



Social impact study of the proposed agro-processing and biodiesel production facility in the Mogalakwena mining area

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Research report prepared for:
The Council for Scientific and Industrial Research (CSIR)

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Economic Performance and Development
Human Sciences Research Council

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Date:
19 March 2019

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Acknowledgements

Various people have provided critical support to the realisation of this study. We wish to thank all those who, in a way or another, helped us through the numerous difficulties that we had to navigate through in order to plan for the data collection process and conduct the necessary community engagements. We would like to thank particularly Evans Masilo Lebepe (Community relations officer at Anglo- American Platinum, Mogalakwena), Mmabatho Shirley Masipa (Community relations officer at Anglo-American Platinum, Mogalakwena) Portia Moshokane (Community relations officer at Anglo- American Platinum, Mogalakwena) for their advice, guidance and support during the contact with local community members in the respective villages.

Peter Lentswane (stakeholder relations manager at Anglo-American Platinum, Mogalakwena) and Sibusiso Tenza (Social Performance principal Limpopo SED at Anglo-American, Johannesburg) provided valuable assistance for community engagement during the preparation phase and we wish to thank them wholeheartedly.

George Ramuhashi (Admin Officer, Corporate Governance, Human Settlement and Traditional Affairs in the Waterberg District) provided invaluable assistance in making the necessary arrangements for meetings with the traditional leaders. We gratefully acknowledge his precious help. We also wish to thank all focus group discussion participants, interview respondents, as well as all those who participated in the trust survey. A word of thank is also owed to Ms Ilse Visagie and Dr Yasser Buchana for their ingenious help in graphic design. Responsibility for any errors, misstatements and omissions remains with the authors.

Study Highlights

- The success of the proposed agro-processing & biodiesel production facility in the Mogalakwena mining area will partly depend on its ability to source its raw-material inputs from local agricultural production. The area has considerable land resources but local agricultural production is severely constrained by water shortage and lacking irrigation infrastructure. Increased production to meet the input demand requires adequate support for an efficient irrigation system. Provision of appropriate irrigation infrastructure can be achieved through collaboration with the National Department of Water Affairs and Mogalakwena Local Municipality integrated development planning, which are already working on increasing the capacity of the water supply system for local communities.
- Traditional leaders enjoy the highest levels of institutional trust among and therefore wield a non-negligible influence on community members. Together with Mogalakwena local municipality officials, they are eager to support this proposed project, provided that its implementation is aligned with the local economic development priorities, namely providing employment opportunities to the local youth and expanding their skills base.
- Local human capital in the area is relatively low with an average educational attainment below matric level, but the local municipality has collaborative agreements with various government agencies to provide skills training and bridge skills gaps as may be necessary for the success of the project.
- The social capital of the local communities is characterised by strong bonds of kinship and mutual trust, adherence to common norms and procedures and general trust in institutions. This results in observed positive attitudes towards social change. The community's propensity to support the implementation of the project is partly driven by the high levels of unemployment, which has the potential to make their expectations of livelihood improvement overly optimistic.



- Experiences with similar, but failed initiatives of the past, have left vivid memories of disappointment and frustrations due to insufficient communication and a lack of clearly defined framework for demarcation of responsibilities and obligations of each involved stakeholder. For the success of the current initiative, an adequate planning will be required in order to avoid the factor that led to the failure of previous initiatives. Clear communication will be necessary to ensure an optimal level of cooperation for mutual benefits between community members and project implementers.

1. Study background

Limpopo's economy is heavily dependent on mining, and is therefore highly vulnerable to internal and external shocks that can affect mining sector production. Being the most significant economic player in the area, Anglo-American Platinum (AAP) is conscious of the negative effects that a likely decline in mining operations in Limpopo, could mean for the province's unemployment and poverty. That is why it commissioned a study of the Limpopo Provincial Strategy for Resilient Sustainable Development, in order to articulate the key challenges, opportunities and priorities for making the province ready for a transition to a sustainable post-mining economy. That study was carried out by Dobbin International and its 2016 report painted an alarming picture of the possible economic deterioration that could befall the province if the mines were to close. That report also identified five key sectors in which development should be pursued in order to lay a foundation for alternative sources of job creation and sustainable development: 1) Agriculture & Agro-processing; 2) Tourism; 3) Manufacturing 4) ICT Infrastructure; 5) SMME & Skills Development. AAP subsequently initiated a series of consultations, workshops and presentations on how best to respond to the needs of the local communities in the context of these challenges related to the province's economic dependence on mining. The envisioned future development was intended to be based on a new economic structure that would enable sustainable growth through infrastructure provision and industry development.

The realisation of this vision requires a strong and reliable partnership capable of promoting structural transformation of the local economy. From the need to create such a partnership emerged the idea of establishing a Collaboration Platform for Development in the Limpopo Province. Anglo American approached the CSIR to seek the latter's participation in that collaboration platform geared towards development and transformation in Limpopo Province. The rationale for using a collaboration platform was the necessity of a collective impact model to achieve the desired outcomes of this vision.

The collective impact model is defined as the commitment of a group of actors from different sectors to a common agenda for solving a specific social problem, using a structured form of collaboration. The advantages of using the collective impact model go beyond the obvious synergy and scale/scope benefits. They also cover the areas of broader acceptance of the transformative projects in the target social communities and business environment. Such a wide spectrum of advantages is made possible by the fact that the various domains of competence covered by each of the platform partners ensure a broader coverage of the diverse needs and aspirations that exist among the multiple stakeholders within the province.

In line with some of the opportunities suggested in the Dobbin International report, an immediate intervention was proposed in order to generate short-term impacts through concrete projects, while still developing the long-term strategic vision. The achievement of such a vision will rest on three main pillars with integrative interactions:

- Industry development
- Human and social capital development
- Sustainable production of goods and services.

The Dobbin research identified agriculture and agro-processing as key sectors for an immediate intervention that can contribute to rapid job creation in the Mogalakwena mining region. Anglo American Platinum subsequently sought to give form to this idea by establishing an agro-processing platform in the Mogalakwena Local Municipality. The purpose of this platform is to set up a multipurpose facility for the processing of various crops into value-added products (E.g. oil, biodiesel, guar gum and other industrial related products) as well as processed foodstuff that enhance the contribution of local agriculture to food security (see report ANG-1.1. -001).

The proposed feasibility study for an agro-processing & biodiesel production facility has therefore as objective to demonstrate what will be possible on the path of that long-term vision and consists of 6 components:



- Primary production feasibility studies;
- Future technology interventions;
- Supply chain analysis;
- Social impact study;
- Market study;
- Ownership model.

The CSIR was contracted by AAP to conduct this feasibility study. Then the CSIR approached and subcontracted the HSRC to carry out the social impact component of the study because of the latter's expertise in this domain. The social impact study must shed light on social factors affecting the capability of target communities to make this intervention successful and beneficial. The social impact study that HSRC undertook is therefore an integral component of the feasibility of the proposed immediate intervention in line with the long-term vision of structural transformation of the provincial economy.

2. Problem statement & study objectives

The proposed intervention will require, in addition to setting up the plant and equipment for the production facility, the primary production of feedstock to be processed into various finished products, some of the crops being specifically targeted for the production of biodiesel. The crops targeted for cultivation and processing include *moringa*, *guar*, vegetables (tomatoes, potatoes, onions and spinach), maize, sorghum, cotton, dry beans, *solaris*, rose geranium and soya beans. These crops were identified and selected in accordance with the recommendations of the crop selection study conducted by the CSIR (WP1.1-2 ANG-11-002).¹ The proposed production of vegetables for agro-processing in the Mogalakwena area must be seen in light of the situational analysis that revealed a high risk of malnutrition in

¹ From the recommendations of this study, cotton is considered as the preferred crop for the production of biodiesel (from cottonseed oil).

Limpopo Province and recognised the role that vegetables can play in reducing malnutrition and enhancing food security in the province (see study report ANG-1.1-007).

