Unfortunately, very little detail is developed in these documents in terms of anticipated outcomes (beyond the level of outputs) and impacts. This has resulted in an incomplete theory of change as presented in the table below. The temptation to complete the table retrospectively was resisted since this would create the appearance of a clearly articulated theory of change when one of the challenges facing the project is that this framework has not yet been developed.
Objective
“The objective is to establish viable furniture-production factories, making products needed by Government, using wood from invasive plants, creating jobs for 3025 (three thousand and twenty five) beneficiaries, working at competitive EPWP rates, and producing high-quality products at costs lower than if the Government buys them on the open market.” (DEA 2015. Project Concept Document)

Developmental Impacts
The project aimed to create 2061 jobs in the first year, 267 jobs in the second year and 697 jobs in the third year.

The project also intended to have the following key additional impacts:

a) The project will contribute to the clearing of hectares of invasive alien plants, with the spectrum of benefits (water quantity, water quality, biological diversity, productive use of land, soil erosion and other benefits).

b) The development of products that are needed by Government, at costs that are very competitive with – and generally lower than – the prices that are being paid for these products (and being of superior quality and longevity), will have important benefits for the work of the Department. (DEA 2015 Project Concept Note)
## Incomplete Theory of Change

<table>
<thead>
<tr>
<th>Activity Category</th>
<th>Activity</th>
<th>Inputs</th>
<th>Output</th>
<th>Indicator</th>
</tr>
</thead>
<tbody>
<tr>
<td>Site establishment related activities</td>
<td>Biomass assessments</td>
<td>R4.2 mil</td>
<td>Biomass assessment reports</td>
<td>12 Biomass assessments</td>
</tr>
<tr>
<td></td>
<td>Site establishment (incl. George)</td>
<td>R32.3 mil</td>
<td>Renovated sites fit for use</td>
<td>Renovated (8)</td>
</tr>
<tr>
<td></td>
<td>Purchase of equipment for harvesting &amp; operations (incl. PPE)</td>
<td>R140.0 mil</td>
<td>Equipment Purchase</td>
<td>Assets purchased. Asset register</td>
</tr>
<tr>
<td>Employee relations</td>
<td>Recruitment and initial training</td>
<td>R10.8 mil</td>
<td>Staff employed and trained</td>
<td>3025 employment contracts and training certificates</td>
</tr>
<tr>
<td></td>
<td>Upskilling</td>
<td></td>
<td>Existing staff upskilled</td>
<td>Training schedule, certificates and invoices</td>
</tr>
<tr>
<td></td>
<td>Management costs</td>
<td>R1.8 mil</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Value chain activities</td>
<td>Harvesting operations</td>
<td>R24.6 mil</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Wet mill operations</td>
<td>R10.0 mil</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Dry mill operations</td>
<td>R18.5 mil</td>
<td>School desks (equivalents)</td>
<td>300 000 manufactured</td>
</tr>
<tr>
<td></td>
<td>Transport of work in progress</td>
<td>R1.0 mil</td>
<td>School desks (equivalents)</td>
<td>300 000 delivered</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Activity Category</th>
<th>Activity</th>
<th>Inputs</th>
<th>Output</th>
<th>Indicator</th>
</tr>
</thead>
<tbody>
<tr>
<td>Activity Category</td>
<td>Activity</td>
<td>Inputs</td>
<td>Output</td>
<td>Indicator</td>
</tr>
<tr>
<td>-------------------------------------------</td>
<td>---------------------------------</td>
<td>-------------</td>
<td>---------------------------------------------</td>
<td>------------------------------------</td>
</tr>
<tr>
<td>Value-added industries (Waste management and Marketing)</td>
<td>Value-adding industries established (incl staffing and training)</td>
<td>R9.2 mil</td>
<td>New products developed and produced. Staff employed and upskilled produced.</td>
<td>Skilled staff in place</td>
</tr>
<tr>
<td>Strengthen organisation EFP</td>
<td>Establish appropriate ring-fenced entity for EFP</td>
<td>R2.2 mil</td>
<td>New ring-fenced entity established</td>
<td>New product specification finalised</td>
</tr>
<tr>
<td></td>
<td>New cement fibre board product developed for manufacture</td>
<td>R30.6 mil</td>
<td></td>
<td>New product specification finalised</td>
</tr>
<tr>
<td>Marketing activities</td>
<td></td>
<td>R0.2 mil</td>
<td>Marketing Strategy for EFP Marketing strategy report</td>
<td>Marketing strategy report</td>
</tr>
<tr>
<td>Monitoring Project progress and spending</td>
<td>Monitoring project progress and spending</td>
<td></td>
<td>Quarterly Reports (Incl. monthly production schedules)</td>
<td>Quarterly reports</td>
</tr>
<tr>
<td>Project annual auditing</td>
<td></td>
<td>R1.8 mil</td>
<td>Annual Audit Report</td>
<td>Annual Audit Report</td>
</tr>
<tr>
<td>Independent Project evaluation</td>
<td></td>
<td>R1.5 mil</td>
<td>Project evaluations (Formative, Mid and Summative)</td>
<td>Evaluation reports</td>
</tr>
<tr>
<td></td>
<td></td>
<td>R288.8 mil</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Previous Evaluation Recommendations

The only formally commissioned evaluation of the Eco-Furniture Programme to date was the feasibility study conducted, after the grant funding was allocated, by Mahlako a Phahla Investments and Abacus Advisory in 2013. This comprehensive review is referred to as the ‘Transaction Advisor (TA) report’ in this evaluation. The TA report included an analysis of the furniture sector (Ch 2: Market Overview); the forestry sector including IAPs (Ch 3: Availability of Supply); the value chain (Ch 4); financial analysis (Ch 5 & 6: Assessment of Commercial Sustainability); jobs and skills (Ch 7); institutional structure (Ch 8); institutional capacity to implement project (Ch 9); and the approach (Ch 10: Phased approach vs Setting up all factories at once). Based on this detailed study, the authors of the TA report identified several risks and opportunities and drew some conclusions.

Key risks and mitigation measures that were identified in this report are listed in the table below. Only those risks with a probability of occurrence of over 50% are reproduced here.

<table>
<thead>
<tr>
<th>Risk identified in TA</th>
<th>Mitigation Suggested in TA</th>
<th>Comment based on the current review</th>
</tr>
</thead>
<tbody>
<tr>
<td>Losses due to lack of experienced management team</td>
<td>Review management skills sets and implement training programmes to bridge gaps</td>
<td>There are two levels of management (National Management and Mill Managers. There have been significant capacity issues at both levels of management.</td>
</tr>
<tr>
<td>Low productivity due to experience of workers</td>
<td>Proper training of staff before commencement</td>
<td>Interview data suggests that labour management rather than competence has emerged as the overriding issue leading to low productivity.</td>
</tr>
<tr>
<td>Wage rates go up – unions</td>
<td>Proper legal consultation before commencement</td>
<td>This issue has emerged as a significant challenge particularly in relation to the bargaining council. EPWP is governed by a Ministerial Determination hence no collective bargaining.</td>
</tr>
<tr>
<td>Competition-saturated market</td>
<td>Proper market research before commencement</td>
<td>MoA with DBE opened up more market than factories could service. Even with this contract the EFP accounts for an extremely small proportion of the market share.</td>
</tr>
<tr>
<td>Sales price going down</td>
<td>Proper market research before commencement</td>
<td>EFP provides a small percentage of DBE market thus not significant impact.</td>
</tr>
<tr>
<td>Cyclical spending by department</td>
<td>Proper planning and understanding of client</td>
<td>Remains a challenge.</td>
</tr>
<tr>
<td>Credit risk – payment terms</td>
<td>Capacitation of finance department</td>
<td>Remains a challenge at an EFP level but is sufficiently capacitated at a SANParks (IA) level.</td>
</tr>
<tr>
<td>Quality of timber – furniture requires good timber</td>
<td>Proper IAP counts and records before proceeding with investments</td>
<td>The quality of timber has been a significant issue – also a reason for reduced opening of factories. IAP assessment big part of initial budget. Assessments done and continue to be done. Lack of coordination with WfW</td>
</tr>
<tr>
<td>Risk identified in TA</td>
<td>Mitigation Suggested in TA</td>
<td>Comment based on the current review</td>
</tr>
<tr>
<td>----------------------</td>
<td>-----------------------------</td>
<td>-------------------------------------</td>
</tr>
<tr>
<td>Accessibility of timber – related to terrain and equipment</td>
<td>Proper IAP counts and records before proceeding with investments</td>
<td>Provincial operations limits access to cleared timber.</td>
</tr>
<tr>
<td>Ownership of timber – the owner may want to use the timber for private use</td>
<td>Enter into agreements with landowners before proceeding with the investments</td>
<td>Interview data confirms that extraction is inefficient and expensive relative to commercial timber. Original business planning did not focus sufficiently on the extraction requirements of timber in difficult terrains. The original idea of planking in-field was not feasible if required to go to scale in production.</td>
</tr>
<tr>
<td>Understatement of costs – hidden costs</td>
<td>Proper cost analysis before starting with the investments. Complete the pilot study and understand the results.</td>
<td>The extraction of timber is not financially viable and the follow-up costs are high. This requires integration of extraction into VAI value chain. NEMBA has not been as effective as expected. Landowners attempt to sell the furniture grade logs and then expect WfW to remove the remainder of the IAPs with limited or no VAI benefits.</td>
</tr>
</tbody>
</table>

Based on the analysis in the review, the following conclusions and recommendations were made:

- The establishment of the Eco-Furniture Factories in order to aid job creation is likely only to the extent that the DEA sells planks (referred to as primary products) into the furniture producing, laminated board and structural timber markets.
- The DEA undertake a comprehensive market study into the furniture market before any investment is made; especially in relation to the impact on existing manufacturers.
- Land-owner agreements be in place prior to the commencement of any harvesting activities with the EFP.
- The DEA commission a comprehensive study that will look at the more beneficial uses of biomass in terms of its socio-economic objectives. There are opportunities in logs, wood, SUPAWOOD and bio-energies. [Again, the emphasis was on primary products.]
- Field survey and biomass hectare by hectare to count and record the number of mature trees with a diameter of not less than 40cm, 1m from the ground. Must be done for each factory location, covering a 100km radius.
- Provision must be made to keep the factories operating once feedstock has been exhausted.
- An independent trading entity to be established as the EFP is not SANParks’ core business.
- After a thorough review of existing management skills, additional capacity must be secured by the IA.
Although not included in the risk table, the review did place significant emphasis on the institutional structure that should be created in order to accommodate the EFP. [See second to last bullet point above.] Four alternatives were considered. These were: a focused programme within the DEA; a separate trading entity; a government component as set out in the amended Public Services Act; and a public entity outside of the public service as allowed for in section 3A and 3B of the PFMA. The TA report suggested that the creation of a government component within a government department would give the project a high degree of autonomy and responsiveness but still allow government to shape its strategic direction. This was felt to be important, particularly for the non-financial components of the programme such as the creation of jobs and the use of alien invasive plant biomass.

It must be noted that an excellent report is let down by weak conclusions and recommendations. This results in the need to continuously reference back into the document to supplement what is in the final section of the report. Despite this, the insights from the TA report provide a useful baseline from which to consider the subsequent implementation of the project. It is seldom the case that recommendations are entirely implemented or ignored. Rather, it appears that in some instances, greater engagement with the recommendations would have benefitted the programme while in other instances the risks were mitigated through various actions. Although the responses and implications of these responses by the project will be explored through this evaluation, some initial observations are offered here.

The very substantial orders of school desks through a Memorandum of Agreement with the Department of Basic Education overcame the ‘saturated market’ risk identified within the initial report. Rather than battling to find a market, the EFP found itself in a situation where it was unable to produce enough planks. This has remained a challenge for the programme, although more recently with the completion of the bulk of the DBE order, new markets will be required and these have not yet been secured. This will also be made more challenging for the EFP due to the expected agreement between DEA and the South African Furniture Initiative (SAFI). This agreement limits the EFP to the use of alien invasive timber harvested, planked and dried as part of EFP activities and requires that the EFP ensures transparent, fair and economically viable procurement by means of tenders. It appears that the risks raised in the initial evaluation were addressed through the DBE order but that these risks may re-emerge without clear strategies related to marketing or alternative business models.

The risk associated with management has been exacerbated by the scarcity of skills (sawmilling and furniture industry management) as well as transformation requirements within the EFP implementing agent, SANParks. The very rapid expansion of the factories to meet the DBE order placed additional strain on the management structures and business systems, thus limiting possibilities to build the necessary capacity through internal skills development. This has resulted in negative consequences related to the ability to deliver to multiple stakeholder groups including DBE, the Jobs Fund, DEA and project beneficiaries.

Access to significant amounts of IAP timber of suitable quality was identified as a significant risk in the initial assessment. A number of recommendations relating to ensuring adequate supply and securing agreements from landowners prior to the commencement of the expansion of the EFP were made. The decision to scale back the number of factories developed was, partly, a response to the shortage of suitable IAPs in many areas. In those areas where sufficient timber was identified, access appears to be being negotiated with landowners as the timber is required. This is resulting in delays in supply in some instances and excessive supply in other areas. This aspect of the supply chain requires urgent attention with the implementation of the requirements of NEMBA being an important lever that was not anticipated in the initial review. It should be noted that some of the factories were donated by local municipalities as a mechanism to create jobs and the acceptance of these facilities did not always consider the availability of biomass within economically viable distances.

The risks related to costing models and efficiencies within the value chain from accessing timber to delivering products to the market appear to have been significantly underestimated in the initial financial modelling (despite the modelling being done in substantial detail). The rapid expansion of the programme appears to have
exacerbated the impact of the underestimation of cost and thus overestimation of margins. Given the scale at which the factories are now operating, these costing issues are starting to have significant financial implications. The work to date provides important financial data that was not available at the start of the programme and resources need to be invested in a careful analysis of the financial performance and material flows of the EFP in order to identify inefficiencies along the value chain.

The proposals with regard to the institutional structure were taken up seriously by the Jobs Fund who made the clarification and establishment of a trading entity a Conditions Precedent within the grant agreement. This was reflected in the ABC PIMP under section 3.1 with a specific activity focused on establishing an appropriate corporate structure for the EFP. The trading entity needed to be confirmed by the end of Q2 and established by the end of Q4. It appears that the DEA made no formal effort to meet this condition due partly to the initial acceptance by all parties of SANParks as the implementing agent. However, as a number of risks and challenges related to this non-core business started to impact on SANParks the organisation became reluctant to extend its IA agreement and the impetus to identify an independent trading entity re-emerged. This uncertainty contributed to structural issues within the implementing agent (SANParks) resulting in reduced responsiveness at a time when the EFP expanded rapidly and took on significant orders. This had a number of ramifications, one example of which was the inability to quickly contract in independent logistics specialists for the delivery and assembly of desks in the Eastern Cape. As a result, this process had to be undertaken internally with substantial inefficiency and strain on staff who were poorly prepared for this task. Attempts to contract out services such as logistics proved cumbersome due to PFMA and SANParks procurement processes.

The initial TA report thus provided a number of important flags and suggestions regarding the roll-out of the EFP. In many instances, alternative opportunities were created or emerged that either addressed the issues raised or meant that they were not given the attention that they required. The extremely rapid scaling up required by the DBE order, for example, was a huge success in terms of creating a market for the EFP. However, it did have implications in terms of the management and business systems that were unable to develop at the speed required. Similarly, the access to IAP timber was considered in the development of the factories and resulted in fewer factories being developed. The NEMBA should, in theory, also have increased access to timber on private land beyond what was anticipated by the initial evaluation. However, poor understanding and implementation of the Act is highlighting the risks identified in the initial evaluation regarding getting landowner agreements in place timeously.

The TA report also highlighted the necessity to consider composite materials as a way of mitigating the risk of not being able to access timber grade biomass and the low conversion rates from logs to planks. The manufacture of secondary products including composite materials is becoming an increasingly important part of the IAP biomass value chain.

With these initial reflections on the TA report and the engagement with the risks and opportunities identified in the report, we turn now to a more in-depth evaluation of the EFP and its implementation over the past two years.

Purpose and Scope of Evaluation

The purpose of this evaluation is to document the efficiency, impact and sustainability of the Eco-Furniture Programme with a particular emphasis on the outcomes and impact related to the funding provided by the Jobs Fund. Within this broad purpose, the review has two main objectives. These are to describe the efficiency, impact and sustainability of the programme and to explore what has worked well, for whom and why. This review thus:

- Provides an overview of the context and outcomes of the Eco-Furniture Programme;
- Articulates the efficiency, impact and sustainability and the underlying mechanisms that enhance or hinder these aspects of the programme;
- Identifies particular strengths and areas that could be improved;
- Contributes to the ongoing development of the Eco-Furniture Programme.

Key focus areas within the review include:
- A deeper understanding of key contexts within which the EFP operates;
- The underlying ideas or mechanisms that shape the interpretation of successes and failures with regard to outcomes;
- The systemic nature of the Eco-Furniture Programme that integrates poverty alleviation, ecosystem services, skills development, employment, manufacturing and demand for products;
- The supply chains and supply chain efficiency within the integrated system mentioned above; and
- The human capacity development processes and employment opportunities linked to the Eco-Furniture Programme.

The review uses the Integrated Reporting framework to portray and understand the value created by the Eco-Furniture Programme and the potential to enhance this value through improved governance, alignment with dominant ideas, integration of supply chain and human capacity development.

The narrow scope of the review is the Jobs Fund contribution to the Eco-Furniture Programme. However, the Eco-Furniture Programme was operational before the Jobs Fund support and the programme is located within the larger Value-Added Industries programme, itself forming a part of the Extended Public Works Programme initiatives of the Department of Environment Affairs. This has required a flexible approach to the scope in order to provide context for the Eco-Furniture Programme and its location within a number of extended value chains.

A key question that emerged as the purpose and focus of the evaluation was being clarified related to the timing of the review coming as it did at the end of the current round of Jobs Fund funding. This meant that rather than being a ‘Mid-Term Review’ for the Jobs Fund, the review had a broader purpose of informing the various project partners as they take forward the broader work related to the EPWP and the Value-Added Industries programme of the DEA. We have thus tried to write the report in a way that provides both accountability to the Jobs Fund as well as information to the DEA on institutional and operational challenges and innovations that require attention as the work progresses.

Methodology

This review drew on an evaluation method known as Realistic Evaluation (Pawson & Tilley, 1997) to develop deeper and, in some instances, more critical insights into multiple perspectives evident within the literature and expressed during the interviews. Realistic evaluation aims to identify the underlying generative mechanisms that explain ‘how’ the outcomes are caused and the influence of context. The relationships between these three factors are known as Context-Mechanism-Outcome configurations or CMOs. The report is structured into three sections that examine the Context, the Outcomes and finally the Mechanisms that emerge from the Outcomes and help us to make sense of the different perceptions evident in the Outcomes. The conclusion section then brings the Context-Mechanism-Outcomes configurations back together to provide a more nuanced understanding of the EFP. Based on this understanding, a number of recommendations are made.

The review used both quantitative and qualitative methods. In addition to document analysis of reports associated with the Jobs Fund, the Value-Added Industries programme and the Eco-Furniture Programme, a number of interviews and site visits informed the study. These interviews included both one-on-one interviews with key stakeholders as well as focus group discussions where this proved more efficient. The interviews were recorded and key insights were transcribed and used within the evaluation report. In order to structure the outcome section of the report, an Integrated Reporting framework was used as it provided an opportunity to articulate value addition across a number of ‘capitals’. These capitals are financial capital, manufacturing/infrastructure capital, intellectual capital, social/relationship capital, human capital and natural capital. Insights
generated from this process were used to develop conclusions and recommendations to inform the ongoing development of the EFP.

In addition to the interviews, site visits and document analysis, the experience and knowledge of the reviewers in terms of the context, mechanisms and outcomes related to the key focus areas of the review was key to ensuring accurate and applicable insights.

The following table provides a breakdown of the interviews and site visits conducted.

<table>
<thead>
<tr>
<th>Position</th>
<th>Organisation</th>
<th>Purpose</th>
<th>Location</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mill Manager</td>
<td>SANParks</td>
<td>Site Visit and Interview</td>
<td>Eco Furniture Factory - George</td>
<td>7 June 2017</td>
</tr>
<tr>
<td>Senior Manager</td>
<td>DEA NRM</td>
<td>PDM and Interview</td>
<td>DEA Office Cape Town</td>
<td>9 June 2017</td>
</tr>
<tr>
<td>Senior Manager</td>
<td>DEA NRM</td>
<td>PDM and Interview</td>
<td>DEA Office Cape Town</td>
<td>9 June 2017</td>
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<td>DEA Office Cape Town</td>
<td>9 June 2017</td>
</tr>
<tr>
<td>Manager</td>
<td>Wood @ Heart</td>
<td>Interview</td>
<td>Eco Furniture Factory - Ficksburg</td>
<td>13 June 2017</td>
</tr>
<tr>
<td>Mill Manager</td>
<td>SANParks</td>
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<td>Eco Furniture Factory - Ficksburg</td>
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<td>Eco Furniture Factory - Ficksburg</td>
<td>13 June 2017</td>
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<td>Senior Manager</td>
<td>Jobs Fund</td>
<td>PDM and Interview</td>
<td>National Treasury - Pretoria</td>
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</tr>
<tr>
<td>Senior Manager</td>
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<td>PDM and Interview</td>
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In order to encourage open comment on the programme, all interviews were conducted with a signed assurance of confidentiality. This means that while insights within the report are assigned to broad institutional entities, individual names and designations within these entities have not been used.

**Contextual Reviews**

To make sense of the Eco-Furniture Programme, it is important to place the programme within the broader contextual challenges and opportunities in South Africa. In order to provide some focus for this contextual framing, the objectives of the programme are used to identify particular dimensions or sectors for detailed consideration.

The Eco-Furniture Programme has three overarching goals namely:

- To add value to alien invasive plant biomass and thus subsidise the clearing of IAPs;
- To create sustainable jobs (including the development of skills); and
- To alleviate poverty through the provision of short term employment.

To evaluate the relevance, effectiveness, efficiency, impact and sustainability, it is thus appropriate to consider the following key of aspects of the context within which the programme takes place.

- A broad cost/benefit analysis of clearing alien invasive plants and thus the importance of this work in South Africa. This will form the basis from which to consider the value addition to invasive plant biomass and thus the contribution that the Eco-Furniture Programme makes to the clearing of IAPs.
- The furniture sector since it is assumed that the jobs created would largely be within this sector.
- The broader context of unemployment, poverty and inequality within which the EFP takes place and, to some extent, seeks to address.

**Invasive Alien Plants**

The impact of Invasive Alien Plants on biodiversity, water and agricultural land and the corresponding increase in environmental, social and economic vulnerability to climate change have been mentioned already. In this section, a more nuanced and detailed description of these impacts is developed to better understand the context of the Eco-Furniture Programme. This is developed through a consideration of value creation across the extended value chains within which the Eco-Furniture factories are situated.
It is estimated that IAPs occur across at least 10% of South Africa’s land area (Kotzé et al. 2010) and despite significant investment in their eradication, their coverage and density are increasing (van Wilgen et al. 2012). A recent CSIR study (Stafford 2017) estimates that over 10 million ha of land is invaded by woody IAPs to some degree and that they are spreading at a rate of 5-10% per annum. The report goes on to note that “the current NRM Working for Water activities currently clear 169 086 ha per annum ... indicating that these invasions are currently being reduced by only 1% per annum”. Figure 1 below provides a graphic representation of the extent of invasive alien plant coverage in South Africa.

![National Invasive Alien Plant Survey map (Kotzé et al. 2010)](image)

The estimates of impacts on water flows or mean annual runoff (MAR) by invasive alien plants in South Africa rely on complex modelling and reveal significant variation between studies. A 1998 study (Versfeld et al.) estimated that IAPs resulted in a 6.7% reduction in MAR, while a more recent study (Le Maitre et al. 2013) assessed the impacts at 1,444 million m³/annum or 2.9% of the country’s MAR. Similarly, the impact on losses caused by the degradation of ecosystem services varies considerably with one recent report (De Lange & van Wilgen 2010) estimating that ecosystem service losses from transformation of natural ecosystems by IAPs costs the South African economy R6.5 billion annually (2008 figure). Importantly for this review, it is estimated that these losses could have been as high as R41.7 billion without any IAP control measures. The Working for Water programme is the most significant intervention for IAP control to have been implemented nationally.

The Working for Water programme was established in 1995 as a response to the growing concerns around the economic costs of water resource and ecosystem services losses caused by IAPs. The programme seeks to use Expanded Public Works Programme principles to contribute to addressing unemployment in line with the ‘decent employment through inclusive economic growth’ while simultaneously enhancing long term sustainability through environmental protection and restoration. However, the control of IAPs creates a
substantial fiscal burden on the South African economy with R3.2 billion reported to have been spent by the Working for Water programme on control measures between 1995 and 2008 (van Wilgen et al. 2012).

Given the extent of the problems caused by IAPs, the distribution of IAPs and their potential to spread, the DEA Natural Resources Management programme is constantly seeking innovative ways to enhance its impact while containing costs. Innovations include the Land Users Incentive (LUI) programme and the Value-Added Industries programme. The objectives of the VAI programme include creating additional jobs, reducing the net cost of clearing IAPs and reducing the fire risk associated with IAP biomass both before and after clearing. Various options have been explored in terms of VAIs, including the production of small-scale arts and crafts, the large-scale production of coffins and furniture, the production of erosion control products, the use of biomass for energy at a number of different scales, and the production of building materials.

One of the greatest challenges facing ecosystem service linked projects and businesses are the market failures related to valuing ecosystem services. These market failures centre around the complexity of ascribing property rights to ‘public goods’ such as catchment quality, reduced fire risk, soil creation, erosion prevention, etc. These market failures mean that there is little financial incentive for the private sector to invest in the maintenance and restoration of the ecological infrastructure underlying ecosystem services, because there is generally no profit to be made from doing so. As such, some form of intervention is typically required to encourage and enable the private sector to invest in the maintenance and restoration of ecosystems. (Stafford et al. 2016: 9, 10)

These include, for example, the following interrelated interventions of:

- Introducing legislation for mandatory behaviour or payments;
- Creating markets for voluntary payments for ecosystem services (PES);
- Reducing the risks to private sector investment;
- Providing financial instruments for investment; and
- Communicating the ‘business case’ for private sector investment in ecological infrastructure.

(Turpie et al. 2014 cited in Stafford 2017: 11)

A few examples of these interventions relevant to the EFP are outlined below.

Legislation such as the National Environmental Management Biodiversity Act (NEMBA) requires that landowners clear some categories of invasive alien plants. However, in order to realise the financial benefits of clearing IAPs from a catchment, costs need to be recouped through some form of income or payment. Such ‘payment for ecosystem services’ involve “a voluntary transaction where a well-defined environmental service (or activity likely to secure that service) is being bought by at least one buyer from at least one service provider and where the sale is conditional on service provision” (Turpie et al. 2014 cited in Stafford 2017: 11). Despite years of pilot projects and substantial support for the concept of PES, the terms and conditions for transactions in these markets are yet to be fully developed and implemented in South Africa (Stafford 2017: 11). This means that the services provided by Working for Water and in the case of the EFP value chain, the removal of IAP biomass from catchments are not paid for and thus there is a need to build value along the value chain with the value-added industries.

The challenges associated with the complexity of natural ecosystems and the high levels of uncertainty regarding the costs and benefits related to the protection and restoration of ecosystem services makes private sector investment a risky proposition. Developing the scientific evidence-base that demonstrates the costs and benefits of restoring and conserving ecological infrastructure is therefore critical (Turpie et al. 2014 cited in Stafford 2017), as is developing the capacity to identify, quantify and communicate the financial and social benefits and risks associated with such activities. Turpie et al. (ibid.) noted that an important role that government can perform is in funding the early stages of a project, when the risks are too high for private sector investment. In a sense, this is exactly what the Jobs Fund has done in terms of the Eco Furniture Programme. However, the links along the chain need to be recognised and there is a very real risk that attempting to separate out the areas
of market failure (e.g. the harvesting and follow-up to reduce regrowth) from the more lucrative areas of furniture manufacture will undermine the ability of such programmes to compensate for market failures and thus become sustainable.

Making the business case for private sector investment in ecological infrastructure includes: managing risk associated with legislative compliance and preserving the ‘licence to operate’; building reputation and brand value; increasing operational efficiency such as reduced weed control or access to water; and opening new markets through innovative product development such as socially and environmentally responsible furniture. The business case could be made far stronger if government used their substantial procurement spend to drive strategic priorities such as sustainable development aligned business practices. In the case of the DBE procurement of school desks, government buying power has contributed to improved catchments and reduced fire risk while simultaneously meeting the needs of schools and learners for dignified learning conditions.

The CSIR review of the Environmental and Natural Resource Management call of the national Green Fund identified a number of key strategic areas that required attention to catalyse investment in environmental management and the green economy. These are all highly relevant to the VAI and EFP and include the following:

- Enhance governmental coordination of South Africa’s transformation to a green economy;
- Enable greater private sector investment in environmental and natural resource management;
- Support an integrated and practical understanding of the opportunities and constraints to operationalising the principles of a green economy into the restoration and conservation of ecological infrastructure, through supporting catchment based studies; and
- Increase technical and financial support for small businesses in the biodiversity economy.

A number of recent studies have sought to quantify the financial value created by IAP removal (Mugido et al. 2014; Mander et al. 2015; Mander & Blignaut 2016). These studies suggest that the cost of harvesting and extraction of IAP biomass for value-adding activities in South Africa is significantly higher than the cost of commercial timber as an input material. However, if one factors in the direct value or cost offsets created by IAP biomass removal, they far outweigh the investment required. Unfortunately, in the absence of payment for these ecosystem services, profit-driven enterprises will selectively harvest IAP biomass they can use, thereby failing to significantly contribute to IAP eradication goals and broader ecosystem service protection and restoration. In fact, these profit-seeking activities make it even more difficult for programmes such as the EFP to source inputs for the value-added industries programme as they are left to harvest the least viable stands where in many instances the most valuable resources have already been extracted. It has therefore been suggested that without government subsidisation (through the DEA NRM Programme, for example), the use of IAP biomass as an input for VAI would be unlikely to be financially feasible (Mugido et al. 2014). However, the studies also suggest that if structured appropriately, government financial support for IAP biomass VAI projects can mitigate some of the business risk and potentially also leverage enhanced developmental impacts in private enterprise partners. This is the approach being taken with the Land User Incentive programme and the recent agreement with the South African Furniture Initiative. The value chain linked to the EFP is thus an extremely important site for understanding and innovation that may require ongoing government support in the context of persistent market failures linked to valuing and paying for ecosystem services.

The South African Furniture Sector

The furniture sector provides the most direct context for the Eco-Furniture Programme. In order to understand the potential for this sector to create job opportunities for the participants in the EFP, this section provides a contextual background to the wood and furniture sector from global, national (South Africa) and local (George) perspectives.

The global furniture industry has undergone dramatic change in the past three decades. Since the 1990s, there has been a significant arrival of new players in the sector. This has resulted in a shift in the locus of attention away from developed furniture economies of western Europe and north America to Asia and eastern Europe.
The new entrants have tended to focus on cost competitiveness based on mass-producing cheap furniture and exporting it to new markets across the globe. By way of example, China’s furniture imports into America in the early 2000s reached 49% of all furniture sales. The shift to mass-produced, cheap and globally exported furniture has been aided by broad shifts in manufacturing supported by ‘lean’ approaches that seek to minimise waste and enhance efficiency. Within the furniture industry, one outcome of this approach has been the ‘flat-pack’ or RTA (ready to assemble) furniture. These flat-packs, alongside innovations in global logistics, containerisation and cardboard packaging, allow furniture firms to market and export their products anywhere at significantly reduced costs.

The above changes have taken place in an increasingly ‘free trade’ global market that has undermined the ability of countries to impose the kind of import tariffs, production subsidies and infant industry protection that developed countries and emerging Asian countries benefitted from up to the late 1980s. South Africa therefore faces significant challenges in terms of enhancing its global competitiveness in the furniture sector. Cheap imports, often hiding the significant environmental impacts associated with extended supply chains, compete with businesses and thus job creation opportunities locally.

At the national level, the South African furniture sector is characterised by domination by large firms and a high degree of concentration in terms of corporate ownership. In the broader timber industry, this has resulted in large conglomerates spanning the forestry, paper and pulp production, furniture fixtures and retailing sectors. This has deprived South Africa of the historical route, evolved in Europe, whereby most furniture sectors are run by small family-owned artisanal firms. This trend was exacerbated by the emergence of very large retailers in South Africa (e.g. Ellerines, Joshua Doore, Bears, etc.) that introduced highly standardised mass-produced furniture items in high volumes across South Africa. The dominance of these retailers was enhanced by their ability to provide financial credit and by the late 1990s, the credit system had become the main basis of profitability for the furniture sector: “Most of the profits accruing to furniture chains do not emanate from mark-ups on the commodities sold, but instead arise from provision of consumer credit” (Kaplinsky & Manning 1998: 153).

The above global and national trends have resulted in a number of systemic challenges for the South African furniture sector. Firstly, despite the advances in flat-pack furniture technologies, South Africa is still too far away from the main export markets to be able to effectively compete with other furniture sectors closer to the main consumer locales. Secondly, the monopolistic conditions surrounding the three dominant saw milling firms has meant that furniture manufacturers have had little influence over the quality of sawn timber. As Kaplinsky et al. (2003: 15) noted:

“The saw-milling technology used is old, since most new investment has gone into paper and pulp, which has higher profit margins. Consequently, the furniture industry is badly served with respect to input quality and flexibility, and delivery reliability is poor.”

These challenges were further elaborated in another study that noted:

“The local environment within which the wooden furniture value chain is located is a difficult one in which the chain is squeezed between the dominant pulp and paper value chain and the increasing export of unbenefficiated raw materials (i.e. logs) out of the country. Combined with a lack of trust between different players in these intersecting value chains and ongoing inefficiencies in, for example, the supporting environment (including but not limited to the port of Durban), local wooden furniture manufacturers face significant challenges simultaneously from the local and global contexts.” (Morris & Jackson 2002: 44)

A more recent study (Kaplinsky & Morris 2014) on global supply chains in Africa suggests that new manufacturing standards are being required of firms operating in global markets. These standards are being driven by developed nation consumers and are related to three sets of requirements:
• Standards to do with the social conditions of production, for example, their working conditions, safety standards and education and training.
• Standards to do with the environment, for example, the need to ensure that the environment is not degraded during production.
• Standards to do with the collective economic efficiency of each tier of the supply chain, and not only the profitability of the lead firms. (Kaplinsky & Morris 2014: 102)

These standards may put pressure on South African companies in the furniture sector to upgrade in multiple ways. These include process upgrading (e.g. new technology and improved manufacturing capabilities); product upgrading (e.g. enhanced design or the use of certified wood); and functional upgrading (e.g. a functional shift from purely manufacturing into design and even retail). However, previous studies suggest that powerful multinational conglomerates with a presence in key overseas markets and South Africa have tended to benefit from these standards by being in a position to exploit the benefits created by them. This in turn has enabled these large companies to engage in significant functional upgrading moving into forestry, sawmilling, manufacture and retail, thus excluding or out-competing small players and Small and Medium Enterprises (SMEs).

A number of interventions have been attempted within the furniture sector at a national level. These include the use of industrial policy to move to higher value-adding production in furniture and the provision for training and technology support to SMEs. The early 2000s saw a number of university-based industrial policy experts and industry consultants introduce Saligna (Eucalyptus) hardwood as the basis for producing higher quality furniture pieces and higher value within the furniture sector. The shift in the mining industry from the use of eucalyptus poles to alternative methods of pit-prop support meant that the wood had become available for alternate purposes. However, the upgrading was hindered by a number of dynamics within the timber value chain. The first problem was the power of the sawmills who were geared to cutting softwoods (pine) rather than hardwoods and thus delivered hardwood products to the market at unpredictable intervals and with varying quality. The second problem was the competition for Saligna from paper and pulp applications meaning that unless the final furniture products could be positioned in a higher product niche, the manufacturers would not be able to meet the market price for the timber input. Ultimately this initiative failed.

Another initiative to support the furniture industry is the Furntech Incubator project. Furntech launched in 2000 with support from the Department of Trade and Industry, the Small Enterprise Development Agency and the Swedish International Development Agency. The Furntech Incubators offer world class training and technology support to SMEs, thus improving the international competitiveness of the South African furniture industries. Of the original eight incubators, seven remain after the George campus closed because of the decline of the wood products and furniture sector in that local economy. Furntech has the capacity to house several firms annually. In 2012 it incubated 93 firms nationally, 85% of whom were considered likely to ‘graduate’ successfully through the two-year incubation process (Masutha 2012: 80, 88). In contrast to these high graduation rates, Masutha cites a rather low job creation rate across these 93 firms during 2012, who collectively only created 80 new jobs. This low job creation has been linked to a lack of demand for local products and their substitution by cheap imports, the global economic recession, the lack of government demand for local products due to procurement policies and the reluctance of dominant buyers to include start-up firms in their supply chains. These challenges have resulted in low occupancy rates and low levels of income generated by furniture manufactured within the seven Furntech facilities. These challenges meant that the ability of the centres to recover their costs is very weak and the dependency on government funds is high. A focus on strategic public procurement where bid specifications include a focus on supporting emerging SMEs that have a strong transformative and sustainability dimension while still producing competitively priced (not necessarily cheapest) products could address some of the demand side challenges experienced by these furniture manufactures. Strategic public procurement has
been shown to support innovation and the creation and retention of jobs within national borders and local clusters (GreenSkills 2016).

These examples and other studies (Kaplinsky & Morris 2014) point to a number of systemic challenges that limit the possibility for growth in the furniture sector. These include:

- A lack of cooperation between key role players across the value chain and particularly the sawmills and furniture manufactures;
- Asymmetric power relations that result in the value chains being dominated by large retail buyers who dictate terms of production down the chain; and
- Despite specific policies being drafted (see DTI 2008, DIT, 2014; Department of Economic Development, Gauteng, 2008) and expert intermediaries providing support to initiatives such as the introduction of Saligna into the furniture value chain, the actual outcomes have been minimal.

In an ongoing review of the furniture industry in George, Kraak (see Appendix 2) uses the notion of a furniture ecosystem to probe and understand key enabling and hindering factors within the local and national furniture sector. Ecosystem here is defined as a ‘system of inter-dependent components interacting as an integrated whole’ (Finegold 1999).

The George furniture ecosystem is made of multiple actors interacting to build the industry. Some of the key actors are:

- The lead firms – for example, Steinhoff (a major global retailer owned by South Africans but headquartered in both Germany and South Africa);
- The saw-mills;
- The mass producers of affordable pine home furniture;
- The bespoke producers of design-intensive niche furniture using mainly imported hard woods;
- The local municipality responsible for local economic development (LED) and electricity provision;
- The Provincial Government;
- Education institutions – including the South Cape College, Nelson Mandela Metropolitan University (NMMU) and its branch at Saasveld which historically houses an important forestry college. Other education players in the past included the local Furntech incubator which was closed down in 2014;
- The Department of Basic Education, which has removed woodwork as an examinable subject at school; and
- The SANParks Eco-Furniture Programme, which can be defined as a ‘public good’ project in the midst of a largely private sector run industry.

Kraak’s (2017 – Appendix 2) findings argue that this ecosystem – which historically supported a vibrant furniture manufacturing sector until the late 1990s – is now dysfunctional, with various actors (those listed above) not providing the complementary support services needed by the other players in the ecosystem. Given space constraints, only a few examples of this dysfunctionality can be listed here. They include:

- **Ecosystem governance failure**: Key value chain and cluster relationships do not exist anymore. There are no champions of the industry (not even government at national, provincial or local level). The cluster or ecosystem is not being ‘governed’ or steered by the key players in the system – usually the lead firms, along with local agencies and government structures.
- **Key areas of cross-departmental government coordination very poor**: A range of cross-departmental coordination failures is evident in the George forestry, timber and furniture value chain. The most alarming is the lack of a clear policy on waste wood products (sawdust, off-cuts and rejects) which could easily support a viable biomass energy industry in the region. The Eco-Furniture Factory in George suffers from additional cross-departmental problems linked to alien vegetation clearing, the most serious being that the quality alien wood that should be removed from the land of forestry contractors has never been delivered. And
finally, the several ‘public good’ projects envisaged for the region – the eco-furniture project, the Furntech incubator and some of the previous biomass initiatives – were never envisaged as part of a comprehensive integrated project, but implemented separately without dialogue between government departments. Strategic integration of these projects across government departments may have generated a different outcome.

- **Local and provincial government failed to support the furniture industry:** Furniture is not on the list of provincial or local government priorities. ‘Design’ is an industrial policy priority for the Western Cape government, but this appears to apply to urban planning and architecture, clothing and IT, not furniture. The local government has no incentives at all for furniture manufacturers.

- **No education and training:** Almost no formalised training takes place in the furniture industry – both locally in George and across the country. George manufacturers train informally on the job. Many manufacturers indicate that the last time they saw cabinet makers being trained on apprenticeship programmes in decent numbers was in the period prior to 2000 when the new SETA system was launched. In addition, even though there is consensus that design capabilities are crucial for the industry to upgrade towards higher quality, higher value-added products, no education and training institution in the Southern (and Western Cape) provides furniture design courses.

- **Untransformed white-owned SME economy:** Almost all the furniture firms of George are still white-owned and controlled. Furniture is the classic industry where family owner firms are handed over from generation to generation making it very difficult for newcomers, particularly from differing racial and gender backgrounds, to enter the firm. In Kraak’s (2017 – see Appendix 2) surveying of 14 local firms, 12 were white male-owned, one was white female-owned, and only one firm was owned by a black (Coloured) South African. This phenomenon of family-owned SMEs makes the transformation of the industry difficult, as affirmative action cannot be legislated as is the case with large corporate firms. The fact that ownership passes from one generation to the next affects things like training as well, as skills are acquired within the family, and there is very little incentive to bring in outsiders and then incur large costs to train them up.