For the proposed intervention to succeed, it is very important that members of communities to which it is targeted be integrated in its structures, its functioning and its various value chains. It is equally important that the risks and rewards associated with the changes inherent in such intervention be managed in line with the intended long-term structural transformation of the communities. This requires a clear understanding of social norms, perceptions, attitudes and practices as well as the political and power structures that influence the direction of change within those communities.

The study aims to generate an adequate understanding of behavioural, cultural, and cognitive features of the target communities that are likely to foster or hinder the structural changes associated with the intervention in the short and long run. In our approach to understanding the socio-economic environment in which the proposed change must take place, we bear in mind that what works in one community is not necessarily appropriate for another. This is why this social impact study was designed to probe and elucidate the preparedness of target communities for the socio-economic transformations that the implantation of an agro-processing & biodiesel production facility in their immediate environment can bring about.

The study had therefore the following objectives:

1. Understanding the social context of the environment in which the intervention takes place;
2. Map out the following attributes of local communities with respect to social interventions:
 - social capital and capabilities;
 - social attitudes towards innovations;
 - entrepreneurial and technical skills linked to the opportunities offered by the production facility;

- exposure to similar interventions in the past and factors explaining success or failure of these interventions;
 - land availability for the cultivation of the target crops
 - land ownership structure.
3. Understand how the political structures and societal forces are used to wield influence for motivation and mobilisation for the intended changes.

The social impact study was also conducted in order to shed light on social factors that affect the capability to achieve the stated vision and objectives of the projected intervention. Social capital with its structural cognitive and relational dimension was analysed to elucidate its dynamics and explain how those dynamics affect the acceptance of, and the support for the proposed interventions.

3. Analytical framework: Absorptive capacity for structural change

With the purpose of empowering targeted communities to take ownership of transformative interventions aimed at improving their livelihoods, this study sought to understand how the expected outcomes of the transformation can be adequately defined and clearly communicated to local community members. The various social, cognitive and behavioural aspects of adaptation to change that this study endeavours to explore were analysed within the rural structural transformation framework (Ranis, 1988; IFAD, 2016). This framework is elaborated below to explain the conditions under which the rural economy reallocates resources across sectors to move from its dependence on traditional sector production (agriculture or mining) in order to develop industrial capabilities for higher productivity in the manufacturing sector.

3.1. Resource reallocation for structural transformation

For such a resource reallocation to take place, the existing economic structure characterised by low labour productivity levels in the traditional sector must first build the necessary

capability to make a significant increase in food production. Increased food supply is necessary only in order to deal with existing food shortages but also to alleviate the pressure caused by the increased prices of imported foodstuffs (Collier, 2002). This implies building a dynamic agricultural sector, which requires that a part of the surplus be devoted to strengthening the agricultural sector (IFAD, 2016; Timmer, 1988). The gradual reallocation of labour from the traditional to the modern sector (agro-processing and other manufacturing) leads to an overall increase in productivity because of the learning effects in the manufacturing sector. In the Lewis (1954) growth model, continuous reinvestment of the savings generated by the modern sector leads to capital accumulation in the manufacturing sector. The resulting increase in capital-labour ratio attracts more labour moving from the traditional sector into the modern industrial sector because of higher labour productivity. The relative contribution of the traditional sector to total GDP decreases gradually as the industrialisation intensifies and the service sector becomes more important (see Figure 1).

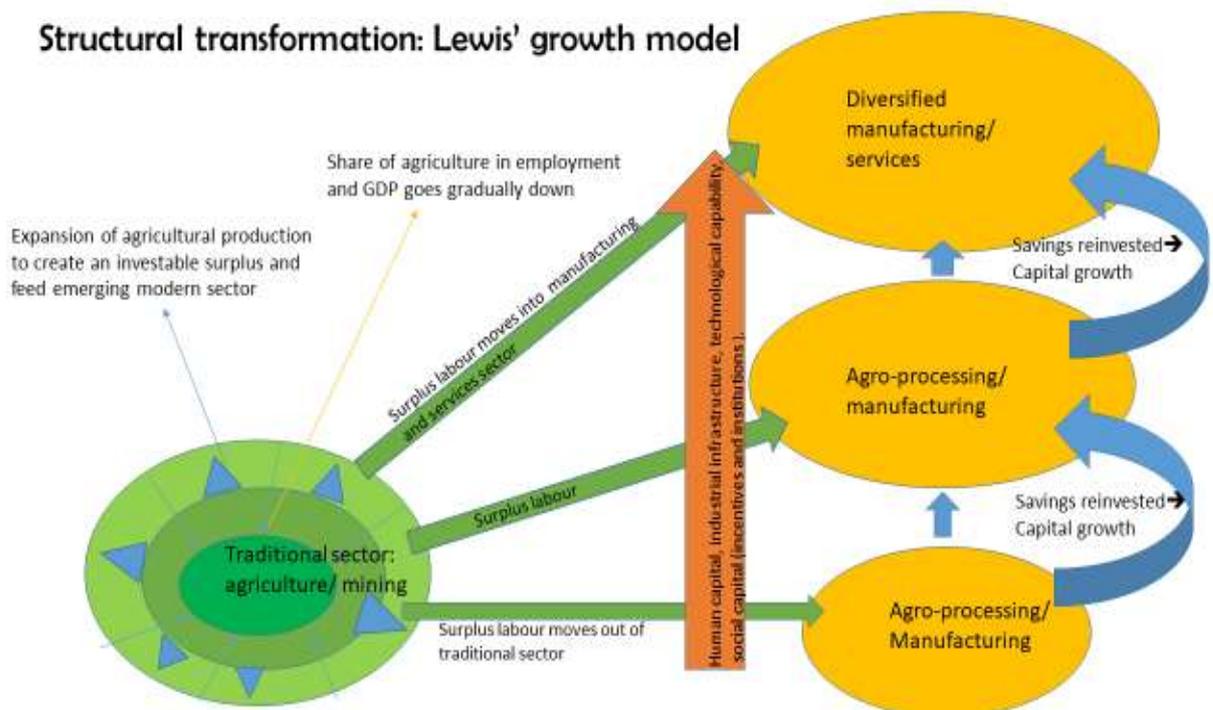


Figure 1: Schematic representation of the dynamics of structural transformation

Source: Author's representation of the Lewis' (1954) structural change growth model

3.2 Absorptive capacity for new technology adoption

The ability of communities in the Mogalakwena mining region (characterised by a traditional economy dominated by mining) to reallocate productive resources and develop a strong modern industrial and services sector (structural transformation) hinges on having the required absorptive capacity that enables the necessary adoption of modern production technologies. According to Narula (2004), absorptive capacity comprises three major pillars: 1) basic and advanced industrial infrastructure to provide a platform for (new) industries and services to operate, 2) firms to internalise external sources of technology knowledge and 3) formal and informal institutions to enable interaction between economic actors and provide incentives to boost economic activities.

This concept of absorptive capacity needed for that structural transformation is closely related to the notion of social capability pioneered by Abramovitz (1986) to refer to skills and technical competences as well as social and cultural institutions and markets capable of mobilizing resources on a large scale to make the transformation possible. The social capability present in Mogalakwena mining area is determined by socio-cultural features that are likely to foster or hinder the adoption of the proposed intervention.²

Human capital stocks are a critical component of absorptive capacity because technical progress in the production process cannot occur without using the available knowledge.³

² Our analysis of factors affecting adaptation to social changes will be based on the indicators of social capacity, similar (but not identical) to social capability. The term social capital has many definitions but generally refers to tangible and intangible resources, actors and relationships between these actors and resources as well as the impact that these relationships have on the resources and on the larger groups. It can also be related to networks of people with bonds of mutual trust and reciprocity that determine the performance of people involved in those networks. Social capital can be used to explain economic transformation (Fukuyama, 1996), improved performance of diverse groups, the growth of entrepreneurial firms, superior managerial performance, enhanced supply chain relations and the evolution of communities.

³ See e.g. Ziesemer, T. 1991. Human capital, Market Structure and Taxation in a Growth Model with Endogenous Technical Progress. *Journal of Macroeconomics*, 13 (1): 47–68. See also Nelson, R. and E. Phelps

Indeed, skilled and trained brains are necessary to produce ideas, while capital stock and labour only contribute to transforming these ideas into new products and services or producing increased human capital. Human capital therefore plays a key role in structural transformation by making the technological change possible and by subsequently supporting economic growth and poverty reduction.

Basic, industrial and technological infrastructure is necessary to support the processing of primary commodities or the initiation and expansion of manufacturing activities (Narula, 2004). For example, roads, railways and waterways reduce transportation costs, while the resulting exposure to outside products forces local firms to innovate in response to pressures from external competition. This can result in the creation of new production, trade and profit opportunities. A good provision of public infrastructure is thus indispensable, not only for the necessary structural transformation, but also for sustaining growth once the transformation has taken place.

In summary, a favourable environment for the structural transformation to succeed must possess sufficient levels of human capital that make technological learning possible, public and private investments in physical infrastructure, a strong agricultural (or natural resource) sector to generate the needed financial surplus, and a good access to financial services to facilitate resource reallocation (Ranis, 1988; Szirmai, 2005). This is what enables a dualistic economy, such as the one in Mogalakwena platinum mining area, to convert the financial resources accumulated from the traditional sector (mining and agriculture in this case) into productive investments in the modern sector (agro-processing & biodiesel production facilities in this case) (see. Subramanian and Roy, 2003).

3.3 Structural transformation and social change

Transformative interventions needed to spawn economic diversification in Limpopo, though highly desirable, can also be cause to considerable socio-economic disruptions in the

(1966). Investment in humans, technological diffusion, and economic growth. *American Economic Review: Papers and Proceedings*, 52: 69.75.



communities in which they are introduced. Innovations are namely a form of creative destruction, by which the new production methods, process or techniques can displace the existing ones and render them obsolete (see Aghion & Hewitt, 1992). Along with the displacement of the old production methods, the existing social arrangements are likely to be disrupted by the arrival of the new economic dynamics as well. That is why innovations are often accompanied by resistance to change when the target communities are not properly involved in the design and planning of this concomitant change.

The structural transformation that accompanies the shift from reliance on mining activities to a more diversified and competitive economic structure has a profound influence on the attitudes and behaviours of the local communities. The transition from the primary sector to the manufacturing and services has the potential to transform surrounding residents from low skilled subsistence farmers into entrepreneurs and skilled factory workers. The embedding of the transformations in the local communities must therefore be analysed from the perspective of participatory development and participatory empowerment. Empowered participation is when primary stakeholders are capable and willing to initiate the process and take part in the analysis. Active participation by local citizens and other stakeholders from the design stage enhances both the quality and relevance of the suggested interventions, and therefore increases their acceptance by the local communities. This leads to joint decision making about what should be achieved and how. Through dialogue, critical issues are identified and analysed, and solutions are reached by exchanging knowledge and experiences.

Structural transformation for economic diversification has been characterised by the Department of Trade and Industry as being an urgent and indispensable task in order to address the mineral commodity dependence problems and put South Africa on a sustainable growth trajectory (Davies, 2016: IPAP 2017-2019). Diversification aimed to reduce the economic dominance of the natural resource sector has also inherent features that enhance growth through learning by doing as empirically demonstrated by Al Marhoubi (2000), De Ferranti *et al.* (2000) and Herzer (2005). The promise of economic diversification that the agro-processing & biodiesel production facility will bring is therefore desirable on multiple

grounds: in aggregation with similar projects, it has the potential to contribute to new industrial dynamics that can lead to a more balanced growth path on which the benefits of economic activities are spread across sectors.

4. Methodology

4.1 Social capability indicators and data collection objectives

The various components of our study were carried out to determine the factors conducive for the success of this economic intervention within the framework of social capability and absorptive capacity for structural transformation. Various elements of social capability were explored in as much as they relate to the dynamics of change. Indicators of the available incentives include aspects of the macroeconomic environment, labour laws and social justice, social grants and social security. The resource reallocation to an agro-processing & biodiesel production facility in a rural mining area should indeed be seen as a micro-level illustration of the transition from traditional to the modern industrial sector.

Interviews were designed and carried out with key informants as well as focus group discussions with community members in order to gain insights into the mechanisms that determine how the proposed industrial production facility would affect daily lives and livelihoods of the target population in the vicinity of the mining area. Before the formal data collection in the form of interviews and focus group discussions, informal gatherings were also organised with top-level Mogalakwena municipality officials as well as a meeting and exchange of views with seven traditional leaders of the surrounding localities in Waterberg District. The gathering of the traditional leaders was organised with the assistance of George Ramuhashi, CoGHSTA administrative officer in the Waterberg district. We wish to reiterate our gratitude for his support and assistance.

The information obtained from those multiple contacts with communities and their various leaders has been compiled and analysed to assess the nature of attitudes, perceptions and influences that could enhance or hinder the success of the proposed agro-processing &

biodiesel production project. In addition to the determinants of absorptive capacity, specific attention was given to the aspects of social capital present in those local communities, with emphasis on measures of trust and social cohesion as predictors of social capital in the communities (Liu, Milojev, Zuniga and Zhang, 2018). Trust inventory in a given community is an important indicator of social capital and can act as an indicator of the community to manage developmental change (Fukuyama, 1996). Social capital is indeed a capability that arises from the prevalence of trust in a society or in certain parts of it, as highlighted by Fukuyama (1996).⁴

In the same way as trust influences the build-up of social capital, the latter in turn influences the build-up of economic competence and, consequently, an opportunity for empowerment and growth. Without trust and social capital, development becomes difficult because of the characteristic inflexibility of culture to external modifications. The success of an external economic intervention in a given community (such as this proposed implantation of an agro-processing & biodiesel production facility in a rural locality) therefore requires a good understanding of intra-community mutual trust structure (which forms the social glue that determine internal cohesion of the community (Liu et al., 2018)) and the trust inventory with respect to external actors (which forms the basis for collaboration between project implementation entities and local communities).

Trust in authority and political institutions also plays a role in determining the relative distribution of influences that can mobilise communities for intended actions and objectives (Fukuyama, 1996). In order to gain the necessary insights into the ways in which trust intensity is distributed with respect to various actors and institutions, we collected self-assessment scores of trust through interviews and a survey questionnaire, which recorded trust perceptions on a sample of community members in the three randomly selected villages. Respondents from the randomly sampled villages were asked to rate their trust towards

⁴Fukuyama (1996) defines trust as “the expectation that arises within a community of regular, honest, and cooperative behavior, based on commonly shared norms, on the part of other members of that community”.

people, entities and institutions on a number of issues regarding their representation and sourcing of intangible resources. The issues on which trust perception were being surveyed concerned different aspects of representation (to represent respondent's personal interests, economic concerns, political views, security) and sourcing (information, opportunity for social advancement, assistance in case of need or disaster). Trust intensity was measured with respect target entities and people classified in ten categories ranging from close kinship connections to distant institutions:

- 1: respondent's own family;
- 2: other members of his/her village/community;
- 3: residents of other villages in respondent's municipality;
- 4: people from other tribes;
- 5: respondent's local representatives in the ward/ municipality;
- 6: Respondent's traditional leaders;
- 7: non-governmental organisations active in respondent's region;
- 8: private sector operators active in respondent's region;
- 9: trust in provincial authorities;
- 10: trust in national government.

Responses were rated using the following Likert-scale levels: 1= not at all, 2= I trust somewhat, 3= I trust quite well, 4= I trust strongly, 5= I trust absolutely. The indicators of social capital that were extracted from the survey questions provided useful insights into the internal cohesion within communities, the influential structures of the communities and their potential to embrace change.