- **Small horizons:** Local furniture producers only focus on consumers along the coast from Cape Town to Durban, but not Gauteng, Africa and the world. This is because of the costs and complexities of transportation across terrain not previously commercially conquered by the South Cape furniture hub. Small firms seem comfortable with local (coastal) markets that are familiar to them and shy away from entering into competition with existing players in the Gauteng, African and global markets. This ‘business as usual’ philosophy has its downside, however, as there is no pressure or incentive for manufacturers to change their existing production routines and seek out more demanding products and manufacturing processes.

As is evident from the contextual review of the furniture sector, there are a number of systemic challenges at the global, national and local levels. In order for the Eco-Furniture Programme to achieve its objectives it is vital that it navigate these challenges and find ways to address the opportunities and threats associated with them. These challenges are exacerbated by the broader objectives associated with poverty alleviation, skills development, and enhancing the functioning of ecosystem services through the use of alien invasive plant biomass as the feedstock.

**Unemployment, Poverty Alleviation and Inequality**

The National Planning Commission (NPC) identified “the triple challenges of poverty, inequality and unemployment” as pressing issues in our country. In response to these challenges, the National Development Plan is anchored on two key objectives, namely the elimination of poverty and the reduction of inequality. The Extended Public Works Programme and the Jobs Fund are both responses to these challenges and aspirations and it is worth briefly considering some recent reports to set the context for this work and the evaluation of the EFP.
The latest Stats-SA figures (2017) show that South Africa has one of the highest rates of unemployment compared to other upper middle income countries which averaged 6.2% unemployment in 2016. South Africa by comparison has an official measure of unemployment that rose to 27.7% in the first quarter of 2017. The number of unemployed persons in South Africa currently stands at 6.2 million in a labour force of 22.4 million. If one works with the expanded definition of unemployment which includes people who have stopped looking for work, then the figure is 36.4%. These are not temporary issues either. The unemployment rate in South Africa has been rising steadily for the past nine years. Using the expanded definition of unemployment, 5.5 million South Africans were unemployed in 2008. This figure has risen to over 8 million at present. A closer look at the figures suggests that 39% of all unemployed South Africans have never worked before. Among young people (aged 19-24), this figure is 60.3% (Yu 2017). These figures reflect the economy’s inability to keep pace with the number of people entering the labour force. In 2016 there were 37 million individuals in the working population; this is an increase of 1.6% from 2015. Given that the number of jobs created in the economy is currently increasing by between 0.5% and 0.7% for each 1% of GDP growth, current trends suggest that over 3.2% GDP growth is required to maintain current levels of employment. With current GDP growth rates of between 0.5% and 2% predicted for the next three years, it is highly likely that unemployment will increase for a number of years to come (UCT 2017). This raises a number of issues for EPWP programmes such as the EFP. In particular it brings into question the assumption that the programmes are short-term responses to a temporary unemployment challenge. This in turn suggests that sustainable sources of funding will be required to extend the duration of individual work opportunities and of the programmes as a whole. These issues are explored in greater depth in the section on mechanisms later in this review.

The relationship between poverty and unemployment is extremely close. Data from 2014/2015 shows that the poorest 40% of the population accounted for 71.9% of the unemployed and a mere 12.4% of the total national income (Yu 2017). The definition of poverty is highly contested with some measures reflecting a narrow monetary focus, while others take broader capabilities into account. Stats-SA use the ‘cost-of-basic-needs-approach’ to define three poverty lines, namely the food poverty line (FPL), the lower-bound poverty line (LBPL) and the upper-bound poverty line (UBPL). These lines describe different levels of poverty with the FPL being the rand value below which individuals are unable to purchase or consume enough food to supply them with the minimum per-capita-per-day energy requirements for adequate health. The LBPL and UBPL are based on the FPL but take non-food items into account. At the LBPL, individuals do not have enough resources to purchase or consume both adequate food and non-food items and are therefore forced to sacrifice food to obtain essential non-food items. A recent review on poverty in South Africa (StatsSA 2017) using figures from 2006, 2009, 2011 and 2015 provides some useful insights in poverty trends in the country. Given that the Medium Term Strategic Framework (MTSF), the NDP and the SDG reporting is based on the lower-bound poverty line (LBPL), this section will use this as the basis for discussion. It must also be noted that the LBPL is updated based on inflation and has thus increased from R370 per person per month in 2006 to R456 in 2009, R501 in 2011 and R647 in 2015. Using the LBPL, 40% or 21.9 million South Africans were living in poverty in 2015. This represents an increase from 36.4% (18.7 million) in 2011 but a decrease from 51% (24.2 million) in 2006. The number of people living in extreme poverty (below the FPL) has increased from 13.4 million in 2006 to 13.8 million in 2015. This group is particularly vulnerable to food price increases as a result of drought and the relatively small increase hides significant variations across the years as well as distance below the poverty line. In terms of meeting the poverty related targets in the NDP, it is distressing to note that the NDP sets a target of: “Reducing the proportion of persons living below the lower-bound poverty line from 39% (in 2009) to zero by 2030”. As seen above, the percentage of persons living below the LBPL in 2015 was 40%, representing a 1% increase as opposed to the substantial decrease required to achieve the targets set in the NDP. Both the fluctuations in poverty levels and the persistence of poverty point to the importance of poverty alleviation programmes and policies in South Africa.
In addition to the monetary based statistics reflected above, it is important to recognise the significant impact that the provision of a ‘social wage’ package has had in reducing poverty in South Africa. The social wage package encompasses a number of government interventions including free primary health care, no-fee paying schools, grants including old-age and child support, the provision of basic services and the extended public works programmes. This support has had a very significant impact on the lives of resource-poor people in South Africa. One reflection of this is in the South African Multidimensional Poverty Index (SAMPI). This index defines poverty according to four dimensions namely health, education, living standard and economic activity. According to the SAMPI, household poverty reduced from 17.9% in 2001 to 8% in 2011 and then fell a further 1% by 2016. Although slowing in recent years, the multidimensional poverty level has declined highlighting the positive impact that the social wage has had on the most vulnerable sectors in our society. The EPWP with its payment for work, exposure to lifes kills and opportunities to develop new skills is an important contributor to reducing all four dimensions of poverty considered within the multidimensionional poverty index.

The social wage has however required a substantial investment of public funds. As the Stats SA (2017) report on poverty notes:

“Social protection now represents the single largest poverty reduction strategy of the country in terms of coverage and resources. There has been a dramatic increase in the number of beneficiaries in receipt of social grants from 2.6 million in 1994 to over 16 million people by 2014 (Presidency 2014). ... Grant payments have risen from 2.9% of GDP and now amount to 3.1%, which is almost three times higher than the median spending of 1.4% of GDP across developing and transition economies.” (Presidency 2014; Leibbrandt et al. 2010: 53)

It is difficult to interpret exactly what is included in the figures above and it may well only refer to direct social grants. Regardless, it is the staggering increases that raise issues of sustainability. These increases have taken place against the background of government debt to GDP ratios increasing from 27.8% in 2008 to 51.7% in 2016. Given the rating agency downgrades and the ongoing investment in underperforming State Owned Enterprises, this level of debt will become increasingly difficult to sustain. This in turn will place substantial pressure on the ability of government to continue to channel substantial resources into the social wage. The potential of the EFP to generate income over and above the public goods that it creates becomes increasingly as significant as the state’s ability to provide a social wage.

Despite the positive impact that the social wage has had on household income, school attendance rates, health status and access to nutrition, South Africa remains one of the most unequal countries in the world. One measure of inequality that is commonly used is the Gini coefficient where an index of 0 represents total equality and 1 represents complete inequality. South Africa regularly rates as the most unequal country in the world according to the Gini index. The NDP has thus made reducing inequality in South Africa, one of its key objectives. Although appearing to be a relatively simple measure, the Gini index can be calculated based on different variables. The most commonly used measure is based on income per capita (including salaries, wages and social grants). Based on this calculation, the NDP aims to move the Gini coefficient from 0.7 in 2011 to 0.6 by 2030. The latest StatsSA report on poverty trends in South Africa (using 2006-2015 data) suggests a very slight decline from 0.72 in 2006 to 0.69 in 2009. The income Gini coefficient declined marginally between 2009 and 2015 to 0.68. “At this rate, South Africa would not likely achieve its target of reducing inequality to 0.6 by 2030” (Stats SA 2017). Two points require emphasis, the first is that inequality in South Africa has remained relatively constant over time and persistently high despite government programmes including social grants. The second point is that even if South Africa were to achieve the NDP goal of 0.6 by 2030, we would remain one of the most unequal countries in the world.

The Sustainable Development Goals have set a number of global targets, domesticated for local relevance, across the social, environmental and economic dimensions of sustainable development. Goal 1 seeks to “End
poverty in all its forms everywhere”. One of the targets is to reduce by at least half, people living in poverty in all its dimensions according to national definitions. Key indicators include the proportion of the population living below the LBPL with a proposed base line in South Africa being 40.0% (2015). Another important indicator is the proportion of households that are multidimensionally poor as determined by the SAMPI with the base line being 7.0% (2016). The figures given above demonstrate how challenging it is going to be for South Africa to achieve these goals given the current trajectories.

Before concluding this section, it is important to stress that the discussion above has smoothed over the huge inequalities between the race groups, between different age groups and between different genders. By way of example, the percentage of the white population living below the LBPL has moved from 0.6% in 2006 to 0.4% in 2015 while the corresponding percentages for the Black African population are 60% (2006) to 47.1% (2015). The unemployment rates of the youth relative to the rest of the population were also highlighted in the discussion above. These and many other differences are important for understanding the targeting and scope of the interventions required to address poverty, inequality and unemployment in South Africa. Without the substantial investments in the social wage in South Africa, the poverty, inequality and unemployment rates would have been even more distressing. The challenge going forward is to find ways of financing the contributions to addressing unemployment, poverty and inequality in a low GDP growth and increasing government debt to GDP context. All these considerations will have significant implications for the EPWP, more broadly, and the Eco-Furniture Programme, more specifically. To add to the complexity of the situation and the social challenges related to employment, income, equity and education, we will as a country need to address these issues within the environmental resource base to which we have access. These resources will have to be managed in a way that does not undermine current and future generations’ access to fresh water, food, biodiversity, air quality and energy. While the poorest citizens are often least likely to contribute to unsustainable environmental stresses, they are the most likely to feel the negative impacts. The Natural Resource Management (NRM) programme within the EPWP thus offers a unique opportunity to address economic, social and environmental dimensions of the SDGs by creating work opportunities that provide income to poverty stricken households while simultaneously protecting and restoring environmental assets and ecosystem services. How well this has actually been achieved to date is explored in the section on Outcomes below detailing various perspectives on the impact and outcomes of the project. Before considering the outcomes however, it is useful to consider an overlay of the three contexts outlined above.

A Multi-Layered Contextual Overview

An overlay of the impact of alien invasive plants, the potential of the furniture sector, and the need to address unemployment, poverty and inequality opens up a more systemic approach to adding value to IAP clearing. In particular, the focus on the furniture sector, given the challenges and limitations for growth of this sector, is challenged and placed within a broader value-added industry framing. It is recognised that the DEA and others have been exploring this broader framing; however, a number of studies suggest that this could be done more efficiently and that concepts such as industrial symbiosis and the circular economy may be useful for understanding, profiling and improving the current interface between environmental concerns related to IAPs, value-adding industries and job creation.

The woody biomass that is available as a by-product of the clearing of alien invasive plants extends beyond the timber currently being harvested for planking for the furniture factories. It includes the leaves, needles, branches and other woody plants that are too thin to be planked. At the furniture factories, there is also a large amount of waste that is either being turned into other products (e.g. erosion matting, wood chips, etc.) or is accumulating at the factories and creating a variety of hazards. A number of studies have suggested that there are additional opportunities for value creation in the IAP biomass value chain. These opportunities are likely to increase as the demand for wood-based products increases based on global trends including a shift towards a
bioeconomy to alleviate our reliance on fossil fuels. This expansion of opportunity for value addition introduces increased opportunity for innovation, new market development, sustainable value creation and job creation.

These value-adding opportunities have been explored by several government departments and programmes, including the DEA and Department of Energy (DoE), and various academic and research institutions, notably the Council for Scientific and Industrial Research (CSIR), and Universities of Pretoria and Stellenbosch. (See for example: Stafford 2017; Stafford et al. 2016; Toma-Now 2016; Vundla, Blignaut, Nkambule, Morokong, & Mudavanhu 2016; Pierce 2015; DEA 2015; Mugido et al. 2014; le Maitre & Forsyth 2011; Marais, Eckert, & Green 2001). More detail and references to these studies are provided in Appendix 4. Because of the findings of a number of these studies, and to enable better integration of developing a range of materials and energy products from IAP woody biomass, the biomaterial and bioenergy opportunities were merged in the DEA’s Natural Resource Management (NRM) programme with the establishment of the Working for Value-Added Industries (VAI) programme in 2015. This programme encourages cost-recovery of the cleared biomass by processing it into a wide range of products (PMG 2015; Stafford 2017).

Reading across a number of these studies, it is possible to identify a range of potential products that use woody plant biomass as feedstocks. These include: biochemicals and nutrients; biomaterials; biofuels; timber materials and manufactured products; bioenergy and ‘basic’ biofuels. These products and the processes that produce them can be understood in terms of volumes, financial value, job numbers and skills required. Many of the reports include a consideration of volumes and financial value with the implication of, for example, transporting high volume: low value biomass compared to low volume: high value products. In the context of this unemployment, a consideration of job numbers/labour intensity and skills requirements/learning opportunities is also vital. The products’ hierarchy and other considerations are summarised in Figure 2.

Figure 2: Invasive Alien Plant bioproduct value hierarchy (Jenkin, see Appendix 5)

There are a number of factors that affect the feasibility of VAIs related to alien invasive plant biomass (see Appendix 5 for further details). As the Transaction Advisor report noted, a key factor relates to the accessibility of feedstock. This includes both the access to feedstock on private land and the cost of harvesting and
transporting IAP biomass. A second factor is related to the proportion of the biomass that is suitable for various products. By way of example, a recent study (Stafford & Blignaut 2017) suggests that on the Cape Agulhas Plains, of the total biomass that could be harvested, only 1.5% was suitable for the production of planks, 3% for smaller poles and droppers, 32% for wood fuels such as firewood or charcoal, and 53% had other bioenergy potential. Different IAP species and infestations would have different potential for a range of products. A third factor relates to transport costs relative to value addition. The obvious consideration is to avoid transporting high volume/low value biomass across great distances. And this leads to a further consideration: the accessibility of skills and machinery to take the waste or by-products from one process e.g. planking and use it in another process such as erosion mat manufacture. This idea is well captured in the notion of industrial symbiosis.

Industrial symbiosis is the collaboration between companies whereby the unused or residual resources (materials, energy, water, waste, assets, logistics, expertise, etc.) of one company become a resource or feedstock for another. This requires that traditionally separate companies or production processes are brought together to create synergistic advantages that improve the environmental, social and economic impact of the participating entities. There are many examples of industrial symbiosis internationally and three high profile initiatives in South Africa. These are located in the Western Cape, Gauteng and KwaZulu-Natal. In South Africa, GreenCape and the National Cleaner Production Centre have been important role players in the development of industrial symbiosis initiatives.

More recently, industrial symbiosis along with eco-design, remanufacturing and eco-innovation, has been recognised as a key component of the circular economy. The circular economy is an emerging concept that recognises that the way that we design, make, use and manage things has significant implications for everything from our demand on natural resources, our CO$_2$ emissions, the amount of waste we generate, our ability to grow the economy and thus create jobs and the way that we treat people and other animals on the planet. It is this focus, creating economic value and reducing environmental and social impact through design and best use of materials and efficient use of resources and materials, that are the defining features of the circular economy.

Industrial symbiosis and the bigger process of circular economy are thus increasingly being seen as a means to decouple economic development and job creation from environmental degradation. Put in a more positive way, industrial symbiosis and the circular economy are key to the creation and growth of innovation, resource efficiency, and a green economy. This, in turn, is the basis for stimulating the demand for new green jobs and associated skills. The usefulness of industrial symbiosis is the focus it brings to connecting by-products from one process to inputs for another. The efficiencies lie in the ability to reduce transport costs and the use of each resource at the highest value possible. To date, many of the studies on the value-added industries have not focused on clustering the various product production processes based on principles of industrial symbiosis and the circular economy. International and local experience suggests that the efficiencies created by these processes would enhance market competitiveness of IAP biomass and the products produced. It also suggests that using the heat and electrical energy that could be produced to, for example, dry timber and run a factory has the potential to produce significant environmental value, innovation, new job creation, greater economic value, etc. In this way, the potential is enhanced to create value at the intersection of: IAP clearing; value-added industries beyond but symbiotic with furniture manufacture; and employment in an economy that is socially, environmentally and economically sustainable.

The following section explores different perceptions on the extent to which the potential to bring about change in the context outlined above has been achieved. This requires a consideration of value creation across a range of economic, social and environmental areas.
Outcomes

Within the context outlined above, this section of the evaluation examines the efficiency, impact and sustainability of the Eco-Furniture Programme. It does this through document analysis, interviews and site visits that generated both quantitative and qualitative information. To structure the insights developed, it was agreed early in the evaluation process that it would be necessary to reflect the multiple forms of value created within the broader objectives of the Eco-Furniture Programme. The degree to which these objectives had been achieved could be understood in terms of value created through the efficiency, impact and sustainability of the programme with regard to addressing poverty, enhancing the value of assets and creating jobs. The evaluation process revealed that related to each of these dimensions were issues of finance, manufacturing capacity, innovative approaches and products, networks and relationships, skills development and ecosystem services. And all these dimensions were brought together by the institutional structures and project management processes that either contributed to or hindered the achievement of project objectives. In order to make sense of this complex web of dimensions and processes, we have used integrated thinking and more specifically, the integrated reporting framework.

The Integrated Reporting (IR) framework is an internationally recognised approach that is increasingly being used in the private and public sectors to think about, plan for and report on short-, medium- and long-term value creation. Integrated thinking and reporting brings together all the resources and relationships an organisation or programme depends on and refers to them as capitals. These capitals (financial, manufactured/infrastructure, social/relational, human, intellectual, and natural) are either enhanced, maintained or destroyed through an organisation’s or programme’s activities and processes. The integrated thinking and reporting framework thus uses both quantitative and qualitative information to consider how the activities and capabilities of an organisation or programme transform the capitals into outcomes. The diagram below shows how the capitals are considered as both inputs and outcomes for the activities of an organisation or programme.

![Figure 3: The value creation process (source: www.integratedreporting.org)](image)

As a recent World Bank publication (2016: 25) noted, “Integrated Reporting offers the opportunity to consider and review the interconnectedness of complex multi-service delivery and to clarify the goals and identify preferred outcomes within the wider context of promoting public wellbeing”. This is particularly important as
public sector initiatives are “increasingly challenged with maintaining or improving outcomes within the same or reducing resources” (IoDSA 2016). These insights are directly aligned to the Jobs Fund review guidelines that require a focus on outcomes in the public sector initiatives. By using a multi-capital approach, this evaluation is able to probe the efficiency, impact and sustainability of the Eco Furniture programme in terms of the programme’s objectives.

The remainder of this section thus looks firstly at understanding the business model that informs the Eco-Furniture Programme and then at each of the six capitals as they relate to the EFP.

Understanding of the Business Model
The business model refers to the Vision, Mission, Governance and operational model of the business. It would include a consideration of the risks and opportunities, the strategy and resource allocation, performance metrics and outlook for the business over the short-, medium- and long-term. In a project of this nature, some of these aspects are captured in the theory of change and the logical planning frameworks. However, there is a need to make many of these aspects of a business more explicit and communicate them with funders, partners and broader stakeholders.

With regard to the vision and mission, it was unanimously agreed by everybody interviewed that some of the biomass currently left to waste during invasive alien plant removal should be salvaged and used to create value. The following quote from one of the Mill Managers reflects sentiments shared by many of the people interviewed:

“I love this project, it’s got so much potential there. It’s doing good for the environment, it’s getting all these trees out, it’s water security, and it’s educating people and giving them skills development, and then job creation. It’s a brilliant programme …”

The relevance of this work related back to the issues covered in the context section of this evaluation. The clearing of alien invasive plants and the contribution to water security, ecosystem assets and poverty reduction was strongly supported. Differences of opinion did however arise with the more specific objectives of the EFP quoted below for ease of reference:

“The objective is to establish viable furniture-production factories, making products needed by Government, using wood from invasive plants, creating jobs for 3025 beneficiaries, working at competitive EPWP rates, and producing high-quality products at costs lower than if the Government buys them on the open market.” (DEA 2015. Project Concept Document)

There were differences of opinion on whether, in the context of a struggling furniture sector, government should be establishing furniture-production factories. Coupled to this is the fact that the Departments of Labour and Correctional Services have both established factories that provide furniture to the government. These factories have been in existence in some cases for over 50 years and have a proven track record in terms of product diversification and quality. The TA report noted that the DEA VAI should be a provider of primary materials to these facilities. The SA Furniture Initiative (Bargaining Councils) was also very clear that furniture production by the EFP was causing additional competition in a sector that was already stressed. This does raise a number of questions about whether the Jobs Fund should have been supporting the establishment of 18 factories in a sector that was already under pressure. Senior managers within DEA, however, argued that it was perfectly legitimate for government to produce items that it needed and to use its purchasing power to address market failures. As one manager said:

“The issue that we face are the externalities. There are negative externalities in terms of IAP impacts on water and there are positive externalities such as providing school desks and skills development.”
Another manager felt that an argument could be made around specific products that government needed. The problem at present was that things are “price dominated” and that there was no allowance for long-term value. This manager went on to argue:

“The scale is so much bigger. It is about not needing to build new dams. In the end economics and not price must come to dominate but it will take a long time. In the interim, government has a role to play.”

Where the line got drawn however in terms of what was produced was not always clear and there had been instances where the furniture factories had produced products for the commercial market. One example of this was garden furniture for Massmart. Here the reference in the objective of “products needed by government” seemed to have been subverted for other parts of the objective such as using alien plant biomass and job creation. This was questioned by some of the senior management within DEA, one of whom commented that:

“… with the Massmart sales we start to compete. We should rather supply the planks to somebody who supplies Massmart and focus our work on government needs. That will keep us busy. The health, education and housing development needs are huge. If we did the RDP houses and finishing in RDP houses then we have a market for IAPs for years. Huge green thought has gone into the housing design. We can do this so much cheaper than the big furniture shops and avoid the risk and exploitation associated with financing and loans to the poor.”

There was a whole spectrum of ideas on what role the DEA and in fact government should be playing in terms of the furniture business. Some felt that DEA should do no more than use contractors and EPWP labour to fell the timber and deliver it to commercial sawmills. One interviewee was very clear that “we need to support our local industries. The DEA should not be involved in the EFP. Our job is to deliver the material to the door of businesses.” Others felt that it was important to be part of the extended value chain so that money could be generated to offset the costs of IAP clearing. In some instances, this involvement in the value chain extended no further than planking the timber (in line with the TA report suggestions) while others felt that maximum value could be derived by integrating across the value chain all the way to the production of high quality furniture for government offices.

Another viewpoint that was expressed was the idea of saving a job by creating a job. This approach reflects a recognition of the challenges faced within the furniture industry and seeks to work with the industry to initially reduce job losses in the furniture sector and progressively build furniture manufacturing skills. In addition to the EFP focussing exclusively on the use of alien invasive plants, the DEA, through the EPWP, would place and pay for workers in the commercial furniture businesses that were running below capacity. In addition, the DEA would supply invasive furniture-grade timber to the commercial entities which are better placed to maximise the plank conversion into furniture. The factories would then supply products to government to the value of the DEA input costs (timber, labour and off-take agreements) at a competitive rate while at the same time providing opportunities for work experience and skills development in the furniture sector. The commercial entities are expected to benefit from surplus timber (as a result of their own efficiencies) and additional labour availability. This approach is currently being formalised in a co-operation agreement between DEA, SANParks and the South African Furniture Initiative.

The divergent views within the DEA reflect a healthy level of debate and experimentation with different models for creating value within the Value-Added Industries programme. They are also reflective of some very different assumptions about the role of the state. (See discussion on this mechanism later in this review.) However, it was evident from the interviews that these differences were making management decisions difficult as competing visions, missions and objectives resulted in uncertainty and in some instances, conflicting practices. This was leading to inefficiencies, undermining the impact of the project and resulting in contradictory approaches to building the sustainability of the programme. Perhaps more concerning is the fact that these inefficiencies are leading to financial deficits which are in turn reinforcing the view that the EFP will not work. These challenges
are reflected in the reduction of potential value creation across the six capitals explored below and addressing them could significantly increase support for the programme.

A key funder and stakeholder in the EFP is the Jobs Fund and it was clear during the interview at the Jobs Fund that key aspects of the business model were either not in place or not well communicated within this project. There was a strong sense that political promises were driving strategy and this ‘strategy’ was poorly supported with appropriate systems and capacity for implementation. One outcome of this, according to the Jobs Fund, was that managers at SANParks level and at the factory level were engaged in crisis management rather than proactively managing the activities and monitoring systems that should have been in place to provide evidence of outcomes back to the Jobs Fund.

The following quote from the Jobs Fund interview illustrates the above point:

“Being so busy with setting up the factories, dealing with staff issues and trying to make it work, which you have to focus on, but the strategic focus was just not there. We are not just trying to set up the jobs for now. We are not like a normal EPWP. Our mandate is about the sustainability of the initiative. The factories are there but we do not want them now to stagnate. We need to see the strategic direction. We don’t even have clear audits and we cannot see the way forward.”

In a publication entitled “Creating Value: Value to the Board” (IR 2014), it is noted that “telling the company’s performance story is an important part of the board’s responsibilities. Explaining strategy and the business model is essential to present clearer and more complete information to investors and other stakeholders”. At many different levels within the EFP, this lack of clear strategy has undermined the confidence of investors, including the Jobs Fund, and other stakeholders. This is evident in the challenges that private business and labour have launched through the SA Furniture Initiative. It is also evident in the frustration that has been felt by management at different levels.

The link between ecological restoration and job creation through the building up of the Eco-Furniture Programme was almost universally recognised as an important innovation that needed to succeed. The critique thus hinged on the communication of the strategy and the governance and corporate structures that were in place to realise the objectives as set out in the initial proposal.

Part of the challenge around strategy seems to have been the very significant investments that DEA had already made into the value-added industries and continues to make. This meant that there was already a well-developed narrative around the objectives of the programme within certain parts of DEA. The linkages that had been formed with the Department of Education, for example, meant that the recommendations of the TA report on the Jobs Fund proposal would have been difficult to implement. In particular, the recommendation to produce planks for sale rather than extending up the value chain to the production of school desks and other furniture. This left the Jobs Fund with the feeling that “this project was going to go ahead regardless of what the formative evaluation recommended. There was a tension between the commitments made in DEA and the expectations of Treasury”. While the Jobs Fund personnel interviewed acknowledged that the context is not static and recognised the need for responsive change, they required that these adjustments be negotiated and agreed. Given the size of the investment from the Jobs Fund, strategic level decisions required committee level approval and it was felt that this had not been sought by the project or given by Jobs Fund, in this instance.

This is not to say that this level of strategic planning is not happening. The Eco-Furniture Programme Business Plan: 2017/2018 (DEA 2017) reveals a careful consideration of the vision, the risks and opportunities, strategies and resource allocation, marketing and outlook. It also recognises the current performance limitations and considers possible alternatives to the business entity through which the Eco-Furniture Programme operate. What the Jobs Fund interviewees were suggesting is that rather than simply communicating this level of strategic thinking, an investment of over R100 million requires careful consideration and approval by investors such as the Jobs Fund. In response senior managers at SANParks noted that there was also significant change within the
Jobs Fund with four successive teams being involved from the approval of the project to the actual signing and implementation. This resulted in discontinuities from both sides as the project’s objectives and activities were negotiated and rolled out.

Turning the strategy into implementable action plans is another area that was regularly mentioned as a major challenge for the project. This was obviously not a new challenge. One of the Mill Managers noted that major problems bedevilled the Eco-Furniture Programme from the start (referring to 2011). The steering committee was made up of people who did not have significant experience with the harvesting, milling and furniture sector, SANParks was asked to temporarily house the project but dedicated staff and new systems were not allowed for and as the DBE orders expanded, new factories were required. As the project went to scale, nationally consistent administrative standards and systems were required at a time that few systems had even been developed at the first factory site at Farleigh.

These issues appear to have been compounded rather than sorted out with the addition of the Jobs Fund project. By their own admission, the Jobs Fund is administratively ‘heavy’. It requires detailed record keeping and reporting particularly on jobs created and the sustainability of these jobs. This in turn requires substantial management capacity. Many of the interviewees commented on the almost superhuman efforts of the SANParks staff. However, a project this size required more than the addition of responsibility to existing staff. It required careful business planning and capacity development. As the Jobs Fund interviewees noted:

“SANParks capacity was limited. More than a year ago we pushed for additional capacity on the project. A letter was written stating that SANParks needed to increase their capacity in terms of project management. Ideally for a project this size, you need a project manager. You also need a financial manager who can manage the reporting; an M&E person; and somebody in the field to actually gather that information. It looked like this was going to happen. A financial person and project manager were interviewed but did not materialise. This has impacted the gathering evidence.”

This evidence was required by the Jobs Fund investment committee to justify the R122 million investment in the EFP. And the lack of accessible and up to date information was a major factor in the Jobs Fund decision to withhold the final disbursement to the EFP. Given the impact of this lack in management capacity, the question arose as to whether this capacity had been provided for in the allocation of resources. Here there appears to be a substantial difference of opinion that will require careful attention as the project moves forward. According to the Jobs Fund, an amount of R4.39m was available for project management/ administration. Ideally for a project this size, you need a project manager. A financial person and project manager were interviewed but did not materialise. This has impacted the gathering evidence.

This evidence was required by the Jobs Fund investment committee to justify the R122 million investment in the EFP. Given the impact of this lack in management capacity, the question arose as to whether this capacity had been provided for in the allocation of resources. Here there appears to be a substantial difference of opinion that will require careful attention as the project moves forward. According to the Jobs Fund, an amount of R4.39m was available for project management/ administration. Ideally for a project this size, you need a project manager. A financial person and project manager were interviewed but did not materialise. This has impacted the gathering evidence.

From the DEA and SANParks perspective the availability of funding for management, particularly senior managers to oversee the project as a whole, was not reflected in the original budgets submitted to and approved by the Jobs Fund. This budget was developed per factory with the assumption that there would be 18 factories. In these budgets R2 981 521 was allocated to equipment for the establishment of each factory. In addition, other installation costs (R4 719 240) and running costs (R6 392 444) were budgeted for. This produced a total budget per factory of R14 093 205. Within this budget was a budget line for “Management and Marketing” that was made up of R420 000 for initial start-up costs and R980 000 for running costs. The total budget for the 18 factories was thus R253 677 690 with a total “management and marketing” budget of R25 200 000. The original budget did not include operational management costs and an implementing agent fee as it was assumed that the implementing agent would do this under existing management budgets. Also missing from the budget were sufficient transport costs for moving materials, provision for vehicles and ongoing operating expenditure. All these factors resulted in substantial underbudgeting for senior management staff and little manoeuvrability within the budgets to reallocate budget to this expense item.
It should be noted at this point that the above figures were, largely, an extrapolation of the original business plan that contained limited details for the establishment of one factory but on which the project was approved. The assumptions, or rather misassumptions, were then significantly compounded by simply multiplying the original costings, covering one factory, to cover 18 factories. The discrepancies between what the Jobs Fund considered available for management costs and the amounts being worked with by the implementing agents suggest that in this process there were also differences in interpretation of the resulting budgets. Despite a well-considered Transaction Advisor’s report, these assumptions and differences of interpretation appear to have persisted throughout the implementation of the project.

Despite these challenges, SANParks interviewees felt that although they had struggled with limited management capacity, they did have sufficient financial and reporting capacity. The one difference of opinion may be that SANParks were treating the financials on a programmatic basis and thus not setting up separate project codes for DEA and Jobs Fund funding. Similarly, the information on jobs was being entered into the WIMS database, the reporting software used by the EPWP programme. This may have resulted in challenges in terms of extracting reports in a format required by the Jobs Fund.

One final point that was raised on numerous occasions was the fact that SANParks was always seen as the interim implementer of the programme. It was always the intention to set up a new trading entity in which to house the Eco-Furniture Programme. This interim status within SANParks meant that there was a reluctance to open new positions or systems within the SANParks structures or to commit SANParks beyond their agreement with DEA. Again, this lack of certainty appears to be the result of misalignment between strategy (in so far as it existed) and the allocation of resources and commitment to realise the strategy.

Ultimately a business model should allow a stakeholder to make an assessment of the integrity and capacity of the governance of an organisation or project. It would also make explicit what value will be created or destroyed through the business or project processes. In the case of the Eco-Furniture Programme there is broad agreement that the programme is creating substantial value. What is less clear is the overall strategy and the governance structures in place to realise and report on the strategy. Both these aspects are succinctly captured in the following extract from the Jobs Fund interview:

“The biggest stumbling block was the lack of strategic clarity and the lack of capacity. And it is not fair to put all of that responsibility on too few people. We recognise the brilliant work that the project has done – the positive aspects. But from Jobs Fund perspective it has become a risk for the Jobs Fund. Factory managers seem unable to provide the evidence required. They are running a factory but that money has come from the Jobs Fund and we have to report on the commitments made in the grant agreement.”

It is this perception of risk, despite the value being created, that has resulted in the Jobs Fund withdrawing prior to the end of the contract. The business model and particularly the strategy, management capacity and performance monitoring on key metrics relevant to funders is thus an area that requires significant attention within these programmes.

**Finance Capital**

The grant agreement between the Jobs Fund and the Department of Environment Affairs specifies that a grant of R122 400 000 would be made available by the GTAC to the DEA for the purposes of implementing the Eco Furniture project. Match funding of R42 795 000 would be made available for the purpose of implementing the Eco Furniture programme. In addition, it was forecast that R35 058 000 would be generated through sales. The outputs and outcomes for the project were set out in the ABC PIMP and included, but were not limited to, the creation of 3025 new permanent jobs and the training of 3025 project beneficiaries. The project started on 1 April 2015 and the grant agreement stipulated that the duration of the project would be four years, with three years for implementation and the final year for reporting and close out.
### Summary of Original Budget

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<tr>
<td><strong>New Permanent Jobs Total</strong></td>
<td>3025</td>
<td>2646</td>
</tr>
<tr>
<td><strong>New Permanent Jobs targets (non-seasonal)</strong></td>
<td>0</td>
<td>131</td>
</tr>
<tr>
<td><strong>New Permanent Jobs targets (seasonal)</strong></td>
<td>0</td>
<td>2515</td>
</tr>
<tr>
<td><strong>Permanent Placements in Vacant Positions beyond project partners</strong></td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td><strong>Permanent Placements in Vacant Positions with project partners</strong></td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td><strong>New Short-term Jobs</strong></td>
<td>0</td>
<td>20</td>
</tr>
<tr>
<td><strong>Completed Internships</strong></td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>*<em>Trained Beneficiaries <em>Balance trained in 2014/15</em></em></td>
<td>3025</td>
<td>1933</td>
</tr>
<tr>
<td><strong>Contact Person</strong></td>
<td>Grant Trebble</td>
<td>Grant Trebble</td>
</tr>
<tr>
<td><strong>Designation</strong></td>
<td>EFP National Coordinator</td>
<td>EFP National Coordinator</td>
</tr>
</tbody>
</table>

**Source:** ABC PIMP

In considering the figures presented, it must be noted that, between the time that the application was submitted, the Jobs Fund approved the Grant and the commencement of the project, a period of four-and-a-half years had elapsed and the net value of the Grant had diminished by approximately 28% due to inflationary pressures. In addition, the exchange rate fluctuations contributed to higher plant and equipment costs. It appears that a motivation was submitted prior to the Grant Agreement being signed for this reduced grant value to be considered in mitigation of reduced job targets; however, this was not approved. This has obviously had significant implications for the project in terms of both capital expenditure and employment targets.

With reference to the table above and based on financial figures as of 31 March 2017 (the latest financial reports that the reviewers had access to) R111 716 000 (91% of the original agreement) had been disbursed by the Jobs Fund. Additional sources of funding and additional sales meant that R161 250 000 (375% of the original agreement) had been disbursed by the Department of Environment Affairs as matched funding and R115 729 000 (330% of the original agreement) had been generated as income from other sources. Over the two years covered by this review 2 646 (87.5% of the original agreement) seasonal and non-seasonal jobs had been created and 1 933 (64% of the original agreement) beneficiaries had received training. It should be noted that a significant portion of the training took place prior to the reporting period and that all beneficiaries received training. In addition, the reporting format does not allow for multiple training per individual to be captured. Some individuals received more than six sets of training, especially those that showed initiative and progressed to more technical positions. The EPW Programme and SANParks are both careful in ensuring proper training takes place.
It is important to note that the Jobs Fund definition of a job within the EFP has changed substantially during this engagement. The EFP was contracted under Indicator 1 (New Permanent Jobs) to provide 3,025 jobs and the initial assumption was that the Working for Water (EPWP) system would continue as the employment model. During the period of negotiation in finalising the Grant Agreement, the employment definition was modified to full-time employment contracts and then one-year contracts. The EPWP system however only allows for payments to beneficiaries through independent contractors who, at most, have three-month contracts. In addition, many of the participants work in environments that are affected by weather and resource (biomass) availability. For these reasons, it became apparent that the contracted definition of employment would not be adequate for the project and that, in fact, many of these jobs were short-term contracts. After extensive discussions, it was agreed that most of these jobs were also seasonal in nature. It was thus agreed in December 2016, that those beneficiaries could be counted under indicator 1.1. which are listed as New Permanent Seasonal Jobs.

Of the R359,970,000 noted in the actual expenditure up to 31 March 2017, an amount of R123,159,000 has been invested in assets – equipment and buildings. This includes a significant investment in the factories themselves, the machinery needed to operate the factories and a small investment in vehicles for transporting the inputs (e.g., timber) and outputs (e.g., planks and furniture) of the factories.

The costs relative to expenditure are detailed in the table below. Government accounts for all capital expenditure in the financial year and does not depreciate the assets which does affect the cost assessments. Using the government accounting model, the following costs can be drawn from the Jobs Fund support to the Eco-Furniture Programme after deducting income from sales:

- Cost per person employed: R 91,286.00
- Cost per person-day: R 533.00
- Cost per desk: R 1,770.00
<table>
<thead>
<tr>
<th>EFP</th>
<th>2015/16</th>
<th>2016/17</th>
<th>Accumulative</th>
</tr>
</thead>
<tbody>
<tr>
<td>Expenditure NRMP &amp; JF incl. roll over</td>
<td>R190 430 000,00</td>
<td>R169 540 000,00</td>
<td>R359 970 000</td>
</tr>
<tr>
<td>Assets/Capital (Incl. buildings)</td>
<td>R67 814 000,00</td>
<td>R55 345 000,00</td>
<td>R123 159 000</td>
</tr>
<tr>
<td>Total Confirmed Contribution from Other Sources</td>
<td></td>
<td></td>
<td>R115 688 000</td>
</tr>
<tr>
<td>Total unique number of people employed</td>
<td></td>
<td></td>
<td>2676</td>
</tr>
<tr>
<td>Cost per person employed</td>
<td></td>
<td></td>
<td>R134 518</td>
</tr>
<tr>
<td>Cost per-person employed at 20% capital depreciation</td>
<td></td>
<td></td>
<td>R97 699</td>
</tr>
<tr>
<td>Cost per person employed less income</td>
<td></td>
<td></td>
<td>R91 286</td>
</tr>
<tr>
<td>Total EFP Person-days</td>
<td>250 031</td>
<td>208 549</td>
<td>458 580</td>
</tr>
<tr>
<td>Cost per-person-day</td>
<td>762</td>
<td>813</td>
<td>785</td>
</tr>
<tr>
<td>Cost per-person-day at 20% capital depreciation</td>
<td>R544,65</td>
<td>R600,65</td>
<td>R570,11</td>
</tr>
<tr>
<td>Cost per-person-day at 20% capital depreciation less income</td>
<td></td>
<td></td>
<td>R317,84</td>
</tr>
<tr>
<td>Cost per-person-day less income</td>
<td></td>
<td></td>
<td>R533</td>
</tr>
<tr>
<td>Total desks</td>
<td>142 720</td>
<td>60 710</td>
<td>203 430</td>
</tr>
<tr>
<td>Cost per desk</td>
<td>1 334</td>
<td>2 793</td>
<td>1 770</td>
</tr>
<tr>
<td>Cost per desk at 20% capital depreciation</td>
<td>954</td>
<td>2 063</td>
<td>1 285</td>
</tr>
<tr>
<td>Other Products EFP No</td>
<td>768</td>
<td>4608</td>
<td>5 376</td>
</tr>
<tr>
<td>Total cubic metres harvested logs</td>
<td>15 787</td>
<td>13 443</td>
<td>29 230</td>
</tr>
<tr>
<td>Total cubic metres planked</td>
<td>8 796</td>
<td>8 250</td>
<td>17 046</td>
</tr>
<tr>
<td>Ha cleared NRMP</td>
<td>2 033</td>
<td>261</td>
<td>2 294</td>
</tr>
</tbody>
</table>

The cost per desk is 2.5 times higher than the sales price (R730,00) which can, in part, be explained due to the following factors not necessarily applied to the private sector:

- Not depreciating assets;
- Processing wild biomass as opposed to plantation timber;
- Lower conversion rates per cubic metre of planks. The private sector achieves a conversion rate between 24 and 26 desks per cubic metre of planks whereas the EFP started at 10 desks per cube and currently average 16 desks per cube;
- An underestimation of the kiln-drying requirements;
- EPWP requiring participants to be previously unemployed which meant all employees being trained from scratch. Also, the need for retraining was high;
- An inability to acquire senior management capacity with sufficient experience in manufacturing and logistics; and
- A lack of similar procurement responsiveness; especially with regard to machine breakdowns.