For the analysis of the social context of the socio-economic interventions, our research team also collected data on human capital stocks, the dynamics of skills development, the infrastructure stocks and the socio-cultural dynamics. Information regarding the corresponding local economic development planning was gathered from administration and policy documents in order to enable us to determine the alignment between the intended operations of this agro-processing & biodiesel production facility and the existing framework

for socio-economic development planning. Inquiries into the alignment of this industrial project with community’s own development priorities were used to explore the factors that motivate the community members to feel associated with project implementation. Successful alignment has the advantage of making local residents consider the changes intended by the operations of the production facility as being part of their own aspirations. Factors that disenfranchise and alienate intervention stakeholders were equally analysed through communication with the communities in the target area.

Figure 2 represents the relationships that may exist between community members and the agro-processing/biodiesel production facility:

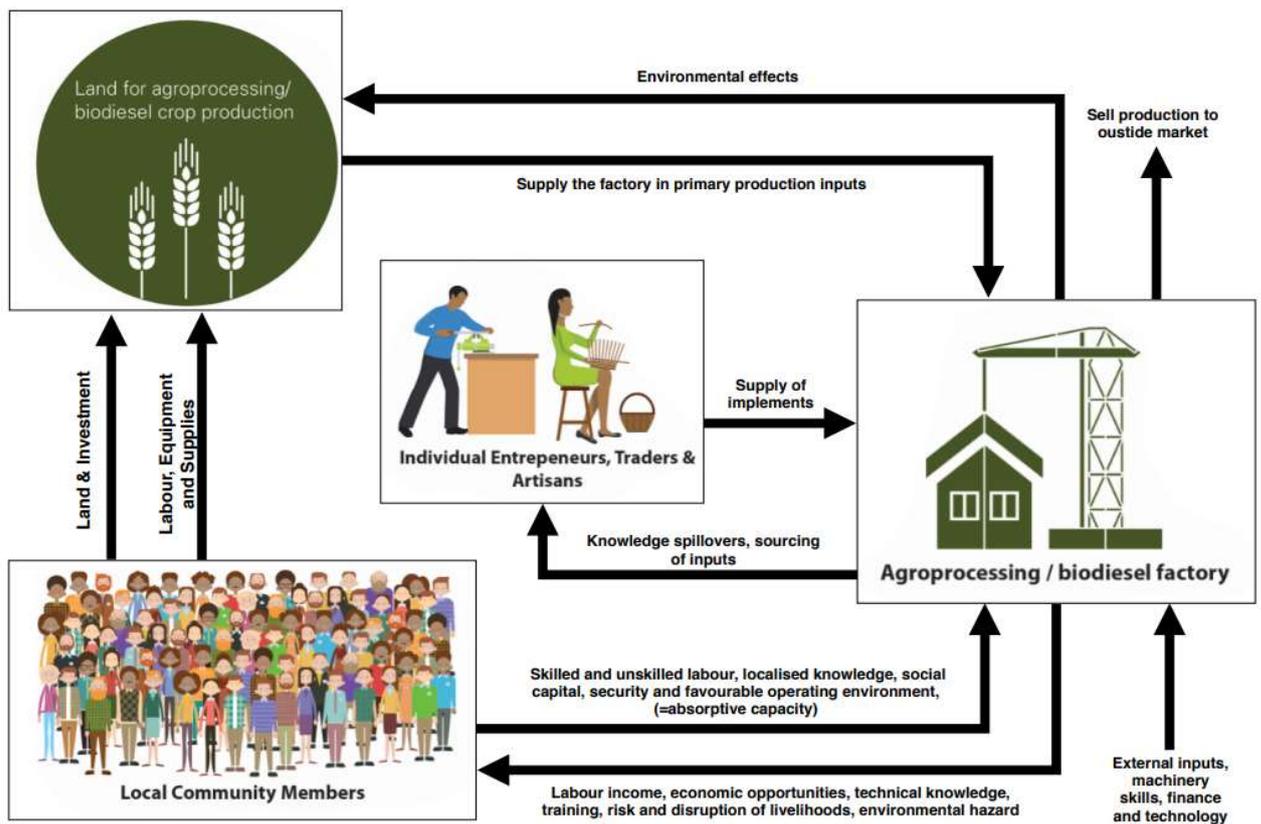


Figure 2: Schematic representation of the relationships between the production facility and the local community

Source: author

The analysis of the dynamics of these relationships was carried out to provide a picture of the potential social impact of the implantation of the production facility. The data on attitudes and perceptions towards benefits and risks enabled us to capture the latent transition dynamics and sketch a direction of the change that such an agro-processing factory is likely to bring about.

Data on the availability of complementary skills and the training mechanism to be set up were also collected during interviews with municipality officials in light of the expected needs in the projected production techniques. The purpose was to generate a picture of the human capital component of the available absorptive capacity. Information on land use, land availability and land ownership structure was gathered in order to generate insights into the available capacity within local communities in the target area to supply the required feeding crops for the agro-processing & biodiesel production. Information garnered from key community leaders that we spoke to, both in informal conversations and in formal interviews, constitute additional indicators of the local absorptive capacity as well as its direction of change.

4.2. Sampling and data collection process

4.2.1 Preliminary engagement meetings

The meetings with municipality officials was held on the 08th of March 2018 at the Mogalakwena Local Municipality (municipal main boardroom Lleka Lekalakala building) while the gathering with traditional leaders took place on the 09th of March 2018 at the Park hotel in Mokopane. Meeting with the community task team leaders was held at the South Concentrator Lapa Boardroom (Anglo-American Platinum Mine) in Mogalakwena.

A total of five municipal officials, including the Mayor, attended the meeting. Researchers from the HSRC explained the proposed agro-processing & biodiesel project in detail to all attendees. Discussion evolved around the involvement of the municipal administration in the implementation of the project as the administrative entity in charge of local economic development planning. Aspects regarding land allocation availability of skills and participatory empowerment of the communities were also covered. Municipality officials



The random drawing yielded the following villages: Ga-Matlou, Ga-Maloka and Ga-Molekana.

4.2.3 Final data collection

The data collection consisted of the following elements: key informant interviews with various community leaders and administrative officials of the target area of implantation, focus group discussion sessions and a short survey on social capital indicators were conducted among a sample of local community members. The general intention of key informant interviews was to garner reliable information on currently available absorptive capacity, local economic and industrial development policy, as well as local knowledge and social interactions. These are key factors that are likely to influence the anchoring of the projected industrial production facility in the local context. The aim of organising focus group discussions was to probe communities' attitudes and perceptions towards the intervention. The survey's primary intention was to provide a summary indicator of some facets of local social capital. Focus group discussion sessions and the survey were held in in each of the three sampled villages located in the likely implantation site of the proposed agro-processing & biodiesel production project and an additional discussion session was organised at Mapela tribal authority office.⁵

For each village, we targeted groups of 12-20 participants, preferably gender balanced and covering the three age categories: young = 18-30, middle aged = 31-45, and mature = 46 and above. The aim was to have two focus group discussion sessions per village. We also wanted each focus group discussion to include, if possible, unemployed as well as employed participants, but also people active in agriculture or operating their own small or large businesses. With such balanced sampling within each village, the main demographic characteristics of age, gender and occupation status were covered by our respondents, so that

⁵ Residents of the villages around the mining areas fall under the Mapela Tribal Authority, as explained to us during our meeting with traditional leaders in March 2018 Discussions regarding trust and attitude towards change were therefore held at the Mapela tribal authority's office in addition to the focus group discussion held in the three villages drawn in the sampling process.

bias can be reduced. Moreover, FGD and survey responses to the questions regarding trust and representation in social capital were closely analysed to serve as a check of how representative the FGD participants are for their respective communities (higher scores of trust and delegation towards members of the same community or village were interpreted as implying that participant views are quite representative of their community's opinions).