This comparison is exacerbated when one realises that of the 203 430 desks delivered in the reporting period, 76 134 were delivered by private sector partners at a cost of R440 per desk. This would equate to a factory cost per desk of R2 565 or 3,5 times the selling price.

Of further concern is that the one private sector partner faced the same challenges as the EFP: using the EPWP contracting system and invasive biomass. However, the two factors that contributed to the success of this aspect of the Programme were the management’s capacity and experience and their ability to respond quickly to
procurement requirements. The following table summarises some of the key considerations when trying to assess the efficiency of the EFP relative to the private sector Land User Incentive contractors.

<table>
<thead>
<tr>
<th><strong>Comparison Between EFP and LUI</strong></th>
<th><strong>Inputs</strong></th>
<th><strong>Eco-Furniture Programme</strong></th>
<th><strong>Land User Incentive Contractor</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Biomass availability</strong></td>
<td></td>
<td>Limited networks initially</td>
<td>Inherent networks</td>
</tr>
<tr>
<td><strong>Species selection</strong></td>
<td></td>
<td>Targeted invasive, wild eucalyptus which had low recovery rates</td>
<td>Deliberately targeted poplar with much higher recover rates</td>
</tr>
<tr>
<td><strong>Harvesting expertise</strong></td>
<td></td>
<td>Developed from scratch - experience felling and recovering large diameter trees not available in WfW</td>
<td>Contracted experienced staff from the outset - volumes achieved almost immediately</td>
</tr>
<tr>
<td><strong>Harvesting machinery</strong></td>
<td></td>
<td>Procurement took three years due to learning on the job and the need to procure new equipment</td>
<td>Able to procure second-hand equipment and upgrade when financially viable</td>
</tr>
<tr>
<td><strong>Wet mill expertise</strong></td>
<td></td>
<td>Developed from scratch - as not available in WfW</td>
<td>Contracted experienced staff from the outset - volumes achieved almost immediately</td>
</tr>
<tr>
<td><strong>Wet mill machinery</strong></td>
<td></td>
<td>Based on in-field cutting model</td>
<td>Procured in-line sawmill with correct volume output</td>
</tr>
<tr>
<td><strong>Dry mill expertise</strong></td>
<td></td>
<td>Developed from scratch - as not available in WfW</td>
<td>Partner had over 25 years’ experience and manufacturing team over 10 years’ experience each</td>
</tr>
<tr>
<td><strong>Dry mill machinery</strong></td>
<td></td>
<td>Purchased the correct equipment (new) but did not have the skills to use and maintain it</td>
<td>Used existing machinery and procured a few machines (used) to increase output</td>
</tr>
<tr>
<td><strong>Logistics</strong></td>
<td></td>
<td>Developed in-house using the contractor system which caused significant cost overruns</td>
<td>Outsourced most of the transport but built core business capacity internally</td>
</tr>
<tr>
<td><strong>Training</strong></td>
<td></td>
<td>All teams needed initial and continuous training</td>
<td>Only general workers required training in line with WfW requirements</td>
</tr>
<tr>
<td><strong>Management</strong></td>
<td></td>
<td>Developed skills as the programme evolved</td>
<td>Management expertise already in place</td>
</tr>
<tr>
<td><strong>Procurement</strong></td>
<td></td>
<td>Could take up to 6 months</td>
<td>Orders could be placed within days</td>
</tr>
<tr>
<td><strong>Maintenance</strong></td>
<td></td>
<td>Basic maintenance was constrained by procurement processes</td>
<td>Mostly in-house and, where necessary, procured immediately</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Outputs</strong></th>
<th><strong>Eco-Furniture Programme</strong></th>
<th><strong>Land User Incentive Contractor</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Desks</strong></td>
<td>Higher cost than sales price</td>
<td>As per contracted price</td>
</tr>
<tr>
<td><strong>Job creation</strong></td>
<td>Significant</td>
<td>Not a focus of the LUI contractor</td>
</tr>
<tr>
<td><strong>Invasive biomass clearing</strong></td>
<td>Focus on improved water security and biodiversity enhancement</td>
<td>Harvested financially viable timber and some clearing but little follow-up</td>
</tr>
<tr>
<td><strong>Skills development</strong></td>
<td>Progression of properly skilled individuals into the job market</td>
<td>Skilled people employed from the start. Little or no ongoing skills development</td>
</tr>
</tbody>
</table>
One of the challenges in assessing the financial efficiency of this project is deciding which financial ratios are relevant. If one looks at the EFP purely in terms of the factories themselves then one would expect to see them creating jobs and running at breakeven at the very least. This may be possible if the factories use plantation or commercial timber and operate with a stronger commercial orientation (e.g., less labour intensive, different employment contracts, higher levels of management expertise, etc.). However, the Eco Furniture Factories are very clearly located within an extended value chain and social context that has significant implications for economic performance and thus financial efficiency. These considerations are explored further below in the review of outcomes and in the discussion on mechanisms.

**Infrastructure Capital**

Manufactured or infrastructure capital refers to material goods and infrastructure owned, leased or controlled by an organisation that contribute to production or service provision, but do not become embodied in its output. In the case of the EFP, this would include the factories, the machinery, the kilns, vehicles and offices. Manufactured capital is important for the functioning of the EFP in two ways. Firstly, the manufactured capital enables the factories to produce a range of products and potentially extend into new value chains. Secondly, this capital, if well used, should enable more efficient use of the IAP biomass.

The original plan within the Eco Furniture Programme was to establish 18 factories (two in each province). The original intention was that the EFP would not buy or rent any factories but would use existing government infrastructure that was not being used or was under-utilised. These factories would have to be located near priority IAP infestations, in areas that had high poverty occurrence and a good connection to the electricity grid. In addition, drying facilities (kilns) would need to be available within a distance that made the transporting of wet timber viable. Some of the DEA staff interviewed felt that these criteria should have been implemented and that this would have reduced costs significantly. However, a number of the DEA staff, the SANParks implementers and private contractors suggested that these criteria were unrealistic. To date, only seven of the originally planned 18 factories have been established due to a number of different considerations.

One reason for the reduction in the number of factories was the intervention of the Bargaining Councils. As manufacturers of furniture, legislation requires the EFP to adhere to industry norms and standards in relation to medical aid and provident fund contributions, leave standards and wage rates; this would have added an additional 20 to 25% on the wage rate. However, the parties understood that there is a conflict between the Bargaining Council stipulations and the payment schedules in terms of the Ministerial Determination covering EPWP. The DEA, SANParks and the Bargaining Councils ended up with a partial compromise that guaranteed that no further factories would be opened and that a process would be developed that would allow for cooperation across the sector.

Another consideration was the accessibility of timber and even the seven factories are constrained by the volume of suitable invasive timber that is currently being accessed. The most recent business plan for the EFP acknowledges that “there is a lack of suitable furniture-grade standing timber in some provinces and, where there is a suitable timber, it is only sufficient to supply one factory” (DEA 2017). With very significant investments in the refurbishment of factory sites, rental agreements and the installation of expensive and difficult to move infrastructure such as kilns and large saws, it is evident that a very different business model is being pursued relative to the original plan. This is raising the risk of the manufacturing capital becoming a stranded asset as shortages of IAP biomass become an issue. One response has been to actively identify and get access to alien invasive plant biomass while at the same time significantly increasing the amount of biomass that can be utilised by diversifying the product range. This in turn is requiring further investment in manufacturing capital. As the complexity of these manufacturing chains increases, so do the risks and challenges linked to maintaining the machinery.

The Jobs Fund investment in the EFP benefitted from the previous work done within the programme. The early work done setting up the factory in George had provided an important learning opportunity.
Managers noted, the project “ended up buying the wrong equipment – more small-scale hobby equipment than commercial equipment which couldn’t cope with the volumes they had to soon produce”. This learning resulted in far better investments in infrastructure with the first year of funding from Jobs Fund. Even so the rapid scaling of the project across the country resulted in a number of challenges and inefficiencies in terms of infrastructure development. As another Mill Manager noted:

“The managers are not technically skilled and then different people are coming and selling us machines. Different wood requires different things (e.g. putting the blue gum timber in the machines that are meant for poplar blows the motor). Most of our machines are standing – we buy machines for millions but they just break and then we have to try and get parts from Germany and then everything stops for months.”

A good example seems to be the kilns. According to some of the mill managers and private contractors, the kilns were a very substantial investment and yet some of the kilns were standing idle due to procurement issues on parts and others were very expensive to run or were not properly specified for where they were operating. The issue of procurement was raised by many of the people interviewed with the following comment by one of the private contractors commenting on the inefficiency in the system: “You simply can’t wait 2-3 months for pieces of a machine to be replaced through the procurement processes”.

A comment by one of the private contractors however puts the above into context.

“Private business builds slowly. It takes 5-10 years to build up equipment. You take big chances with lots of sleepless nights. We build up from nothing. Build up with old things and then you realise that the oil is costing the same as the payments would be for new equipment. You learn all the time.”

This learning curve seems to have been condensed with the very large investment (R100 million) in the first year of the Jobs Fund funding in the factories. This has resulted in the very fast establishment of the factories and very quick learning but it has obviously also resulted in some expensive mistakes. Site visits to two of the factories suggested that substantial learning has taken place and that new refinements and in some cases innovation emerging from the experience are being gained. One of the biggest challenges appears to have been the inexperience of the factory managers. Very few have had specific training in saw milling, timber drying or high-quality furniture manufacture. Without these skills, it is unlikely that the manufacturing capital will be used to its full potential.

It is interesting that one of the private contractors with more than 15 years of experience in the sector was very clear that:

“This programme has more than enough machines and it has the right machines. But how you manage these machines is the real challenge. Even a roving team is going to battle to share the skills.”

He went on to note:

“This is a programme that can work and generate the value that has been put into it. The equipment you have here you can run for 10-20 years within safety standards. We can steamline these factories so that one machine that can do the work of 30 people but that is not the point of the EPWP. The biggest investments have been made now.”

These comments from an experienced contractor raise a number of issues around the efficiency, impact and sustainability of the Eco-Furniture Programme from a manufacturing capital perspective. Firstly, the programme has enabled the creation of significant value in terms of the factories that have been established. These factories are viable if sufficient timber can be sourced and as will be seen below, some of the factories have sufficient feedstock particularly it this feedstock is more efficiently used. One of the challenges that was apparent was that some factories were not producing the inputs they required (e.g. sufficient planks) and this was resulting in
very high transport costs as material was moved around the country. A detailed logistics mapping exercise is urgently required to assess the efficiency of moving high volume, low value timber between the factories.

Another issue raised by the quotes above are the trade-offs between using the manufacturing capital efficiently and the impact that this will have on employment. The most recent business plan has acknowledged that with the reduction in the number of factories established and the potential efficiency of the machinery: “the target of 3025 jobs will, if achieved, result in the factories being economically unviable”. This will result either in substantial job losses at the factories or heavy subsidisation of the wage component of the factories. Figures for the current financial year indicate the same outputs as the previous year will be achieved by approximately 1 100 participants. This suggests that consideration needs to be given to project outcomes within the job creation frameworks. More specifically, the intention to maximise job numbers/ labour intensity may be in conflict with the optimum number of jobs required for sustainability. The third alternative, and one that is being actively pursued, is to expand the product range in such a way that lower grade timber and biomass is used for a range of other value-added products. This in turn has the potential to again increase job numbers. It is exactly this kind of innovation that the Jobs Fund and the Value-Added Industries have set as one of their objectives. Given the challenges and uncertainty of working with timber sourced from invasive alien plants, it will require substantial and very risky investments to experiment with potential value chains. As one of the DEA interviewees commented, “there are good reasons that the private sector has not succeeded in this area”. Another viewpoint also expressed in the interviews is that there is potential but it will require very careful integration of the waste streams from one process into the production of another product required by government. Much work is currently being done to explore these possibilities as is evident in the section below on intellectual capital.

Intellectual Capital

Intellectual capital is the systems, processes, patents, and other innovations that enable organisations to create competitive advantage through value chain positioning and the development of new business models. One of the biggest opportunities of the Value-Added Industries has been the development of new intellectual property within the alien plant value chain. This has been driven by a particularly creative and innovative senior management team linked to the DEA NRM department and collaboration with private businesses including Wood at Heart. At times, this creativity appears to have got ahead of the teams working in the field with the realities of operational issues. However, in terms of the purpose of the Jobs Fund in supporting innovation and opening new markets and job opportunities, the achievement in this area requires careful consideration.

Nearly every person interviewed noted the potential inefficiencies of working with alien timber as opposed to commercially produced timber. These challenges are summed up in the following quote from a senior manager within the DEA NRM:

“There are very significant challenges working with alien timber. It starts with the raw material. In the forestry industry the cost of harvesting a cubic metre from a plantation is about 30% of the cost of harvesting ‘jungle timber’. The terrain, quality of timber, diversity in the stand (thick and thin trees), different species all add to the complexity and inefficiency. It is very difficult to come up with straight cut lines. You have bent timber, side branches and tension within the wood. Commercial sawmill operations get a yield of 40-50% of a round log. In some cases we are operating at a 10% yield. So that is a big challenge. But we have to consider back to what we are trying to achieve in terms of ecosystem restoration and reduced fire risk. We can increase our yields if we can get to a secondary offset for the offcuts such as chipping and making board.”

This extended quote is very important for understanding why the Eco Furniture Programme did not limit their focus to the production of planks as originally suggested by the TA report on the project proposal. There was a need to create value in the secondary value chains and a great deal of innovation has gone into this aspect of the factories. Some of the innovations have included: wood-wool for the production of anti-erosion logs and matting, packaging material, woodchips for gardening and for building materials, wood fibre for use in fibre
board, etc. Many of these products are currently being imported into South Africa and the development of these products locally has a wide range of benefits including reduced carbon emissions from transport, job creation in South Africa, supporting innovation within South Africa, responses to local housing challenges, etc. There are also experiments going on with the production of energy from biomass that have the potential to contribute to renewable and carbon neutral energy options particularly in rural areas that are not well served by the existing grid.

Having noted the above, many of the innovations are competing against established cheaper imports and will require procurement specifications that acknowledge the added social and environmental value being generated by the invasive alien plant and labour intensive nature of the local operations. This is already evident within the DoE MoA and some other government contracts but will require more formal and long-lasting guarantees in order to support the development of new intellectual property and other innovations. This innovation however is not always being done efficiently. One example that came up in a number of the interviews was the investment being made in developing fibre cement board. This was originally budgeted for in ABC PIMP and an experienced contractor expressed frustration at the waste of time and money going into ‘reinventing the wheel’. He and others stressed that this product has been developed overseas and that trying to make the board is “like trying to bake a cake with all of the ingredients but not the recipe”. The suggestion was that the relevant technology and know-how should be imported and then government should procure the cheaper, fireproof and environmentally friendly product for use in its buildings. This could include SANParks accommodation and low-cost fire-resistant housing for high-risk areas. This all suggests that significant innovation is taking place but that it requires a far more focused and business minded approach to innovation.

The entire value chain being created by the Working for Water Value-Added Industries is also a very useful space for developing new understandings and institutional arrangements related to the payment for ecosystem services. The potential to create value from ecosystem restoration has been an extremely challenging and elusive goal within the conservation and natural resource management sector both globally and in South Africa. Many studies (Blignaught, Tourpie, etc.) point to the value created by ecosystem restoration and a few initiatives have piloted different approaches in South Africa. One example given by a senior manager in the DEA NRM was the clearing of Black Wattle by a mine in Groblersdal to offset its water use on the mine. There is a need to take these kinds of initiatives to scale and this, in turn, will require innovative agreements with land users and other resource users as well as the generation of value along the IAP value chain. However, at present, due to market failures and the complexity of working with alien plants, the private sector will require significant incentives to move into IAP value chains. One of the big challenges for DEA is to decide whether it will stick to the low innovation/ costly work of harvesting IAP and then hand over the intellectual capital and biomass to private industry or whether the EFP and VAI initiatives will continue to open up and benefit from innovations within the value chain. At present the innovations are not producing the efficiencies required to have significant impact on either IAP clearing, the furniture sector or extended value chains. Without turning the innovations into viable products that are supported by procurement practices, this kind of work is costly and ultimately unsustainable.

**Social/ Relationship Capital**

The social and relationship capital refers to the internal and external organisational networks. These have the potential to create or destroy value through the efficacy of supply chain relationships, community acceptance, government relationships, private sector relationships and customer loyalty.

Due to the vertically integrated nature of the EFP, there are a very large number of relationships that create or destroy value. The diagram below, although somewhat dated and based on activities within KwaZulu-Natal, provides an insight into the complexity of the relationships within the EFP.
Some of the key relationships that were evident through the literature reviews, interviews and site visits include: landowners, harvesting contractors, EFP managers and other staff, beneficiaries, government departments that purchased various products of the EFPs, existing private sector players within the furniture sector, existing government initiatives with similar objectives, other EPWP initiatives and government institutions that work together to implement the EFP.

In a number of the interviews, the complexity of working across government departments and thus departmental mandates was raised both as a significant challenge and a potential strength of the project. There were some interviewees who felt that the EFP did not fall within DEA’s mandate. This is captured in the following quote: “The Eco-Furniture Programme is not part of DEA’s mandate. It is part of DTI’s mandate. Our [DEA’s] job is to deliver the material [IAP biomass] to the door of downstream industries”. A number of other people interviewed, however, felt that by working together across government departments, much more could be achieved despite the difficulties entailed in this kind of collaboration. The support from National Treasury and GTAC in conceptualising how best to structure the initial EFP was one example and the MoA between DEA and Department of Basic Education was another. Significant potential for collaboration between the IDC, DTI and DST was also mentioned. The role that SANParks has played as the implementing agent is another example of collaboration within government. Here a senior DEA official acknowledged that “without SANParks we would be nowhere. But it is not the right institution. And we failed them in terms of management.”

One of the key processes within the EFP is access to very significant amounts of alien invasive plant biomass. This issue was raised in the initial review of the programme with very specific suggestions that access to the IAPs on private land be secured before building the furniture factories in particular areas. Access to the IAPs has been facilitated by the passing of legislation requiring that landowners clear certain categories of alien plants from their land. As one of the DEA NRM senior staff commented, “with the National Environment Management:
Biodiversity Act (NEMBA) at least one of our hands has been untied from behind our backs.” However, as this manager and others noted there are big challenges implementing NEMBA and in many instances, the access to biomass relies on personal relationships. A private contractor that was sourcing timber for the factory at Ficksberg noted,

“There is plenty of feedstock for the next ten years but the challenge is getting access to it. Government has all the legislation in place but it is just not being implemented at all. Timber is thus being sourced through personal relationships but it is difficult. We are being forced to work from hand to mouth with many farmers refusing to allow us access to the timber unless we pay them. But the timber has zero value if it wasn’t for the Eco Furniture Programme.”

In George, it appears that the government privatised many of the forestry plantations with the agreement that the new landowners would remove alien plants and leave the timber at the roadside. This arrangement was supposed to yield 400 cubic metres a month according to one of the managers in the area. However, according to this manager, no clearing is taking place and no timber has been forthcoming from the landowners who benefited from the privatisation of the government plantations. During the site visit to the Ficksburg factory, it was apparent that there was a significant shortage of biomass feedstock with many of the machines currently idle and many of the staff not on site. This was confirmed by the Mill Manager who noted that “[the private contractors] are not currently supplying us with enough wood. There might be trees but they cannot access them”. This issue was receiving substantial attention with a flight over the region having recently identified significant IAPs in the area. But without the enforcement of current legislation, access to this timber will require ongoing relationship building with local landowners. Given the risks to landowners in terms of compliance with existing legislation, water security and fire it appears that more needs to be done to communicate the benefits of the EFP and particularly the removal of AIP biomass from private land.

Another key relationship that was mentioned regularly during the review was the relationship with the private furniture industry. This relationship manifests at multiple levels and has recently been addressed through a formal agreement between the EFP and the SA Furniture Initiative. One of the key tensions in this relationship is the value that is created or destroyed for the private sector by the government funded EFP. There are significant differences in opinion within and across the various role players on the role that government should play in the establishment of, and ongoing support for, the EFPs. The low labour costs and investment in capital equipment enabled by the EPWP programme and Jobs Fund support, creates certain advantages for the Eco-Furniture Programme relative to the private sector. However, for many, this is more than cancelled out by the fact that the EFP is using alien invasive plants with all of the challenges that this introduces into the value chain. It must also be noted that the labour intensive methods used by the EFP creates many more jobs than the private sector would create for the same output. Part of the problem may well have been a communication issue. As one of the Mill Managers noted, many of the private sector players have made negative comments about wage subsidies, poaching staff, etc.

“When the project started, it was started without consulting the private sector to get the story straight, to tell them what was going to be done. That we were not competition to them, and by so doing addressing their concerns. But that was never done, and in hindsight that is what we should have done. So right from the start the attitudes in the industry were totally negative.”

These challenges are currently being addressed through a co-operation agreement that is being negotiated between DEA, SANParks and the South African Furniture Initiative (SAFI). The South African Furniture Initiative represents five furniture manufacturer’s associations and two labour unions. Very broadly, this co-operative agreement seeks to promote the efficiency and economic sustainability of the furniture sector while at the same time creating and retaining the employment and training opportunities available through the EFP. The DEA and SANParks are limited to using alien wood that is cut, dried and planked as part of the EFP. For their part, SAFI will support the DEA and SANParks initiatives within the furniture sector including taking on EPWP beneficiaries.
within their production systems. This appears to be a positive resolution of the issue that have arisen and has the potential to build the furniture sector within South Africa.

A key relationship that has shaped the EFP has been the Memorandum of Agreement between the DEA and the Department of Basic Education for the production and delivery of school desks. This MoA is exactly in line with the mission of the EFP to produce high quality and competitively priced products needed by Government, using wood from invasive plants. This contract has had huge implications for the EFP. As one of the senior SANParks managers commented, the strategy of the EFP was driven by the end product (school desks) and as a result the project was not ready for the huge management and operational expansion required by the initial DBE order for 120 000 desks. This sentiment was echoed by some of the Mill Managers interviewed. There challenges related to all aspects of the value chain from sourcing timber, in fact at times plantation timber had to be used to supplement the alien plant timber, to the manufacture and ultimately, to the delivery of the desks. To date, over 272 000 desks have been produced. Despite these challenges, the making and delivery of school desks was for many people interviewed a highlight of their professional careers and a huge service to often marginalised communities. As one of the ladies involved in the delivery and assembly of desks noted with pride:

“In some schools there were five people to one desk – that is how bad it was. The minute you put those desks you could see the joy in their faces they beamed it was fulfilling work – you felt like you were giving something back to the community.”

This delivery of desks by the programme was very challenging and inefficient. The school lists provided by DBE were out of date and in many instances provided insufficient data to identify or locate schools. The trucks used were not appropriate for the poor quality roads and regularly got stuck. The delivery notes were often not signed requiring multiple trips to get the correct documentation from school heads after delivery. By all accounts, this process was hugely inefficient. However, as one of the interviewees noted, no other businesses were servicing these rural schools.

The relationship between the EFP and the beneficiaries who are engaged as part of the EPWP is a key relational and social dimension of the programme. The creation of jobs and the associated wages are vital for addressing poverty in South Africa. The discussion on Public Works Programmes as a mechanism further on in this report provides more detail on the conceptualisation of these relationships. In the interviews, it was an important value addition of the programme and even those who disagreed with other aspects of the programme, acknowledged the importance of job creation. As expressed by one of the SANParks senior managers, “value lies ... in the social capabilities built like job creation, training and giving people their dignity in work”. Although employment levels fluctuated, between 2300 and 1900 people are employed at any one time. In addition, “the total number we touched of course would be much higher if you count the numbers who were employed, trained and then left and hopefully are employed somewhere else with their new skills” (SANParks senior manager). It was also noted that all these workers were unemployed before the EFP provided them with jobs. This job creation was appreciated by many of the beneficiaries interviewed. As one stressed: “I am glad EPWP are creating jobs”. However, there were a number of challenges too. One that was raised was the pay scales:

“Did the they look at the pay scales? Like the people here they get R2500 per month. It is very little. We are here to employ people but they are creating poverty. People work but there is not enough money to get people out of poverty.”

Another challenge raised related to the contractor model used. On the one hand, it was praised for developing small businesses and a substantial amount of the training was focused on contractor development. One of the mill managers had this to say:

“Contractors are used to employ the staff, and the SANParks/ EFP employs the contractors. The contractors also train the staff up in the various aspects of tree harvesting, planking and factory production work. But this model doesn’t really work in a factory because its arms-length employment
through the contractor, its impermanent – both of which do not create the necessary ‘ownership’ of the production process to make it economically viable.”

There were also obvious challenges regarding payments though the contracting model with both contractors and workers complaining about non-payment. In 2016 the workers at the Heidelberg factory staged a protest because of non-payment. According to the workers they were often expected to work for three or more months before getting paid. In some instances, late payments appear to be the result of contractors not being able to complete the requisite paperwork. In other instances, it was pointed out that the management at a factory level did not fully understand the processes required to successfully process payments. The establishment of a business support unit within the programme at SANParks appears to have resulted in improved management of these administrative functions.

During a site visit, one of the workers approached the researcher assuming he had influence to change the contracting system and requested that “we fall under the government”. This comment was clearly both a recognition of the value of the jobs and income on the one hand and the challenges associated with the lack of a centralised and well-managed payroll that guaranteed monthly payments.

This section provides illustrative insight into a few of the relationships within which the EFP is embedded. Multiple government departments, government and private sector, government and society, contractors and workers are all involved as key stakeholders and have the potential to add or destroy value in the EFP. Substantial work has been done and continues to be done to map, understand and enhance these relationships. This in turn requires champions at senior government level, the identification of the correct trading entities, extremely competent leaders and managers with the time and resources for relationship building and clear strategy on how to maximise the potential of these relationships.

**Human Capital**

Human capital refers to the skills and experiences of individuals. This includes their capacity and motivation to innovate and produce and their ability to collaborate and lead. It also includes the ability of an individual to understand, support and implement an organisation’s strategy.

In the context of the EFP, human capital development would include the development of skills of beneficiaries, the mentoring of contractors and the building and transformation of management capacity. As is evident in the discussion on Public Works Programmes later in this evaluation, capacity development particularly as it relates to enhancing the potential of participants to secure a formal job, is an important deliverable. This focus is reflected in the EFP ABC PIMP with activities dedicated to “training of all new employees” and “capacity development required when new technologies or processes are introduced”. Capacity development is not mentioned in the 2017/2018 business plan of the EFP, however, it would form an important part of the EPWP component of the programme.

The Key Performance Indicator Report on training for 2015/2016 states that the total payments towards training (incl. accommodation, transport, venue hire, catering and wages) were R4 298 841. This paid for 13 867 person days of training and a total of 5 715 persons being trained. Given the number of people employed by the EFP, it is obvious that some people attended more than one training course. The vast majority of the training was funded through the Working for Water programme. Over 80% of the training was focused on vocational and specific tasks related to the EFP. Less than 7% of this training (by person days) was accredited. A brief review of the training undertaken suggests that the majority of the funding was spent on Health and Safety Phase 2 with almost R850 000 spent to train seven people (42 person days) Other substantial training costs went into: finger joint training (R79 182 for 510 person days); contractor development phase 1 (70 738 for 552 person days); first aid level 1 (62 911 for 1587 person days); making walking sticks (R56 289 for 224 person days); and basic chainsaw training (R55 827 for 100 person days). The vast majority of the training appears to have been done internally. In the 2016/2017 KPI Report on training, the total payments towards training increased by R1.5
This paid for 23 005 days of training and a total of 7 799 persons being trained. Again over 95% of this training is reflected as Working for Water funded and almost 90% of the training was vocational and task orientated. Less than 6% of this training was accredited calculated by person day. The bulk of the training focused on induction; first aid level 1; incident investigator; chainsaw operation and health and safety phase 1. Less than a third of the amount spent on contractor development in 2016/2017 was spent in 2016/2017. Once again, the most expensive training (cost per person day) by a significant margin was Health and Safety phase 2.

Many of the people interviewed had personally benefitted from the capacity development opportunities available through the EFP and the Working for Water and Working on Fire programmes. The following are some quotes that illustrate the kinds of capacity that are being built through the programme.

“I went from general worker to machine operator and then I became a contractor... For me it has been quite an experience because I gained a lot of skills. I have certificates for machines. I have got a lot of experience with machines right now.” (Wet mill contractor)

“I was a general worker before, when I started, then I became a machine operator...and then I became a clerk. I can say now I am OK working at the office.” (Office Clerk)

“I started as a fire fighter at Working on Fire. There I got serious training that included management skills. This was sometimes three months. Since I was here I have never had any training related to leadership.” (Manager at private company linked to EFP)

Being a contractor at first it was very challenging because it’s something you are not used to. Having to handle a team of 20 people, having to discipline them, having to pay them making sure they get paid, making sure that they come to work. I have gained a lot of experience; right now I can go and get bigger tenders.” (Wet mill contractor)

Many of the Mill Managers also spoke about the development that they have seen in beneficiaries.

“There was a contractor who got a tender from the DBE to go around fixing the desks. One went on to be a business manager, another one is a teacher, another one opened a hostel, some of them are now doing construction for the Eastern Cape. We helped them to open businesses, helped them with SARS and CIPC so now they are working under their own companies. They started as general workers and we trained them within EPWP.” (Mill Manager)

“I've got so many stories about people, there was a lady, Thembela Tshabalala who started off in Working for Water, and here in the factory she became the driver, and then she became an administrator for the project in Knysna, and then she became an assistant manager, and became a manager, and now she's an assistant cluster manager. So her development has been phenomenal. There are other similar stories. We've got another lady here that can't even read, and write. Now she's a forklift driver. I mean she doesn't even have a driver's license but she's got a driver's license for a forklift, and that's a real skill that she can use to get another job.” (Mill Manager)

Much of the training is done by the suppliers of the various machines in the factories and because the training is done in the factories while performing work tasks, it develops very specific and practical skills. This, for many of the people involved, was seen as a significant strength of the project. However, in the factories such as Ficksburg, that are not close to other timber or furniture industries, one manager noted:

“The skills that we are getting are related only to the planks. If we can get other training that can make our lives better. Those machines there are only so many – this is the only place in the Free State!”
There is however another level of human capacity that was constantly referred to as requiring attention and this was the senior management of the project. Despite many of the interviewees acknowledging the huge effort and commitment of a number of senior managers in SANParks, the DEA, and a number of the Mill Managers, there was a feeling that this level had not had the capacity that it required. As the Jobs Fund noted it is not fair to put this level of responsibility on a few people and in fact it ultimately becomes a risk to the people themselves, the project and the funders. This point is also acknowledged in the business plan for 2017/2018 developed by the DEA:

“Management capacity – the Jobs Fund Transaction Advisers identified the need for specialist support approximately 3 years’ ago; this support was planned to be provided through the Casidra tender process. To-date, there has been no specialist support to the EFP which has left current management in a difficult position. The EFP has met its transformation goals but cannot be expected to provide solid mentorship to its young management team when the key skills required are not available within SANParks.” (DEA Business Plan, 2017)

As has already been mentioned in the section on the business model, there are a number of reasons for this capacity constraint including the uncertainty regarding the best place to locate the project institutionally and the interim status it has had as a SANParks project. Transformation within the timber and furniture sector has also been a very substantial challenge and to some extent, a success of the programme. “There is a push to develop a cohort of black and female talent. If you look at the Heidelberg factory, Ga Rankuwa and Graskop we only have black senior staff, and at Ficksburg there is a black female. Almost all these staff had no previous experience in the wood industry” (Senior SANParks manager). This transformation has not been easy however since the sector (sawmilling and furniture making) have a legacy of being the domain of white males, many of whom would have been educated at Saasveld. As one of the HR managers commented:

“Recruiting female mill managers ... There are literally no women we could find. We had to mentor people with other skills. We had to tap into the skills of white males but we cannot afford those skilled people. And time was a challenge for creating mentoring opportunities.”

This was a major issue for the programme with some DEA officials feeling strongly that the inability to get in the qualified management staff brought into question the whole EFP model. As they noted:

“Entry level mill managers are earning R500k to R600k per annum, but we are expecting to use project managers of EPWP to manage factories at R250k annual salary. We are setting them up to fail and the programme along with them. We need specialist millers in the programme and we need to explore the possibilities of getting support from the private sector as part of enterprise development or other CSI.”

An interviewee at SANParks acknowledged that they “had limitations in terms of appointing due to the salary scales in SANParks”. A senior DEA official stressed that the big challenges are not related to the principle of using IAPs, or working across the value chain, or selling to government; the biggest challenge is management both at SANParks and within the factories. He went on to say,

“Without SANParks we would be nowhere but it is not the right institution. We have failed them in terms of management.”

There have been many challenges related to human capacity development within the EFP. One is that training does not appear to have been given the priority that it required to develop management skills. In addition, although vocational and trade skills related to the factories directly received substantial funding, it did not come close to the two days per person per month required by the EPWP. One of the challenges that was often cited was the trade-off between meeting production targets and freeing people up for training. As one of the HR managers noted:
“In the EFP it is difficult because of production. When you need to take people out of the factory it is difficult. We do have a training matrix but it is a constant fight with production. There was little space in the budget to have extra people so some could be working and some on training. The targets need to take training into consideration.”

At the level of project management within SANParks, there were many references to the enormous level of responsibility that a few people were expected to carry. The jobs fund alluded to this in quotes earlier in this review, senior staff in the DEA have acknowledged that they failed to put the requisite management capacity in place and a number of the interviewees spoke of emotional breakdowns in senior project managers. Although not linked to capacity development, this is a very real example of destroying human capital and requires urgent attention. In correspondence related to the project, it is noted that:

“As per the request from the Jobs Fund, the EFP has put in place the following measures to address the capacity constraints:

1. Budget has been allocated by DEA in order to contract:
   a. A Finance Manager – interviews have taken place and contract negotiations are pending budget transfers;
   b. A Business and Systems Manager – to be advertised;
   c. A Health and Safety expert – to be advertised;
   d. A Logistics Manager – to be advertised or contracted through a Framework Agreement;
   e. Harvesting and wet mill expertise through a Framework Agreement; and
   f. Dry mill expertise through a Framework Agreement.
2. Internal training and mentorship is in place across all the factories.
3. Budget has been allocated to improve systems.

Unfortunately, the agency contracted to engage the above-mentioned skills and services has been unable to continue with the project and another vehicle is being considered. It is anticipated that the above-mentioned contracts will be in place by the 1st of November 2016.”

It does not appear that these positions were filled, a point made strongly by the Jobs Fund participant during the interview. Part of the challenge in terms of bringing in this kind of capacity is the short-term focus within the EPWP under which this project is housed. As an experienced contractor working in the private sector noted:

“Nobody will come to work with us with the skill sets that we need on one-year contracts. Everybody is in limbo. Many of the workers are on one-month contracts! By extending the contracts you get much better skills. Industry standard for a high-quality sawmill manager would be R65 000 per month and we are paying less than quarter of this in EPWP. An alternative is to build the skills internally but then you need to invest and people must be prepared to learn. As we develop the skills then they are being poached into the industry – but that may be part of the value that the programme is creating for the sector but this needs to be recognised. The reality is that your production can drop 50% as an experienced person leaves and a new person needs to be brought.”

Despite the challenges associated with the short contract terms, the EFP has introduced more stability than many of the extended public works programmes. A senior SANParks manager noted that the factories provided ‘continuous job creation rather than temporary employment’ and this allowed for progressive skills development. This development is difficult to track since the EPWP skills matrix and reporting frameworks are not set up for this ongoing and progressive skills development over a number of years. It appears however that many of the people interviewed and working in the factories had benefitted from this kind of skills development.

A final point on the creation of human capital related to the long-term value created. This focuses not only on the immediate job numbers but on the jobs created more broadly in the sector and peoples’ ability to get jobs based on their capacity development within the programme. This was clearly expressed in the Jobs Fund interview as follows:
“The project has to be able to track the beneficiaries. We recognise the huge challenges of tracking people but it has to be done to justify this kind of work. This will require investment into the tracer studies. The projects have to make this investment if the Jobs Fund needs this evidence beyond project funding frame. A two-year follow-up process is required. Recognise that this is very challenging but it does require attention.”

The general sense amongst those interviewed was that in terms of operations, sufficient training was done to keep the factories operational. In fact, some of the management reports even hint at the training increasing efficiency to the point where additional staff were not required to meet the production demands being placed on the factories.

However, the lack of management capacity at the factories and the inability of these managers to access or make time for professional development resulted in both inefficiencies and reporting challenges that have placed the entire programme at risk. Even more concerning has been the inability within the current structural arrangement to employ senior managers who have the ability and autonomy to run the EFP.

Natural Capital

There is a broad consensus in the literature that natural capital includes resources, such as timber, fish, water, minerals, etc., which can be used by humans to provide a return. In addition to these resources, there are a number of processes from which humans benefit that are provided by nature, which some sources define as “ecosystem services”. How we use natural capital and how we maintain and restore the ecosystems on which these resources depend has a lot to do with the kinds of processes that we implement within our economies. Process models such as industrial symbiosis and circular economies are increasingly being implemented to increase the efficiencies and reduce the impact of resource use.

As has been noted in the contextual considerations natural capital, and particularly the impact that IAPs have on catchments, biodiversity, soil quality and particularly water resources, has been central to the development of the EFP. It is estimated that IAPs cost the South African economy R6.5 billion annually (2008 figure) and that these losses could have been as high as R41.7 billion without any IAP control measures. According to one DEA official, it was recognised as far back as 2007 that government alone did not have enough money to address IAPs and that a multi-pronged approach would be needed to tackle and finance IAP clearing, follow-up and rehabilitation. For many of the people interviewed, this protection and restoration of natural capital was the overriding goal of the EFP. In particular, there was an assumption that “the factories should generate enough money so that they can contribute to the cost of restoration”. Others were less ambitious and acknowledged that even if the factories did not operate at a financial surplus they created sufficient positive environmental benefits to justify their existence. This section considers some of the natural capital value creation.

In considering natural capital, it is important to consider both the internal factors i.e. how the operational approaches within the EFP contributed to natural capital protection and restoration and external contextual factors that include the priorities such as whether the harvesting areas are in important water resource areas. A number of variables are significant. These include: the investment in the eradication of IAPs and the areas cleared; the ongoing follow-up and restoration work; and the location of IAP harvesting in terms of priorities such as water production, fire risk, agricultural land and biodiversity. In a recent Masters study (Mander 2017) on value-added industries, a research approach was used that ranked various value-adding industries working with alien invasive plants. This study found that three enterprises reviewed that received high government investment (i.e. the Eco-Furniture Programme at Farleigh and Durban and the Eco-Coffin factory) scored highest in terms of natural capital value addition. Of particular interest is the finding that only these initiatives of the ten reviewed scored at all in terms of follow-up and restoration of natural capital. The study suggests that “the three government owned enterprises, not being bound by a profit-making objective, were able to focus more on the natural capital restoration benefits of their raw material supply chain” (Mander 2017).
Although the broader NRM and particularly the Working for Water programme clears approximately 170 000 ha of IAPs per annum, the figures for the EFP are far more modest. The consolidated figures for 2015/2015 suggest that 2 033 ha were cleared resulting in a harvesting of 15 787 m$^3$ of logs. In 2016/2017 only 261 ha were cleared resulting in 13 443 m$^3$ of logs being harvested. The significant reduction in area cleared relative to the amount of timber harvested suggests that larger trees are being much more specifically targeted. What these figures also make clear is that the EFP only contributes approximately 1% of the total clearing of IAPs under the NRM programme. In addition, the areas in which this clearing is taking place may not be in strategic priority areas given the range of variables that need to be considered in the establishment of the factories.

Evident in the interviews were a number of different perspectives on the potential and methods for value creation with regard to natural capital. In no particular order, the following issues were raised:

“Market failures make it difficult to capture the value.” (Senior DEA professional)

“We need to plank in the field. There is a lot of waste and it would be better to leave it in the field.” (Factory manager)

“It is expensive to take out the timber. It has zero value if it wasn’t for the Eco Furniture Programme.” (Harvesting contractor)

“From a tree that I cut down I lose 50%. Then I cart it into the mill in log form and lose another 75% at the mill.” (Harvesting contractor)

“You will need to subsidise the harvesting and follow-up. In summer the regrowth is so fast you need more teams. Every time 10% comes back so it is a long-term process.”

“The private sector realised that it was not going to make any money of the harvesting. Rather you have to look at all of the options for adding value throughout the value chain.” (LUI participants)

Many issues are evident in the selection of quotes above. The first is that natural capital gains are often not accounted for. Increases in water flows, enhanced biodiversity etc. are not easily convertible into financial value and particularly not financial value that will then be translated into payment for the service provided. The second point is that it is expensive to harvest IAPs relative to using plantation timber. This means that without some subsidisation or legislative enforcement, the cost of harvesting IAPs outweighs the financial benefits. Thirdly, the perception of off cuts or any biomass below a certain diameter as waste, makes it hugely inefficient to remove IAP biomass from the field. This in turn diminishes the potential natural capital value creation as fire risk etc. is not significantly diminished. Fourthly, the maintenance of teams for follow-up activities is costly and will be avoided by commercial operations focused on profit.

Despite these challenges, many of the people involved recognised that by extending value chains into higher value and ‘waste’ utilisation processes, there was potential to cover a significant proportion of the cost of IAP clearing.

Missing however from all of the above is direct payment for ecosystem services. If, as has been estimated, IAPs cost the country billions of rands per annum, then it makes sense to establish institutions to incentivise IAP clearing and subsequent restoration work. In a sense, the NRM programme and particularly the Land Users Incentive scheme within NRM does exactly this. By providing some government support that has to be matched by private businesses or landowners, ecosystem restoration can be cross subsidised. There is no doubt that this approach is leveraging significant funding into natural capital. However, the LUI scheme does require very substantial investments by the private partners and if they cannot secure the direct value being created, they may well withdraw or avoid the scheme. What is not yet operating very well in South Africa is a broader economy built on payments for ecosystem services. In this instance communities, non-profit organisations and even private business could get paid to protect and restore ecosystems that generate significant natural value. Many
studies have been conducted on this concept both internationally and within South Africa but no viable system is currently in place. This severely diminishes the potential to develop an economy and thus create jobs linked to natural capital.

The above point is clearly made by a recent CSIR study (Stafford 2017) which notes that the Net Present Value (based on 2015 prices and a discount rate of 6% over 25 years) for water yield by IAP clearing may be as high as R30 billion rand. The cost of IAP clearing and follow-up would be R24.4 billion. The report points out that these costs are notably less than the value that can be generated from value-added products (including electricity and heat) and ecosystem services. “However, their value will need to be incorporated into government decisions and accounting mechanisms, with established payment for ecosystem services, in order to improve decision making and incentivise the clearing of IAPs” (ibid.: p.30).

The challenge for the value-added industries and the EFP in particular, with regard to natural capital value creation, is to distinguish between the value created by simply clearing and leaving the biomass in situ on the one hand and removing it as a feedstock into VAIs. The clearing is largely the work of the Working for Water programme while the removal and value addition is the work of the VAIs. Until the VAIs start to generate significant surpluses to subsidise the cost of alien clearing, it is perhaps not justified to include the natural capital value creation of IAP clearing against the VAIs. Viewed this way, the VAIs need to be able to demonstrate the added environmental value that they create post clearing. Thus, for example, the added environmental values of decreased fire risk with its associated risk of soil erosion and siltation of dams needs to be calculated against the alternative of leaving the biomass in the field. Similarly, the ability of biodiversity to recover in an area where the IAPs have been cleared and removed as opposed to cleared and left in situ. There is also an argument to be made for the comparative reduction of environmental impact of IAP timber relative to alternatives (fuel sources, plantation timber, chemical feedstocks, etc.) These kinds of distinctions were not evident in the reporting on the project or the interviews. A review of literature related to the value-added Industries in general is contained in Appendix 5 but did not provide sufficient detail on the EFP specifically to quantify natural capital value creation post clearing. This review has therefore been unable to quantify the natural capital created by the EFP through the removal of IAP biomass after clearing. This is not to suggest in any way that positive environmental externalities are not being created by the project. In fact, almost every person interviewed highlighted the positive environmental impact of the programme. The challenge is that the current costs of running the VAIs including the EFP means that no surplus is currently generated to subsidise the IAP clearing programmes. The implications that emerges in terms of efficiency, impact and sustainability is that, were the project viable and the environmental externalities positive, it would not be necessary to do complex calculations and comparisons of natural capital.

However, in the current context where the project in its current form is not viable, either some hard work needs to be done to quantify the environmental (and social, intellectual, etc) efficiency, impact and sustainability of the EFP or it needs to be made viable through greater financial capital value creation.

Some Concluding Thoughts on the Outcomes of the EFP

The EFP has been set up to achieve a number of things including:

- Generate income to offset some of the costs of IAP clearing;
- Establish infrastructure to manufacture furniture (and other products) for government at a cost and quality that is competitive;
- Develop innovative processes and products that add value to IAP biomass and thus have the potential to create new jobs;
- Build relationships across government departments and other stakeholders that support sustainability (the EFP brings environmental, social and economic dimensions together);
- Provide income for resource poor individuals and support capacity development that enhances peoples’ employability; and
• Enhance environmental quality and ecosystem services through the restoration of areas infested by alien invasive plants.

These six bullet points (corresponding to the six capitals of the Integrated Reporting Framework) present a number of challenges to a simple assessment of efficiency, impact and sustainability. In terms of financial capital, it is extremely clear that the programme is currently costing a substantial amount of money and the intention to generate a surplus or at least break even is not being realised. On its current trajectory, the programme is clearly not financially sustainable. However, for every other capital there were a diversity of viewpoints on the successes and challenges of the programme. The factories were described by some as viable and important contributions to a range of industries (furniture, erosion matting, mulch etc.) while others saw them as inefficient and potentially stranded assets as feedstocks diminished or structural/institutional challenges constrained their ability to operate effectively. The enormous creativity and innovation associated with the EFP were also commented on by nearly all of the people interviewed. For some, this represented exciting opportunities to be pursued as a way of making the factories viable, while for others it moved out of the mandate of the DEA, encroached on private business and resulted in over extension of staff and institutional systems. The relationships within government has enabled the EFP to secure substantial outlets for its products. At the same time, the need to work across departments results in significant challenges. Similarly, for some the EFP represented an important way to supply often marginalised sector of society (e.g. rural schools in the Eastern Cape or resource poor communities needing affordable coffins) with affordable quality products. Others viewed this as government crowding out the private sector resulting in negotiated settlements or ongoing tensions. Capacity development was appreciated by those who had received it and acknowledged as an important part of contributing to the furniture sector. However, there were challenges related to the focus of the training, the ability to set up develop higher level skills and the amount of time that could be allocated to training in the contest of production pressures. The notion of environmental value was also understood in very different ways. For many, the value of the EFP was linked directly to the clearing of IAPs and thus it was automatically assumed that the programme contributed directly and significantly to water and biodiversity. However, a careful examination of the actual area cleared by the EFP reveals that it is not material. Rather, other projects are clearing the IAPs and the EFP is providing an experimental and innovative space for taking the biomass and turning it into value-adding products. It is evident that innovation in the creation of additional value streams through the use of smaller diameter timber and the use of waste as feedstock for secondary products has the potential to add to all six capitals. In addition, addressing some of the mistaken assumptions made in the planning phase, enhancing the strategic focus and business model, building capacity within the programme and addressing challenges associated with the operational structure has the potential to unlock value across all of the areas considered above. In order to understand better what is enabling or hindering the outcomes we turn now to a consideration of some of the mechanisms evident in the literature review and interviews.

Mechanisms
Mechanisms can be referred to as the underlying ideas about how change will be achieved in the world around us. As such, they refer to the social or psychological drivers that ‘cause’ the reasoning of actors and thus influence the way in which projects are structured and implemented. A focus on mechanisms may enable getting beneath the formal structures and symptoms to reveal the underlying ideas, interests, incentives and institutions that enable or frustrate change. The extent to which these mechanisms actually shape the outcomes of a project is strongly influenced by the context within which there are enacted. Thus, for example, the ideas that particular actors have about the role of the state in development will influence how these actors seek to structure and implement development initiatives. Other actors may have different ideas about the role of the state. As these ideas are brought to bear in a particular context, various aspects of this context may support or undermine the impact of these ideas. The following section outlines some of the mechanisms that were
identified through the literature review and interviews within this study. These are the role of government in
the context of the ideas, interests, incentives and institutions associated with the notion of a developmental
state; the social, economic and political ideas informing the adoption and development of public works
programmes; and the social, economic and environmental ideas informing and shaping sustainability transitions
and more specifically, the notion of a green economy or greening the economy. It must be noted that these
mechanisms often represent very different view points, paradigms, theoretical positions etc. and are therefore
not necessarily theoretically coherent either within a particular mechanism or across mechanisms. This lack of
coherence and diversity of perspectives has a number of implications, both positive and negative, for the
potential of the EFP to develop a clear and powerful strategy and focus.

The Role of Government and the Developmental State
A broad range of policy documents and strategic plans have informed the work of the South African Government
since 1994. These include the Reconstruction and Development Plan (RDP), the Growth, Employment and
Redistribution (GEAR) strategy, AsgiSA, the National Growth Path (NGP), the National Development Plan (NDP)
and most recently, an as yet contested and poorly defined notion of ‘radical economic transformation’. Across
all these policies and strategies, the South African government has broadly defined itself as a ‘developmental
state’ committed to the structural transformation of the economy to deal with the legacy of apartheid and
colonialism. The government aims to do this by stimulating economic growth while simultaneously building a
more cohesive, equitable and sustainable society. The National Development Plan has a chapter dedicated to
the notion of a ‘capable and developmental state’ and describes a developmental state as follows:

A developmental state brings about rapid and sustainable transformation in a country’s economic and/or social
conditions through active, intensive and effective intervention in the structural causes of economic or social
underdevelopment. Developmental states are active. They do not simply produce regulations and legislation. They
constantly strive to improve the quality of what they do by building their own capacity and learning from
experience. They also recognise the importance of building constructive relations with all sectors of society, while
insulating themselves from capture by sectional interests. (409)

The developmental state discourse evolved internationally in opposition to the “Washington Consensus”, which
favoured markets as the driver of economic growth. By contrast, the Newly Industrialising Countries (NICs) and
subsequently the Asian Tigers achieved spectacular growth through significant state intervention. In Asia, the
developmental state was recognisable through its commitment to structural transformations of the economy in
ways that supported sustained growth and development usually through a focus on industrialisation. This
structural transformation was driven through a strategic focus by the state on proactively developing selected
industry sectors. These sectors were often carefully selected based on the potential for import substitution and
the potential for developing significant exports.

At the time, the South African based academic Adrian Leftwich consolidated much of the research into the Asian
model of economic development in the mid-1990s in a publication entitled ‘Bringing Politics Back In: Towards a
Model of the Developmental State” (1995). At around the same time, Thabo Mbeki speaking at the Development
Planning Summit (1995) noted that “Our fundamental challenge ... is to construct a truly developmental state”.

As President ten years later, Mbeki again emphasised in his State of the National
Address (2004), “the advances we must record demand that we ensure that the public sector discharges its
responsibilities to our people as a critical player in the process of the growth, reconstruction and development
of our country” (cited in Swilling, Khan, van Breda, & van Zyl 2008).

This strategic orientation is sustained through a range of supporting features within a development state. Nentshitenze (drawing on the ANC 2007 Strategy and tactical document) describes these as including the following:

- **Strategic orientation**: development strategy and programmes based on high growth rates, restructuring
  of the economy and socio-economic inclusion;
- **Ideational capacity**: leadership in defining a national vision and mobilising society to take part in its implementation, with effective systems of interaction with all social partners;
- **Organisational capacity**: state structures and systems that facilitate the realisation of a set agenda, with appropriate macro-organisation of the state;
- **Technical capacity**: translation of broad objectives into programmes and projects and capacity to ensure implementation, with proper training, orientation and leadership of the public service (Netshitenzhe 2011).

The extent to which government is able to control the agenda of development within a country is obviously a highly contested area. In describing the Developmental State as it emerged in Asia, Swilling et al. noted that:

> The Developmental State is characterized by a capacity to coordinate the efforts of individual businesses by encouraging the emergence and growth of private economic institutions, target-specific industrial projects and sectors, resist political pressure from popular forces and, at times, also brutally suppressing them. (Swilling et al. 2015)

Given our history of ‘brutal suppression’ by government prior to 1994, there is a strong commitment in the Constitution to build a ‘social compact’. This is understood as a collective agreement between social partners including government, business, labour and civil society. This social compact needs to focus on how to address major issues faced by South Africa through the collective action and contribution of the social partners. The roles of these social partners have been emphasised in the different policy approaches in different ways. Broadly, the state is required to invest in social and economic infrastructure and to ensure the extension of a social wage to the poor; business should expand its investments in training and production; and labour should recognise that wage demands should be matched by labour productivity (see Social Cohesion Summit declaration). Fine (2016) pointed out that the developmental state and social compacting paradigms have evolved in different parts of the world for different reasons, and have seldom co-occurred. However, both have been central in SA policy. This integration of the idea of a development state with the notion of a social compact is very evident in the National Development Plan in sections such as those listed below.

> The approach of the plan revolves around citizens being active in development, a capable and developmental state able to intervene to correct our historical inequities, and strong leadership throughout society working together to solve our problems.

> A developmental state builds the capabilities of people to improve their own lives, while intervening to correct historical inequalities. Neither government nor the market can develop the necessary capabilities on their own.

> Long-term growth and investment requires a shared vision, trust and cooperation between business, labour and government. (National Planning Commission 2012: 43)

In order to support this social contract, a number of large funds such as the RDP fund, the Municipal Infrastructure Fund, the National Skills Fund, the Poverty Alleviation and Jobs Summit Fund, the Extended Public Works Programme, and many others were developed. The Jobs Fund is one such fund. In the State of the Nation Address in 2011 President Zuma announced that government had “declared 2011 a year of job creation through meaningful economic transformation and inclusive growth”. He went on to state that the focus would be on six priority areas namely “infrastructure development, agriculture, mining and beneficiation, manufacturing, the green economy and tourism”. In order to support this job creation, “a jobs fund of 9 billion rand over the next three years to finance new job-creation initiatives” was announced. According to the Jobs Fund web site, the objective of the Jobs Fund is to co-finance projects by public, private and non-governmental organisations that will significantly contribute to job creation”. In order to do this, “the Jobs Fund seeks to operate as a catalyst for innovation and investment in activities which directly contribute to sustainable job creation initiatives, as well as long term employment creation.”
The latest ‘Economic Transformation Discussion Document’ presented at the 2017 ANC National Policy Conference continued this line of thinking by suggesting that “an effective democratic developmental state and efficiently run public services and public companies are necessary instruments for widening the reach of radical economic transformation enabling the process to touch the lives of ordinary people”. This same document has an entire section entitled ‘Defending the ANC’s vision of a developmental state’ and states categorically that “inclusive growth can only be delivered by the programmes of a democratic developmental state”. In this latest discussion document, the notion of the developmental state is mentioned 22 times in a twenty page document. It is interesting that other than tagging ‘democratic’ onto the front of some of these references, the notion of the social contract is mentioned only once in the economic transformation document. It is clear that the ANC intend for the developmental state to be the driving force for radical economic transformation.

There are many critiques of the underlying political-economic theory informing the notion of a developmental state and it is beyond the scope of this review to examine this level of argument. What is more useful to examine here is the notion of ‘crowding out’ and ‘crowding in’ with regard to the role of the developmental state. One meaning of the term ‘crowding out’ relates to the provision of a service or good by government that would otherwise be a business opportunity for private industry. Here the risk is that the government programme competes directly with private industry and because of certain advantages (such as access to grants and low interest loans or the ability to pay below minimum wage) has significant competitive advantages, thus outcompeting or crowding out private business. Furthermore, using taxpayers’ money to develop a competitive advantage over private firms may result in closure of private companies. The risk here is that reduced business may impact on the tax base on which government partly relies to fund its activities. This in turn may lead to government borrowing more which has the potential to raise interest rates, thus further crowding out private enterprise as they suffer a reduction in access to capital. The South African government and the ANC have thus been at pains to reflect the potential of their programmes to ‘crowd in’ private investment (NDP 2012 and ANC 2017). By way of example, the latest ANC policy discussion document on economic transformation states that: “More private sector investment will be stimulated, or crowded-in, by government and public sector infrastructure investment, as well as public-private partnerships, if confidence-building measures are prioritised.” (ANC Policy Discussion 2017)

The argument here is that the development of infrastructure reduces the cost of doing business and the increase in economic activity, including jobs, creates an opportunity for business to increase their operations and profitability. Thus, the private sector ‘crowds in’ due to decreasing costs and increasing consumer demand as the customer base increases.

The notion of a developmental state provides the rationale and institutional structures for government to invest significantly in the Eco-Furniture Programme. The involvement of the Department of Environmental Affairs and the South African National Parks, both government institutions in the establishment of furniture factories, draws strongly on the idea that government must play an active role in transforming the economy. In this sense, the EFP can be seen as a significant and justifiable contribution to the project of a developmental state. Similarly, the mandate of the Jobs Fund to support the development of innovative economic projects that unlock sustainable jobs in the formal economy is supported by the underlying assumptions of the developmental state. As an example of a developmental state initiative, the EFP has contributed to transformation in a sector that is identified in the Industrial Policy Action Plan 2017/2018-2019/2020 (DTI 2017) as a sectoral focus area. The focus areas include both ‘furniture competitiveness’ and ‘furniture market access development’ (ibid.: 40). In this sense, a number of the people involved in the EFP consider it a significant success or at the very least an important site for innovation and learning.

There were however a number is issues raised relating to the notion of ‘crowding out’ that rely partly on a more neo-liberal interpretation of the role of the state. Here the underlying idea is that the state should play a minimal role in terms of creating the legislative frameworks, social capacity and infrastructure to support business and not get involved in business ventures itself no matter how developmentally focused. This reaction can be seen most directly in the tension with the SA Furniture Initiative but was also evident in the initial review of the programme proposal and is evident within DEA itself where some staff members interviewed expressed the
viewpoint that the EFP was ‘crowding out’ the private sector in some areas of the EFP value chain. These tensions suggest that a deeper discussion on the underlying ideas, interests, incentives and institutions that inform and shape the theory of change associated with the EFP would help to clarify and strengthen the programme.

More specifically it is suggested that the notion of ‘crowding out’ be critically examined as it is evident that within the EFP the government funding is generating significant value across the six capitals over and above the value generated by the private sector. Many of these differences are captured in the comparison between the EFP and the LUI contractor outlined earlier in this review. Some of these differences reflect significant value creation including the development of skills, the commitment to transformation in management positions and the sustainability of ecological benefits from AIP clearing. There are however a number of areas in which the EFP eroded value including cumbersome internal procurement processes that had a negative effect on productivity, and challenges with the commitment and productivity of staff who had few performance incentive relative to private contractors. At present and within this review most of the comparative advantage between the EFP and private industry has been qualitatively listed. There is a need to develop the tools to quantify value creation across the six capitals. This is work that is currently being developed internationally and could be included in a follow up study. At present it must be noted that the value being created across the six capitals by the EFP makes the arguments around ‘crowding out’ far more complex than stated from the neo-liberal perspective that seeks to limit state intervention. It must also be noted that if government is going to recognise and support the value being created through interventions such as the EFP it will require more sophisticated ways of incorporating multiple value considerations in public procurement and public and private reporting.

The tension between the notion of the developmental state as originally conceptualised (i.e. a strong state with high levels of expertise able to drive economic and social development) and the current realities of a government that has been hollowed out by cadre deployment, the claims of state capture and the resultant lack of confidence in both government and the state-owned enterprises limits government’s capacity to fulfil its developmental role. At the same time, the social compact represented by the levels of trust between government, business, labour and civil society is currently at relatively low levels. In this context, significant attention is going to be required with regard to the ability of government to drive the EFP. This is partly reflected in the initial tension and subsequent dialogue and immanent signing of an agreement between DEA, SANParks and the South African Furniture Initiative. In the concluding section of this evaluation, the relationship between the context (including the impact of IAPs, the decline of the furniture sector and the challenges of poverty), the perceived efficiency, impact and sustainability of the EFP and the underlying assumptions about the developmental state and social compact will be drawn together. There are, however, a number of other mechanisms that are having a profound impact on the perceptions of different people and institutions related to the EFP.
Public Works Programmes as a Model for Poverty Alleviation

The History of Public Works Programmes

Public employment programmes were initiated by the US government in response to the Great Depression of the 1930’s. In South Africa, these programmes catered for ‘poor whites’ and by 1932, 18% of the government budget was being spent on such programmes ultimately benefiting 230 000 whites, many of who were subsequently absorbed into the mainstream economy when the economy improved (CDE 2003 cited in Vaughan 2016). The core logic of these programmes was that where “business was not able to expand, the government must take up the slack” (Heilbroner 1999: 275).

Public Works Programmes have evolved to become frequent state interventions under conditions of “one-time or repeated co-variate shocks” (such as droughts, floods, other natural disasters or economic crises). In South Africa during the 1980s, public works programmes were implemented in response to drought, rising unemployment and political unrest. These short-term interventions continue to be implemented at a global level with recent examples including the 2008/2009 Chinese economic stimulus program; the 2008 European Union stimulus plan and the American Recovery and Reinvestment Plan of 2009.

By the 1990s however, corresponding with the rise in the developmental state discourse outlined above, discussion in South Africa shifted to longer term interventions. Within the Reconstruction and Development Plan national public works programmes were seen to have the capacity “to provide much-needed infrastructure, to repair environmental damage, and to link back into … the industrial and agricultural base…” (RDP 1994 cited in Vaughan 2016). Although the National Public Works Programme (NPWP) was subsequently shelved along with the RDP, some of the programmes such as the Working for Water programme (launched in 1995) continue to make a significant contribution to environmental restoration. Despite the commitment evident within the RDP to transformation, many of the socio-economic power structures, including the coalition of interests related to the energy, mining and related manufacturing value chains, were left largely intact as part of the negotiated settlement just prior to and after the 1994 elections. This significantly weakened the state’s ability to restructure the economy and led to a continuation of largely neo-liberal economic policies that may have contributed to persistent poverty and inequality. A number of macro-economic policies were subsequently developed that sought to address the economic and social issues in South Africa. GEAR, introduced in 1996 sought to stimulate faster economic growth which it was argued was needed to provide resources to meet social investment needs. However, despite some achievements, private investment, job creation and GDP growth indicators were disappointing. At the Growth and Development Summit in 2003 a large-scale public-works programme with the aim of creating one million work opportunities over a period of five years was launched. This focus on job creation was carried over into AsgiSA, launched in 2005, with ambitious targets to reduce poverty and halve unemployment by 2014. By 2008 the Extended Public Works Programme had exceeded its target of 1 million jobs and a Phase 2, which aimed to create 4.5 million work opportunities over the next five years (i.e. by end March 2014) was launched. With the fall of Thabo Mbeki, AsgiSA was replaced by the New Growth Path which was announced by Jacob Zuma during his State of the Nation address in 2010, the same speech in which he declared 2011 South Africa’s “year of job creation”. The NGP aimed to create five million jobs by 2020 and to bring the unemployment rate down to 15%. The National Development Plan, released in 2012 by the National Planning Commission, has high level targets including “a fall in the strict unemployment rate from 25% to 14% by 2020, and to 6% by 2030. The NDP goes on to note that even if these ambitious targets are met, public employment strategies will remain an ‘essential element’ of any employment strategy and ‘will be needed in large numbers over the entire period’ (i.e. until 2030). At the time it was estimated that a GDP growth rate of 5.4% per annum would still require a contribution of 431 000 EPWP work opportunities per annum up to 2030 while a growth rate of 3.3% would require 5.5 million work opportunities per annum up to 2030. As we have seen the growth rate is far below even the 3.3%. Phase 3 of the EPWP (2014-2019) has set a target of 6 million work opportunities to be created over the five years. However, it is not only these quantitative targets that are important. In order to understand the ideas, interests and institutions that enable or hinder the success of the
EPWP it is as important to understand the qualitative impact that various stakeholders envisage for the programme.

Evident within the very brief history of the public works programmes above are the three key contributions that public works programmes are expected to make. These are:

1) The provision of temporary income or consumption smoothing to people in need;
2) The addition of value to public assets through the work being done; and
3) Human development (through providing training or work experience to individuals).

Point 3 above has been linked to the notion of ‘graduation’ which is described as the movement “from a position of dependence on external assistance to a condition whereby [recipients/participants] no longer need these transfers, and can therefore exit the programme” (Sabates-Wheeler & Devereux 2011 cited in McCord 2012). This notion was initially (circa 2003) understood in South Africa as a graduation from the ‘second’ to the ‘first’ economy. By 2011, this dichotomy was no longer informing ‘graduation’ within the EPWP as the scale of unemployment within the mainstream economy became the key focus. Skills development shifted from a focus on generic skills during Phase 1 to more specific job-related training in Phase 2. Thus, by providing work experience and training, it was envisaged that the EPWP would create the pathway from joblessness to gainful employment within the formal economy. Given the centrality of this idea of graduation from joblessness into a sustainable job within the objectives of the Jobs Fund, further attention is given to the topic of skills development below.

Before turning to human development, it is important to examine some of the assumptions and tensions within the other two contributions that public works programmes are expected to make. The extremely high levels of unemployment in South Africa, despite a range of macro-economic, industry, labour and social transformation policy interventions, has necessitated substantial welfare programmes including the public works programmes. One of the concerns with the welfare programmes relates to the notion of dependency while the other relates to fiscal unsustainability. As McCord (2012) notes the “anticipation that participants will graduate out of poverty and away from ongoing reliance on state support is politically attractive because it recasts social protection as a temporary ‘treatment’ for the poor or unemployed, rather than an ongoing form of support with recurrent expenditure implications for government”. In the context of both low job growth and extremely low growth rates, this notion of providing ‘temporary’ income is increasingly being challenged with suggestions that, in fact, for the majority of people in the world, a decent job in the formal economy is unlikely to be a regular ongoing occurrence. Even with a formal economy growth rate of about 3% per annum creating employment, at historic rates employment is likely to grow at approximately 1.5% which is less than is required to significantly reduce unemployment (Fourie 2013). This means that it may be necessary to recognise the informal economy, which accounts for approximately 17% of employment in South Africa, and significantly more in other similar income countries, needs to be seen as an important exit point for many people participating in EPWP programmes. (It is not clear whether the Jobs Fund considers work in the informal economy as a successful outcome in terms of jobs created.) In addition, long-term participation in public works programmes may also be necessary. The Zibambele road maintenance project in KwaZulu-Natal provides an example of this kind of approach where many of the people working on the programme have been renewing their annual contracts since 2009. Similarly, many of the workers at the EFP factories have been working on monthly contracts for two to three years. McCord (2012) suggests that in contexts of structural unemployment and chronic poverty, the impact of short term income through public works programmes are likely to have limited impact on the ability of individuals or households to “cross a graduation threshold on a sustainable basis”. A similar point was made by one of the beneficiaries at the Heidelberg factory and recorded under the section on relational and social outcomes.

The potential to have a positive impact on public assets and through this impact to contribute to enhanced household, rural, regional or even national productivity, depends significantly on the relevance of the assets selected and the capacity of implementing agencies to oversee the programme activities. The benefits and asset
value creation will depend in addition on the integration between public work activities and the local development priorities. In this regard, Cronin (2016) has noted that “the Department of Environmental Affairs (more than other lead EPWP departments) has been meticulous in evaluation the impact on water and grazing conservation of their Working for Water EPWP programme”. He goes on to note that “output monitoring of this kind is important, to counter the argument that South Africa’s public employment programmes are ‘not real work’, or that they are merely a ‘welfarist drain on the fiscus’. A significant challenge to this kind of output monitoring has been the difficulty in putting a value to assets such as increased water flows or reduced fire risk, despite the recognition that value is created. The value of providing a desk to a child in a school that may not otherwise have received school desks or the contributing to safer housing through fire resistant building materials also fall into this area of monitoring and evaluating value created.

Finally, it is an assumption of public works programmes that the opportunities for skills development increase the ‘employability’ of participants. This in turn could enable graduation into formal sector employment, promote self-employment and increase informal sector activity. According to the Mid Term Review of Phase 2 of the EPWP (2013 cited in Atkinson and Ingle 2016), “the aim of the Expanded Public Works Programme is to bring the unemployed into a temporary working environment during which time they will obtain skills, work experience and receive a stipend to enhance their chances of future employment”. This quote clearly articulates the idea of skills development supporting the graduation from joblessness to employment. Also evident within the quote is a strong assumption that the participation is temporary. However, as Atkinson and Ingle go on to note, quoting further Mid Term Review finding, the “majority of the participants have been employed in the EPWP for more than three years” (MTR cited in Atkinson and Ingle 2016). The implications of this finding are that participants do not believe that they will find a suitable job outside of the programme (probably a valid assumption given the discussion above) and/or that they are being trained to remain within the programme rather than exit it and/or that the quality of the training is not sufficient to equip them for work/ livelihood creation outside of the EPWP. A 2007 study by the Community Agency for Social Enquiry (CASE) and a more recent masters thesis suggest that the primary aim of training beneficiaries to do their jobs safely and efficiently is directing their skills development inwards, towards being dependent on alien invasive removal jobs and government-supported employment (Richards et al. 2007; Fourie 2017) There are a number of contradictions that are emerging within the skills development assumptions and practices within the EPWP. These include the assumption that the work is temporary which is resulting in the tendency to provide short, often unaccredited courses, that do little to prepare participants for graduation out of the EPWP. This is in turn resulting in people remaining within the EPWP if possible and often being given the same training repeatedly. However, where the assumption is made that participants are likely to be involved for some time (as in the case of the EFP), it is possible to develop a more structured and developmental learning programme that includes accredited courses.

The challenge remains to balance the requirements of the EPWP programmes and the demand for skills in the informal and formal economy.

Building on the underlying ideas of temporary employment, asset value creation and graduation through skills development, many institutions assume that given the vital role that the EPWP plays in achieving a wide range of natural resource management objectives within South Africa, it is obvious that their potential for job creation extends far beyond the government funded public works programmes. As the Department of Higher Education (DHET) has suggested, green economy occupations, specifically the elementary type, are a key requirement for building learning pathways that enable and support the transition from public works programmes into the mainstream green economy (DHET 2012).

The Department of Environment Affairs (2010) Environmental Sector Skills Planning report notes that:

If this [EPWP] training is carefully developed with attention to quality and output value, this presents a significant opportunity for developing entry level skills for the environmental sector, particularly for new potential growth areas and/or for youth development as is currently being identified in green economy and green job strategies (e.g. the projected potential for 140 000 jobs in the recycling industry). For this training to be of maximum benefit, there is a need to further improve the sustainability value of the
skills programmes offered, perhaps through linking them to Environmental Practices Learnership Programmes that are linked to sustainable forms of employment. Environmental Practices Qualifications exist at level 1, 2 and 3 on the NQF, and have been registered in LGSETA, but have been very poorly utilised to date. Capacity needs to be developed amongst training providers to provide improved quality programmes and maximise these investments in skills development.

There are a number of challenges to the underlying assumptions evident within the public works programmes. The first is that given current growth rates, it is unlikely that the formal economy will absorb significant numbers of EPWP participants. This is partly reflected in the tendency of EPWP workers to remain within EPWP for many years despite the assumption that they are temporary programmes. There is also a poor evidence base for the value creation of public assets linked to the work of EPWP in many of the sectors in which it is implemented. In the case of the clearing of alien invasive plants, substantial studies have been conducted on the cost/benefit of this work and a more solid evidence base suggests significant returns (Vundla et al. 2016, Stafford 2017). This is despite the fact that much of the economic analysis in this field is complicated by market failures to adequately price the value of catchment management, water provision, biodiversity loss and fire risk. The lack of growth in the economy including the furniture sector, and the lack of economic markets related to the alien plant control make it extremely challenging for graduation from unemployment and the EPWP into the formal economy. This is exacerbated by, in many instances, skills development that is focused more on equipping participants for work within the EPWP than responding to market demands or even the needs of local communities. One area that has received significant attention is the potential of the green economy to provide growth and employment in ways that creates sustainable value in the economy.

The Green Economy Discourse and Strategy

Both the discussion on the developmental state and the discussion on the public works programmes above revealed a strong reliance on the underpinning idea of growth of the formal economy. This growth is most commonly represented as a growth in GDP. The potential for this ongoing growth has, at least since the 1960s, been the subject of substantial debate and the notion of ‘sustainable growth’ has been described as an oxymoron by many authors. These include authors of publications such as Limits to Growth (Meadows et al. 1972), Steady State Economics (Daly 1992) and Douthwaite’s (1992, 1999) book The Growth Illusion: How economic growth has enriched the few, impoverished the many and endangered the planet. In order to understand the implications for this discussion on both the underlying ideas, interests and institutions linked to the EPWP, it is worth spending some time relooking at our understanding of economics.

In 1767 when the Scottish lawyer James Steuart first proposed the concept of ‘political economy’, he clearly spelled out its purpose:

“The principle objective of this science is to secure a certain fund of subsistence for all the inhabitants, to obviate every circumstance which may render it precarious; to provide everything necessary for supplying the wants of the society, and to employ the inhabitants (supposing them to be free-men) in such a manner as naturally to create reciprocal relations and dependencies between them, so as to make their several interests lead them to supply one another with their reciprocal wants.” (cited in Raworth 2017: 29)

In summary, what is required is a secure livelihood, fulfilling employment and mutual relationships that meet people’s reciprocal wants.

By the 1930s, much of the normative element of this definition had been lost and the desire to position economics as a ‘positive’ science was reflected in definitions such as the following:
“Economics is the science which studies human behaviour as a relationship between ends and scarce means which have alternative uses.” (Lionel Robbins cited in Raworth 2017: 30)

This definition was reduced to “Economics is the study of how society manages its scarce resources” (Mankiw cited in Raworth 2017: 30) that eliminated any explicit mention of normative goals, ends or aspirations. In the absence of an explicit aspiration, a more implicit notion took hold. This was underpinned by the notion of gross domestic product (GDP) as a measure of ‘how well society managed its resources’ and from there, a small move to GDP growth as a measure of ongoing success in terms of managing resources. This definition is reflected in statements such as this one from the National Development Plan (National Planning Commission 2012): “A stable and enduring macroeconomic platform will underpin sustainable growth and employment creation.” In contrast, Amartya Sen’s Nobel prize winning works (1999) argued that the focus of development should be on “advancing the richness of human life, rather than the richness of the economy in which human beings lived”. The distinction between growth as quantitative increases in GDP on the one hand and development as qualitative improvements in the quality of life became ever more pressing as the environmental and social exploitation and risks associated with economic growth became more and more apparent.

One way of navigating the space between development and growth has been articulated by Kate Raworth (2017) in a new book entitled Doughnut Economics: Seven Ways to Think like a 21st Century Economist. The doughnut is a visual depiction of two concentric circles with the outer circle representing the ecological ceiling and the inner circle depicting the social foundation.

“Below the Doughnut’s social foundation lie shortfalls in human well-being, faced by those who lack life’s essentials such as food, education and housing. Beyond the ecological ceiling lies an overshoot of pressure on Earth’s life-giving systems, such as through climate change, ocean acidification and chemical pollution. But between these two sets of boundaries lies a sweet spot – shaped unmistakably like a doughnut – this is both an ecologically safe and socially just space for humanity.” (39)

Raworth goes on to note that the challenge is to bring all of humanity into this safe and just space that is regenerative and distributive. The implications of this model for South Africa with its reliance on fossil fuel and increasing water scarcity on the one hand, and persistent poverty, unemployment and inequality on the other, are overwhelming. The challenge of ending deprivation and degradation at the same time has huge implications for GDP growth and how economies, particularly the normative goals of economies, are conceptualised. By way of example, a 2014 modelling exercise by the OECD projecting economic growth through to 2060 was only able to achieve predicted annual growth rates of between zero and one percent in a number of OECD countries (e.g. Germany, France, Japan and Spain) by assuming that global greenhouse gas emissions would double by 2060. As Raworth notes “the promise of even slight GDP growth was secured only at the cost of accepting catastrophic climate change”. Naomi Klein drives this point home by concluding that “the real reason we are failing to rise to the climate moment is because the actions required directly challenge our reigning economic paradigm…they also spell extinction for the richest and most powerful industry the world has ever known – the oil and gas industry…” (2014: 63). Read in the South African context, this can be understood in terms of our reining belief in economic growth and the powerful industrial interests of the mineral-energy-complex.

At the global level, one response to finding a safe and just pathway for humanity has been the development of the idea of a ‘green economy’. Many of the large international organisations, including the United Nations, the World Bank, the IMF and the European Union, have argued that future economic growth can become environmentally sustainable, or remain within planetary boundaries, by decoupling GDP from environmental impacts. The United Nations Environment Programme (UNEP) defined a green economy as one that results in:

“improved human well-being and social equity, while significantly reducing environmental risks and ecological scarcities … in its simplest expression, a green economy is low-carbon, resource-efficient and

This idea was taken up in South Africa and the following quote from the now defunct National Sustainable Development Strategy and Action Plan 2011 to 2014 provides an insight into the mix of ideas embedded within the green economy discourse.

“A green economy implies the decoupling of resource use and environmental impacts from economic growth. It is characterised by substantially increased investment in green sectors, supported by enabling policy reforms. This implies moving towards a stable, steady-state economy…” (DEA 2011)

Within South Africa, a series of studies and policy frameworks have aimed to provide an enabling policy environment to achieve a transition to a green economy. These include the Green Economy Summit (2010), the Green Economy Accord (2011), the National Development Plan (2012), the Long-term Adaptation strategy (2012), Industrial Policy Action Plan (2017) and many others. These have been translated into a much wider set of interventions at project-specific level (see PAGE 2017) and the Value-Added Industries, including the Eco-Furniture Programme, are examples of this.

Despite all this support for a green economy, green growth and green jobs globally and in South Africa, there is much confusion about how to interpret these ideas. In a seminal paper entitled ‘The Green Economy in South Africa: Global Discourses and Local Politics’, Carl Death (2014) provided useful insights for navigating the issues surrounding green economy ideas, interests and institutions. Death identifies four main discourses of the green economy:

- **Green revolution** – radical transformation of economic (and hence social and political) relationships to bring them in line with natural ecological limits.
- **Green transformation** – a re-alignment of current socio-economic and political systems while leaving the basic elements and assumptions of economic growth intact.
- **Green growth** – sees green markets as an economic opportunity thus dismissing the notion of limits and focusing on new markets, new services, and new forms of consumption.
- **Green resilience** – aims at protecting the status quo and places an emphasis on building infrastructure and communities that are resilient to climate change (flood defences, disaster relief plans) rather than addressing underlying environmental issues.

In addition to the discourses mentioned above, other commentators have noted the importance of recognising a ‘green jobs’ discourse (Swilling et al. 2016).

Death went on to note that “it is possible to identify each of these discourses to some degree within South African invocations of the green economy, but it is impossible to clearly identify a homogenous ‘South African’ position given the different agendas, actors, and emphases involved” (2014). The risk is that despite the frequent use of the rhetoric of green economy, “the overall commitment is rather shallow and incoherent, and it poses little potential to drive sustained economic growth let alone genuinely transform the South African development model”. Swilling et al. (2016) in ‘Greening the South African Economy’ highlighted this point by arguing that the environmental sustainability imperatives of the Green Economy Accord and the National Development Plan face marginalisation due to the obsession with economic growth, as measured by GDP.

Despite the confusion and challenges outlined above, there are many opportunities for building an economy that is “low carbon, resource efficient and socially inclusive”. Two key leverage points appear to be around procurement and planning. A detailed study on Green Public Procurement (Ward et al. 2016) commissioned by the Public Sector Education and Training Authority provides a number of suggestions for using government spending to support government’s strategies on climate change, water management and sustainability more broadly. These suggestions include greater alignment between national sustainability commitments and strategies and departmental planning. This needs to be taken all the way through to the incorporation of
appropriate bid specifications that support ‘sustainable production’. The Memorandum of Agreement that was signed between DEA and the Department of Basic Education for the Eco-furniture Factory to produce desks provides an excellent example of this kind of strategic sourcing that holds long term benefits for the country. It will be vital to retain space for strategic procurement within the agreement signed between DEA, SANParks and the South African Furniture Initiatives.

Another area of potential leverage relates to the achievement of policy objectives through the annual planning that takes place within the Treasury Framework for Strategic and Annual Performance Planning. New policies and laws are summarised in the legislative compliance section of these documents; and should inform the organisational plans, staffing and budgeting for all organs of state. However, the integration of environmental considerations requires both refining the instruments and building capacity. At local government level, for example, the DPME Municipal Assessment Tool requires that the Disaster Management Plan (e.g. fire); the Land Use Management Framework and System (e.g. clearing potentially arable land); the Water Resources Plan (IAP clearing) etc. provide supporting evidence for any Integrated Development Plan (IDP). Every one of these sub-plans should ideally be evaluated against environmental considerations, and would drive green economy objectives were they to do so. Yet no supporting rubric for evaluation of each plan against environmental legislation exists. Institutional mechanisms for planning and auditing green economy projects are accordingly constrained by their focus on formal policy provisions rather than policy substance. This limits the ability of sustainable economic activities to compete against wasteful and exploitative economic activity that benefits from market failures such as externalising the cost of catchment management, fire risk, skills development and many other undervalued environmental and social goods.

There thus appears to be a significant mismatch between the commitment to building an economy that is low carbon, resource efficient and socially inclusive and the current focus on growth as defined by growth in GDP. This in turn is undermining the potential of developing a green economy or an economy that simultaneously meets the environmental, social and economic needs in South Africa in a sustainable way. In the context of a furniture sector that is in decline in South Africa, there is a very real opportunity for government to use its procurement spend and planning documents to pro-actively support locally produced furniture from alien invasive plants through both public works programmes and potentially through the formal sector. In addition, in the context of significant need for a range of social development imperatives including safe and affordable housing and environmental functions such as anti-erosion and land restoration, there is significant potential to develop a range of green products from IAPs. The opening of these markets will however require addressing some of the negative externalities and putting a value to the positive impact of removing IAP biomass and converting the biomass into socially, environmentally and economically beneficial materials and products. This in turn will require a more concerted effort by government, business and civil society to support and buy green products.
Conclusions

This evaluation has used an approach that seeks to understand the relationships between the context within which a project takes place, the outcomes as expressed by a number of different sources and the broader mechanisms that shape the various understandings of relevance, efficiency, impact and sustainability within the project. This has required a substantial amount of ground to be covered and in this concluding section some key threads will be pulled together and linkages made. It must be noted that the need to use the interview data summarised in the outcomes section to identify key mechanisms required a context-outcome-mechanism sequencing in the report. In this concluding section we return to the context-mechanism-outcome configuration in order to use the insights gained in the review of the mechanisms to critically reflect on the outcomes and alternative courses of action. Very broadly, four configurations will be considered. There are:

- The furniture sector (context) – the developmental state including jobs (mechanism) – all six capitals (outcomes)
- The furniture sector – public works programmes including training – relational and social capitals
- Alien Invasive Plants (context) – economy/ green economy (mechanisms) – all six capitals
- Poverty/ unemployment (context) – developing state/ PWPs and Green Economy – all six capitals

There is also an overarching conclusion related to governance and management that is a recurrent theme across all the documents and interviews. This area is captured under the section on the business model within the integrated thinking and reporting framework.