Before final engagement with target communities for actual focus group discussions, additional information sessions were held to provide detailed explanations on the background and objectives of the proposed agro-processing & biodiesel production facility in the Mogalakwena mining area. Further, we explained the aims of agro-processing & production of biodiesel as well as their potential implications for community members and entrepreneurs (as in Figure 2). Participants were explicitly cautioned against overly optimistic employment expectations by emphasizing the limited capacity of a single capital-intensive industrial unit to significantly affect unemployment absorption in a context of widespread joblessness among the youth. The crops proposed to feed the production facility were presented and their potential role in the value chain explained. Information on the CSIR crop selection study was also provided to participants, with explicit mention of the preference given to the production of cottonseed as the optimal input choice for biodiesel production.

Because of logistic limitations, it was not possible to organise large-scale surveys on big samples that would have represented all demographic characteristics of the underlying population more accurately. Here, it is important to keep in mind that this is not an impact evaluation study, but rather an exploratory study to probe the likely social impact. In addition to the perceptions of respondents, the interviews that we conducted with local community leaders (who are in constant contact with the majority of their community members) were used to generate balanced views representative of the respective communities. Leaders' assessment of attitudes towards change, risk and complementary skills were presumed to be informed by their intimate knowledge of the views and opinions of their community members.

Key informant interviews targeted the following prospective respondents:



- Traditional authority of Mokopane;
- Traditional authority of Mapela;
- The headmen/headwomen of the three villages (Ga-Matlou, Ga-Maloka and Ga-Molekana) identified by random drawing.
- Mogalakwena municipality:
 - Municipal authorities of Mogalakwena;
 - Officials in charge of local economic development (LED) planning;
 - Economic advisers to the mayor;
 - Officials in charge of agriculture policy;
 - Officers in charge of youth policy in the municipality;
 - Officers in charge of employment policy and industrial development;
 - Ward representatives;
- Task-force team leaders;
- Provincial LED coordinator for Limpopo.

We had also wished to arrange key informant interviews with officials involved in the planning of the agro-processing & biodiesel production project, but our inquiries did not yield enough timely information to enable us to identify the resource person to talk to. The scheduled data collection engagements took place in November 2018. Because of existing external communication protocols within the communities targeted for focus group discussions and surveys, we have had to schedule separate information sessions in order to obtain the final approval of community gatekeepers for data collection in their respective communities. This also means that the actual data collection in all 3 villages where arrangements had been made for community engagement had to be rescheduled. For one of the communities, the data collection had to be postponed for almost a week, and when we came back for community engagement, we were met by gatekeepers who informed us that data collection could not take place because the communities had not been notified to give their consent. A third visit was thus necessary for the data collection to take place.



Similarly, interviews scheduled with administrative and tribal authorities were repeatedly cancelled at the last moment, which forced researchers to extend the stay in the area for rescheduling. Additional cancellations reduced the number of actual interviews that could be recorded in face-to-face engagements. Scheduled interview with some of the tribal authority were also cancelled by respondents, who invoked the lack of space in their offices under renovations but also declined our invitation to meet at an alternative venue despite an offer made to cover their traveling costs. Arrangements were subsequently made for telephonic interviews with some municipality officials in order to make up for the lost opportunity for face-to-face interviews.

Interactions with respondents and data collection in the various villages (focus group discussions and surveys) were organised and conducted in Sepedi by our research team members who are native speakers of the languages most commonly used in the area. Because of the communication protocols that are prevalent in the target communities, our planned data collection process became quickly overtaken because it was necessary to organise several negotiations with gatekeepers and community leaders before actual engagement with respondents could take place. For establishing those contacts and engaging with community members, we received precious assistance from Anglo-American Platinum community relation officers Evans Masilo Lebepe, Mmabatho Masipa, and Portia Moshokane, whom we gratefully acknowledge. Peter Lentswane (stakeholder relations manager at Anglo-American platinum, and Sibusiso Tenza (Social Performance principal Limpopo SED at Anglo-American Platinum) also provided precious support in the organisational phase of these contact by providing guidance and useful tips for dealing with communities in total respect of their protocols. Their generous support is equally gratefully acknowledged here. Interviews with municipality officers were held in English as the primary administrative language of respondents. Ultimately, all planned group discussion sessions were held, involving a total of 51 participants. Survey questionnaires regarding social capital were also administered to 61 respondents,

5. Data analysis

The collected data were transcribed, translated and analysed quantitatively (surveys) and qualitatively (surveys, interview and FGD) to provide insights into the strength of social capital and the adequacy of absorptive capacity for the intended agro-processing & biodiesel production facility. For the analysis of the social impact of the project on target communities, emphasis was put on understanding the socio-cultural environment as well as identifying and assessing the factors that determine the propensity to embrace change and connect with the prospective project activities. The analysis was organised with the view to filter information from the collected data according to the different objectives set out in section 2 (in accordance with the terms of reference). Information from the various data collection points was aggregated and treated as one sample in order to be representative of the whole vicinity of the mining area. Observed differences between villages, especially in the trust survey, served only as indicators of respondents perceptions on underlying social capital factors but could not be characterised as statistically significant, also in light of the subjective nature of the responses (responses are non-homogenous, i.e. the perception of at the levels “somewhat” for example, may mean different things between to different individuals, and even for the same individual, the scale of response is non- homothetic, i.e. the difference in trust between the levels “somewhat” and “quite well” cannot be objectively equated to the difference between “quite well” and “strong”).

Responses from interviews on various themes covered by the study objectives were combined with relevant views from the focus group discussions as well as in situ observations by research team’ members in order to synthesise the corresponding findings.

6. Findings

6.1 Local absorptive capacity for the agro-processing & biodiesel production

This subsection provides an overview of skills requirements for local community members’ participation in the factory’s core and / or ancillary activities, the required resources,

infrastructure and incentives. It also analyses the availability of resources (land, financial/material) as well as the complementarity between these skills and resources with the identified requirements.

6.1.1. Human capital

One of the objectives of our data collection strategy was to gauge the availability of human capital and technical skills that can contribute to enhancing the likelihood of success of the agro-processing & biodiesel production in the area. As indicated above, human capital is a key component of the absorptive capacity that makes industrialisation possible. Educational achievement in number of years of schooling is one of the most commonly used indicators of human capital within a given population group (Barro and Lee, 2013). One of the key findings of Dobbin International (2016) was the low education level in Limpopo, as illustrated in Figure 4.

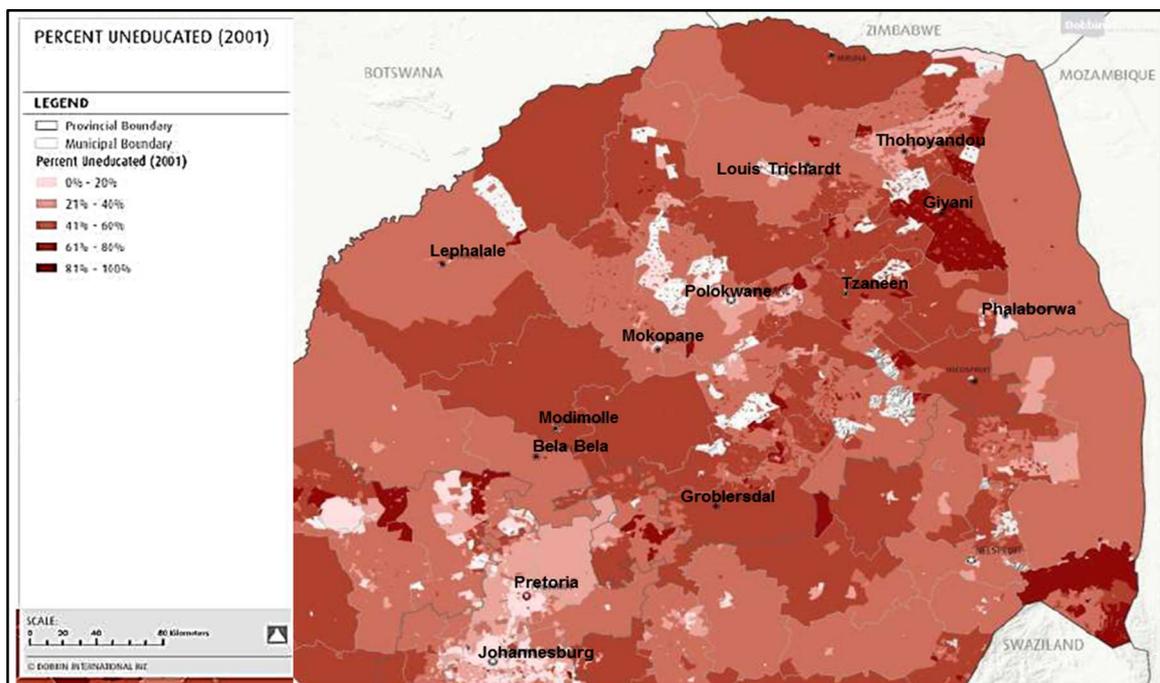


Figure 4: Educational attainment map of Limpopo (Source: Dobbin International, 2016)

As can be seen on this map above, there is still a substantial portion of the population without formal qualification in Limpopo. In the survey that we conducted, we also attempted to corroborate this finding by asking respondents to categorise their education qualifications as follows:

1: Grade 9 or below, 2: grade 10 or 11, 3 Grade 12/Matric/ National certificate, 4: diploma or higher certificate, 5: bachelor's degree, 6: post-graduate qualifications (honours, master's degree of PhD).

The recorded responses display the following average educational attainment disaggregated according to gender and the three communities where the survey was conducted.

Table 1: Average education qualification of respondents

Gender	Community			Average
	Village 1	Village 2	Village3	
Male	2.16 (0.75)	2.53 (0.87)	3.66 (0.57)	2.60 (0.91)
Female	2.16 (0.09)	2.37 (0.74)	3 (1.41)	2.37 (0.88)
Total	2.16 (0.83)	2.47 (0.81)	3.4 (0.89)	2.50 (0.89)

standard deviation in brackets

Out of 61 targeted respondents, only 39 returned valid responses regarding their educational qualifications, which means that the recorded answers only give an indicative glance rather than an accurate representation of the human capital available in the area. The average educational qualification level of 2.50 is lower than grade 12/ matric level (level 3), which means that our data are roughly in agreement with the findings reported Dobbin International as mentioned above. There are no significant differences between genders and the variation within groups are also fairly limited as can be seen from the low standard deviations. During focus group discussions we were however told that there were many young people who were not present but who have been trained in agricultural techniques and have qualifications and

skills that can be tapped into to develop the production of the target crops in the region. Interview with the economic policy adviser to the mayor of Mogalakwena confirmed the availability of qualified youth and the potential to support them with additional skills training when required.

The officials at Mogalakwena municipality also expect Anglo to play an important role in skills training for the worker conversion when needed⁶ and the unemployed⁷ if it starts implementing this project, because some of the required technical skills may be specific to this industrial activity. In the existing national skills training framework, every employer has the responsibility to provide training and is assigned to a particular SETA⁸.

6.1.2 Economic infrastructure

For the proposed project to hold and thrive within the suggested geographical confines, it ought to be connected to a network of economic infrastructure and other industrial operators for its supply chain. Although the road networks that connect the localities to other villages and to the urban centre of Mokopane are of satisfactory quality, there are hardly any other industrial facility in the area than the mine concentrators. Interview with municipality officials revealed that there was only one small private company active in agro-processing in the area around Mokopane. Should the facility take hold in the mining area, this would mean that it will have to source most of its supplies from distant locations. The agricultural production needed to supply the factory with input for agro-processing and biodiesel production need much water that is currently not available. There is a need for an extensive irrigation infrastructure to ensure an adequate agricultural production that does not depend only on the rain to ensure regular quantity and good quality supply of vegetables, cotton and all the other crops identified for the agro-processing. Lack of water resources and good irrigation

⁶ This refers to the employees who are already working for the Anglo-American Platinum mine.

⁷ This refers to the people residing within Mogalakwena, who aspire to get employment from the proposed agro-processing and biodiesel production factory.

⁸ SETAs are governed by the Department of Higher Education and Training (DHET).

infrastructure is also the factor that most constrains local agriculture production, because the area is semi-arid. The region has however very limited water resources other than ground water. The rivers that are closest geographically (Olifantsrivier and Limpopo river) are located at quite considerable distances and have limited capacity to supply water for irrigation.

In a direct interview, one municipality official explains that currently Mogalakwena municipality plans to transport water from Olifantsrivier to the areas that are now threatened by drought. The National Department of Water Affairs is responsible for the piping infrastructure, while the municipality is only responsible for the internal regulation. Integrated Development Plan for 2018-2019 reveals that Mogalakwena Local Municipality has laid infrastructure for the functional water scheme to supply various communities with water sourced from Flag Boshielo dam. The municipality is also in the process of negotiating with relevant role-players to increase the current water supply capacity. Projected expansion of water supply capacity is also foreseen to accommodate the anticipated mining developments within the area. To limit water wastage and optimise its usage in agricultural production, the municipality will recommend the adoption of a type of irrigation system that minimises water usage, especially for the production of vegetables. The involvement of the National department of Water Affairs in the piping of water from Olifantsrivier is an important opportunity that should be leveraged for providing adequate irrigation system for the production of agro-processing feed crops where it is optimal to produce them for the factory.

A research laboratory will also have to be set up in order to monitor production and ensure that the output meets established quality standards. It is to hope that the Collaborative platform for Limpopo development will be able to attract more industrial operators in the area and channel investments that are big enough to motivate government move to support the construction of sizable water preservation and irrigation infrastructure.

6.1.3 Incentive schemes to support industrial development

To guide investments and support industrial development in the region, a favourable incentive system is necessary to give assurance to investors that they will be able to reap the rewards of their entrepreneurial efforts. For the intended investment in this rural area, the Cluster Development Programme (CDP) is an available incentive scheme administered by the Department of Trade and Industry (DTI). It may be interesting to attract different investors in the region to compete in related product value chains in order to maximize the benefits that can be derived from the CDP.

There are several other schemes that are available to small enterprises and individual small farmers who may be interested in participating in the agricultural production meant to feed the agro-processing factory with their raw inputs.

Table 2: Incentive schemes for supporting industrial activities

Incentive scheme	Government authority	Description
Cluster Development Programme (CDP)	Department of Trade and Industry (DTI)	<ul style="list-style-type: none"> • The CDP supports all sectors of the economy and aims to promote industrialisation, sustainable economic growth and the job creation needs of SA through cluster development and industrial parks • This incentive is divided into three components namely: <ul style="list-style-type: none"> o Shared infrastructure: offers up to 80% of the qualifying investment such as buildings, machinery, equipment and commercial vehicles, to a maximum of R10 million per cluster o Business Development Services (BDS): is a non-taxable cash matching grant of up to 80% of the costs payable at the establishment of the Cluster Management Organisation to a maximum grant of R5 million per cluster – it covers BDS initiatives of the cluster such as conformity assessments, financial management, information technology and human resource management o Cluster Management Organisation (CMO) Funding: is a non-taxable cash matching grant of up to 80% of the costs payable at the establishment of the CMO to a maximum grant of R5 million per cluster – its main purpose is to manage core operation and delivery by the cluster

Source: Report ANG-001 -001, Table 1.

6.2 Agro-processing & biodiesel supply chain potential

For adequate production of feed crops, availability of suitable land and agricultural supply chain are essential. This section deals with the adequacy of land and resources for feed crop production, labour supply, local entrepreneurship for local linkages and technological spillovers.