Furniture Sector – Developmental State – Value across the Six Capitals

Globally, the furniture sector has undergone significant changes over the past three decades. Although the sector has to some extent survived as a low-tech exporter globally, it is increasingly being challenged to innovate in order to remain globally competitive. Innovations influencing the sector include LEAN production processes, flat-pack technologies and computer aided design and manufacturing. These innovations have taken place in parallel to radical shifts in the centres of production. Most significantly, Asian countries and particularly China, some South American countries and some of the Eastern European countries have become significant exporters of furniture. Some of the conditions under which this global shift occurred are difficult to replicate as trade regimes have shifted under the World Trade Organisation and global trade agreements.

In this context, the South African furniture sector has been dominated by a few very large and internationally integrated companies. These companies span forestry, paper and pulp production, furniture fixtures and retailing. They are also linked to large retailers that have used their organisational capacity to expand into the finance sector thus enabling them to offer credit and to leverage high returns through interest and other service charges. With the global shifts mentioned above, the local industry has been in decline due to a number of factors that are extremely difficult to influence. These include the distance from key training partners and consumers, the dominance of the pulp and paper industries in the country, outdated technologies and high cost of key inputs. This has resulted in a decline in the furniture sector in South Africa over the past 30 years. This in turn has contributed to a reinforcing cycle of declining investments in new technologies, skills development in the sector, design capability and relationships across the value chain.

In response to the global challenges to, and local decline of, the furniture sector along with the attractiveness of a relatively low-tech manufacturing industry, the South African government have sought to play a developmental role in this sector. This has led to a number of policy texts including the National Industrial Policy Framework in 2007 and the most recent Industrial Policy Action Plan (DTI 2017). However, a recent review as part of an ongoing PhD study (Kraak) and this study suggests that while these policy texts have been accepted, they are simply not implemented. It is, for example, telling to note that while other manufacturing sectors prioritised in the IPAP are mentioned in the section on IPAP Achievement Highlights 2016-2017, furniture is noticeably absent and is not mentioned at all in a presentation of the Industrial Policy Action Plan 2017/2018-2019/2020 given to the Portfolio Committee on Trade and Industry in June 2017 (DTI 2017) other than to say.
that it is a sectoral focus area. The systemic challenges and lack of systemic coherence identified by Kraak (2017) are the result of a number of factors. These include governance across the sector; poor cross-departmental government coordination; local and provincial government failure to support the furniture industry; a lack of formal training in the furniture sector; a lack of transformation within the small and micro enterprises in the sector; and the small horizon for sales geographically.

The EFP has invested very significantly in the establishment of furniture factories and other infrastructure and machinery. However, other than the factory in George, the factories’ locations have not been driven by an interest in building the furniture sector ecosystem. It also does not appear to have been driven by a governmental commitment to strategically build the furniture sector. In fact, the significant delays in engaging with the furniture sector has resulted in unnecessary tension between the EFP and the furniture sector represented by the South African Furniture Initiative. Nor does the DEA appear to have provided a strategic orientation or ideational capacity in terms of providing leadership in defining a national vision and mobilising key role players within the furniture sector that would have been required to make a lasting impact on employment within the sector. The EFP management appears to have attempted several innovative engagements, including engagement with SAFI. However, the lack of clarity with regards to strategic direction, organisational structure, and delegation of authority has limited the ability of this level of management to gain traction in some of these initiatives. The organisational capacity has been weak beyond the day to day functioning of the factories and the skills that have been developed are very focused on the work within the factories and may not be transferable – particularly given the isolation of some of the factories from furniture sector hubs.

Looking at the aspirations of the EFP with the focus on establishing factories and producing products for government from alien invasive plant biomass, it is obvious that this project was not set up with the intention of contributing to the development of the furniture sector. This appears to be at odds with the expectation of the Jobs Fund that had a mandate to unlock sustainable jobs and not simply EPWP work opportunities. Given the strong emphasis within government and particularly the ANC on a developmental state and to a lesser degree on the social compact, it is surprising that the EFP was not positioned more strongly within this discourse. Part of the challenge here was that the mandate of the DEA did not sit comfortably with the building of the furniture sector; this was far more closely aligned with the mandate of the DTI, and thus the programme tended to focus on other discourses to justify its involvement. These include the Public Works and broadly green economy discourses, the implications of which will be considered later.

The perceptions of the outcomes in terms of the investment in the factories, the intellectual or ideational leadership, relationships and organisational capacity and human capital development to some extent reflect the fault lines between notions of the developmental state’s aspirations, the social compact and the actual roll-out of the EFP. The NDP makes it clear that the developmental state needs to play an active role in the sustainable transformation of a country’s economic and or social conditions. And that they should do this not simply by producing legislation but by engaging and learning from experience. The EFP has invested R123 million in assets in the process of setting up the factories and the extended value chain associated with the harvesting, wet milling, dry milling, and transport. It is evident that there have been significant inefficiencies in this process. There was a very steep learning curve as the DBE order required rapid expansion. Some mistakes were made in this process but, as has been noted, the factories now have the equipment required to produce planks and in some instances, basic furniture.

The order from the Department of Basic Education for school desks overcame the challenges associated with developing a market early in the programme. However, the inefficiencies of the EFP were revealed in the fact that the cost per desk is 2.5 times higher than the sales price (R730,00). Closely linked to this inefficiency is the conversion rate per cubic metre of planks with the private sector getting between 21 and 26 desks per cube and the EFP currently averaging 16 desks per cube of planks. As has been mentioned, there are a number of factors
contributing to these inefficiencies including the EFP’s commitment to taking on previously unemployed staff requiring significant training. The very substantial commitment to transforming the sector and limitations on what the programme could pay mill managers was also a contributing factor to financial and production inefficiencies. Finally, the challenges with the institutional location of the EFP, particularly with regard to procurement processes in a factory environment that required quick and often complex purchasing of goods and services.

The impact of the EFP in terms of contributing to sustainable jobs, particularly within the furniture sector, is not well substantiated by the available information. Although there is anecdotal evidence of some staff moving out of the EFP and into the furniture sector, there is no medium-term tracking of this movement. The Jobs Fund have suggested that this kind of tracking will be important to make the case for sustainable job creation. Part of the challenge with regard to sustainable job creation includes the divergent opinions on whether the EFP is crowding in or crowding out private sector initiatives. There is substantial evidence of existing partnerships between the EFP and private sector companies such as Wood at Heart. There is, however, also evidence of concern from the furniture sector that rather than playing a developmental role that opens up new opportunities in the furniture sector, the EFP is competing for work with existing companies. This concern was raised in the Transaction Report and is currently being addressed through the agreement with the South African Furniture Initiative. The ongoing impact and sustainability of the EFP, in so far as it remains focused on the furniture sector, will require a more strategic engagement with the sector and the systemic challenges identified in the sector.

This raises one of the biggest challenges for the government’s aspirations in terms of the developmental state and this is the notion of a capable state. It is telling that in the ANC Economic Transformation Discussion Document (2017) in a section entitled ‘Building a Capable State’ Chalmers Johnson, who synthesised the essential features of the Asian developmental states, is quoted at length. The extract in the discussion document notes that

“The first element of the model is the existence of a small, inexpensive but elite bureaucracy staffed by the best managerial talent available in the system ... The second element ... is a political system in which the bureaucracy is given sufficient scope to take initiative and operate effectively ... The third element of the model is the perfection of market-conforming methods of state intervention in the economy...”

(Johnson 1982 cited in ANC 2017)

As has been discussed in the outcomes related to the business structure, the EFP has not been able to staff the programme with “the best managerial talent available in the system”. Although the upper management within DEA has been able to carve out scope for innovation, this has often placed significant pressure on middle management who have been under capacitated to operate effectively. In terms of efficiency, impact and sustainability the capacity and institutional structures require substantial attention if the programme and government departments that sit behind it are going to achieve the potential for contributing to the aspiration of a developmental state. This will require more than the establishment of a different trading entity. It will require a knowledgeable, skilled, diverse and independent governing body to set a coherent strategy for the programme, delegate authority to a well-resourced management team and then enable this team to get on with the implementation of the strategy. This implementation will in turn require sufficient scope for the management to make quick procurement and staffing decisions while the governing body oversees the structuring of appropriate public-private partnerships to take the work forward.

The Furniture Sector – Public Works Programmes including Training – Outcomes

The context-mechanism-outcome configuration related to the furniture sector, the public works programmes and outcomes across a number of the capitals is closely aligned to the history and positioning of the Eco-Furniture Programme. The furniture sector context will not be repeated here. Rather the focus will be on how
the underlying ideas, institutions and activities informing the public works programmes enable or hinder the outcomes of the EFP in the context of the furniture sector.

Although the notion of a developmental state, particularly as articulated in the NDP, is committed to inclusive growth as a way of addressing persistent poverty and inequality, in South Africa a number of factors have mitigated against these aspirations. A key factor in the past decade has been low and occasionally negative GDP growth rates. This low growth rate has put significant pressure on the ability of the country to create jobs. This pressure is exacerbated by the fact that South Africa’s relatively youthful population is now entering working age faster than the economy can absorb them. The NDP targets of reducing the strict unemployment rate from 25% in 2011 to 14% by 2020 unemployment had actually risen to over 27%. Even if these ambitious targets were being achieved, the NDP estimated that a GDP growth rate of 5.4% per annum would require a contribution of 431 000 EPWP work opportunities per annum up to 2030. If the GDP per annum growth rate fell to 3.3% then 5.5 million work opportunities would be required per annum over the same period. With the GDP growth rate currently significantly below even the lower 3.3% the current target of Phase 3 of the EPWP to create 6 million work opportunities between 2014 and 2019 looks both challenging and inadequate.

As has been noted under the section on mechanisms, the intention of the EPWP is more than merely creating work opportunities. In addition to providing employment, the EPWP is expected to contribute to the provision of temporary income, the addition of value to public assets, and human development through the provision of opportunities for skills development and ultimately permanent employment in the formal economy. It is this assumption of ‘temporary income’ in the context of increasing unemployment particularly amongst the youth, many of who have never had a formal job, that requires careful attention. The Jobs Fund was very clear that the funding that they provided was not for an extension of the public works programme ‘temporary employment’. The Jobs Fund has a mandate and requirement of the projects that it funds to create ‘sustainable jobs’. The difference in underlying ideas evident in the PWP framing and the mandate of the Jobs Fund has resulted in some people considering the outcomes of the EFP with regard to employment creation extremely positively while others see it as a major challenge. This difference is stark in the following quotes:

“If I look at the current budget it is about R160 million for the year to create public works jobs of which DEA gives R70 million and the rest would be from generating income if we can finalise the order. In the past government would have paid the full R160 million now they pay R70-80 million. That is a huge saving for government. The EFP is the only EPWP that generates a direct return on investment.”

(SANParks manager)

Compared to:

“The strategic focus was just not there. We are not just trying to set up the jobs for now. We are not like a normal EPWP. Our mandate is about the sustainability of the jobs and the initiative. We don’t have clear audits and we cannot see the way forward.” (Jobs Fund)

Part of the challenge is that the underlying ideas have shaped the reporting structures, making it extremely difficult to reflect the longer-term approach that is being taken within the EFP. The recognition that structural unemployment and the inability of the formal market, particularly in a contracting and struggling sector such as the furniture sector, to absorb workers has led to people remaining at the Eco Furniture Factories for a number of years. This is however difficult to reflect in the EPWP reporting frameworks. The difference between the Jobs Fund definition of a permanent job and the framework within the EPWP that employs beneficiaries through contractors who themselves are on three-month contracts, is indicative of the underlying ideas informing the work of the two institutions. This has required substantial dialogue around the classification of full time/permanent jobs and their relationship to EPWP ‘full time equivalents’. In addition, the ability to report cumulative skills development is, according to some of the managers, impossible to capture in the reporting frameworks. These systemic discrepancies have resulted in 2767 (88% of the original agreement of 3025) permanent jobs having been created and 1933 (64% of the original agreement) beneficiaries being recorded as receiving training. However, some individuals have received six sets of training, much of it cumulative thus enabling progression into more technical positions within the factories. The Jobs Fund acknowledges that the
effectiveness and impact of the jobs creation and capacity development is probably more than is currently being reported but notes that it requires substantiated numbers to report internally and to parliament.

It is the sustainability of these numbers that is of greatest concern at present. With increases in efficiency, difficulties associated with accessing available IAP biomass, marketing limitations and a range of other issues the ability to retain workers is under pressure. With the factories not located within furniture manufacturing hubs (other than the George factory) and the furniture sector itself under pressure, very little movement has occurred between the factories and the private furniture sector. It is surprising that this was not a requirement of the original contract and the resultant lack of emphasis on the medium-term tracking has resulted in the need to work with anecdotal data rather than quantitative tracking. Even if this tracking was in place, it is highly likely that the jobs in their current form and numbers are not sustainable without significant diversification of the product range produced in the EFP. It is also likely that even with product diversification active industrial policy and preferential procurement will be required to stimulate employment in depressed economic sectors and to address negative externalities and market failures.

Alien Invasive Plants (Context) – Economy/ Green Economy (Mechanisms) – Outcomes
Shifting the focus from the furniture to the environmental component of the Eco Furniture Programme significantly changes the context for this evaluation and introduces important emerging mechanisms. The configuration between the context of alien invasive plants and their impact on South Africa and the understanding of economy shifting from GDP growth to sustainability, open new perceptions of the outcomes with regard to efficiency, impact and sustainability.

As has been noted, alien invasive plants have a significant and largely negative impact on ecosystem services such as water resources (both quality and quantity), soil quality, biodiversity and the impact of fire. Recent estimates suggest that over 10 million ha of land is currently invaded by woody IAPs in South Africa and that they are spreading by 5-10% per annum. Although difficult to quantify, some studies have estimated the cost of this infestation at R6.5 billion annually with one study estimating that these losses could have been as high as R41.7 billion without any IAP control measures. The Working for Water programme has invested R3.2 billion between 1995 and 2008 in IAP control. Part of the difficulty in estimating either the costs of IAP infestation or the benefits derived from the clearing programmes are the significant market failures related to valuing ecosystem services. These market failures meant that there is little or no market incentive to invest in the maintenance and restoration of the ecological infrastructure that support the creation of ecosystem services.

A key response to the negative externalities created by these market failures has been a call for the reorientation to the ideas, institutions and practices related to the economy. More specifically, a number of authors have sought to shift the economic focus from GDP growth to safe and just operating spaces where the economy creates value for people, the planet and business. One articulation of this approach that has gained traction both internationally and locally, is the green economy described as an economy that is low-carbon, resource efficient and socially inclusive. There are concerns that the concept of the green economy is unclear and poses little potential to transform the South African development model. Given these concerns, significant focus will be required to realise the NDP aspiration that “by 2030, South Africa’s transition to an environmentally sustainable, climate change resilient, low carbon and just society will be well underway...” (NDP). This focus is emerging with the current work being done to develop a Green Jobs Roadmap for the EPWP (Mohamed 2017) being one significant research initiative due to be completed later this year. Such initiatives are broadening the definition of the green economy and green jobs in ways that correspond well with the EFP and the broader VAIs. A useful definition emerging within the Green Jobs Roadmap for the EPWP and shared in a recent presentation (Mohamed 2017) suggests that “jobs are green when they help reduce negative environmental impact, and lead to environmentally, economically and socially sustainable enterprises and economies”.

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This definition describes exactly what the EFP has sought to achieve. The engagement with the environmental challenges associated with alien invasive plants and particularly, the impact and waste of not leaving biomass in the field after clearing, is a key part of the programme. By highlighting the economic potential of what until now has been viewed as a waste product with no value has the potential to develop new economic value and market potential in relation to IAP clearing. This in turn created the potential to create and sustain new job opportunities in the green economy. More specifically, the potential to develop an integrated industrial symbiosis model that created the maximum value from IAP biomass is being highlighted through the extended value chains developing from the EFP.

The current assumption that the EFP is having a significant impact on IAPs is not reflected in the reported figures. The EFP is not clearing significant amounts of IAP (2 033 ha in 2015/2016 and 261 ha in 2016/2017) as this is work done by the Working for Water programme. However, the EFP is harvesting (15 787 2015/2016 and 13 443 2016/2017) and planking (over 8 000 cubic metres per annum), a substantial amount of IAP biomass. This has resulted in over R100 million of income from other sources (other than Jobs Fund and DEA NRM) of which a very large percentage was from the sale of school desks and other products. This represents a significant income from green economic activity. Although the cost of sales (harvesting, transport, milling, manufacture and distribution) are still way above industry standards and reveal significant inefficiencies, it must be acknowledged that given the challenges of working with ‘jungle timber’ and the market failures related to IAP clearing, the generation of substantial income is significant. As mentioned, this is one of the few EPWP that is generating substantial income to offset the costs of addressing the environmental, social and economic challenges in South Africa.

The financial outcomes reveal substantial inefficiencies. Private sector partners were able to produce school desks at below R500 per desk while the EFP was producing them at over R2 000 per desk. This means that at a selling price of R730 per desk, the EFP was producing the desks at a substantial loss. The private sector companies received the same support to offset some of timber harvesting costs. They were able to invest in more specific training based on better informed assessments and were able to benefit from higher management capacity and quicker procurement procedures. Thus, for both the EFP and the private partners, it was necessary to provide government support for the investment in IAP harvesting as a result of the negative externalities of not costing in the value of removing cleared biomass. Both the EFP and the private contractors working with the EFP benefitted from the DBE order for school desks. The private-public sector model that developed out of Ficksburg should be further explored to better understand the efficiencies that were created. Based on this exploration new funding models and organisational structures could be developed.

Where the EFP created significantly more value in terms of a green economy was in the capacity development of previously unemployed beneficiaries. There has also been a significant improvement in the efficiency of the factories seen, for example, in the number of desks produced per cubic metre of wood and the quality of the planks being produced. New black, and in the majority of instances, female black managers have been developed and supported through the programme. This represents a significant contribution to transformation in the sector.

Another area in which substantial value has been added is in the development of new intellectual capital that has the potential to turn IAP biomass into viable products. This work extends beyond the confines of the furniture sector and has the potential to create green economic activity in the building, recreation, education, landscape rehabilitation, furniture and energy sectors. Even more significantly, this intellectual capital could become a cutting-edge example of industrial symbiosis and the emerging circular economy. By freeing itself from the confines of the furniture sector, the EFP could start to focus substantially on the use of waste from one process as a feedstock for another process. This is already being explored in an ad hoc way but requires a more
conscious and strategic focus in order to realise the full potential of an integrated green economy. This idea will be developed further in the following CMO configuration.

Poverty/ Unemployment (Context) – Developing State/ PWP\'s and Green Economy – All Six Capitals

Within the context of the triple challenges of poverty, inequality and unemployment, the potential for government to support public works programmes that create sustainable and inclusive livelihoods (as opposed to temporary work opportunities) should be a high priority on the government\'s agenda. Although there is substantial policy and rhetorical support for job creation through the development of a low carbon, resource efficient and inclusive economy, many niche initiatives require major scaling in order to have a significant impact on social and environmental priorities. A broadly conceptualised industrial symbiosis or circular economy linked to the clearing of IAPs and closely linked to associated environmental challenges has the potential to build on the investment in the EFP and substantially improve the efficiency, impact and sustainability of this investment.

The current GDP growth rates of below 1% and the need to cater for a 1.6% increase of entrants into the labour force each year, is resulting in extremely high unemployment. This is exacerbated by very low job creation relative to GDP growth. Current estimates suggest that the number of jobs created currently increases by 0.5% to 0.7% for each 1% increase in GDP growth. At these rates, it will require at least 3.2% GDP growth simply to maintain the current levels of employment. And with the current unemployment rate rising to 36.4% (expanded definition of unemployment), there are over 8 million people unemployed, many of whom have never worked.

This high rate of unemployment is contributing to the fact that 40% of the South African population or 21.9 million people are forced to sacrifice food to obtain essential non-food items. This represents an increase from 18.7 million people living below the lower-bound poverty line since 2011 and a marginal decrease since 2006. With current growth rates and increasing unemployment, it is likely that without substantial government grants, the levels of poverty will remain relatively constant and may actually increase. This is extremely disconcerting as government debt to GDP ratios have increased from 27.8% in 2008 to 51.7% in 2016. This will put significant pressure on government with regard to its ability to continue to finance the current grants programmes.

It is in this context that the Deputy Minister of Public Works has cautioned that public works programmes will need to show significant value creation in order to avoid being seen merely as a drain on the fiscus. One of the biggest challenges in portraying this value for the environmental sector is the market failures in terms of ascribing monetary value to environmental goods and services. Over and above this, the ability of public works programmes to develop intellectual capital through new product development and business models has not been explored in substantial depth. There are also ongoing questions about the efficacy of the training being offered in the EPWP to develop skills that are transferable to economic sectors outside of the EPWP\'s themselves. These questions arise along two dimensions. The first is related to the provision of training based on short-term employment within the public works programmes. This results in superficial skills development often at lower levels that do not provide beneficiaries with the skills development pathways required to develop skills that enhance their ability to compete in the labour market. The second challenge occurs at the interface between the market failures in the environmental sector and the development of green skills. Where the value of ecosystem services for communities and business are not recognised in markets, the possibility to create sustainable jobs is diminished. Both these challenges require government intervention. The first requires that the ongoing work on developing education and occupational pathways within the EPWP be given additional focus and resources. The second is that following the notion of the developmental state, Government play a leading role in creating the enabling conditions and directly support the development of a green economy. This will require more than a proliferation of policy. The current initiative looking at the green jobs roadmap in relation to the EPWP is an exciting innovation that will require ongoing support in order to realise the potential of sustainable job creation within the green economy.
The current investment by the DEA and the Jobs Fund in the furniture factories and increasingly in other value-added industries that can create value at multiple levels of the IAP biomass value chain, is an important site for implementation and innovation in the green economy. As one of the senior DEA managers noted, it is time to capitalise on the significant investment that has been made. The financial inefficiency does not reflect the multiple other capitals to which the EFP has contributed. This is clearly captured in the quote below from a senior SANParks manager:

“At the outset it was a very, very noble idea because they were doing alien clearing, creating jobs, skilling, and using the biomass for a sensible product beneficial to government. But to realise this vision in the longer term, there needs to be a drastic change in the model. Unfortunately, the measurement of the value of the project is purely market related and monetary (how much are we selling) but ignoring the value of the social and environmental aspects – the training aspect, the job creation aspect, giving people the dignity of work. So the programme is being run almost as a private, money making entity, and I think unless that model changes then the vision will not be realised.”

This highlights a key issue that was raised during this evaluation. The tendency to measure efficiency, impact and thus sustainability along one or two capitals is inappropriate for a project such as this. In fact, the integrated framework suggests that it is inappropriate for any business or government initiative and the recognition of multiple capitals provides a more useful representation of the value being created or destroyed. While many of the people interviewed suggested that value along a number of the capitals could be further enhanced the infrastructure capital, the intellectual capital, the relationship and social capital, the human capital and natural capital had been enhanced through the programme. It is this ability of the programme to positively contribute to all of these capitals in the context of market failures that is one of the most consistently recognised outcomes of the programme.

The quote also reveals a blind spot that many of the other interviewees were very aware of but that often gets overlooked in the increasingly inappropriate name of the Eco Furniture Programme. It is not one product (school desks) or even sector (the furniture sector) that the EFP is operating in but a value chain related to IAP biomass and more specifically the ‘waste’ produced during the process of IAP clearing. A number of value chain research reports have sought to calculate the value potential of different production processes. The most recent report produced by William Stafford for the CSIR provides the most comprehensive study to date and identifies a range of possible IAP based production processes. Even this report however is silent on the possibility of linking the different production processes together into a closely integrated industrial symbiosis or circular economy.

One of the most often cited inefficiencies in the current EFP model is the very low percentage of IAP biomass that can be converted into high quality planks. This has led to experimentation with a range of other value-adding products from building materials, to erosion matting, to toys, to charcoal, to energy, etc. The EFP is providing a space for innovation and is on a small scale providing the kind of support that is aspired to in the notion of a developmental state. With private sector partners, the EFP is providing strategic orientation in terms of opening up new opportunities to the economy and socio-economic inclusion through the activities of the EFP and the extended IAP value chain. It is also providing ideational leadership both at the higher levels of the DEA and in the experimentation and proof of concept work across a range of products and processes. The organisational capacity has been improved through relationships with other government departments such as the DBE, DHS and DoL and the technical capacity is being transformed and improved through training and employment practices.

At the same time, it is recognised that there are substantial areas for improvement with regard to the EFP and the extended value chains. Key to this is the organisation of the programme as a whole. This includes the
institutional location of the programme, the management of the programme and industrial structure of the factory sites. The institutional location of the programme both within the DEA and the SANParks came up repeatedly. There was no doubt that the support of DEA senior management had been vital for the initiation and ongoing support of the EFP. There were however suggestions that this involvement had at times resulted in an over reliance on DEA structures (including SANParks) and at times, a lack of attention and autonomy being given to these structures. There was also an overreliance on existing staff who were required to play multiple roles and were under capacitated for the responsibilities that they were expected to bear. This has resulted in ongoing crisis management and insufficient attention to the strategic direction, business models and reporting. This was one of the main reasons given by the Jobs Fund for their concerns in terms of the efficiency, impact and sustainability of the programme.

Linked to the strategic focus, management capacity and industrial structure has been a very significant inefficiency in terms of transport. This included both the location of the factories and the challenge of sourcing feedstock but more importantly related to inefficient transport of, for example, wet planks from one factory to another factory for drying and then to a third factory for manufacture and then across to another province for delivery and assembly. At the same time, huge amounts of ‘waste’ are being generated at many of the factories with large areas around the factories covered with offcuts and sawdust. As the value chain moves from low volume/ high value material e.g. high quality dried planks to high volume/ low value material e.g. offcuts and even sawdust, it will become more and more important to cut down on the transport of materials. This strongly suggests building clusters of processes (e.g. furniture making, planking, biomass energy, cellulose production etc.) so that waste from one process can be efficiently fed into the next process. This process symbiosis has the potential to maintain and increase the value within the value chain and thus enhance the possibilities for sustainable job creation. There is also the possibility that as more processes and more sophisticated processes are linked together that there are opportunities for job progression from low skill to higher skills jobs either for individuals or within clusters. These clusters are no longer necessarily furniture clusters but rather IAP value addition clusters.

Governance

A recurrent theme in the interviews and document analysis was the issue of governance, institutional setting and management. This broad area of concern has been expressed in different ways and has taken a slightly different focus in different settings. For some it relates to ‘political interference’ in the strategy and operations of the EFP. For others, it relates to the ‘trading entity’ and the temporary location within SANParks and for others, it has to do with the management capacity at a number of levels. These include the overall programme management, factory managers and occasionally the contractors through which workers are employed. These areas of concern are by no means new, nor are they mutually exclusive. This section considers both the separate governance issues and concludes by arguing for an overarching governance review as a key first step to addressing these issues; especially as the product range diversifies.

The Integrated Reporting Framework places the ‘business model’ which includes the vision, strategy and operational model at the centre of the value creation process. In the context of both the necessity and cost of IAP clearing, a furniture sector that was diminishing in South Africa and under pressure from imports, and the need to create employment and build skills the EFP had a broad vision. This vision is also strongly influenced by mechanisms related to the developmental state, public works programmes and the green economy. The alignment between the contextual issues and the mechanisms meant that for most respondents, the broad vision of using IAP biomass to produce furniture for government in labour intensive factories at a competitive cost and quality was appropriate. However, the ‘vehicle’ or trading entity to take forward this vision has been the subject of ongoing debate. The Transaction Advisors report raised this issue and it was one of the first requirements of the establishment of the Jobs Fund project. Substantial resources were allocated in the ABC PIMP to establishing this trading entity. The failure to establish this entity has resulted in SANParks ‘temporarily’
being the implementing agents. An arrangement that has now lasted throughout the Jobs Fund project duration. This has resulted in a number of challenges varying from complex and slow procurement processes, the reliance on project reporting and management processes that are not well aligned to Jobs Fund administrative requirements, the inability to offer competitive salaries for specialised management staff, and slow recruitment processes that have undermined management capacity across the operations of the EFP. Ultimately, it is these challenges that have led to the Jobs Fund withholding the final payment.

The question thus arises as to where the responsibility for the business model lies. In addition to the PFMA and the Companies Act (2008), the King IV Report on Corporate Governance (2016) provides a set of principles and practices to guide governing bodies and corporate governance more broadly. The term ‘governing body’ is used to apply to the accounting authority, the board or other terminology as provided in the enabling legislation of state owned enterprises including state owned companies. It is unlikely given the investment in the Eco-Furniture Programme by government that the assets would be handed over to a private company. (B-Corporation status in South Africa is still undergoing legal review and may require changes in the legislation. This may be an option in the future but is not currently considered to be viable for the EFP.) Thus, regardless of the actual form that the trading entity takes the governing body will be key to the success of the entity. Under Principle 6 of the King IV Report the primary leadership role of any governing body is expressed as encompassing the following:

a) steering the organisation and setting its strategic direction;

b) approving planning that gives effect to the direction provided;

c) overseeing and monitoring of implementation and execution by management; and

d) ensuring accountability for organisational performance by means of, among others, reporting and disclosure. (IODSA, 2016)

This is exactly what many of the interviews suggested was required to enhance the effectiveness, efficiency, impact and sustainability of the EFP as a whole. This is reinforced by Principle 4 which requires that “the accounting authority should appreciate that the SOE’s core purpose, its risks and opportunities, strategy, business model, performance and sustainable development are all inseparable elements of the value creation process”.

The DEA as the department responsible for the implementation of the EFP should take into consideration the importance of working across the IAP biomass value chain and the developmental state discourse and consider building a cross-departmental collaboration at the Ministerial level for the implementation of a broader VAI programme. It is recognised that this is not easy and was specifically raised as a significant challenge by senior staff within the DEA. However, at the very least, collaboration will be needed with the DTI to take forward the strategic innovations associated with the VAI and Eco-Furniture Programme and related value chains. However, this inter-departmental collaboration is established, the key conclusion emerging from the governance challenges is that the executive authority within government will need to build a governing body for the ‘trading entity’ that “comprises the appropriate balance of knowledge, skills, expertise, diversity and independence for it to discharge its governance role and responsibilities objectively and effectively” (IODSA, 2016. Principle 7). It is this body that will have to work closely with the executive authority to align the policy priorities to align the policy priorities including higher level commitments as articulated in the National Development Plan, the notion of the developmental state and emerging concepts such as the green economy to the strategy of the EFP. The governing body will also need to work with the executive authority to appoint a CEO or equivalent to who an appropriate level of authority is delegated. It is strongly suggested by King IV that this person report to and be part of the governing body and that the governing body agrees performance measures and targets with the CEO or equivalent and assesses the performance of this senior manager (IODSA, 2016. Principle 10). This separation of duties between the executive authority, the accounting authority/ governing body and the executive manager is currently not in place. This has led to ad hoc strategy changes, unclear reporting lines, lack of and unclear delegation of
authority and insufficient support and resources allocated to the different levels of authority. This requires urgent attention regardless of the actual form that the trading entity takes.

Recommendations

1) **Repositioning the Eco-Furniture Programme as a broader Invasive Alien Plant Value Chain** – The EFP is a misnomer for the vertical and horizontal integration of the current programme. This results in the programme risks being narrowly conceptualised and the potential for further integration being overlooked. This recommendation includes the need to build cross-departmental relational capital that includes the direct involvement of DTI, DST, small business development and EDD. This in turn will require a much stronger positioning of the programme within the Developmental State and the social compact discourses.

The first step in this process would be a value chain mapping process that identifies particular components of the value chain and shows how they link. As a guide to this process two volumes entitled *Value chain development for green jobs in Asia* (ILO, 2014) provide detailed methodology and operational guidance for this work. Volume 2 in particular provides details on linking the value chain and actor mapping processes. The development of the value chain and related actor maps will need to be done iteratively with Recommendation 2 below. Based on the results of this mapping process, links will need to be made with the planning of identified government departments. Thus, for example, the link to IPAP and the intention to make the furniture manufacturing sector a priority within IPAP should inform an engagement with DTI on the furniture component of the value chain. Similarly, the Department of Science and Technology is currently developing a road map for the circular economy in South Africa and a strategic engagement that positions the Invasive Alien Plant value chain within this road map will be important for ongoing engagement with DST.

2) **Different components of the value chain need to be strategically clustered along the lines of industrial symbiosis** – The current focus on Eco-Furniture is missing many opportunities for the creation of synergistic advantage. Greater integration with regard to the use of residual materials, energy, water, assets, logistics, expertise, etc. needs to be done strategically as part of the overall design of the programme. This process will reduce current transport costs, the accumulation of waste and loss along the value chain.

Appendix 6 of this review provides an overview of the large body of work that has been done on the viability of different value adding possibilities related to invasive alien plants. What is currently lacking is an integrated value chain based on the concept of industrial symbiosis. The *Invasive alien plant bioprocess value hierarchy* contained in this report provides an overview of the levels of value addition. The various manufacturing processes for the different products now need to be organised in such a way that the ‘waste’ from one process feeds directly into the feedstock of another process. Given the relatively low value/ high volume nature of the biomass waste/ feedstocks it is likely that the factories will need to be placed within close proximity to each other and to adequate invasive alien plants. The National Cleaner Production Centre in South Africa has substantial experience in Industrial Symbiosis having established initiatives in Gauteng and Kwa-Zulu Natal. GreenCape has also successfully implemented a number of industrial symbiosis initiatives in the Western Cape. It is recommended that these organisations be contracted to support a review of the potential for streamlining the value creation and retention within the invasive alien plant value chain.

3) **The potential of sustainable public supply chain management needs to be unlocked** – Given the many market failures in valuing the environmental and social benefits of the programme and the potential to create positive externalities through the value-added industries, there is a need to secure procurement support. This in turn will require close collaboration between DEA and National Treasury along the lines of the PSETA funded study into Green Public Procurement (Green Skills 2016). By positioning the
programme within the green economy discourse and highlighting the value creation across multiple capitals, it should be possible to move beyond the current tendency to focus narrowly on price.

The DEA has both the mandate and the specialist knowledge to support the strategic integration of national environmental policies into other areas of government activity. This would include driving the implementation of policies such as the National Environmental Management: Biodiversity Act. At the same time, National Treasury has stated that government needs to use public supply chain management to support national and local policies and strategies. It is therefore recommended that DEA and National Treasury work together to ensure that all government departments (and particularly bid specification committees) are empowered to incorporate sustainability and environmental considerations into tender requirements. This needs to be a broad initiative that could be supported by seconding a sustainable development/environmental specialist from the DEA to the Office of the Chief Procurement Officer. As part of this process, criteria related to water security, biodiversity restoration and the environmental and social transformation of a strategic sector such as the furniture industry could be developed for inclusion in supply chain management decisions.

4) Formal recognition of the longer-term employment within EPWP and thus opportunity for more cumulative training and capacity development – The current format of the EPWP is not aligned with the persistent and increasing unemployment in South Africa. The extended value chain associated with IAP biomass has the potential to develop new models of longer term employment as well as education and job progression within an integrated cluster of industries.

The Department of Environment Affairs has recently commissioned research into the career pathways linked to the environmental EPWP programmes. This research intends to develop a clearer picture of the occupations and skills requirements for work within the environmental EPWP programmes and the extended green economy. It is recommended that contact be made with Garth Barnes in the DEA to explore the possibility of this review and the research that he has commissioned jointly developing deeper insights into longer-term employment options within the EPWP and the training and capacity development implications. As a first step, it is recommended that this review be shared with the research team conducting the study on career pathing.

5) Strengthening the private-public sector partnerships through existing DEA initiatives (LUI programme), SAFI and the broader timber industry – There is significant support from all sectors to support the broader VAI Programme, especially when linked to the key imperatives of reduced environmental risk, including water security, and sustainable job creation. Building positive linkages between the public and private sectors is needed to enhance the potential for sustainable job creation based on economic, social and environmental value creation.

The co-operation agreement between DEA, SANParks and SAFI provides an extremely useful but challenging pilot for exploring how best the public and private sectors work together at the interface between environmental and social concerns and commercial business with a strong focus on competition and profit. This agreement has taken years to put in place and will require dedicated resources to implement and monitor in ways that lead to mutual cooperation, learning and benefits. It is not clear whether this agreement has been signed but as soon as it is, it is recommended that it become a key performance area for one of the senior staff working on the EFP. The insights gained from this process and the ongoing work with the Land User Incentive programme needs to inform the ongoing strengthening of the public-private partnerships within the invasive alien plant value chain.

6) Focus initially on getting the corporate governance right and then refining the strategic business model – An operation of this size needs a board with the knowledge, skills, diversity and independence to guide the strategic development of the programme. This is more important at this stage than the actual structure of the trading entity.
It is recommended that the Minister of Environment as the executive authority within government establish a governing body for the ‘trading entity’ as it is established. Appointments to this board should be guided by the *Handbook for the appointment of person to boards of state and state controlled institutions* (approved by Cabinet in 2008). A nominations committee will need to develop the criteria that ensure that the governing body has the appropriate balance of knowledge, skills, expertise, diversity and independence for it to discharge its governance role and responsibilities objectively and effectively. This body will then need to work closely with the executive authority, senior staff in the DEA and the executive management within the trading entity to align national policy priorities, including environmental policies, the notion of the developmental state and concepts such as the green economy and public works programmes within the strategy of the EFP. The governing body will also need to work with the executive authority to appoint a CEO or equivalent to whom an appropriate level of authority is delegated. It is recommended that this person report to and be part of the governing body and that the governing body agrees performance measures and targets with the CEO or equivalent and assesses the performance of this senior manager.
References


“Working For” Environmental Programmes & Green Fund EPWP projects; Famine Weed invasive alien; Value-Added Industries/Eco-Furniture; Committee Report on DEA Budget. Parliamentary Monitory Group. Retrieved from https://pmg.org.za/committee-meeting/20744/


Value-added industries: Opportunities for local and embedded energy, wood fuels and other products from invasive alien plant biomass. Council for Scientific and Industrial Research (CSIR).


Greening the South African Economy; Scoping the Issues, Challenges and Opportunities (1st ed.). UCT Press.

Feasibility Study for the Establishment of Eco-Furniture Factories. Mahlako a Phahla Investments and Abacus Advisory.


Towards a Green Economy: Pathways to Sustainable Development and Poverty Eradication. UNEP.


The opportunity cost of not utilising the wood invasive alien plant species in the Kouga, Krom and Bavaians catchments in South Africa. SAJEMS, 19(5), 814-830.

Integrated Reporting <IR>: Focusing on value creation in the public sector. An introduction for leaders. World Bank, IR, CIPFA.

Appendices

Please note that these documents are working documents that were developed to inform the Eco-Furniture Factory Programme evaluation. They form deliverables 2 (Contextual Profile Reports) and 3 (Case study and site visit reports). As such these documents should not be circulated as standalone documents without the consent of the authors.

Appendix 1
The Context and Policy Framework informing the Eco-Furniture Project by Daryl McLean

Appendix 2
A Contextual Profile of the South African Furniture Industry by Andre Kraak

Appendix 3
Review of DEA Eco-Furniture Programme by Dandira Mushangai

Appendix 4
South African Eco-Furniture Factory Value Chain and Actors: A commentary by Nicola Jenkin

Appendix 5
South African Eco-Furniture Mid-Term Review: Adding Value to Invasive Alien Plant (IAP) Clearing and Opportunities for the Expanded Public Works Programme (EPWP) programme by Nicola Jenkin

Appendix 6
Heidelberg Factory Site Visit by Dandira Mushangai
Appendix 1

The Context and Policy Framework Informing the Eco-Furniture Project
by Daryl McLean

Introduction

The Eco-Furniture Project (EFP) originates in a creative response to a confluence of major contextual drivers and policy imperatives. Contextual drivers (nationally and globally) include shrinking natural resources; the dramatic impacts of climate change and other environmental degradation; the culmination of a number of deep structural crises and shifts in the economy; and projections of shrinking employment in the formal economy. All these are likely to further fuel the already strident demands from those excluded from participating in or benefitting from the existing order.

In response, national development strategies have travelled almost full circle from the Reconstruction and Development Programme (RDP) through the Growth, Employment and Redistribution (GEAR) and AsgiSA, to the developmental state, the National Development Plan and the New Growth Path. The still emergent Second Transition and “radical economic transformation” proposals essentially take forward the developmental state discourse, but with an increased emphasis on a more interventionist and pro-poor state. This section explores the key features of successful developmental state strategies; the extent to which the EFP was adequately supported by such features; and the implications that shifts in the context have for taking forward the initiative. Locating the EFP at the interface between the formal economy, the informal economy, the “economy of the commons” and the family economy is proposed.

Greening the economy has been seen as an important strategy in its own right, but assumes even more importance as a developmental strategy in the current context. South Africa is a signatory to global climate change mitigation efforts; and a series of national policy studies and frameworks consistently point to the job creation and poverty alleviation prospects from greening the economy. Efforts to achieve these policy objectives have consistently run into challenges at the level of institutional discourses, regulations, technologies and practices at all levels. Institutional mechanisms for planning and auditing green economy projects are constrained by their focus on formal policy provisions rather than policy substance; the Organising Framework for Occupations (OFOs) struggles to incorporate informal or emerging occupations due to the prescribed methodology for defining hence funding them; and the complex organisational development work necessary to support such change at all levels of the system is constrained by current regulations and capabilities (for example, the regulated processes for creating, funding or filling jobs to undertake such work).