6.2.1 Land resources and land ownership

The land in Mogalakwena is characterised by a soil classified as sandy and shallow, with high clay content. The highest agricultural production potential in the area can be found in the swathes of land that stretch along local streams and rivers. In the Mogalakwena municipality, land is categorised into rural land and agricultural land whereas some areas are allocated to urban settlements, mining and industrial activities. According to data from Mogalakwena Local Economic Development (LED) planning, the total land area of the municipality is about 616 600 ha. An estimated 252,342 ha of this land is currently under land claims, while the remaining is distributed between communal ownership, individual ownership and municipal ownership. There are areas of the municipality where the ownership structures remain unclear. In the communities around the Mogalakwena platinum mining area, where our study focalised, the land is mostly under communal ownership (controlled by community trusts), whereby local traditional leaders (chiefs and headmen/headwomen) and tribal councils exert significant influence in the allocation of land use, including for settlement and for economic activities.

During the focus group discussions, the most salient concern regarding the conversion of land used to the production of the target agro-processing crops was the shortage of water for land irrigation. Mogalakwena municipality officials in charge of economic planning see in such a land reallocation an opportunity to channel the energy of youth cooperatives in the agricultural production. The lack of water and the reliance on rain is however a threat to local agricultural productivity potential. From discussions with local authority and traditional council members, it emerged that local residents and their tribal structures as well as the

municipal authorities control sufficient land resources that can be allocated to the production of primary input crops if the agro-processing & biodiesel production project gets started. The municipality administration indicated that it owns a substantial amount of land for both residential and industrial development, but does not control the rural land, which belongs to the tribal authorities. While visiting various villages of the Mogalakwena municipality surrounding the mining area, we also took the opportunity to observe large expanses of land suitable for agriculture around the villages covered by our study and beyond. The soil type observed in some areas surrounding the platinum mines was described by focus group discussion participants as very fertile (see landscape photo in Figure 5).

Local participants in focus group discussions confirmed to us that the land was fertile if properly irrigated. One respondent expresses adequate knowledge of the variety of soil types and the necessity to match each crops with the type of soil suitable to it:

“Here in Mapela tribal area, in our communities in general we have all types of soil, we have sandy soil which we know is suitable for certain crops, we have clay soil, which we know is suitable for certain crops. All the soils that are included in the farming sector, we have them here at Mapela. We have where we know crops that need sand, there very big place where there is sand where we can grow those crops. Regarding clay soil, we have a very place with clay soil where crops needing clay can be planted. On the side of soil, we are very rich we the Mapela people” (see Figure 6).

Water resources and irrigation infrastructure are however unavailable for the most part in the area. Most respondent express that the threat of drought remains a major concern and is at the basis of the observed shortage in food production and the constant danger of malnutrition and food insecurity. FGD participants are also concerned about the support that they can expect from the government in accessing fertilisers.

The Mogalakwena river (called Nyl rivier in its upper parts), after which the municipality is named, has been totally tapped to irrigate commercial farms located upstream and is totally

dried up in the area covered by our study. The nearest irrigated land is located near Sterkrivier, about 40 km west of Mokopane, and further inquiries are needed to determine whether this area can become a source of the production for the required feeding crops.



Figure 5: Fertile agricultural landscape in the vicinity of the Mogalakwena platinum mine

(Photo: HSRC)

Many villages and townships in the Mogalakwena municipality source their water supply primarily from boreholes. The water from these boreholes is however heavily affected by underground contamination, which impairs its suitability for irrigation and human consumption. Residents are intermittently affected by diarrhoea and other diseases spread by water pollution. For the land situated in the mining area to be efficiently converted to fields for the production of crops identified for the agro-processing facility, large-scale water catchments and irrigation schemes are necessary. Participants in the focus group discussions in the three villages of our sample indicated their willingness to reserve land and commit

labour for the production of crops for supplying the agro-processing & biodiesel production facility, provided that proper arrangements are made with their traditional leaders and local authorities with guarantees either for employment, supply contract or land lease. Support for irrigation is strongly desired for locals to meet the production efficiency and quality that meet the required standard for supplying the agro-processing & biodiesel production factory. Most FGD respondents expressed their eagerness to collaborate with the project implementation with a noticeable penchant for vegetable production as it directly relates to tackling the threat of malnutrition and food insecurity, which is quite noticeably dreaded by villagers.



Figure 6: A view of the local landscape with sandy soil near one of the villages surrounding the platinum mine

(Photo: HSRC)

6.2.2 Agricultural input supply chains

For the needed production of crops to serve as inputs for the agro-processing and biodiesel production, participating farmers, cooperatives or other entities need supply chains for

sourcing their inputs (seeds, seedlings, agricultural implements, machinery, fertilisers, etc.) as well as ancillary activities for harvesting transport and storage.

Two private companies are the major players in the agricultural supply chain of Limpopo province and render various services to farmers for their agricultural needs. They sell farming equipment and supplies, including irrigation systems, tractors, seedlings, fertilisers, and pesticides. It also offers loans and insurance to farmers.

In addition to the bigger players, there are several minor suppliers, each one specialised in specific branches of the value chain, such as supplying seeds, seedlings, agricultural chemicals, or mechanical implements. Markets for agricultural products are quite sizable: the latent demand expressed by locals is enough to drive a reasonable production, provided that investment in irrigation system are borne by a third party. The current purchasing power of many local residents is relatively low, but could go up gradually if agricultural production were to start in the area.

They also expressed corresponding latent demand for processed products that would come from the factory as a primary means to combat malnutrition in the area.

6.3 Social capital and attitude towards social change

As highlighted in the absorptive capacity framework, social capital plays an important role in making possible the adoption of new production techniques and adapting them to the rural context. This section deals with measures of social capital in local communities and their influence on the propensity to embrace change for the long-term sustainability of the envisaged project. Social norms and cultural capital that determine societal cohesion are analysed together with trust indicators in relation to the how they influence adaptation to social changes expected to come with the implantation of an agro-processing & biodiesel production facility in their vicinity. Experiences with previous interventions form part of the collective memory and have therefore an effect on the community's attitude towards the current project. These experiences are evoked in the last subsection and the reasons for project success or are failure reflected upon.

6.3.1 Trust as an indicator of social capital

Social capital comprises various socio-cultural factors that can foster or hinder the inclination to adopt industrial production and handle the concomitant social changes. Here we analyse the social capital of the target communities under social structure perspective, which approaches its measurement from three aspects: structural, cognitive and relational. The structural dimension relates to elements of social structure that create opportunities for the social realisation of productive ends. Measures in this dimension included trust (general and institutional), trustworthiness, social network structural characteristics (e.g. network density, intra-community ties, etc.), association membership and community engagement, and voluntary activities (e.g. community volunteerism, civic engagement, social and political participation, etc.). The cognitive dimension includes shared norms, values, attitudes, and beliefs that predispose people towards mutually beneficial collective action. Indicators in this dimension comprise civic norms, reciprocity, trust, social support, affective bonds and collective goals. Religion also plays an important role in the social organisation: adherence to given religious practices constitutes a key component of the cognitive dimension of local social capital. As for relational social capital, it is based on the characteristics of social relationships between individuals and is commonly described as including trust and trustworthiness. Its measure focus on social relationships, social cohesion, and social interactions.

For the structural dimension, the study came to the following findings: the sample communities are structured in such a way that external as well as internal information goes through village committees, which meet regularly to discuss matters of common interests and associate village residents in the deliberations when decisions have to be taken. The villages are organised according to particular norms, whereby every contact with external actors needs to go through the approval of community gatekeepers and traditional leaders. Before we could speak to gatekeepers, for example, it was required that we provide evidence of the permission given by the tribal authority, lest we could not hold any conversation. Village committee

members have delineated competencies and may act on behalf of community members in accordance to mutually agreed procedures.

The cognitive dimensions of shared norms, practices, attitudes and mutual bonds determine the potential for collective action. Bonds of trust are structured around kinship and vicinity, with systematically high levels of trust in close blood relatives, which gradually decrease once we go from respondent's own village residents to people from other villages and those from other tribes. From the time of our first community engagement with local community members, we observed their adherence to strict protocols when they engage with outsiders. Religion also plays an important role in the social organisation, because of how it influences community behaviour. In the target communities the adherence to religious practices is pervasively apparent, with a majority of residents displaying insignia of their belonging to a Christian religious denomination. Christianity was brought by European missionaries and has thus considerably displaced traditional religious practices that were based on ancestral worship (phasa). That deep religious conviction was underscored by the fact that all data collection activities were preceded by invocation prayers and were equally concluded with prayers. A pertinent cultural component of the structural capital is the prominent role that women play in the organisation of local agriculture. Traditional gender role division assigned most agricultural activities to women, while men committed more time to grazing cattle and hunting. Strong knowledge of soil and crops for vegetable production is still apparent among local women, as illustrated by some of the comments made in focus group discussions (see e.g. quote on page 25-26 above).