The Expanded Public Works Programmes – of which the environmental Public Works Programmes (PWPs) are the most successful – are also a key component of the developmental state strategy. PWPs yield value through cash on income or consumption smoothing; asset value generated; and human development. In relation to all three, research provides useful insights as to how such strategies can be improved. Cash on income and consumption smoothing should pay careful attention to the wage rate; labour or capital intensity should be evaluated against sustainability; and the economic leverage of beneficiaries as consumer cooperatives or brand association opportunities should be explored. The human development strategies require careful pathway analysis to inform curriculum; and participant engagement, individually and collectively, should take centre-stage. Without embedding the asset value generated into formal economy systems (for example, through eco-service payment models), the sustainability of the interventions is unlikely to succeed. There are solid economic analyses as to how this can be achieved, and these are elaborated at length here since they are potential points of consideration in the evaluation.

In response to the above challenges, this section sketches a framework of “socio-technological transition” as an appropriate way of conceptualising the EFP. This framework is proposed both as a framing for the evaluation of the current project, as well as a way of shaping the way forward.
The National Developmental Paradigm

Developmental Paradigms in Recent South African History

South Africa has seen successive development policy reorientations over the past 20 years.

“… within a couple of decades, we have been offered the Freedom Charter, the RDP, GEAR, AsgiSA, the developmental state, the NGP (the New Growth Path), the NDP (the National Development Plan) and, most recently, the Second Transition …”

(Fine 2016: 3)

While the Freedom Charter was not explicitly located within a theoretical paradigm, the notion of a developmental state was core to the formulation of the Reconstruction and Development Programme (RDP). The ANC argued in its 2012 Mangaung Policy Paper that the temporary diversion into the neo-liberal Growth, Employment and Redistribution (GEAR) strategy was necessary in the context of a bloated state. However, the resurgence of a developmental state discourse thereafter has informed the National Development Plan (NDP), New Growth Path (NGP), the Second Transition and the current proposals for “radical economic transformation”. All the above have also been informed by a “social compacting” paradigm, in which a developmental state would achieve its goals through collaboration between the state and often antagonistic social forces, such as business and labour.

Core Features of Developmental State Strategies

The developmental state discourse evolved internationally in opposition to the ‘Washington Consensus’, which favoured markets as the driver of economic growth. By contrast, the Newly Industrialising Countries (NICs) and subsequently the Asian Tigers achieved spectacular growth through significant state intervention. Most research into developmental states has focused on “what policy-makers in developmental states actually do, the mindset that guides their actions, and the institutional architecture that assists the process” (Weiss 2014: 639).

Using a mix of different policy tools, they each pursued a strategic industrial policy; strategic in the sense of proactively selecting particular industry sectors for development. The focus was not only on exports. These states combined export orientation with import substitution. Government officials did not ‘pick winners’ as if in a lottery. They typically studied the import profile to see what products or components of a product could be made locally for both domestic consumption and/or selling internationally. This process is one of continuing discovery: How many and which firms have the potential to produce X or Y? Where are the promising markets? What mix of incentives and other public inputs do they need to get to that point? While in the early phase of industrialisation bureaucrats turned their strategic efforts to the technologically simpler items, such as keyboards for computers in the case of Taiwan, later they promoted the higher-value-added components such as flat panel displays and LEDs, in addition to a host of high-end final products (for example, wireless telecommunications, photonics and netbooks) (ibid.).

The “strategic orientation” outlined above is the central feature of a developmental state, but this has been sustained through other features. As described by Nentshitenze (drawing on the ANC 2007 Strategy and Tactics document) these include:

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1 Fine (2016) points out that the developmental state and social compacting paradigms have evolved in different parts of the world for different reasons, and have seldom co-occurred. However, both have been central in SA policy.

2 The Eco-Furniture Factory Project was informed by just such an analysis, but it is worth noting that successful industrial development strategies within a developmental state paradigm are typically long-range and require sustained support; and involve “continuing discovery”, in which research and development/innovation capabilities are a critical component.
• “**Strategic orientation:** development strategy and programmes based on high growth rates, restructuring of the economy and socio-economic inclusion

• **Ideational capacity:** leadership in defining a national vision and mobilising society to take part in its implementation, with effective systems of interaction with all social partners

• **Organisational capacity:** state structures and systems that facilitate the realisation of a set agenda, with appropriate macro-organisation of the state

• **Technical capacity:** translation of broad objectives into programmes and projects and capacity to ensure implementation, with proper training, orientation and leadership of the public service”

(Netshitenzhe 2011)

A useful point of evaluation may be to explore to what extent these features formed part of the EFP design. For example, was the necessary ideational, organisational and technical capacity-building factored into the project design? What similar capacity-building is required to take forward the EFP and the Value-Added Industries strategy more widely?

Developmental state strategies were often successful in East Asian environments, and notably less so elsewhere. Considerable attention has therefore focused on the question: “Why does state involvement get such mixed results, producing relatively robust effects in some settings but poor or perverse outcomes in others?” (ibid.: 640). As summarised by Weiss (2014), the answers include:

• Incentive structures that focus on “performance orientation”, rather than “handouts” which go “in scattergun fashion to the strugglers and stragglers”;

• “Administrative guidance’ from “smart industry bureaucrats”;

• “Institutional software” on the part of the state, such as “value coherence: the developmentally oriented cadre in each case shared a similar background and socialization experience”;

• “Institutional hardware” within the state, such as “the creation of a pilot agency responsible for long-term strategy and coordination of policy inputs and staffed by a competent, mission-oriented professional bureaucracy, sufficiently insulated from the push and pull of special short-term interests”;

• Institutional hardware also includes “economic connectedness” through which “pilot agencies developed strategy from the ground up, rather than imposing made-to-measure orders from the top down”; and

• “Governed interdependence”, meaning “a formal (and informal) institutional environment of consultation and cooperative information-sharing between an independent and cohesive developmental leadership on one hand, and well-organized business sectors on the other”.

The Shifting Economic Context

What is missing from the Weiss analysis above is the shifting global political economy. Some analyses have noted “doubts within the [Developmental State Paradigm] camp itself over whether global conditions remain conducive to developmental states along the lines experienced by those of the past” (Fine 2016). In particular, Fine notes the changes wrought by “financialisation”, which involve:

“the phenomenal expansion of financial assets relative to real activity (by three times over the last thirty years); the proliferation of types of assets, from derivatives through to futures markets with a corresponding explosion of acronyms; the absolute and relative expansion of speculative as opposed to or at the expense of real investment; a shift in the balance of productive to financial imperatives within the private sector whether financial or not; increasing inequality in income arising out of weight of
financial rewards; consumer-led booms based on credit; the penetration of finance into ever more areas of economic and social life such as pensions, education, health, and provision of economic and social infrastructure; the emergence of a neo-liberal culture of reliance upon markets and private capital and corresponding anti-statism despite the extent to which the rewards to private finance have in part derived from state finance itself.”

Fine argues that the financialisation of the South African economy (and globalisation of the South African financial sector) has substantially undermined the developmental state agenda:

“… if the role of such financial services is to mobilise and allocate resources, South Africa has failed miserably. The level of investment in the South Africa economy has been at historically low levels; scarcely exceeding 15 per cent of GDP or half of what is necessary for developmental state status.”

Consequently, “post-apartheid South Africa has suffered an almost perfect, destructive storm as far as strengthening its prospects for developmental state or social compacting are concerned” (ibid.).

These debates regarding the current status of and trends within the economy in South Africa and elsewhere are relevant in terms of conceptualising and positioning the EFP. Some of the most important thinkers globally suggest that the formal market economy has entered a possibly terminal crisis. In Streeck’s words “… electronicisation will do to the middle class what mechanisation has done to the working class, but it will do so much more quickly”. Those excluded from the formal economy are increasingly surviving in the informal economy (Wills, 2009; Chambwera et al., 2011); the family economy (Becker, 1991, 1995; Sidh, 2011; Borderias, 2004); the economy of the commons (Raworth, 2016; Rowe, 2008; Frieschmann, 2005); and the shadow economy3 (Schneider et al., 2010; Winter, 2008; Hubschle, 2016; Masciandaro, 1999; Katsios, 2006). As argued by Smith et al. (2006) in relation to “post-socialist” societies:

“capitalist development ... should be seen as one part of a diverse economy, constituted by a host of economic practices articulated with one another in dynamic and complex ways and in multiple sites and spaces.”

Further growth within the formal economy is therefore unlikely, and growth strategies should ideally interface with the various dimensions of the economy.

The Green Economy Discourse and Strategy

A Brief History of Green Economy Discourse Globally

The concept of a “green economy” has a long history; has been called different things; and has been (and still is) conceptualised rather differently in different contexts and for different purposes. The Brundtland Report (UN, 1987) defined sustainable development as “development that meets the needs of the present without compromising the ability of future generations to meet their needs”. It is the conceptualisation and weighting of the three themes implicit in this definition that still today informs different perspectives.

Since the United Nations Conference on Sustainable Development at Rio in 2012, the definition hegemonic in policy discourse has been that of the United Nations Environment Programme (UNEP) which defines a green economy as one that results in

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3 “… the weighted average size of the shadow economy (as a percentage of “official” gross domestic product) in Sub-Saharan Africa is 38.4 percent; in Europe and Central Asia (mostly transition countries), it is 36.5 percent, and in high-income OECD countries, it is 13.5 percent. … The driving forces of the shadow economy are an increased burden of taxation (both direct and indirect), combined with labour market regulations and the quality of public goods and services, as well as the state of the ‘official’ economy” (Schneider, 2010: 2).
“improved human well-being and social equity, while significantly reducing environmental risks and ecological scarcities … in its simplest expression, a green economy is low-carbon, resource-efficient and socially inclusive.” (UNEP, 2011)

**Key Features of the Green Economy**

Features that distinguish the green economy from traditional economic perspectives and business practices are summarized in the table below.

<table>
<thead>
<tr>
<th>Current economy</th>
<th>Green economy</th>
</tr>
</thead>
<tbody>
<tr>
<td>GDP growth: more economic activity the aim</td>
<td>‘Beyond GDP’: prosperity the aim</td>
</tr>
<tr>
<td>Focus on the near future (short-termism)</td>
<td>Long-termism</td>
</tr>
<tr>
<td>Maximisation of return</td>
<td>Safeguarding of long-term incomes</td>
</tr>
<tr>
<td>Shareholder value</td>
<td>Stakeholder value: benefit to society</td>
</tr>
<tr>
<td>Extraction of natural resources</td>
<td>Management of natural resources</td>
</tr>
<tr>
<td>Linear production systems</td>
<td>Circular production systems</td>
</tr>
<tr>
<td>Short-life products for sale</td>
<td>Long-life services: the ‘performance economy’</td>
</tr>
<tr>
<td>Efficiency measured in monetary terms (e.g. cost-benefit analysis, CBA)</td>
<td>Multidimensional efficiency (e.g. multi-criterion analysis, MCA)</td>
</tr>
<tr>
<td>Micro- and macrorationality highly divergent</td>
<td>Micro- and macrorationality highly congruent</td>
</tr>
</tbody>
</table>

**Green Economy Initiatives in South Africa**

Within South Africa, a series of studies and policy frameworks have aimed to provide an enabling policy environment to achieve a transition to a green economy. A summary of these is provided in the table that follows. These have been translated into a much wider set of interventions at project-specific level – the Value-Added Industries (and EFP) are an example of this.

<table>
<thead>
<tr>
<th>Policies and measures</th>
<th>Main goals</th>
</tr>
</thead>
<tbody>
<tr>
<td>Framework for Environmental Fiscal Reform (NT, 2006)</td>
<td>Provides principles and guidelines for fair and effective environmental taxes</td>
</tr>
<tr>
<td>10-Year Innovation Plan (DST, 2006)</td>
<td>Includes safe, clean, affordable and reliable energy supply and climate change as priorities</td>
</tr>
<tr>
<td>Medium-Term Strategic Framework (2009-2014)</td>
<td>Notes the need for sustainable livelihoods and sustainable resource management and relates this to various other policies including energy, water, housing, technology and competitiveness</td>
</tr>
<tr>
<td>Industrial Policy Action Plan (2014)</td>
<td>Specifically targets growth in green industries, focusing on solar water heaters, solar and wind energy, and organic farming</td>
</tr>
<tr>
<td>New Growth Path (2010)</td>
<td>Targets the growth of a green economy, resulting in green jobs</td>
</tr>
<tr>
<td>Integrated Resource Plan 2010-2030 (DoE, 2011)</td>
<td>Limits emissions from electricity generation to 275 mt per year, expects renewable energy to make up 42%</td>
</tr>
<tr>
<td>National Climate Change Response (SA 2011)</td>
<td>Endorse and quantifies South Africa’s GHG’s limits/commitments</td>
</tr>
<tr>
<td>National Strategy for Sustainable Development</td>
<td>A large variety of indicators and goals spanning social, economic, environmental issues</td>
</tr>
</tbody>
</table>
Not all green economy initiatives potentially address poverty and inequality. In relation to the energy sector for example, Baker et al. argue that a shift is taking place from

“‘electric capitalism’ – the way in which the current electricity regime in (South) Africa entrenches and embeds existing inequalities through its uneven development and levels of access while locking in a carbon-intensive development path – to a form of ‘climate capitalism’ in which capitalism’s growth imperatives are increasingly served by the creation of new sites of accumulation in a low carbon economy”.

Challenges in Implementing Green Economy Strategies

Efforts to achieve these policy objectives have consistently run into challenges at the level of institutional discourses, regulations, technologies and practices at all levels.

All planning on the part of the state takes place within the Treasury Framework for Strategic and Annual Performance Planning. New policies and laws are summarised in the legislative compliance section of these documents; and should inform the organisational plans, staffing and budgeting for all organs of state. However, the integration of environmental considerations requires both refining the instruments and building capacity. At local government level, for example, the DPME Municipal Assessment Tool requires the following plans as supporting evidence for any Integrated Development Plan (IDP):

- Disaster Management Plan;
- Land Use Management Framework and System;
- Water Services Development Plan (WSDP);
- Water Resources Plan;
- Forestry Plan;
- Integrated Transport Plan;
- Integrated Waste Management Plan (IWMP);
- Roads & Storm Water Master Plan;
- Energy Master Plan (Electricity Master Plan);
- Infrastructure Investment Plan;
- Housing Plan;
- Informal Settlement Upgrading Plan (ISUP);
- Area Based Plans (Land Reform).

Each of these sub-plans should ideally be evaluated against environmental considerations, and would drive green economy objectives were they to do so. Yet no supporting rubric for evaluation of each plan against environmental legislation exists. Institutional mechanisms for planning and auditing green economy projects are accordingly constrained by their focus on formal policy provisions rather than policy substance.

These problems manifest at all levels of the system. In creating posts or training people to fill such posts, the Organising Framework for Occupations (OFOs) struggles to incorporate informal or emerging occupations due to the prescribed methodology for defining hence funding them (essentially a form of job analysis). The DPSA guidelines for organisational design are used to create posts or organisational capabilities, and this too has limitations in taking emerging fields of practice into consideration. Building the state capabilities to lead green economy transitions may require further engagement with these challenges.
Public Works Programmes as a Model

The History of Public Works Programmes

The Eco-Furniture Factory Project uses a Public Works Programme (PWP) model. Historically, such programmes originate in the Public Employment Programmes (PEPs) initiated by the US government in response to the Great Depression of the 1930s. The core logic of these is that where “business was not able to expand, the government must take up the slack” (Heilbroner, 1999: 275).

Public Works Programmes have evolved to become frequent state interventions under conditions of “one-time or repeated co-variate shocks” (such as droughts, floods, other natural disasters or economic crises). Recent examples internationally include the 2008/2009 Chinese economic stimulus program; the 2008 European Union stimulus plan; and the American Recovery and Reinvestment Plan of 2009. They are also particularly widespread across developing countries in sub-Saharan Africa.

PWPs typically achieve an impact through three key mechanisms:

- Providing temporary income or consumption smoothing to people in need;
- Adding value to public assets through the work done; and
- Human development (through providing training or work experience to individuals, and sometimes also through some form of community development).

In relation to each of these, there is substantial research evidence supporting what is needed to “make public works work” (Ninno et al.). These are elaborated below, with extensive quotations, to support analysis of the EFP.

Key Implementation Features of PWPs

Key implementation features include the wage rate, number of hours worked and the labour intensity of operations.

**Wage rates** influence whether the programmes reach the targeted audience. In countries where the market wage is below the minimum wage (for whatever reasons including weak enforcement of the minimum wage), a publicly funded programme wage cannot be lower than the minimum wage, and hence it has to be higher than the local market wage for unskilled labour. If this happens, the scope for self-selection is ruled out because the programme wage, now higher than the ruling market wage, is most likely to attract the non-poor to the workfare programme.

In a situation where the market wage is higher than the minimum wage, the publicly funded programme wage can still be set either at the level of the minimum wage, or even slightly higher than the minimum wage, but lower than the prevailing market wage. This type of wage setting is most likely to lead to self-selection of the poor in the programme (ibid.).

The **number of hours** worked similarly influences participation (with a strong gender impact); and may be utilised by families when participating. The choice of the remuneration method, daily rate/piece rate can also affect the targeting and outcomes of PWPs. Task-based payment provides flexibility and may attract more women to worksites or allow several member of a family to share the work (ibid.).

**Labour intensity** of operations is the key consideration in selecting the asset to be created. In this respect, there is a strong relationship between the level of mechanisation and labour intensity. Arguably, the EFP would compete more effectively in various market segments through stronger capitalisation and mechanisation; however, this would reduce labour intensity.
The Design of Safety Net Features in PWPs

The design of safety net features in PWPs includes the targeting method; seasonality of operations; gender sensitivity; community involvement; and financing mechanisms. If targeting the neediest, multiple targeting methods are required.

There is evidence that the use of multiple targeting methods makes the identification of the neediest more accurate and comprehensive, improving the targeting performance (Coady, Grosh, and Hoddinott, 2004). The use of pure self-selection, for example, might be insufficient in reaching vulnerable groups in poor areas or when the demand for participation is very large and some form of employment rationing is needed.

Gender sensitivity is a key dimension if poverty alleviation is the goal:

“The gender dimension of public works participation covers several concerns. First, the need to provide access to women to direct wage employment, to protect them from loss of earnings; second a woman’s participation in the labor force and her control over resources is associated with substantially larger improvements in child welfare, and, women’s health and status; lastly women’s benefits from assets created by PWPs…”

Finally, community involvement in project selection has been demonstrated to have significant benefits:

“Community involvement in the selection of sub projects has many advantages. First it will result in the creation of infrastructure/assets that are most needed by the community. Public works would then become a genuinely demand-driven activity. Second, it creates ownership of the asset created and may lead to better maintenance of the asset (such as community water outlets). Third, it may help on the site supervision of the project by the community (and thus contribute to better quality of the asset created.)”

There are four different models as to how such projects are financed and delivered:

“… we can distinguish four delivery mechanisms: a) the traditional model (financed and implemented by the government); b) Government financed and implemented by others; c) Government and donors financed and implemented by others; and d) financed by donors and implemented by governments or donors.”

These can be classified into four groups: (a) arrangements relating to financial flows, (b) availability of funds for non-wage expenses, (c) weak capacity especially in dovetailing managerial, technical and labour inputs at the actual project implementation site and the role of contractors; and (d) political economy factors.

Weak institutional capacity may sometimes impact on project delivery:

Implementation of a workfare programme requires convergence of technical, managerial and labor inputs at the work site. Since the government capacity to accomplish such a convergence of inputs is weak, often contractors are hired to implement the programme. This has led to two problems: (i) Sometimes agencies providing the funding neither enforce the design of the programme nor do they have any interest in enforcing them since they are accountable, not to the client, but to their respective state governments. (ii) Contractors may bring their own labour and not employ labourers from areas close to the project site for whose benefit the programme was initiated in the first place. (ibid.).

Asset Creation and Maintenance in PWPs

Asset creation and maintenance is the third design feature that is central to the EFP. Three aspects of the asset creation are key: (a) whether or not the assets created are productive, (b) whether or not the created assets are maintained, and (c) whether or not the benefits from created assets actually go to the poor… (ibid.).
Monitoring and evaluation systems should ideally be designed early in the project, to provide feedback during the project lifespan; yet Beazley notes they have been rare in PWPs.

Other Concerns regarding PWPs
McCord (2004) summarises a set of other concerns regarding PWPs, of relevance to the EFP. These include:

- “Clearly defining programme objectives and ensuring the participation of the appropriate groups... Social protection and labour market performance are sometimes contradictory objectives, leading to inappropriate targeting of participants. (Older women or female-headed households are often more appropriate for the former, unemployed youth may be the appropriate targeting for the latter). There is a need to explicitly target and ration access to PWP employment, as self-targeting through the principle of ‘less eligibility’ via restricted wages is not adequate in the context of mass unemployment.”
- “Targeting criteria for beneficiary selection (youth, rural female household heads, etc.) should be developed in line with the intended programme objectives.”
- “The rationing process should be linked to the selection criteria (rather than first-come-first-served or lottery-based processes).”
- “Sustained employment is required for significant anti-poverty benefits to accrue.”
- “Investment in social development processes can enhance the poverty impacts of a programme and community ownership, but this can only be achieved through a sustained intervention.”
- “PWP participation alone is unlikely to significantly enhance labour market performance or increase net employment.”
- “Skills training offered to PWP participants should be appropriate in terms of local labour demand.”
- “PWP implementation should be linked to other development initiatives, such as microfinance, in order to promote sustainability and second-round benefits.”
- “Institutional modalities and incentives should impact on targeting performance.”

Such interventions may be planned by the state from one perspective, but are commonly utilised by participants from another (especially where this is provided for, but sometimes even where it is not). Thus, McCord notes the interface between the family economy and the economic opportunity in the case of a KZN EPWP in which factors informing participant “preference for a lower, secure income over a higher temporary one were”:

“... the prolonged duration (enabling consumption smoothing and so facilitating improved household budgeting, saving, taking loans, etc.), the flexibility of working hours (enabling PWP participation to be combined with other household responsibilities or income generating opportunities), and the household allocation of employment (with the employer sanctioning the employment being passed on to other household members in the case of sickness or death of the nominated worker). These unusual design elements meant that the programme maximised the potential for participation by the poor, and also the benefits derived from participation. Workers in both programmes preferred to maintain their employment in the schemes rather than engage in alternative casual (unpredictable) employment even if it offered higher remuneration.” (McCord, 2004: xi)

Similarly, Fourie notes examples of where participants preferred to provide access to their children to participate in the training opportunities, both because they believed their children had better foundational skills to succeed, and to distribute opportunity and effort across the family capabilities.
The EFF Project as a Technological Transition

The EFP project documentation does not describe an explicit theory of change informing how the project will achieve the anticipated results. A more explicit framing of the theory of change may helpfully influence project activities in the way forward, including the evaluation study. It could obviously also inform project management and governance in the way forward.

Unlocking green jobs requires what one theoretical framework describes as a “multi-level socio-technical transition”. Combining the MLSTT framework with a description of the political economy of particular fields of practice strengthens the analytical value, and provides a useful theory of change for the project. A good example of this is provided by Baker et al. (2016), in relation to the energy sector. A few extracts below describe the framework, and the article itself demonstrates the value of such analyses for strategically targeting systemic changes and capacity-building interventions required:

- The term ‘socio-technical transitions’ refers to ‘deep structural changes’ in systems such as energy and transport, which involve long-term and complex reconfigurations of technology, policy, infrastructure, scientific knowledge, and social and cultural practices to sustainable ends;
- ... the multi-level perspective...analyses systems change from the level of ‘landscapes’, ‘regimes’, and ‘niches’...and is useful here because it attempts to capture the way in which technological and political change is embedded within and affected by broader global processes such as is the case with South Africa;
- A regime refers to patterns of technologically determined behaviour which is shaped by ‘cognitive routines’ shared by engineers and influenced by policy makers, scientists, energy users, vested interests and other professional groups. ... Though gradually evolving, events and structures within the regime are stable and fairly predictable, and protected by ‘lock-in’ mechanisms. ... In the context of our case study the regime level incorporates the state-run, coal-generated, publicly-funded electricity sector and related institutions, policies and structures at the national level. A niche, meanwhile, refers to a protected space at the micro-level, where ‘radical innovations’... and learning such as new technologies, markets, ideas, practices and policies emerge which deviate from the dominant regime. ... These are carried out by ‘small networks of dedicated actors, often outsiders’ and are unstable in nature. ... In South Africa this applies to the emerging entrepreneurial cluster of renewable energy independent power producers backed by bi-lateral donors and private finance, some of whom seek to gain carbon finance through the CDM. A ‘landscape’ meanwhile refers to the external environment or influences at the macro-level. Geels (2011:28) argues that it includes ‘demographical trends, political ideologies, societal values and macro-economic patterns’ and influences dynamics at the levels of the regime and the niche. These form the deep structural relationships of a society and change only slowly.

Accumulation of niche activity can reach ‘tipping points’ (sometimes correlated with scale but often through the convergence of niche activity with dynamics in the regime or landscape). Such tipping points may transformationally disrupt, and trigger reconstruction of, existing cognitive routines; regimes; and (to a more limited extent) landscapes. The EFP has possibly provided such tipping points at micro-levels. This evaluation potentially helps to catalyse the disruption and reconstruction required for a multi-level socio-technical transition, at meso- and macro-levels.
Appendix 2
A Contextual Profile of the South African Furniture Industry
by Andre Kraak

Introduction
This paper provides a contextual background to the wood and furniture industry in South Africa. It does this
briefly by outlining the major factors shaping both the global and national furniture sector over the past three
decades. The analysis concludes by suggesting that the industry lacks ‘systemic coherence’ with key elements
of the system out of synch with other central components. This ‘systemic’ analysis is then applied to a specific
case study of the George furniture sector and the constraints that this regional branch of the industry is currently
facing. All of this ‘context’ is essential in being able to better understand the forces that will be acting upon the
SANPARKS supported Eco-Furniture Project, which has furniture factories located across the country, with the
largest based in George.

The Global Context
The global furniture industry has undergone dramatic change in the past three decades. At least four such
changes can be outlined. The first observation to be made is the survival of furniture as a low-tech export sector.
Furniture is within the top 20 traded goods out of a list of 141 goods traded globally (Kaplinsky, Readman and
Memedovic, 2009: 6). This achievement is quite contrary to the orthodoxy of ‘convergence’ theories which
suggest that global capitalism will shift uniformly towards a high-skill society and knowledge economy. The
reality is that these new high-tech sectors cohabit and co-exist alongside much older low-tech sectors such as
furniture and clothing. These latter sectors have not disappeared.

The second most important change globally since the 1990s has been the arrival of new players in the sector,
entailing a shift in the locus of attention away from the developed furniture economies of Europe (Italy and
Germany), the US and Canada, to new players in the developing world such as China, Mexico, Indonesia,
Malaysia, Thailand and Vietnam, as well as countries joining the European Union from Eastern Europe such as
Poland and the Czech Republic (Kaplinsky, Readman and Memedovic, 2009: 7-8). All of these new players have
been able to enter the global furniture market mainly through cost competitiveness, capturing market share
from the dominant players in Europe and the Americas. However, the power relations between countries remain
unequal, with a polarisation between low quality/price and higher quality/price emerging between the
developed furniture economies and the new players. This polarisation is reinforced by the materials used. The
traditional solid wood, highly specialised furniture products have retained important niche market segments
primarily for high-end, expensive and design-led products. In contrast, the growth in demand for low-price
furniture has created an opportunity for firms from developing countries to mass produce cheap furniture and
to ship them to new markets across the globe (TIPS, 2010: 8; DTI, 2008: 7).

China’s role in this polarisation is large. Chinese furniture imports into America in the 1990s and early 2000s
reached 49% of all furniture sales – an incredible penetration of a market which was largely insular and local.
But with unrelenting price competition, and falling unit prices, many American and Canadian firms were severely
affected, some closing shop whilst others sought routes out of the low-cost, standardised furniture markets.
Kaplinsky, Morris and Readman have characterised the option of seeking to remain competitive in the low-price,
standardised furniture segments as that of ‘immerising growth’ by which they mean the expansion of economic
activity but with declining real living standards (Kaplinsky, Morris and Readman, 2001: 2). This threat of
immerising growth has faced South African furniture producers over the past two decades.

A third dynamic globally is of course the dramatic changes in production, including ‘lean’ forms of work
organisation, outsourcing of non-core activities, computer-aided design and manufacturing (CAD and CAM), and
just-in-time inventory systems. Lean manufacturing is about the control of waste, quality defects, and down-
time as well as worker socialization and discipline. Similarly, quality control systems were put in place as
procedures to reduce manufacturing defects and time delays to zero (Kaplinsky, Readman and Memedovic, 2009: 5; Kaplinsky and Morris, 2014: 94-96; TIPS, 2010: 8).

A complementary innovation within the furniture sector itself – the flat-pack or RTA (ready-to-assemble) furniture – has also been revolutionary. These flatpacks, alongside innovations in global logistics, containerization and cardboard packaging, allow furniture firms to market and export their products anywhere. These packaging developments also allow dramatic cuts in the cost of shipping bulky products (Kaplinsky, Readman and Memedovic, 2009: 5).

On the negative side, the new conditions of production were accompanied by what the literature refers to as Neo-Liberal restructuring, the central element being liberalising trade between economies, making them more open and unprotected by doing away with import tariffs, production subsidies and infant industry protection – all measures used first by the developed economies to grow dominant in key sectors, and secondly, by the East Asian tiger economies to ‘catch-up’ in the 1970s and 1980s. With the establishment of the World Trade Organisation in 1994 and its General Agreement on Tariffs and Trade (GATT), these trade protectionist measures were severely restricted for use by developing economies such as South Africa in the current period (Letsoalo, 2013: 12).

All in all, the global context provides a contradictory set of opportunities and constraints. Many less developed countries have shown that it is possible to ‘catch up’ in the furniture industry and to attain export competitiveness and grow the local furniture economy. In contrast, there are many structural reforms in the global economy imposed by regulatory bodies such as the IMF and WTO and their trade policies which severely limit precisely this process of ‘catch up’ for late starters. South Africa is one such country faced with problems of late upgrading.

The Local Furniture Industry
The next section provides a brief profile of the South African furniture sector, outlining its key features and current problems. Kaplinsky and Manning characterise the industry as being dominated by large firms and a high degree of concentration in terms of corporate ownership. South African manufacturing in general has a high degree of concentration, with the six largest conglomerates in 1992 owning approximately 87 percent of issued capital on the Johannesburg stock exchange (Kaplinsky and Manning, 1998: 142). This industrial dominance in furniture has affected average plant size, with medium to large firms dominating the formal sector, and thereby depriving South Africa the historical route evolved in Europe whereby most furniture sectors are run by small family-owned artisanal firms.

Kaplinsky, Memedovic, Morris and Readman make the same point about furniture retailing – the top three retailers in 1996 captured 60% of furniture sales. In addition, the authors note that two of top conglomerates have interests which span forestry, paper and pulp production, furniture fixtures and retailing (2003: 15). The rise of the big retailers began in the 1970s. In that period, a number of large chain stores were emerging across South Africa, in both urban cities and rural towns, offering easy access to credit and a wide variety of products on display and in stock. The independent retailers of yesteryear were quickly eliminated by this competition. The chain stores that emerged during this period included: Ellerines, Joshua Doore, the Lewis Group, OK Bazaars/Hyperama, Beares and Morkels to mention only the historically large players in the furniture retailing sector. These players introduced highly standardised mass produced furniture items in high volumes across South Africa (Kaplinsky and Manning, 1998: 147).

Key segments and export potential
The furniture sector is not homogenous, and as a consequence, there are a number of market segments. Morris and Jackson did a competiveness survey in 2002, based on segments, and found that many segments are in fact uncompetitive, with only the ‘lounge’ and ‘bedroom’ components displaying some potential for upgrading and increased competiveness on global markets (Morris and Jackson, 2002: 11). Both lounge and bedroom segments
captured market share during the decade of the 1990s whilst also containing price decreases. In contrast, they found that office furniture had lost market share globally whilst kitchen furniture manufacture had experienced sharp price decreases of about 10%, suggesting weaknesses in both segments (2002: 24-25).

Much of the improvements in exports experienced by segments as described above were due to a mini-boom phase which grew on the back of the depreciating rand from the mid-1990s until the end of the decade. Exports expanded significantly to the European Union, other African countries, and to a lesser extent, the US (DTI, 2008: 9; Morris and Jackson, 2002: 16). The value of furniture exports grew almost tenfold from R54 million in 1990 to R526 million in 1999 (Kaplinsky et al, 2003: 18). But this expansion of exports was built on fragile legs, arising mainly because of a depreciating rand, a set of temporary conditions which changed in the early 2000s. It did not arise because of upgrading strategies and the improved insertion of South African firms into global production networks. In reality, the sector has been facing continuing decline since the mini-boom of the mid-1990s.

Constraints facing the industry

Much of the decline in the sector is due to a number of constraints which are largely irreversible or which industry players and government have not been successful in eradicating. For example, even though flat-pack technologies have been evolving since the 1990s, South Africa is still too far away from the main export markets to be able to effectively compete with other furniture sectors closer to the main consumer locales.

A second negative is the cost of raw materials. The Gauteng Industrial Policy Framework for 2010-2014 notes the uncompetitive pricing of key inputs into furniture production, such as steel springs and foil (Department of Economic Development, 2014: 10-11). Similarly, Kaplinksy et al. also highlight the poor quality of sawn wood timber:

> The saw-milling technology used is old, since most new investment has gone into paper and pulp, which has higher profit margins. Consequently, the furniture industry is badly served with respect to input quality and flexibility, and delivery reliability is poor. (2003: 15)

The monopolistic conditions surrounding the three dominant saw milling firms has meant that furniture manufacturers have faced a sellers- rather than a buyers-market. Consequently, the mills have not been responsive to furniture manufacturer needs for higher quality sawn timber and more favourable timber pricing. The more wealthy paper and pulp industry has been able to pay higher prices for woods in demand that are steered in their direction (Kaplinsky et al., 2003: 22-23).

Although South Africa’s middle class has grown significantly since 1994 with the advent of democracy and the rise of a sizeable black middle class, this increased purchasing power for home ownership and furniture sales is still restricted. This new middle class, alongside a large salaried working class, aspire to affordable furniture sold at the large chain stores. They do not as yet constitute a large market for the higher value-added furniture market segments. And even though South Africa exports to neighbouring countries in Africa, these are still very poor countries, and the demand continues to be for low-cost, standardised furniture (Vukovic, Zarifnejad and Lundgren, 2010: 34).

Poor productivity and competitiveness data

Morris and Jackson (2002: 15, 18) and the DTI (2008: 10-11) both argue that productivity and competitiveness in the sector have declined in the late 1990s and 2000s. This they attribute to the declining investments in new technology and skilled labour, and poor design capabilities in the national innovation system, especially the former technikons (now universities of technology). R&D that is needed to support the revival of the industry is almost non-existent. As Morris and Jackson explain, when productivity and competitiveness measures decrease, this is likely to be due to firms within the sector that are not optimising their resources and processes. The productivity losses may even suggest that firms are in a process of downgrading:
The local environment within which the wooden furniture value chain is located is a difficult one in which the chain is squeezed between the dominant pulp and paper value chain and the increasing export of unbeneficiated raw materials (i.e. logs) out of the country. Combined with a lack of trust between different players in these intersecting value chains and ongoing inefficiencies in, for example, the supporting environment (including but not limited to the port of Durban), local wooden furniture manufacturers face significant challenges simultaneously from the local and global contexts (Morris and Jackson, 2002: 44).

Retail Chain Stores and ‘Hire Purchase’

One of the most striking features of the South African furniture industry is that as much as 80 percent of all products sold are done so on the basis of the model of ‘hire purchase’ (Kaplinsky and Manning, 1998: 147). Hire purchase schemes provide poor consumers with access to credit to buy furniture items for their homes. Kaplinsky and Manning argue that the dominance of the sector by a few very large firms is precisely because of their ability to provide financial credit. This inter-sectoral dynamic – the linkage between furniture retail outlets and financial credit – is a key determining factor in the high degree of concentration of ownership in the furniture sector.

Hire purchase evolved initially in the 1950s to benefit poor white workers who had migrated from the farmlands to the cities in search of work and urban security. This model was extended in a similar way to urbanising black workers by Eric Ellerine in the 1960s, who created a furniture firm, Ellerines, to provide exactly this ‘hire purchase’ service to black workers. By the late 1990s, the credit system had become the main basis of profitability for the furniture sector:

… the principal commodity which is sold by the furniture retail chains is finance, rather than furniture…. That is, most of the profits accruing to furniture chains do not emanate from mark-ups on the commodities sold, but instead arise from provision of consumer credit. (Kaplinsky and Manning, 1998: 153)

In an important 2004 study of the extent of debt incurred by South Africans, Ardington, Lam, Leibbrandt and Levinsohn reveal how the micro-lending mechanisms of major retail stores are the major boosters of high furniture and clothing sales, especially to poor people. The South African furniture industry is a R15 billion industry per year with around two-thirds being sold on credit and entailing over 2.1 million clients (2004: 12-13). Ardington et al. argue that, overall, the proportion of positively indebted households increased from 15% in 1995 to 32% of households in 2000, an increase of over 100% (2004: 14). These high levels of indebtedness create a wide array of social problems in poor families, and leave the furniture industry locked into a highly exploitative low-cost, low quality production regime which is difficult to navigate out of.

The lead role of retailers

A further dimension of the furniture industry to explore is the extent to which the South African furniture retail sector hinders or provides support for the upgrading of supplier firms in the local value chain. Kaplinsky et al. suggest that there are indicators of both routes – upgrading assistance is offered by some lead firms but other suppliers have experienced significant constraints and obstacles. In a recent contribution to the debate on global value chains in Africa, based on case studies of over 25 clusters across Africa, Kaplinsky and Morris argue that the continuous pressure to meet global standards is forcing lead firms to develop supplier capabilities along both the global and local value chains. These standards today are not merely ‘lean production’ requirements regarding quality and just-in-time inventories, but are rather more complex and multi-faceted – what Kaplinsky and Morris call the ‘triple-bottom line’ (2014: 101). These new standards arise because consumers in the high income northern economies have become more discriminating in their consumption habits, beyond issues of quality and scope, to include the social and environmental dimensions of consumed products and the way in which they have been manufactured.
The new manufacturing standards required of firms operating in global markets driven by developed nation consumers is to meet a three-fold set of requirements (the triple bottom line):

- Standards to do with the social conditions of production, for example, their working conditions, safety standards and education and training. Many of these standards are now clearly expressed in the ‘corporate social responsibility’ strategies of lead firms;
- Standards to do with the environment, for example, the need to ensure that the environment is not degraded during production. Lead firms are being forced to adopt ‘greening’ policies which require changes along the value chain, including suppliers along the various tiers; and
- Standards to do with the collective economic efficiency of each tier of the supply chain, and not just the profitability of the lead firms. (Kaplinsky and Morris, 2014: 102)

The Extent of Firm Upgrading: Evidence from the Literature

This next section provides a brief overview of the secondary literature on firm upgrading (and downgrading) in the furniture sector in South Africa. Morris and Jackson undertook a firm survey of 26 firms in the furniture sector in 2002, spread across a wide range of furniture segments, but not including informal SMEs. The core results are revealing. Under the category ‘process upgrading’, Morris and Jackson reveal that 15 of the 26 firms were involved in some sort of process upgrading, mainly with regard to improving logistics and distribution capabilities, to compensate for the very poor services offered by the Durban port, which was plagued by problems of delays, worker strikes and a generally inefficient management (Morris and Jackson, 2002: 32).

In relation to ‘cost related process upgrading’, firms reported the pressures from buyers to cut costs by as much as 20 percent, with little attempt to develop suppliers along the key lower tiers of furniture manufacturing. The industry was cut-throat:

Three manufacturers spoke at length about the behaviour of firms in securing sales. A wooden kitchen furniture manufacturer claimed that firms did not cooperate and tried actively to “cut each other’s throats”. The manufacturer stated that this was a significant trend in the industry which ultimately had an impact on firstly, what were the products sold and secondly, the sustainability of the firm. This behaviour was anathema to the positive opportunities in the exporting market and it was said that “the market is big enough for everyone but the guys out there cut each other’s throats to make the sale”, (Morris and Jackson, 2002: 32).

Such cut-throat competition and the associated lack of cooperation between firms has restricted firms’ ability to benefit from the collective efficiencies and externalities generated within clusters by firms who cooperate and agree to do differing tasks thereby creating complementarities in the cluster. These forms of specialisation do not appear to have emerged amongst the firms surveyed.

With regard to higher quality products, South African firms do appear to have taken the increased regulation in the sector seriously, including the need to harvest only legal and certified woods. Also, many were involved in upgrading quality through sourcing better quality woods, and through the lessons learnt from exporting which required that South African firms met international quality standards:

For the supplier from the developing world, this means that they are expected to meet requirements that frequently do not (yet) apply to their domestic markets. In this study, several manufacturers of pine bunk beds for children explained how products exported to the UK had to comply with British safety standards while bunk beds produced for the local market were said to be “only this side of hazardous”. This suggests a widening gap between capabilities of local manufacturers producing for the local market and for the export market. (Morris and Jackson, 2002: 34)
With regard to product upgrading, Morris and Jackson report that 13 of the 26 firms survey had undertaken some sort of ‘product upgrading’ – that, is producing more sophisticated product lines in terms of increased unit values. However, a much smaller group of firms increased product value through design upgrading, or through the creation of an entirely new product (Morris and Jackson, 2002: 36).

The final measure of upgrading examined by Morris and Jackson was ‘functional upgrading’, which refers to the acquisition of new functions in the value chain, and inevitably, new power dynamics based on these new functions. The classic functional shift for a firm in the value chain would be to move from a purely manufacturing role, responding mainly to a buyer’s requirements, to incorporating more of a design role in the production process as well. It is at this level of power relations in the chain where the upgrading aspirations of suppliers are hindered by the dominant grouping of (retail) buyers in the value chain who control the design, marketing and branding functions. In this survey, the dampening role of Steinhoff, a major multinational conglomerate ‘buyer’ who also operates in the local furniture industry, came to the fore:

This global player has set up retail, production and distribution facilities (in the UK and Europe) which are not available to smaller, independent players exporting to those same markets. The upgrading opportunities for the MNC group of firms are different from those of smaller, independent firms and the options available to it cannot be conflated with the options available to the independents. It is not unsurprising, then, to find that it is this same MNC which has engaged in significant functional upgrading within the local sector and has moved up the value chain into forestry and saw milling links (Morris and Jackson, 2002: 37)

In other words, the small extent of functional upgrading in South African furniture has been dominated by a small group of six powerful buyers, who have extended their reach vertically to control both forestry and saw-milling functions as well as dominating retail in the chain. This unfortunately, has acted to increase the concentration of ownership discussed earlier, and to exclude the small players and SMEs.

The ‘Saligna’ industrial policy experiment in South Africa

There have been some attempts to use industrial policy to move to higher value-adding production in furniture. For example, the early 2000s witnessed an attempt to introduce Saligna hard wood as the basis for expanding higher value-adding furniture manufacturing in the country. The importance of the Saligna (or Eucalyptus) wood lies in the fact that it is not an endangered indigenous forest wood, but is grown commercially in South Africa, is a hardwood which colours well and can be treated to look like any other traditional hardwood. Saligna is also in excess supply on the South African market given the decline of its utilisation as pit-prop supports in mining tunnels which first arose in the 1890s. With concrete materials replacing Saligna in the mines, the wood has been available for alternate purposes since the late 1990s.

In contrast, the furniture sector since the rise of the large chain stores in the 1970s onwards, has focused on pine softwood to manufacture cheap basic home furniture in price competitive markets. The prospects for upgrading in furniture looked grim within this price-led ‘lock-in’ of various economic determinants in the industry. It was at this point that a group of university-based industrial policy experts and industry consultants in KZN raised the prospects of a ‘purposive’ intervention to begin the upgrade of the furniture sector by introducing Saligna hardwood as the basis for producing higher quality furniture pieces (Kaplinsky and Morris, 2003: 22).

The challenges of an upgrading intervention

This route to upgrading was hindered by a number of dynamics in the timber value chain. The first problem was the power of the sawmills who were geared to cutting softwoods (pine) rather than hardwoods (saligna) – and hence presented relatively poor quality hard wood products to the market - delivering at unpredictable intervals with varying quality. The mills also operated in a sellers’ market for many years, and consequently were
unresponsive to furniture manufacturers’ needs to upgrade. Another tension was the role of saw millers and the paper and pulp industry in reducing the gestation period for mature trees from 23 years to around 12 years.

Thirdly, because of the competition for Saligna from paper and pulp applications, the price paid by these alternate sources was higher than that affordable to furniture manufacturers. So, unless the final furniture products could be positioned in a higher product niche, the manufacturers would not be able to meet the market price for the timber input.

One of the main constraining factors was that cooperation between firms was slow, failing to advance beyond bilateral talks between various manufacturers and individual mills (Kaplinsky and Morris, 2014: 28). The initiative was pushed largely by the external intermediaries and by government. In the end, it failed.

The Furntech Incubator

The Furntech incubator project is one of government’s most prominent public incubator initiatives. Through the Small Enterprise Development Agency (SEDA), government has supported the formation of the original eight Furntech incubator centres across the country. Today, there are only seven in existence with the George campus closed because of the decline of the wood products and furniture sector in that local economy. Furntech was launched in 2000 with support from DTI and the Swedish International Development Agency (Sida). As a result of these bilateral relations, the launch of Furntech was seen as an important contribution to improve the international competitiveness of the South African furniture industry (Masutha, 2012: 92). It offered world-class training and technology support to SMEs in the sector nationally.

Through its seven campuses nationwide, Furntech has the capacity to house several firms annually. In 2012, it incubated 93 firms nationally, 85% of whom are considered likely to ‘graduate’ successfully through the two-year incubation process (Masutha, 2012: 80, 88). The high graduation rate cited by Masutha was confirmed in an interview with the former Chairman of the Furntech board. In contrast to these high graduation rates, Masutha cites a rather low job creation rate across these 93 firms during 2012, who collectively only created 80 new jobs.

Problems with the incubation programme

Although Furntech is praised for having provided a high quality service consistently for more than a decade and a half (which many other small business development initiatives fail to live up to), it has faced several constraints, many of which are outside their influence. The first problem is a high dropout and failure rate. Masutha, through his interviews with Furntech centres in 2012, reveals that about 20% of incubatees drop out before graduating after the two-year incubation process. Internal factors which contribute to dropout include: lack of commitment, lack of discipline and effort, and non-compliance with the rules and requirements. External factors contributing to drop out and failure include: lack of demand for local products and their substitution with cheap imports from China; the global economic recession; and lack of government demand for local products through procurement policy (Masutha, 2012: 97). A second problem is a low occupancy rate, which stood at 65% for the period 2006/2007 and 2010/2011. What is more worrying for Chisenga is that the occupancy rate has been falling over the past number of years (2012: 33).

A third problem is the low levels of income generated by furniture manufacturing within the seven centres run by Furntech nationally. Such income has only recovered about 17% of the actual running costs of the centres (Chisenga, 2012: 44). The ability of the centres to recover their costs is very weak, and the dependency on government funds is high.

The final criticism relates to the fact that Furntech incubatees are not linked by the incubation process into the supplier networks of the big chain store buyers and large volume manufacturers of furniture (Masutha, 2012: 125, 133). This is not entirely the fault of the management of the incubators, because Furntech reports very low involvement or interest shown by firms in the formal furniture sector. But not accessing these supplier networks
remains a major unresolved handicap for start-up firms, who will struggle to break this exclusion from the value chain and who will have no secure basis to compete against the dominant buyers and large firms who have already chosen their supplier firms located across the globe.

Constraining Factors on Sector Evolution

Lack of cooperation
There are a number of problems and constraints which limit the possibility for growth in the furniture sector. The next section will examine three of these in more detail. Perhaps the most powerful brake on growth is the lack of cooperation amongst employers in the sector. For example, Kaplinsky and Morris, in reviewing the lessons learnt from case studies of supply chain management in 25 clusters in Africa (with a few located in South Africa) argue that the majority of lead firms do not work effectively with suppliers to upgrade capabilities (2014: 109-110). Laubscher, in an assessment of the Western Cape furniture cluster, concurs, arguing that the sector is not well organised and employer associations are weak or non-existent (2011:77). In the failed Saligna experiment at upgrading (discussed earlier), one of the main causal factors was the slowness of employer cooperation. It was only through external intermediation by the Industrial Restructuring Project that the preconditions for cooperation were triggered. Prior to this, cooperation in the sector was difficult:

The combination of external intermediaries and internal change agents (manufacturers and millers) was critical in arranging the first saligna workshop. Other external attempts to get manufacturers in the South African timber products sector to work cooperatively have struggled to get off the ground, or have failed entirely. This can be attributed largely to the fact that these were policy-driven programs imposed on the industry from the top down. Experience in South Africa has shown that even the offer of financial incentives is not enough to encourage firms to cooperate. In poor trust environments it is extremely difficult to encourage cooperation through policy support mechanisms unless there are key industry players prepared to champion the cause of cooperation and network building. (Kaplinsky et al., 2003: 29)

The limited success at cooperation triggered by the Saligna initiative was not longlasting. It tackled only one production constraint in the value chain – the interaction dynamics between timber saw-millers and the furniture manufacturers, leaving several other production constraints unchallenged. Firms did not work together to resolve these problems, including production inefficiencies (not fully achieving world-class manufacturing standards). Another problem avoided was the high cost of wood imposed on the market by millers who sold chipping to the paper and pulp industry at a higher price for Saligna than what could be afforded by furniture manufacturers. The limited cooperation which was established at the start of the Saligna initiative soon fell away when confronted by these larger structural blockages (Kaplinsky et al, 2003: 27-31; see also Morris and Jackson, 2002: 33-34).

Power relations
The furniture value chain in South Africa is highly asymmetrical in terms of power relations, leaving small firms with little clout. The value chain is dominated upstream by powerful saw-millers, who affect price and quality of timber inputs in to furniture manufacture. Additionally, large manufacturing firms control the market, trapping the industry into low-cost standardised products aimed largely at the internal consumer market. There is little evidence that lead firms use their power to upgrade small furniture firms. Value chain governance is also dominated by the large retail buyers who dictate the terms of production down the chain.

All these powers are reinforced by high levels of vertical integration and concentration, with big industrial conglomerates owning many of the saw-milling establishments, paper and pulp plants, large manufacturing enterprises and the furniture retail outlets. This power asymmetry “affects the division of labour in global value chains and the capacity of different producers to upgrade their offerings” (Kaplinksy, 2015: 27).
The absence of industrial policy

A third problem has been the absence of any implementation of industrial policy to support the furniture sector. Even though specific policies have been elegantly crafted at the national and provincial levels (see DTI, 2008, DIT, 2014; Department of Economic Development, Gauteng, 2008), and even though expert intermediaries such as the Industrial Restructuring Project led by sector experts such as Morris, Barnes and Kaplinsky have provided ample support to government in terms of formulating good policies, the actual outcomes have been minimal. Fine and Rustomjee suggest that it was the ANC government’s adoption of Neo-Liberal policies as articulated in the GEAR framework of 1996 and the government’s rather slavish following of GTO restrictions which weakened its resolve to implement industrial policy even after the launch of the National Industrial Policy Framework in 2007 (Fine and Rustomjee, 1996). The industrial policy texts have been accepted, but they’re simply not implemented.

The Lack of Systemic Coherence in the Industry

In recent work on the furniture industry, and the George furniture hub in particular, Kraak (2017) argues that the industry lacks systemic coherence with key elements of the system out of synch with other central components. System coherence is required across the value chain, and across the infrastructure of the regional landscape where furniture hubs are located in the country. Each input critical to both the value chain and regional landscape must be in place and interacting with other inputs and infrastructure for an effective industry to emerge and sustain itself. In recent literature, the best concept to capture this systemic coherence is the idea of an industry ‘ecosystem’ (Finegold, 1999). Finegold defines an ecosystem as a ‘system of interdependent components interacting as an integrated whole’ with self-reinforcing mechanisms to correct disruptions in the effective running of the ecosystem. The ecosystem idea reinforces the important idea in much evolutionary economic and economic geography literature that effective regional or local ‘hub’ or ‘clusters’ require high levels of cooperation and interaction between firms.

Much of this literature believes that improvements in a firm are fundamentally a result of internal, localised, path-dependent and interactive processes – within the firm and between firms operating in local clusters. This is why the ‘local’ is still important even in the age of globalisation. Firms derive advantages from localisation – being located close to each other – because this provides privileged access to diverse knowledge and networks into very different industrial and technological domains. These agglomerations create positive benefits such as knowledge spillovers which all firms can use and share.

Furthermore, much regional or local industrial expertise still remains ‘sticky’ and cannot be easily ‘globalised’ – it can only be harnessed in local production settings, intelligible only to those employees who have the necessary tacit knowledge because they work the production system every day. This phenomenon of localisation and tacit knowledge strongly characterises the furniture industry locally and globally (Amin and Roberts, 2007; Amin and Cohendet, 2004).

Another reason why ‘localisation’ is important is because market transactions often fail, thereby requiring non-market institutions to help govern especially at local and regional levels. Such non-market, collective institutional activities (such as firms cooperating together or intermediary support from development agencies or NGOs) help build trust, transactional capabilities and effective intermediation processes to help steer the local market.

The George eco-system

The George furniture ecosystem is made of multiple actors interacting to build the industry. Some of the key actors are:

1. The lead firms – for example, Steinhoff (a major global retailer owned by South Africans but headquartered in both Germany and South Africa);
2. The saw-mills;
3. The mass producers of affordable pine home furniture;
4. The bespoke producers of design-intensive niche furniture using mainly imported hard woods;
5. The local municipality responsible for local economic development (LED) and electricity provision;
6. The Provincial Government;
7. Education institutions – including the South Cape College, Nelson Mandela Metropolitan University (NMMU) and its branch at Saasveld which historically houses an important forestry college. Other education players in the past included the local Furntech incubator which was closed down in 2014;
8. The Department of Basic Education, which has removed woodwork as an examinable subject at school; and
9. The SANPARKS Eco-furniture project, which can be defined as a ‘public good’ project in the midst of a largely private sector run industry.

Kraak’s (2017) findings argue that this ecosystem – which historically supported a vibrant ecosystem up until the late 1990s – is now dysfunctional, with various actors (those listed above) not providing the complementary support services needed by the other players in the ecosystem. Given space constraints, only a few examples of dysfunctionality can be listed here.

1. **Ecosystem governance failure**: key value chain and cluster relationships do not exist anymore. There are no champions of the industry (not even government at national, provincial or local level). Lead firm actors like Steinhoff do not see themselves as playing a developmental role in the value chain through building up their suppliers. They are more inclined to close them down. Proximity to pine forests does not help either, as input costs of the quality pine timber needed for furniture manufacture are now high (R7000 per cubic metre, quite close to the import costs of hardwoods from the USA (starting at about R10000 per cubic metre) used in bespoke furniture. Prices for pressed or chipboard are also high even though they are partly derived from waste wood. In addition, cooperation levels between furniture firms along the value chain are low. In short, the cluster or ecosystem is not being ‘governed’ or steered by the key players in the system – usually the lead firms, along with local agencies and government structures. It remains rudderless, caught up in a form of industrial ‘stasis’.

2. **Key areas of cross-departmental government coordination very poor**: A range of cross-departmental coordination failures are evident in the George forestry, timber and furniture value chain. The most alarming is the lack of a clear policy on waste wood products (sawdust, off-cuts and rejects) which could easily support a viable biomass energy industry in the region – if steered by clear government policy directives. The saw mills, wood product firms and furniture manufacturers in the region have nowhere to dump waste material as the local councils refuse them access to municipal dumpsites – because of the fire risks and toxic materials used in timber treatments. There have been attempts in the past at starting a biomass industry but most have failed because of short-term and limited government support and the lack of proper planning.

The Eco-Furniture plant in George suffers from additional cross-departmental problems linked to alien vegetation clearing, the most serious being that the quality alien wood that should be removed from the land of forestry contractors has never been delivered even though such free delivery is part of their 20-year contracts with government to harvest the pine timber. And finally, the several ‘public good’ projects envisaged for the region – the eco-furniture project, the Furntech incubator and some of the
previous biomass initiatives – were never envisaged as part of a comprehensive integrated project, but implemented separately without dialogue between cognate government departments. This led ultimately to their downfall and closure as they were unable to overcome the constraints acting in isolation of one another. Together, they might have generated a different outcome.

3. **Local and provincial government failed to support furniture industry:** Furniture is not on the list of provincial or local government priorities. ‘Design’ is an industrial policy priority for the Western Cape government, but this appears to apply to urban planning and architecture, clothing and IT, but not furniture. The local government has no incentives at all for furniture manufacturers. The only government programme mentioned by manufacturers in George is that of the DTI which has supported local firms to exhibit at world trade fairs (a key mechanism for upgrading SA products), and marketing and exporting training programmes offered through DTI by the Dutch Government. A major lever of government support in any industry is the provisioning and pricing of electricity and this input into production is now proving to be very expensive – up to 20% of production costs. Indebtedness is the main reason for firms closing down at regular intervals, and electricity is the main contributor to debt. The fact that municipalities now charge a top-up price over and above the price they pay Eskom for electricity is a good example of neo-liberal principles of devolving cost-centres to the lowest level going haywire and defeating the principle of supporting free markets.

4. **No education and training:** Almost no formalised training takes place in the furniture industry – both locally in George and across the country. George manufacturers train informally on the job. They are not keen to train young newcomers, who they say do not have an interest or the discipline to work in this industry. Many manufacturers indicate that the last time they saw cabinet makers being trained on apprenticeship programmes in decent numbers was in the period prior to 2000 when the new SETA system was launched. The old Furniture Training Board of the 1980s and 1990s is thought of nostalgically as the only competent player to do this. Today, the firms have little to do with the SETAs.

In addition, even though there is consensus that design capabilities are crucial for the industry to upgrade towards higher quality, higher value-added products, no ET institution in the Southern (and Western Cape) provides furniture design courses. The closest cognate field is industrial design which CPUT and NMMU provide. The South Cape College in George does not train in fields relevant to forestry, wood products and furniture – even though it is located in a furniture hub of more than 100 years old. And the old SAASVELD Forestry College (which now forms part of NMMU and offers a broader menu of courses) is now a small unit – graduating no more than 20 odd foresters per annum for the saw-mills. The Furntech initiative – described earlier – was located on these premises, but closed down in 2014. The main reason was that the incubatees could not stand on their own two feet once freed from state support after two years of incubation. In short, the provision of public education and training to the industry is dismal.

And lastly, the closure of woodwork as a school subject has meant that young people are not being encouraged and inspired to enter the profession. Local youth are disinterested in cabinet-making and old timer artisans are retiring. This is bad for a cluster or ecosystem, as its human capital is a central fuel for its survival.

5. **Untransformed white-owned SME economy:** Almost all the furniture firms of George are still white owned and controlled. Furniture is the classic industry where family owner firms are handed over from generation to generation making it very difficult for newcomers, particularly from differing racial and
gender backgrounds, to enter the firm. In Kraak’s (2017) surveying of 14 local firms, 12 were white male owned, one was white female owned, and only one firm was owned by a black (Coloured) South African. This phenomenon of family-owned SMEs makes the transformation of the industry difficult, as affirmative action cannot be legislated as is the case with large corporate firms. The fact that ownership passes from one generation to the next affects things like training as well, as skills are acquired within the family, and there is very little incentive to bring in outsiders and then incur large costs to train them up.

6. **Small horizons:** Local furniture producers only focus on consumers along the coast from Cape Town to Durban, but not Gauteng, Africa and the world. This is because of the costs and complexities of transportation across terrain not previously commercially conquered by the South Cape furniture hub. Small firms seem comfortable with local (coastal) markets that are familiar to them and shy away from entering into competition with existing players in the Gauteng, African and global markets. This ‘business as usual’ philosophy has its downside, however, as there is no pressure or incentive for manufacturers to change their existing production routines and seek out more demanding products and manufacturing processes. As a result, almost none of the local firms export at all. Accidental or sporadic export orders come in, but they are never sustained beyond these once-off requests for South African products. This is a pity, because there is evidence from the manufacturers that South Africans can match the quality standards of overseas markets, and that the African brand could offer unique design styles not on sale in developed country bespoke markets.

**Conclusion**

The concept of ‘ecosystem’ is useful because it highlights the existence (or lack thereof) of key inter-dependent linkages between individual components of the ecosystem which make up the larger system of furniture production. If reforms in any of these components are sought (for example, clearing alien wood for the eco-furniture project or providing furniture training to young future employees) without the other legs of the wider furniture system being put in place (for example, sufficient demand for furniture products), such reforms will not succeed. This has been the fate of many furniture and bio-mass initiatives launched by national government departments who do not consult cognate departments and who operate in silos, resulting in eventual failure because key cogs in the system have not been put in place.
References


Appendix 3

Review of DEA Eco-Furniture Programme
by Dandira Mushangai

Introduction
The Working for Water Programme was initiated by the Department of Water Affairs in 1995 but now forms part of the Department of Environmental Affairs’ Natural Resource Management Programme. The aim was to clear Invasive Alien Plants which are considered a threat to South Africa’s biological diversity, water resources, the ecological functioning of natural systems and the productive use of land. In 1998 the Value Adding Industries Programme was initiated by DEA with three primary objectives which are: maximising the positive economic benefits of the Working for Water Programme by creating extra jobs through the process of adding value to cleared IAP biomass; reducing the net cost of clearing, thereby contributing to the sustainability of the Working for Water Programme; and, minimising potential negative environmental impacts, such as fire damage, by removing IAP biomass left behind after clearing. Further in March 2014, the Department of Environmental Affairs, in partnership with the Department of Basic Education, launched a project to address the shortage of school desks in South Africa. The Eco Furniture Project, which is implemented through the South African National Parks agency (SANParks), was initiated to use invasive tree species in the production of quality school desks. Even though the project was initiated in 2011 with the opening of an Eco-Furniture factory in Farleigh in the Garden Route, the project was only officially launched in March 2014 when the Ga-Rankuwa factory opened. Since its commencement the eco-furniture project has gone through a number of stages. Some challenges have been confronted in the process. Some of the challenges have been resolved and some are yet to be resolved. However, any assessment of the project has to place it within its context as to what its original vision was so as to measure the extent to which this vision been realised. Based on the data obtained from interviews, some successes have been realised but those involved with the project think that more could have been done. This review tries to assess the project, its vision, its strengths and weaknesses. It will conclude with an assessment of what could have been done better and with suggestions of what can be done to resolve the underlying mechanisms that enhance or hinder its efficiency, impact and sustainability. The assessment is based on the interviews that were conducted with the personnel involved with the day to day running of the project: that is people within DEA, SANParks and the technical managers running these factories. The review is organised around key thematic areas as outlined below.

Institutional Challenges
The major concern is whether the project is operating under the right department. DEA is supposed to formulate policies and to regulate activities relating to natural resource exploitation and development in a way that protects the environment thereby ensuring sustainable development. As such the first concern relates to whether DEA should be running factories as a way of facilitating natural resource industrialisation or whether eco-factories should be role of the DTI. Further there are also complications between DEA, SANParks and the eco-factories. People from these institutions have differing views as to how the programme should be governed and the factories organised. These conflicting views affect the efficiency of the programme as a whole. For example, while those within DEA perceive eco-furniture factories in terms of school desks, the technical factory managers see a whole range of opportunities in product diversification and improving resource efficiency. The technical managers are aiming at improved resource efficiency through the exploitation of wood waste for the production of composite wood material.

Some also think that DEA should only focus on environmental management as they do not have the capacity to run factories. One interviewee within the DEA noted that the project:

“He has been placed in an institutional home that is not necessarily rightful. The institutional arrangement, institutional ability of our structures to essentially to be trading – it’s a very uncomfortable feat. So the
institutional arrangements are a big challenge. Linked to that, our processes, they need checks and balances, our procurement system makes it very difficult to ensure any efficiency. Frankly and sometimes it’s because there is obstruction. Not sure that people always see the vision and the bigger picture and the purpose and think there is a lot of risk associated with some of these activities and most definitely not the norm in terms of what normal government processes should to be. Firstly within DEA our branches implementing directly; engaged with project management on the ground; that is uncomfortable for the systems and people who are managing those systems. Obstruction is one small piece of it but I think it is a systemic issue around mismatch between the subsystems and the kind of efficiency.”

Further, people running the factories are uncomfortable with the arrangement whereby SANParks had to manage resources on their behalf. Thus according to an interviewee in SANParks:

“There is Environmental Affairs giving a certain amount of money, the jobs fund giving a certain amount of money, SANParks only receiving because they have a financial structure in place to see that there is no corruption taking place. Payments are done as prescribed by the Act. I think that is where SANPark is assisting the eco-furniture factories. But for me I think it’s a little bit of a hiccup. I don’t really sit in their meetings where they are. I know there was last year few struggle points regarding payment because SANParks is the implementing agent. Then we are putting strain on their budget. Last year it took time – waiting for our money. So I think that was the only thing that I picked up but they are coming quite a few years so things like the people are working close together. The issue was resolved and they got their payment.”

The people directly involved with the factories think that they should be directly involved with the management of the resources since they are the ones who know the demands of the factory environment. According to one SANParks employee running a factory is a totally different game from policy formulation and environmental management.

Institutional arrangements have also been accused of delays in the release of resources to the detriment of production at the factory level. As such there is need to ensure that resources are released timeously so that production is not affected at factory level. Also institutional arrangements deprive those with the expertise and experience of the opportunity to contribute as to how the project should be organised and how the factories should be run. The issue of institutional misalignment was also noted by a SANParks employee. This person suggested that those managing resources should not be housed within SANParks offices but should be closer to the factories. They pointed out that when they joined the factories they had no one to take them through the requirements of the new job as the people responsible for resource management were all housed at SANParks away from the factories.

Further, with regard to institutions there is need for cross departmental coordination and to ensure linkages with the private sector so as to facilitate skills transfers for the benefit of the programme. A DEA interviewee noted that the learning curve for the project had been longer than it would have been had some linkages been made with the private sector.

“They have had very steep and very long learning curve and there seems to be a reluctance to get the right capacity in terms of technical skills and management skills. A flaw in terms of how the project was initially set up. They need to have engaged with industrial partners earlier on. There seem to be some sort of reluctance around that. The learning curve could have been shortened.”

According to a SANParks employee, there is need for cross departmental links within the government itself to attract skills form other departments to the programme. Thus it was noted that:
“What they don’t understand is that is we have got so many government departments but not one of them is working together. Now me coming from xxx they have got centres that are accredited to train people to qualify. Now to get that factory accredited to qualify people, that’s a lot of work. But nevertheless we have got people inside the xxx working there being trained, some of them do get the qualification but the moment they do you must go outside … where does he start?”

With regard to the government running factories there is a strong belief that the government should be cautious not to be overly involved but limit themselves to the creating enabling environment.

**Lack of the require capital in terms of machinery**

The other challenge that the project is facing is the lack of machinery to increase resource efficiency by turning wood waste into valuable furniture products. There is a general agreement across the board that the eco-furniture project is an innovative project that has ensured resource efficiency by turning IAPs previously left behind after clearing into valuable products in a way that has increased economic, environmental and social benefits for South Africa. However, people across departments agree that much could be done in terms of resource efficiency by turning wood waste into other valuable products such as wood chips, plywood, and wood composite material. The advantage is that other wood composite materials could be recycled at the end of their life cycles through moulding into new products. This again improves environmental benefits by ensuring that the carbon in the materials is stored forever. However, a SANParks employee noted that though this is a desirable course, currently they do not have the machinery to convert wood waste into valuable products. According to this interviewee, the only is: “we have to concentrate on turning the waste into money. By doing that we can contribute a lot towards self-sufficiency”. He went on to emphasise that:

“Our focus should be to turn the whole tree into money. We have to think of how we can make more with the waste lying there. We haven’t had all the machinery especially to turn the waste. I mean to look at some of the trees, anything 200cm and smaller can produce --- something. But there are other machines that we can use. Xxx have wood and steel factories throughout the country and have done furniture for government departments. There is a bigger market in that. What I am saying is, get new machinery. I think I have done the research; there are two types of machinery. One is like if you put you log in it will remove the same layer off and then you make like plywood and then you mould it. So it’s a new product. We don’t have all the machinery to go into that direction. The majority of the machinery was focused on harvesting, slicing, planking and drying. Machinery for taking the other waste products and turning it into money like chips, the machine for moulding and making chairs we don’t have. Even leaves can be turned into oils. I want to use the whole tree.

The other challenge which the programme is facing but with a focus on current production of school desks is the lack of enough drying capacity to allow orders to be delivered timeously. According to one interviewee:

The big challenge still is that we can cut (trees) but we don’t enough kilns, the right drying capacity and kilns. We put out the tender and got two kilns. Those I think it’s about R3,5 million for one. But still it’s not going to be easy. We put one in one factory at Ga-Rankuwa factory that can dry 100m³ per month. But if you look at production wise at Ga-Rankuwa, that 100m³ is not even enough wood for a week’s work for the factory. What we would suggest is from a technical view to capacitate each province because if you manufacture something here and send that product now down to George there will be defects because the moisture and the humidity are different. Currently we are sending up and down, up and down. We are saying concentrate in your area for distribution in your own area. So capacitate a factory to sustain itself. That is the problem. We don’t have proper drying capacity.

Thus the shortage of the required machinery is a hindrance in meeting orders timeously.
Lack of quality wood material

The eco-furniture project was initiated for the eco-factories to convert ‘jungle timber’ into quality furniture for government departments (especially school desks) as a way to generate funding to subsidise and sustain the Working for Programme’s clearing effort. To note is that there is a basic difference between ‘jungle timber’ and commercial plantation timber. Compared to plantation timber, jungle timber is not found concentrated in one area. The fact the resource is dispersed increases production costs in terms of transport and having to move the harvesting teams around the country. Further, the quality of jungle timber is not uniform. The quality therefore differs from one tree to the other. In most of the cases only 20% of the whole tree is put into production. Also the fact that jungle timber is not made up of a single but of a variety of species presents some challenges for machines as compared to commercial plantation timber. The variability of the resource in terms of the species put strain on machines. This entails the need for different machines in working with different species which increases overhead costs. With regard to some of these challenges, one of the technical managers explained:

“The new thing that I have learnt was harvesting the trees but this is not plantation trees. With plantation trees we all know that they are being cloned, thus how advanced the system is. Here I am getting trees standing next to the road, next to these farms. So there is a big difference we call it ‘wild timber’. Not every tree that you chop down could be used. What I learnt is that if I see a tree I want to utilise the whole tree. I think currently if we are lucky we are getting 20% out of the tree. So the focus of what we use is 20%. So the waste is 80% we should turn that into money.”

Added to this another interviewee noted that, “Another challenge is accessing the resource in relation to location because often with the best biomass the private sector can get it. The biomass available is not necessarily as good quality as is needed for production of furniture. With Gums they twist in the mill because of how they grow. It’s not plantation timber, it’s jungle timber.”

Further, with regard to jungle timber, there is a challenge in that time has to be spent in researching the history of timber found in a certain region. This is deemed important to understand the quality of timber found in a certain environment so as to reduce costs when coming to grading and chopping down the trees. With regard to this, an interviewee noted that:

“The big thing regarding the timber is that it all starts in the bush. First of all before anything must be cut we have to build up a history to say in this area we are cutting this species but in that area we are cutting the same species but we are gaining more wood. After that then it’s cost effective to spend much time cutting that tree in this region, and that species in that region. So we have to build up history to identify. Identification should be done on site.”

The advantage of working with commercial timber as compared to jungle timber was noted by a SANParks employee:

“We did put out tenders with commercial timber. Immediately you could pick up the difference especially with production. If you work with our timber some of the factories say they can give 9 to 15 schools desk per cubic but if you look at commercial timber you easily get 22 to 25, so thus a big difference. Using commercial timber we double production per day. Thus, the reality because working with wild timber you put a lot of strain on the machines. If you take commercial timber there is one machine we call it the moulder, you can put timber of this size but with wild timber it will get stuck. But working with wild timber we can’t put it in the same machine because of different thickness. There are lot of challenges involved when working with wild timber, taking the timber out, adjusting the machine again. There is a lot of strain on machines when working with wild timber. Commercial timber is a little bit softer to work with because some of wild timber is very hard and difficult to work with.”

Though it is a legal imperative for landowners to clear their land of AIPs, this does not however guarantee supply of the resource for the project. It has been noted that the best resources are taken by the private sector which
is better at negotiating the prices. This leaves the project’s harvesting teams having to scout for the resource in the most inaccessible parts of the country. Thus an interviewee explained:

“What we have seen on the west coast is very a large river gum that was cleared, extracted mechanically and exported. The private sector is able to engage with landowners, they can negotiate.”

Further, in spite of the fact that the resource is still plentiful at the present moment but at some point IAPs as a resource for the eco-furniture programme will become scarce. The fact that they are spreading rapidly is not a guarantee for future supply. It takes time for the trees to mature to produce quality wood. In addition, the Working for Water Programme does not have to wait for the trees to mature in order for them to be cleared.

Skills shortages
The project has also been affected by the shortage of skills at all levels – low, middle and high levels. This has had negative impact on the smooth flow of production activities. With regard to high level skills there is need to strengthen the management and technical capabilities at these factories. A DEA interviewee noted that if the project is to continue to grow, then it should be “managed appropriately in an institutional context that is appropriate, with the right correctly skilled level of expertise in terms of management and technical technicalities”. With regard to technical skills a SANParks interviewee explained:

"For me I will say I believe at all the factories there must be a qualified machinist, cabinet maker and spray painter – qualified not people who have done six months training. I am talking about artisans. There you can immediately have an increase in production, but now you have people that don’t know but must train other people who don’t know. You can’t have people from George who are fully occupied going around from this factory to that factory. You must have people on the site because you can train them now; if you leave and come back they have already forget. So you need to have a qualified person in each factory to train the people on the job.”

Thus the shortage of skilled people is putting strain on the qualified personnel in transferring their skills to other workers. The programme is yet to deal with the shortage of skilled manpower. For efficiency, these gaps should be addressed.

Demand to meet target/ lack of time for reflecting
The challenge to meet the demands of the market has also imposed considerable pressure on those running the project. There was not enough time for them to reflect so as to devise ways of doing things better. This problem has been summed up well by a DEA interviewee:

“There was pressure to deliver school desks – the order volumes they had to meet are huge and exceed the ability to meet those kind of orders given the learning curve. Now they are better able to deliver the kind of volumes but that put huge strain on staff and management in terms of being put in a position of perpetual crisis management because we always had to meet orders. There was pressure coming from the Department of Basic Education who were themselves under enormous pressure to put desks in schools. There has been a shrinking of space for incremental growth; they were thrown in the deep end very quickly.”

The pressures on management in turn result on pressure at shop floor. Those working in the factories in turn regarded pressure as a result of the lack of vision on part of management on how things could be done better. Thus according to a SANParks interviewee,

“(Lack of) vision is also one of the challenges here because I am a type of person that can visualise where I want to end up. People here can’t visualise, they can’t. They want everything to happen now but instead of building it up towards the long term. Because everything has to happen now, so you can’t contribute you know enough to build something. You implement something now, tomorrow you
implement something else. But if you plan something properly, have done the right preparation, that covers everything … so for me I can visualise what is my end result.”

However, pressure was a rather double-edged sword. Despite the strain it put on the workforce, it also enabled the eco-furniture programme to secure a market for itself and in the process, to learn by doing the work in the process.

Product diversification
Product diversification has been another challenge for the project preventing it from opening other markets. This has had a negative impact on resource efficiency. Thus instead of converting wood waste into other usable material through value addition, the project has been limited to using about 20% of the resource and throwing the rest to waste. This has been largely a result of the lack of capacity in terms of the required machines to turn waste wood into chipboard, plywood and other usable products.

Employment contracts too short/no incentive to work
Further, the short-term contracts have been a great disincentive on the part of the workforce. Workers feel insecure as a result of the nature of their contracts. Though it is difficult to ascertain the impact of this on production, it is generally assumed that low morale may impact negatively on production levels.

Successes and Impact
IAPs and value chain development
Forestry industrialization, through the exploitation of timber resources, has been one of the major impacts of the eco-furniture project in South Africa. The process has had salient ecological, economic and social benefits. Prior to the project, all cleared trees were left behind which presented a fire hazard to forest resources. The project has resulted in the setting up small-scale enterprises from harvesting to sawmilling to factories producing quality school desks for the South African schools. Most of the beneficiaries of the project have been black people that had been excluded economically under the apartheid system. In this way the project is contributing in the transformation of the structure of the South African economy thereby bridging the gap between the first and the second economy. The employment opportunities which opened up as a result of the project have been good for the formerly unemployed black people in the rural areas. The project has generated income for many rural households and is in a way impacting positively on rural poverty. The employment opportunities have presented a chance for skills acquisition for many in the rural areas. Thus a number of skills ranging from harvesting skills, machine operators and cabinet making were acquired by many in the process. Economically and politically the project opened positive debates as to how best can forestry resources be developed for the benefit of the country. The project ascertained the role of the government in economic development especially in those sectors considered unviable by the private sector.

Skills development
The project has facilitated the acquisition of skills by people in the rural areas whose backgrounds offered little room for self-improvement. According to one interviewee, the level of skills has increased and real empowerment is taking place. Another interviewee noted that skills have been acquired in the field of harvesting, wood machinists, cabinet making and spray painting. According to this interviewee, the training which the workers are receiving is accredited and transferable. However, more could have been done especially by linking the project with other government departments that are producing many skills which are not being employed effectively. The interviewee went on to suggest that skilled people from other government programmes could also be brought in to transfer their skills within the eco-furniture project. Further, since some government programmes have accredited skills centres, linking up might allow for those working in the eco-furniture factories to acquire the relevant skills at these centres.
Employment and improvement in household income

There is a level of increased stability that comes with economic opportunities and sustained economic opportunities. On a micro level it has been noted that there has been an increased level of stability that affects those individuals who have benefitted and their households and extended families. (There is still a need for livelihood studies for those involved.) Important to note is that the programme has created jobs as a source of income for people from rural areas who are not able to simply walk into a job and start working. One interviewee noted that:

“Whilst at work we give them training so it’s about uplifting. They always say if you give a man a fish he will be hungry tomorrow but if you learn how to catch a fish you can sustain yourself. That is for us to empower the people think.”

Business model

The project has generated a business model that has been considered a good example and which could be transferred to other sectors of the economy. Thus a DEA interviewee noted that:

“What has been demonstrated is that it is a good model and maybe if transferred to other sectors, it will have a huge effect where you tackling environmental problems, you are creating employment opportunities, meeting social and products create economic exchange. There is value, it’s valuable.”

The programme has presented a learning course on business formation and the role the government can play in the process. Lessons have been learnt and corrections have to be done to facilitate the perfection of the model. Whilst it has been a good model, a DEA employee conceded that there is a need for a slightly decentralised approach to move away from static large factory investments. Thus, small factories would be less costly allowing for mobility and in a way spreading the benefits more widely geographically thereby opening opportunities for other people in other areas. With regard to the business model, a SANParks employee also noted that some successes have been realised.

“I think there have been successes. If the factory is still a young factory, I mean if you start any business you will look at the minimum of five years just to get all the hiccups out and we are not even five years yet. So we jumped off with a bang.”

However, this employee noted that since the business has small contractors inside, there is need to ensure that those contracted know how to do the work that they would have been contracted to do. There is a need also need to be economical when employing people. The programme should not simply be about the numbers of employed people, but should also consider whether the number is commensurate with the work to be done. Thus according to a SANParks interviewee:

“If you are looking at sustainability you cannot employ 100 people where you only need 30 people. That’s the reality. So if you want to be sustainable then you have to have all those in place to say yes, in my factory I only need 30 but then I am working with 100 people, so you have to reduce costs. Eco-furniture for me I think we still have a lot of people. For me I can put up in a factory of lesser people and thus the reality because now we have people standing others talking. That’s a challenge but that’s what it is. So we have to draw the line to meet each other halfway. We might struggle to break-even but if we reduce that which we don’t want to do – that’s the way to go.”

When it comes to clearing the resources from the land, the contractual partnership between the landowner and the government is workable proving to be a win-win situation. A DEA interviewee noted:

“There is argument for government to continue to support were its not economically viable but it is environmentally important because it’s not in every context where the biomass cleared is suitable to be used. Land user incentive to encourage land users to clear their land it’s a contractual relationship. It’s
a partner relationship because the government contributes, but land users have to make some kind of contribution. Through that it’s also unlocking resources into the sector. The government may provide a subsidy or some kind of assistance to support where the clearing costs are very high. But in terms of creation an enabling space they have to be cautious of being overly involved and controlling but play a facilitative role to link people to biomass.”

However, the major concern is the change in orientation towards a focus on individual employees and the benefits it entails for the majority of those employed. The worrying factor is that the change might not benefit most of those working in these factories. A DEA interviewee expressed worry in this regard:

“I question the model that they are moving away from small business to individual employees which is not the EPWP model that we use in all other our programmes. I do question the long term development and opportunities for people. There is a big difference between being a small business owner who is capacitated to have a small business as a feature beyond the project and an employee in the factory. It concerns me that it’s the directions they are going but if there are more benefits for the people are sustained that’s OK. We need to look at that quite carefully and think about what are the consequences attended with that shift.”

Despite the model being a good one there are many other things that have to be taken into consideration if the model is developed further. These will range from the need to be rational when employing people, the need to review how small contracted firms were contacted, the need to prevent political interference, the need for institutional linkages, the need for clarity on the role of institutions involved and the need to consider the importance of high level management and technical skills.

Resource efficiency
The eco-furniture project has achieved a considerable amount in terms of resource efficiency. In environmental terms though, this has not been quantified. The eco-furniture project has much to the conservation of South Africa’s scarce water resources through the mining of IAPs. Rather than regarding the IAPs as waste material, resource efficiency was also achieved in terms of converting the hitherto regarded as waste material into quality school desks. In terms of employment, some of the unemployed people in the rural areas have been skilled and employed thereby contributing to the national economy.

At the factory level, much has been learnt in terms of resource efficiency. With regard to logs, one interviewee noted:

“What we have picked up is critical; logs that have been cut must be sealed. If you don’t seal, then it starts cracking. Logs should be picked up to the factory in a week. But what we picked up is that the logs are lying getting old. We have to visit areas timeously to say if we go into this area we have to be able before contacting to say what is your time in felling one tree and if we give you a contract in this area you should be able to cut so many trees in this area and then we can reduce costs from that.”

Thus to produce the most out of a log, certain conditions have to be taken in to consideration to prevent the log from cracking. Also logs have to be worked while they are still wet. Also those contracted to harvest the resource have to be managed to reduce the costs.

Further in terms of resource efficiency, much has been learnt with regard to the organisation of labour at the factories. It has been noted that the eco-furniture project employs many people, some of whom may end up doing nothing in a way that reduces resource efficiency.

Some Recommendations for the Future of the Programme
• Product diversification
• Small and responsive factories/ spread the benefits geographically
• Institutional coordination
• Improve wage range to attract expertise / recruit skills from correctional services
• Democratisation of the project to allow the voice of those with expertise to be heard
• Promote innovation through competition/interfirm competition
• Create market / other than the government
• More plantations to ensure sustainability through long term supply of raw materials
• Improve drying capacity as way of ensuring increased productivity
• Rationalise labour for increased efficiency
South African Eco-Furniture Value Chain and Actors: A Commentary  
by Nicola Jenkin  

Core actors are those entities which undertake the activity  

Operational service providers  
These are entities which provide a service which enables the programme to function, for example utilities or training.  

Support service providers  
These are those entities that support, enable or provide funding for an activity to take place.  

Overarching national actors identified, include:  
• The two main implementing/supporting departments are the Department of Environment Affairs (DEA) (NRM Programme) and Department of Public Works (DPW)(EPWP).  
  o The EPWP was conceived by and is steered as a partnership between the DPW and the South African Cities Network (a relationship of over 10 years).  
• National Treasury is the main national government department through which funding arrangements are addressed.
The Economic Development Department contributed R8 million towards the cost of establishing the Eco-furniture factories. They also provided guidance on proportions of types of workers e.g. youth, women, disabled.

The Jobs Fund have also provided funding e.g. Durban Eco-Furniture factory.

SANParks acts as a service provider to the DEA Programme. The management of factories is incorporated in the ISCU management component of SANParks, which works in partnership with the DEA-NRMP.

Department of Agriculture, Forestry & Fisheries (DAFF) LandCare programme.

The CSIR were commissioned by the DEA NRM Programme to develop a generic model for prioritising areas to clear.

South African National Biodiversity Institute (SANBI)

Agricultural Research Council (ARC) - Plant Protection Research Institute which focuses on ecologically sound management strategies for agricultural pests, plant diseases and invasive plants,

South African Environmental Observation Network (SAEON), which is primarily funded by the Department of Trade & Industry (DTI) and led by the National Research Foundation (NRF). Its mandate is to develop and sustain a dynamic South African observation and research network that provides understanding, based on long-term information, needed to address environmental issues. One of their areas of research is alien organisms, including plants.

WESSA, which has a national conservation project portfolio through which they work to protect South Africa’s heritage and resources through e.g. ecological infrastructure rehabilitation and restoration. Some projects, such as the Baakens Valley Riverwise project includes opportunities to develop alien invasive plant clearing experience and expertise.

Wildlands Conservation Trust, as with WESSA, also has a focus on conserving and enhancing the countries biodiversity through a variety of community and entrepreneurial projects, such as Trees for Life and Greening your Future. [Note – these two projects could be a useful collaborator for regeneration of areas where aliens have been cleared.]

The Programme draws on or commissions much research from the University of Stellenbosch’s Department of Forest & Wood Science to provide research into feasibility, alien clearing and value-add products.

**Durban Eco-Furniture Factory**

This factory is a state-funded and state-operated enterprise. South African National Parks (SANParks) manages the value chain, producing school desks from IAP biomass harvested from the greater Durban area and KwaZulu-Natal South Coast. Initial funding was supplied by the World Bank’s Development Marketplace prize for innovation (R1 million grant) – initially for making ‘eco-coffins’.

Provincial government agencies engaged with include(d) KZN Economic Development, Tourism & Environmental Affairs, Ezemvelo KZN Wildlife, eThekwini Environmental Planning & Climate Protection Department, Umgungundlovu District Municipality (UMDM) (Pietermaritzburg) and Umgeni Water.

Other local actors engaged with include(d):

- African Conservation Trust (involved in natural resource management in KZN, including the Mkuze River Conservation Project and Mountain Range Rehabilitation Project in the Drakensberg region which includes removing alien weeds and replanting indigenous vegetation),
Duzi Umgeni Conservation Trust (DUCT) which is dedicated to the environmental health of the uMsunduzi and uMngeni rivers,

Kloof Conservancy which is actively involved in combating invasive plants through education and training, funding to EKZN to keep the Krantzkloof Nature Reserve Free of aliens, and clearing of environmentally sensitive areas.

KZN Fire Protection Service – not involved in alien clearing, but would be involved in fires that would be exacerbated by alien vegetation.

Midlands Conservancy Forum focuses on biodiversity conservation to ensure long-term sustainability of the area. One of their programmes is focused on protecting ecological infrastructure. They work with member conservancies to raise awareness of the role of ecosystems in supporting human life and livelihoods. One of their partners is DUCT (see above) with whom they have plans to initiate a programme to rehabilitate affected ecosystems by eradicating alien invasive plants.

Farleigh Eco-Furniture Factory
This is a state-funded and state-operated enterprise. SANParks manages the value chain, producing school desks from IAP biomass harvested from National Protected Areas and former plantation areas in the Outeniqua Mountains near George. This factory incorporates the Rheenendal Eco-coffin Factory.

The factory funders were the Danish Government and British American Tobacco (SA), and WESSA administered the funding for the factory.

Ga-Rankuwa Eco-Furniture Factory
Key actors include the City of Tshwane, in partnership with the North-West Development Corporation. Beneficiaries are particularly around employment and job creation, including the City of Tshwane’s Tshepo 10 000 Programme.

Wood@Heart
A privately-owned business producing school desks and environmental restoration mats using IAP biomass harvested around Ficksburg in the Free State Province. The business receives DEA NRM Programme funds for the IAP clearing, as well as funds towards the labour costs of production. DEA NRM Programme markets the desks and buys the environmental restoration products.

Commentary
The Eco-furniture value chain is complex. No one document outlined all the project partners and varying sources (e.g. DEA internal documents, or the Eco-furniture Programme website and individual factory brochures) were used to identify actors and where possible, their roles in the value chain. An example of the actors engaged in the programme, and the complexity of the relationship between the actors, is illustrated in the example of the KZN Eco-furniture programme. See Figure 1.
The interrelationships between the value chain actors and their roles are complicated for a number of reasons:

- The vast number of actors linked or implementing the programme,
- The range of funders that are either directly funding the programme (such as the DEA), or indirectly funding partner or service provide actors e.g. WWF funding the conservancies.
- The varying layers of actors at a national, provincial and local level. It is possibly on the national actors – whether Government departments or programmes, or national not-for-profit organisations e.g. WESSA which are likely to be involved in the programme in different regions. Local hubs of these entities and local organisations will differ from one location and province to the next, further complicating the network of value chain actors.

The complexity of this value chain suggests that a number of issues could arise, and have been identified within the programme, and/or for the programme to run effectively:

- Governance of complex structures – who is the main lead, and how are the varying roles allocated, monitored and managed?
- Communication between the relevant entities can become difficult – as highlighted in a presentation by Braack, of the DEA on the Eco-Furniture Programme in 2016, who noted that “all actors noted that there was little co-ordination between the Natural Resource Management (NRM) programmes, which is
hindering information and data sharing, as well as the ability to work together and benefit from each other’s resources”.

- Have all the relevant actors been identified to ensure efficiency and co-ordination of the programme within a region, for example Braack recommends identifying how Co-operative Governance & Traditional Affairs (CoGTA) could be incorporated, in particular, to help manage municipalities.
- What happens if a key (core) implementing or supporting (funding) agency withdraws from the programme, or ceases to exist? What type of effect will this have on e.g. the operational efficiency of the programme and long-term sustainability? Have measures been put in place to mitigate any negative consequences of core and key supporting actors withdrawing or ceasing to exist?

Other issues and challenges identified by key actors, in a presentation by Braack, were classified into eight themes, including:
- Co-ordination
- Incompatible drivers and objectives
- Admin and budgeting processes
- Reporting and data management systems
- Human resources e.g. lack of capacity and dedicated staff
- Scientific understanding
- Insufficient budget
- Monitoring and evaluation
- Species focus

The above challenges and issues raised are typically identified in a complex system.

COMMENT: Need to make comment about complex systems (complexity) and key indicators or themes for operating a complex system to ensure it is effective and meeting core programme deliverables (social, environmental and economic [or as per integrated reporting]).
## South African biomass(products) value chain

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<th>Value chain components</th>
<th>Plantations &amp; alien vegetation</th>
<th>Harvesting (alien clearing)</th>
<th>Wood processing (sawmilling)</th>
<th>Product manufacture</th>
<th>Market &amp; Retail</th>
<th>Product users</th>
<th>Maintenance</th>
<th>End-of-life</th>
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<tr>
<td>Bio-chemicals &amp; nutrients</td>
<td>Primary stream</td>
<td>Primary &amp; residual stream</td>
<td>Residual</td>
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<td>Speciality nutrients &amp; chemicals</td>
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<td>Commodity fuels &amp; chemicals</td>
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### Sources:
**Bio-energy**

- Electricity 
  - Heat & cooling e.g. combined heat & power (CHP)
  - Biomass power plant: 344 jobs - plant construction, 120 jobs - operations and maintenance (Toma-Now, 2016)

- Bio-energy to toys
  - Wood crafts e.g. walking sticks & flooring boards & household items
  - Timber for e.g. furniture, coffins, cabinets, etc.
  - Lumber (e.g. planks, posts, poles, oriented strand board, insulation, plywood, chip board, particle board, etc.)
  - Composite wood products (e.g. heat & power (CHP)
  - Heat & cooling e.g. combined heat & power (CHP)
  - Electricity

- Wood from agricultural land
  - Trees & vegetation from commercial and small-holder agricultural land
  - Timber materials from forests

- Trees & vegetation from agricultural land
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- Trees & vegetation from commercial and small-holder agricultural land
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  - Trees & vegetation from commercial and small-holder agricultural land

- Wattle, Pine (Pinus pinaster), Acacia canescens
- Grey poplar (Populus spp., Populus saligna), Port Jackson (Acacia melanoxylon), Grey poplar (Populus canescens)

**Timber materials**

- Composite wood products (e.g. plywood, chip board, particle board, packaging, erosion control)
- Ecodesks - x6 factories produced 2016)
- R500 per desk (Invasive Species SA, 2013)
- Ecodesks - x6 factories produced 2016)
- R2.40/kWh, diesel R3.10/kWh (Stafford, 2016)
- **Wattie, Pine (Pinus pinea), Port Jackson (Acacia saligna), Eucalyptus spp.**
- **Eucalyptus**
- **Pine**
- R2.40/kWh, R3.10/kWh (Stafford, 2016)
- **Wattie, Pine (Pinus pinea), Port Jackson (Acacia saligna), Eucalyptus spp.**
- **Eucalyptus**
- **Pine**

**Wood waste from e.g. furniture processing site (Vundla et al., 2016)**
- Ecodesks - x6 factories produced 2016)
- R500 per desk (Invasive Species SA, 2013)
- Ecodesks - x6 factories produced 2016)

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- Ecodesks - x6 factories produced 2016)
- R500 per desk (Invasive Species SA, 2013)
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Biofuels

- Bioethanol
- Bio-oil & bio-crude
- Chemical & bioproducts
- Firewood
- Biofuels
- Charred biomass
- Woodchips
- Wood pellets

- Black wattle (Acacia mearnsii), Port Jackson (Acacia saligna) (charcoal)
- Mimosa Extract Company

Biochemicals & Biofuels

- Tannins
- Pharmaceuticals & medicinal
- Nano-cellulose
- Food & additives (human & animal)
- Detergents
- Mulch
- Compost

- Wood pellets
- Bio-fuel project: 100 MW plant construction, additional 60 direct & 300 indirect (Terra Nova, 2016)
- Bio-ethanol: alternative or new jobs created in economy, start-up ethanol and R&D companies (Rent, 2011)

- Wood pellets: Direct thermal conversion of ten tonnes of wood pellets displaces eq. c. 1.4 kVA of fuel of (Terra Nova, 2016)
- Bio-gas & syngas: System (Johannesburg Biomass Gasifier (SIG)) 1000 coupled with an electrical generator net present value of up to R54 million (Stafford et al, 2016)
- Firewood: R10-50 per bag (depending on size of the bag)

- Bio-ethanol: dry-ethanol plant of 100 million litres/year capacity could attract investments of R250 million per year (Williams, 2014)
- Biochar: Collection of feedstock and production is labour intensive therefore good job creation potential, especially in rural areas (IDA, 2015)

Cope:

- Kouga, Dromme & Bavaians (charcoal, firewood)(Vundla et al, 2016)

Bio-materials

- Woodchips & Fuel
- Advanced plastics
- Animal bedding
- Biomass
- Compost
- Mulch
- Natural fibres (e.g., pulp, wood wool)

- Black wattle (Acacia mearnsii), Pine (pulp, wood chips)
- Acacia pycodendron, Weddellia gardneri, Utricularia glutinosa and Trihana diversifolia (compost)

Bio-ethanol: dry-ethanol plant of 100 million litres/year capacity could attract investments of R250 million per year (Williams, 2014)

Biochar - byproduct of pyrolysis and gasification (Stafford, 2016)

- Biochar: Application rate of 0.5 tonnes of biochar can decrease fertilizer use by 7% due to increase in nutrient availability (Terra Nova, 2016)
- Soil improves e.g. brook, compost & mulch: no soil carbon & fertility enhancement water retention & soil structure, prevent nutrient leaching (Stafford, 2017, IDA, 2015)

- Biochar & compost - production could provide potential for waste-derived biofuels of 1000 tonnes/ha per annum (Stafford, 2016)

- Biochar: 5 tonnes of biochar per ha contains 2.25 chlorophyll and 75 tonnes biochar per annum (Stafford et al, 2016)

- Biochar: collection of feedstock and production is labour intensive therefore good job creation potential, especially in rural areas (IDA, 2015)

- Biochar: Application rate of 0.5 tonnes of biochar can decrease fertilizer use by 7% due to increase in nutrient availability (Terra Nova, 2016)

- Biochar: 5 tonnes of biochar per ha contains 2.25 chlorophyll and 75 tonnes biochar per annum (Stafford et al, 2016)

Bio-chemicals & Nutrients

- Pesticides
- Detergents
- Food additives (human & animal)
- Nanocellulose
- Pharmaceuticals & medical products
- Tannins

- Acacia spp and Port Jackson (Acacia saligna) (animal fodder)
- Prosopis (wheat flour substitute, medicinal products)
- Port Jackson (Acacia saligna) and Black wattle (Acacia mearnsii) (tannins)
- Wattle (medicinal products)
- Wattle (medicinal products)

- Acacia spp and Port Jackson (Acacia saligna) (animal fodder)
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Appendix 5
South African Eco-Furniture Mid-Term Review:
Adding Value to Invasive Alien Plant (IAP) Clearing and Opportunities for the Expanded Public Works Programme (EPWP)
by Nicola Jenkin

Introduction
This report aims to provide an overview of research into value add along the invasive alien plant (IAP) value chain in South Africa. Objectives include identifying:

- Where potential value sits within the value chain,
- Current and potential value-add activities,
- Where feasible, identifying investment and return on investment (ROI) of the different opportunities, and
- How these potential value add opportunities could link to and/or align with EPWP programme.

While the clearing of IAPs has been a significant and acknowledged component of the Department of Environmental Affairs (DEA) Working for Water programme, it has been argued that there is a missed opportunity in adding value to the woody biomass that is removed in the clearing process (Stafford, Blignaut, Lotter, le Maitre, & Forsyth, 2016).

This woody biomass (including trees and woody plants – leaves, needles, branches and other woody plants) can be utilised in the production of a range of products, including timber and lumber, wood-fuels, composite wood products, soil enhancers, food nutrients, medicines and bio-energy – to name a few (Forests & Rangelands, 2017; Stafford, 2017). Bar a few initiations, which are highlighted in this report below, and accompanying spreadsheet, most of this wood biomass is left in situ (site of clearing) and not removed for alternative uses.

Given the significant potential of using this woody biomass to add value to the IAP supply, an apparent large demand for wood-based products – which is predicted to increase (Stafford, 2017), a global trend to realise and move towards a bio-economy to alleviate our reliance on fossil fuels (Bosman & Rotmans, 2016), and potential for job creation an investigation into how value can be added to the EPWP programme – would be helpful in understanding where the programme could focus its value-add efforts.

This exercise is not a new one, and value add opportunities have been explored by several government departments and programmes, including the DEA and Department of Energy (DoE), and various academic and research institutions, notably the Council for Scientific and Industrial Research (CSIR), and Universities of Pretoria and Stellenbosch. Some of the more relevant and current studies are listed below:

- Value-added industries: Opportunities for local and embedded energy, wood fuels and other products from Invasive Alien Plant biomass (Stafford, 2017)
Because of the findings of a number of these studies, and to enable better integration of developing a range of materials and energy products from IAP woody biomass, the biomaterial and bioenergy opportunities were merged in the DEA’s Natural Resource Management (NRM) programme with the establishment of the Working for Value-Added Industries (VAI) programme in 2015. This programme encourages cost-recovery of the cleared biomass by processing it into a wide range of products (PMG, 2015; Stafford, 2017).

This report does not intend to replicate these studies, rather it aims to collate the findings to inform the status of VAI and feasible opportunities for the EPWP programme, building on the Eco-Furniture initiative.

**Woody Biomass Products and their ‘Value’ Potential**

Prior to identifying and recommending the most suitable opportunities of VA for the EPWP, it is useful to understand the type of products (often referred to as bioproducts) that can be produced from woody biomass, and their potential to add value.

When determining the types of bioproducts and their potential value, what is apparent is the lens from which the bioproducts are being assessed, and how value is interpreted. For example, bioproducts can be determined by:

- Taking all woody biomass species into account, or simply focusing in on specific ‘typical’ forestry plantation species, or IAPs; or
- The author and their area of focus, for example bioenergy or high-end value products, such as chemical manufacture; or
- Considering one-dimensional value determinants, such as financial return on investment (ROI), or multi-dimensional, such as socio-economic (job and skills creation) and environmental (such as soil enrichment).

For the purpose of assessing value add opportunities for IAPs and the EPWP, three useful variants of a woody bioproducts value chain and/or hierarchy have been proposed by Lee (2015), Toma-Now (2016) and Stafford et al. (2016). These have been amalgamated with various other references to biobased products and potential value assessments to reflect the potential value-add for IAPs in South
Africa (see Figure 1). The diagram illustrates the categorisation and diversity of products that could be manufactured from IAPs. Five main product categories were identified:

- Biochemicals and nutrients
- Biomaterials
- Biofuels
- Timber materials
- Bioenergy and ‘basic’ biofuels

These are listed in terms of the complexity and/or simplicity of production or manufacture. Adjacent to the hierarchy of products, four categories of potential value have been identified:

- Production volume e.g. the amount of product that could be generated and/or produced.
- Financial value e.g. the cost per volume of product sold and/or purchased.
- Job numbers e.g. potential number of jobs that could be created through the manufacture and sale of products, and
- High skills e.g. the level of skills and knowledge required to develop, manufacture and sell the products generated.

The first two categories of value potential are often the most common values reported, while job creation and skills are seldom reported alongside product potential. It is argued that these two value potentials are included and assessed in more detail, as they are an important dimension and requirement for the South African government and its motivations for transition to a green economy. The same applies for the DEA’s NRM and ‘Work for …’ programmes.
More specific human and financial capital opportunities to be realised are captured in the accompanying spreadsheet, which also captures preferred biomass feedstock sources and IAP species, examples of value potential (including geographical region examples), challenges and mitigation associated with implementing the opportunities (this is discussed further below).

**Turning Biomass into Product: Opportunities and Challenges**

As mentioned earlier, much of the known focus of the ‘Working for …’ programmes have been involved in IAP clearing. Within the bioproduct value chain, this could be defined as harvesting or collection of the feedstock, from which bioproducts will be produced. This feedstock is often transported to a central location where it is processed (sometimes this processing occurs at point of harvest) and manufactured into a bioproduct (Agricola, 2009).

There are a few key determinants for assessing bioproduct potential and feasibility from IAP feedstock. These include, for example:

- **Accessibility of the feedstock** - how easy is it to access by foot and road (Stafford et al., 2016) and cost of extraction and recovery of feedstock (Vundla et al., 2016). Stafford et al. (2016) argue that the feasibility of value add activities can be significantly impacted by the recovery costs of feedstock, and transports costs from site of harvest to processing. Costs will vary widely depending on access and harvesting mechanism.

  **Mitigation:** One of the most commonly cited solutions to this challenge is on-site or decentralised processing (Stafford, 2017; Vundla et al., 2016), which could be further enhanced by using mobile processing equipment (Stafford, 2017), which can move as areas of IAP are cleared and new sources are identified in other areas.
- **Portion and suitability of harvestable woody biomass** — of the IAPs identified in each area, what can the types of vegetation or residuals be used for? This is often based on species and quality of biomass. For example in a study on the Cape Agulhas Plains, of the total biomass that could be harvested 53% had bioenergy potential; 32% wood fuels e.g. firewood and charcoal, wood composites; 10% left in-field as harvesting residue; 3% small poles and droppers, and 1.5% lumber or larger poles (Stafford, 2017; Stafford et al., 2016). IAP woody biomass is often not suitable for products such as lumber (Marais et al., 2001) or bio-diesel (which is actually derived from fats and oils), yet more suited to the production of (in this instance) bio-ethanol (Byrd, 2011).

*Mitigation:* An assessment of woody biomass potential is undertaken in an area to determine quality and species-type, in order to determine best ‘fit-for-purpose’ and cost-effective bioproducts that can be generated from a site and species (Mugido et al., 2014).

- **Technical capability and ‘fit-for-purpose’ technologies and equipment** — either new or repurposed equipment or facilities will be required to process IAP biomass. Readiness of technologies for commercialisation and scaling also need to be taken into consideration. For example, biomass to energy technologies are relatively mature, compared to biochemical production (Stafford, 2017).

*Mitigation:* In terms of technical capability, this could include improved research and development (R&D) skills and know-how on biomass products, and improvement of product quality output. For example, the University of Free State are collaborating with the leather industry to improve the quality of tannins obtained from black wattle (van Wyk, 2009). Engineering and plant operation skills will be required to construct or repurpose, implement, manage and maintain processing facilities and plants, for example pulp and paper mills equipment and facilities can be repurposed for bioethanol production (Byrd, 2011).

In addition, technologies that are small-scale and localised have significant potential for the EPWP programme. For example, small energy plants are already in operation in the country, and commercially available. Such ‘micro-plants’ could be considered for power generation for the EPWP programmes (Pierce, 2015).

- **A positive net present value (NPV)** — this means operations are not only financially viable, but also contribute to job creation, skills development and broader social and environmental improvement (Isa, 2016; Stafford, 2017; Toma-Now, 2016; Vundla et al., 2016). From a financial perspective, several South African studies have undertaken cost-benefit analyses associated with clearing IAPs to inform decision-making (for example, Van Wilgen, Cowling & Burgers, 1996; Higgins, Richardson & Cowling, 1996; Hosking & Du Preez, 1999; Hosking & Du Preez, 2004; Turpie & Heydenrych, 2000; De Wit, Crookes & Van Wilgen, 2001; Wise, Van Wilgen & Le Maitre, 2012 cited in Vundla et al., 2016).

Parameters for informing and calculating value-add products include price of product produced, biomass of per hectare (ha) of IAP species, biomass conversion ratio into product produced, and proportion of IA species to product produced (Vundla et al., 2016). Some value-add models also include:

  o Carbon sequestration potential of different species which might be lost due to IAP clearing (Vundla et al., 2016).
- Water consumption lost to IAP and therefore water reduction or increase yield if an area is cleared (Marais et al., 2001; Stafford et al., 2016; van Wilgen, Richardson, le Maitre, Marais, & Magadlela, 2001; Vundla et al., 2016).
- Grazing potential after clearing (van Wilgen et al., 2001; Vundla et al., 2016) and commercial crop potential (van Wilgen et al., 2001).
- Harvesting of indigenous flowers after clearing and land is restored (ABI, 2017; Fourie, de Wit, & van der Merwe, 2011; Marais et al., 2001; van Wilgen et al., 2001).
- Tourism and recreation potential after clearing and land is restored e.g. hiking, eco-tourism (Marais et al., 2001; van Wilgen et al., 2001).
- Eco-system restoration after clearing and land is restored (van Wilgen et al., 2001).
- Reduction in fire risk (Stafford et al., 2016).

**Mitigation:** Ensure the most suitable business-models and plans are developed, and a cost and/or inclusive value-add assessments are undertaken prior to investing in an activity and operation. Systems adopted should be lean and efficient, wherever feasible (Isa, 2016; Stafford, 2017; Stafford et al., 2016). Given the link with the EPWP programme, most research undertaken to date, strongly recommends that the feasibility of programmes and operations are dependent on cost sharing along the value-chain. For example Stafford et al. (2016) suggest an appropriate business model could involve sharing cost between NRM (36%), landowners (25%) and bioenergy entrepreneurs (39%) to supply the biomass at a cost of R400/green tonne, in order to secure financial feasibility of bioenergy using an example gasifier. Long-term agreements between parties and/or parties are also recommended to provide a more stable operating environment, which also can ensure longevity of an operation or programme.

- **Market potential for bioproducts** – does such a market already exist, or is the potential demand significant enough to warrant production (this could be local or national) (Vundla et al., 2016).

**Mitigation:** Undertake a demand assessment of products to be produced, and plan the introduction and marketing of the product into the market to maximise its uptake. Who will the market be, for example school desks being purchased by the Department of Education, or fuel wood purchased by wood traders, supermarkets and fuel stations. In a study conducted to assess the potential of IAP value add in the Eden to Addo Corridor, a study was undertaken to assess the market potential of fire wood, noting there was much demand in the area from local forecourts (Eden to Addo, 2017).

In addition to the above considerations, it is important to remember that the IAPs as a feedstock are a temporary source of woody biomass (le Maitre & Forsyth, 2011). In theory, once clearing has reached its optimal success rate (recurring growth is minimal and manageable) then IAPs will no longer be a consistent source of feedstock in this country. Alternative feedstocks, such as agricultural, plantation and sugarcane residues will be required to supplement and ensure the longevity of any operations set up to transform IAP woody biomass into value add products (Mail & Guardian, 2017).

**Conclusions**
There are opportunities for EPWP to use the IAP woody biomass they generate through their clearing programmes to produce value-add products, and create much needed jobs and increase skills whilst doing so. Many studies have predominately focused on the bio-energy potential, with a few examples
illustrating the potential for bio-chemicals (tannins and cosmetics), bio-materials (compost and biochar) or timber materials (eco-furniture).

However, it is recommended that to generate the necessary funds to support social-value creation and good financial returns for reinvestment in EPWP clearing programmes and the South African economy, further research into higher-value products such as biochar, biochemicals and timber materials (such as wood composites for construction and interior design) should be undertaken. Such initiatives could realise improved financial returns and increase the level of high and technical skills required, that might often be imported from abroad.

Financing is clearly a major challenge and opportunities to co-fund and partner with entrepreneurs, R&D institutions, the private sector, government and civil society should be encouraged. However, this should be co-ordinated to ensure effective governance and operating networks, and prohibit ad hoc siloed activities. It is suggested a proactive identification exercise is undertaken to identify potential partners both at a national and local level. A more structured co-partner process could not only assist with future funding, but also increase the rate of clearing of IAPs.

Lower end, yet high volume production and job creation product production activities such as charcoal and fire wood could be explored further to ensure IAPs are being utilised more effectively as a source in the country. The production of such products has the benefit of uplifting and providing incomes in predominantly rural areas, where it is much needed (Vundla et al., 2016).

The building blocks are already in place, and there is clearly a will and potential for value-add products to be included in the EPWP. However, these do need to be planned (road-mapped over time), considered and efficiently implemented, maintained and monitored to reap the economic and social benefits they could achieve.

References


Appendix 6
Heidelberg Factory Site Visit
by Dandira Mushangai

People interviewed:
Dry mill contractor (DMC1 and DMC2)
Wet mill machine operator (WMO)
Dry mill machine operator (DMO)
General Worker (GW)

The Heidelberg research was interested in understanding the eco-furniture factories from the position of the contractors and the workers. This write-up is divided accordingly into these two parts.

Contractors and the ‘Rosy Picture of Progress’
The contractors tried to present a rosy picture of the project mainly touching on the opportunities that the project presented to the people in terms of skills development and employment opportunities. Thus, according to WMC:

I went from general worker to machine operator and then I became a contractor. They conducted interviews. For me it has been quite an experience because I gained a lot of skills. I have certificates for machines. I have got a lot of experience with machines right now. So even when people are working I know how to identify certain things not just to be a contractor that doesn’t know anything. Being a contractor at first it was very challenging because it’s something that you are not used to. Having to handle a team of 20 people, having to discipline them, having to pay them, making sure that they get paid, make sure that they come to work, make sure that they behave. It was a challenge but right now it’s something that is normal to me because I am used to it. I have gained a lot of experience; right now I can go and get bigger tenders. This is something small that I started with.

For one to become a contractor, people have to apply when SANParks advertises. Mostly those already working within the eco-furniture factories apply and are given contracts. Those contracted to the work are then assisted with company registration and other compliance related issues (CIPRO& Labour). This is done after a number of workers have already been assigned to work under them in certain sections of factory. Though this is a way of growing entrepreneurs from those already working for the eco-factories, in most cases these people are not well equipped and skilled to do what they would have been contracted for (a problem raised at the SANParks interviews on 15 June). These contractors lack in a number of ways. They don’t have human resource management skills; financial management skills; capital (machinery and financial resources), and the technical know-how. The lack of capital and other resources, determines the nature of their relationship with SANParks. They are over-dependent on SANParks and cannot negotiate freely for better contracts. This in turn affects their relationship with workers who in most of the cases receive meagre wages. Rather than describing them as ‘free standing’ contractors, they should be described as ‘incubated’ contractors.
Though some gains very been realised, these should not obscure the underlying problems of the project. A thorough probing of the contractors revealed some contradictions and deep underlying problems of the project that are totally different from the picture they tried to portray. These ranged from the late payment by SANParks; unsuitability of the alien species, shortage of the required machinery; to having to retrench labour because of the shortage of material.

**Relationship with SANParks**

Though the contractors could not openly criticise SANParks, it was obvious that the relation with SANParks has not always been smooth. They have problems of late payments which at times spill over to their workers. According to DMO the relationship is ‘OK’ but:

> We have challenges here and again but I can’t say it has been perfect. It has been OK. You know sometimes you get to a point where you are like, I really can’t take it anymore but then at the end of the day you know that you can’t say you wanna lose your job because of just one mistake that SANParks did. As much as they will never say we are dismissing you because of one minor mistake that you have made. It’s a relationship kind of thing so it has been OK. My experience with SANParks has its up and downs. In general, it has been great. I have learnt a lot and I am grateful for this opportunity to me.

To this a dry mill contractor responded:

> It’s coming bad when they don’t pay me. (And in times of late payment by SANParks.) Usually we do have supervisors. You know SANParks Working for Water, I know Working for Water I have been there it pays us after 30 days after end of contract but here SANparks we usually get paid earlier. If we don’t get paid earlier it is sometimes because of the wrong invoice that is my problem. I admit we do make mistakes but at times when the managers don’t take the invoice to the office that is SANParks mistake where we do take it up with the manager here around just following protocol. But then it will be resolved.

From this it can be seen that the contractors have problems of late payment. This problem at times stems SANParks’ failure to pay them on time or from their failure to complete the required documents correctly.

**Value Addition**

The contractors are contracted to add value to the IAP resource at various points of the value chain. This value chain includes the harvesting team, wet log processing (canting and planking at wet mill), dry mill processing, and then production of the required table components and assembling.

Once the logs have been delivered to the factories they have to go through wet mill processing. The process is divided into two: the canting and planking, under two different contractors. Canting is done using Bestbier brand sawmills. These machines are used to do the initial log breakdown and to process cants into planks. After this the planks are cut using the Lucus mill machine and left to dry in the open in preparation for dry mill processing. As WMO explains:

> For the wet mill I am in the planking section. There is a canting section which is Sibongile side. So what we do is we receive cants from Sibongile and then we cut them up to make wood/planks that they use in the dry mill. So we cut them up because they are still wet and then we air dry them first and after they have been air dried we put them in the kilns which are where they get super dry. After the dry mill takes them out and then they make the furniture from there.
It seems that there is too much compartmentalisation of the production line resulting in the creation of too many contractors to do simple jobs that could be combined. It appears the canting and planking section could be under one contractor for the work cannot actually be defined as different. The machines used are the same. Also bearing in mind the shortage of material (timber) as reported it results in overemployment with a negative impact on production efficiency. Further, the breakdown of the work into small pieces denies workers complete knowledge of the wet milling processes.

Thus, efficiency at mills is affected by overemployment and the shortage of material and the size of the logs being worked. The shortage of material denies the contractors of the knowledge as to how many m³ wet planks are produced per day, week or month. Thus, according to WMO, production:

“... depends on the amount of work that you have on a daily basis because it can’t be the same. Sometimes you don’t have a lot, sometimes you have a lot. You can’t really say how much really you can do. As long as there are cants you just have to keep on working and working but we work in cubic metres so that you know for that particular day maybe we would have had about 5 cubes done or like that. On a normal day about 10 to 15 cubics. It depends on how big the logs are and how fast production is. If we have enough then we can make up to 15 cubics per day.

Those working at the wet mill think that alien timber is problematic because the quality is not the same and the logs are too hardy for the machines.

Dry Milling Process
From the wet mill the contractor takes the planks to the solar dry kilns to make them super dry ready for furniture manufacture. The contractor responsible for the dry mill operations complained of the shortage of dry mills as a limiting factor for maximising production. Also the dry mills at the Heidelberg factory are not suitable for drying blue gum which affects the quality of their production. Dry mill contractor (DMC) had this to say:

We don’t have enough kilns to dry. The ones we have I don’t think are perfectly drying the kind of planks that we are using. I think we must get the kind of kilns that are suitable for the planks that we are doing because around here we are using blue gum eucalyptus. The kilns are not suitable because most of the time our planks they crack when they are already in the dry mill. They are not making whatever we want. Thus why most of the time they buy planks for us to work as eucalyptus breaks. When making the desks sometimes the people from Eastern Cape who are assembling they come with reports that this desk was perfect but it cracks. In the long run it cracks.

For this reason, the company management at Heidelberg usually has to buy planks for them to work. DMC also noted that because of their unsuitable dry kilns at Heidelberg they usually take the planks for drying to Ficksburg in the Free State where there are proper kilns for drying blue gum planks. This according to DMC costs money. At times the project had to buy plantation timber for the contractors to work which goes against the original vision of the project: using alien species as resources.

The Manufacturing Section
The whole process from the wet mills, via the dry mills to the manufacturing section of the factory is overseen by the technical person. He has knowledge of the machines and advises the contractors. The technical person is the overseer of the manufacturing of the different components for making the tables. From the dry milling process the planks would be ready for the production of the tables. In the manufacturing section, the planks are cut to the required dimensions and thickness, machine planed for a smooth finish, grooved for joints are cut out and laminated and forwarded to the
thicknesser planer. After this they are delivered to various sites where assembling takes place. The manufacturing section of the Heidelberg factory has a number of machines. They have the top-bottom plane for smoothing the planks from the dry mill. Thereafter the planks are taken to the crosscutting machine for length adjustments and from this they are taken to surface plane machine to plane the edges. All the machines are connected to dust extractors to remove and reduce dust from the factory. The last stages involve the planks being taken to the lamination machine after which they go through the thicknesser for the final thickness required.

Though the technical person thinks that the machines are sufficient at present, the workers feel the need for more dust extractors in addition to the three which they have. They say that at times during production process there is a lot of dust in the factory which presents a health hazard.

Compliance Requirements
The contractors noted that there are many requirements they must comply with as entrepreneurs. They need to have their CIPRO documents in order, they need labour documents and other business related documents. These processes are costly especially for start-ups despite various forms of assistance from SANParks. Their major challenge was the exorbitant charges by the Labour Department for the Workman’s Compensation Fund. They complained the Labour Department does not consider the varying number of the workers employed by the contractor in a financial year. For example, if you start with 30 people and end the year with 15 people, the Labour Department charges the contractor for the 30 workers for the full 12 months of the year. They felt that the Labour Department should charge only for the number of months the workers work. Thus according to DMC:

My challenge is about labour. Labour is taking everything from me as a contractor. As speak now I have paid workman’s compensation R15 000 per year. Last year I didn’t work so much because of we are a project but when Labour comes to us it doesn’t charge us as upcoming contractors they just charge you as a normal business person. Then you know here we are not working a full complete year. We are working sometimes 9 months because sometimes it is ten days per month. When is close to the financial year and the money is not there then we take maybe five people or six people, you cut your team, you come and do at least something and the others are sitting at home. The money is not coming as it is supposed to come but Labour when it charges you. It doesn’t say we are taking for so many people it just charge you straight that money – the Workman’s compensation really I am crying for that. I don’t know what can be done so that they can see that or can we get somebody from Labour to come and explain or when we report they must look at the facts maybe. From the beginning of the year maybe from April sometimes you work with 12 people, then when the year comes in you work with 25 people, you add up another 12, they just take from the first of May until the first of April, and they say 26. When it comes, it does not say it was 12 from the first of April they just say it was 26.

Despite the problems encountered, the contractors are of the view that their operations are aligned to the vision of the government of adding value to IAPs for social, economic and ecological benefits.

Other Challenges
Cash flow management
The contractors feel they require training management. Though much learning has been done on the job, some still find it difficult to manage their finances. One of the contractors regarded financial management as one of her challenges. However, some feel they now can manage their finances effectively. As DMC said,
I mean it’s one of those challenges that we have. I mean as a contractor if you have been working for at least three months it’s enough for you to sustain a certain amount in your bank account. And then you know even if SANParks can delay you can just take the money from your account and then pay the workers and then you wait for SANParks to pay you and then you put that money into your business account.

Shortage of resources in terms of equipment, logs and finance

The shortage of the resources (IAP logs) was presented as one of the major problems that can even affects relations between the contractors and their employees. DMC explained:

My challenge is when you have to cut your team, take others and then others stay at home because of maybe there is no planks. Because the people must come to work. The material, the equipment is not there then you must take another people. When the money, the financials are not at good standard you must take another people to stay at home. You know us you are a black person, you know you create yourself enemies and again you know that the money is far less. Presently we are earning 104, 63 the lowest. Then you cut that person who is earning that less you know it is a challenge for me.

With regard to the shortage of resources, DMC noted that:

I think the factory can improve … we get days when we are staying at home because there is no work. We can’t be working because we don’t have logs, because we don’t have cants, we don’t have stock. I think they can improve by having more stock and sometimes they will be complaining about the budgets – ‘the budget is too low we can’t do this, we can’t do that’. Maybe if they can increase the budget you know instead of making it small. You get to a point whereby you need to go and sit back at home because they are like we don’t have any more budget for the factory. So they can give us more budget then we continue working because sometimes like last year, some of us went and stay at home and it was towards December.

Thus when the logs are not delivered, the finances are not enough or there is a machine breakdown then employers are forced to reduce their labour to cut costs. Thus efficiency in the eco-furniture factories is affected by a contingency of factors.

Workers’ Experience of the Eco-Furniture Factories

Training

The workers receive on the job training mainly from the companies that supply the machines. This includes training to operate the Bestbier and Lucus mill machines. DMC explains the importance of the job training:

We get people to come and train them here. We have the machines so they have to train them here. The people from Nukor actually come and they do the training here and they do it on the actual machines so that the people can actually use the machines instead being trained at Nukor and then come here and they can’t use the machine. Sometimes its theory. They sit down and do the theory and then after they then do the practical. They go outside and train. The trainee looks and checks if they can do it. They can only issue certificates when they have seen that the people can actually now do the actual job.

Certificates are issued by the machine suppliers as part of the recognition for mastery in machine operating. Those trained are taken around the country to transfer their skills to other people. Thus a wet mill machine operator recounted that he had been taken to places like Durban, Giyani and others to train other people.
Source of income
The workers are of the view that the eco-factories presented them with a source of income which is improving their lives. Some of the workers are of the view that there is mobility and opportunities for growth at work. According to a general worker (GW):

I have experienced lots and lots. I can say now I am OK I am working at the office. I was a general worker before when we started then I became a machine operator Lucus Nukor and then after I became a clerk now. So everything is cool. I am prepared to see this company going forward.

However, beyond this rosy picture there are many challenges and struggles for the workers.

Challenges for the Workers
Payment problems
The workers complained about delayed payment which dampens their motivation to work as noted by GW:

There are problems with payment because I have been here since 2013, some of the things are not right because but you get used to those things … I was not getting paid but that money eventually comes. As an individual I have dealt with that at least there is accounting, at least they know that they owe me. I will just be patient but we wish things to be right because things like that they put delays to production. They reduce motivation. Yes I do wish a better system or something could be done so that people they will at least know that they will get paid.

The gravity of the issue was emphasised by GW when he pointed that they once staged a protest because of non-payment in 2016.

You know that time ne, as I was saying we didn’t get paid and we could work for the 30 days. Our contract says we must work for 3 months but that year it was almost for 6 months. The whole year last year I only got paid 4 times. For the whole year 12 months I only got 3 times. Not only me but all the people.

The emphasis on the last sentence shows how serious this problem may be though the workers might have been coached on how to answer the questions. Further, the workers complained of the meagre wage they receive and wish this could be improved.

It is important to note that the workers have a Workers Forum where workers’ problems are discussed and presented to the management. Despite this, Themba noted that only some of the problems are resolved.

Contracting
The government might have tried to avoid running the factories directly by training the workers and then contracting them to perform production functions; however, the workers seem not to be happy with the contractors. Through probing, it was noted that though the workers say they are improving as a result of being employed but most feel that their conditions could improve if they were to work directly as employees of the government. Thus general worker X who thought that I had the power to change this contracting system requested: “we ask if we could fall under the government”. This shows that workers are not happy under the current contracting system.
Health and safety
Health is also an issue that should be taken seriously for the safety of the workers. While the interviewer was touring the factory and being shown the first aid kit, a worker came to report an accident. The injured worker had to be taken to hospital. With regard to health and safety, a machine operator thinks that there is a need for more dust fans to minimise the dust in the factory.

Other challenges
The workers feel that there should be enough logs for them to keep on working. The shortage of logs results in them having to stay at home which impacts negatively on their meagre wages. They think that this could be achieved by obtaining the right kilns for drying blue gum planks. They are also of the opinion that if the right logs could be obtained this would prevent machine breakdowns as blue gum is not suitable for the machines they have. Further, they want to have a person who is capable of fixing the machines stationed at the factory so that production is not delayed and they can meet the targets.