Trust towards existing institutions is another determinant of the social capital potential to mobilise resources for change. Trust in institutions is necessary to give enough confidence that the transformative choices that are proposed to the population through the deliberations of their representatives are for common interest and need support. The data we collected in this respect show traditional leadership as the primary reference for institution trust, for which the trust scores average between moderate and strong trust higher than the scores of any other institution or authority.

As for the relational dimension of social capital, it is more difficult to observe in the short run and would require spending more time with the communities to understand the intricacies of the relationships networks within and between local communities. The scheduling and repeated meeting cancellation problems that the research team had to put up with during the data collection are however an indication of some weaknesses in the relational social capital. The last-minute cancellations have occurred repeatedly so that they cannot be characterised as an isolated incident. As a result, they have considerably disrupted our data collection process. Trustworthiness towards outsiders is part of the relational social capital that enhances the ability to collaborate with outside partners who do not share the same bonds of community trust. Making unexpected changes to fixed appointments without any explanations may be undermining for this collaboration potential. Thanks to the support of the community relationship officers and the bonds of mutual trust that we have managed to establish with some officials in the Mogalakwena municipality administration, we were nonetheless able to complete the planned data collection by resorting to some adaptations. We are therefore confident that this aspect of relational social capital can be strengthened when required by a collaborative working relationship with outsiders.

6.3.2 Hunger for change

On top of weaknesses in the relational social capital, the high degree of unemployment in the area⁹ puts a pervasive strain on local residents' social capital. The hardships associated with absence of work income constantly puts the whole community in a difficult situation which reinforces the impression that residents' demand for change cannot be met by their own efforts without external intervention. Residents are literally hungry for change, as expressed in various focus group discussions by participants themselves and confirmed in the interviews with municipal officials. One woman from Ga-Matlou, for example, after a form of Zionist

⁹ According to data from the Waterberg District Municipality's integrated development plan (IDP 2017) the unemployment rate in Mogalakwena is estimated at about 40.2%, while the youth unemployment rate is thought to be as high as 51.7%.

Church greeting, expressed her thoughts about embracing the changes that the new agro-processing & biodiesel production project could bring:

“I hope they bring good development: we are currently struggling with lack of jobs; our children are suffering, they are not employed, and they will start to steal if they do not get jobs, but we do not want them to steal”.

Similar concerns were heard in the other two villages, with a general sense of worry about youth resorting to theft, gambling and substance abuse if the unemployment persists. This local resident who came to the Mapela tribal council also expressed the same hope for the change that the envisioned project would bring:

“We would be very thankful if the project came near Mapela because it would mean development for our children. Currently we are going hungry: the project would enable us to farm, work hard and sell our produce in order to better organise our life because we are suffering now”.

The thirst for social change to transform life conditions in these villages is therefore the expressed in the form of hopes for a structural transformation that replaces the domination of circumstances and chance over people by the domination of people over their circumstances (Sen, 1989).

6.3.3. Past experience with similar projects

Most participants in our focus group discussions reported to have no previous experience with similar projects. They were therefore not in a position to predict the potential risks and benefits. In one of the four locations where we held our discussions, however, participants expressed frustrations about a project that came before and left them with bitter memories

One woman says:

“My name is [M...], I am talking about the project that once came to our community. I was one of the workers. It came from Anglo and came to our headman (kgoro) to ask for land. Our executives called a meeting and told us to go on training in a school at

Groenfontein. We spent two weeks learning how to plant the crops. They came to establish the project here in our community. They came, made fences and said they will drill a borehole for water. Their first answer was that there was no water in our community. We, as residents of [P...], were surprised when they said there was no water because we know our area has water. We spent a period of one to two years carrying lunch boxes going there. Until today, we haven't gained anything, nothing was ever seen".

Another participant concurs:

"We once had another project that side; it was a project for tomatoes but it didn't get anywhere. The workers were never paid: they worked, weeded, but nothing was ever done for them. Now we hope that this new project does not treat us the same way as the previous one did. It must do things properly so that it can benefit our community".

The executive committee of the village confirmed these assertions. Members of the executive committee recalled that Anglo-American Platinum had requested the land to cultivate crops and started a programme to provide training to the youth. The project eventually stalled but villagers were not even informed of the reasons for failure.

The past negative experiences with similar projects make affected residents sceptical about the proposed one. One of the participants confessed that he and his fellow community members were even angry at our research team before it could make a presentation about the background and objectives of this project: they thought that the current presentation was about the same old thing coming again. They were initially not interested in listening to the explanation concerning this project because they thought we were playing hide-and-seek with them. After we had clarified the total distinction between the currently proposed agro-processing & biodiesel production and the previous experiences, they accepted to cooperate with our research and expressed the hope that this one be better planned and implemented than the previous one in order to be successful.

6.4 Social impact of the change on the affected communities

This subsection deals with perceptions of local community members and their leaders potential towards changes that the implementation of this agro-processing & biodiesel production project is expected to bring about. Opportunities, risks, adaptation mechanisms and fit of the project with local long-term development strategies and objectives are assessed to generate insights into the long-term sustainability of the agro-processing & biodiesel production project. Participatory empowerment of local residents and the coordination mechanisms enabling the embedding of the project within the local community are discussed on the basis of collected information, both from FGDs and key informant interviews.

Participants in focus group discussion expressed various views on the impact that the implantation of this agro-processing & biodiesel factory could have on the life in the village. In addition to sky-high expectations about employment creation, most participants noted that an agro-processing factory in the region, by fostering the production of local inputs, would present a model to the youth and help them overcome the problems of gambling and smoking *nyaope*.¹⁰ Some villagers assume that biodiesel production will have a positive impact on the diesel prices that they will pay at the petrol station, but such expectations seem to neglect the complexity of fuel product pricing policies.

Some participants who have worked in the mine as mechanics see an opportunity to redirect their mechanical skills and experience into repairing tractors if the crop production intensifies. Some small farmers among participants also see an opportunity to expand their production to some of the crops if they can get a guaranteed market for their produce in the form of a contract to supply the factory with those crops.

Other participants, who have sewing skills and operate a laundry, identified the opportunity to supply factory working clothes and laundry services if the factory opens. There are others

¹⁰ A local name for a street drug that came into widespread use in South Africa since 2010, which is a cocktail whose most addictive ingredient consists of opium.

with computer skills who also hope to put those skills to good productive use if the project begins to take its shape.

A woman insists that for the project to be truly beneficial to the local community and gain the needed support and participation, the whole production cycle of the biodiesel production should take place in the area, rather than being limited only to semi-finished products:

“My first condition to support the project is that nothing be done in foreign countries, like platinum being taken to other countries to be processed. Everything from the beginning to the final stage of production must be done here”.

Participants see their involvement in planning and capacitating the production of the identified input crops as an important element for local empowerment. Through mutual consultation with project implementers, local residents hope to contribute to the success of the project by bringing their intimate knowledge of the local conditions to the table. Many of them have a good experience in determining the suitability of local soil types for the various crops targeted to serve as inputs in the agro-processing & biodiesel production. They also hope to count on government support to provide the necessary training aimed at enhancing their capacity to meet the local skills requirements for participation in the production of primary crops and for working in any of the production processes in the factory. They are aware of government programmes that support small businesses such as the assistance offered by SEDA, and are prepared to make use of that support if they get the opportunity to collaborate with the projects.¹¹

The sampled communities were therefore eager to indicate their readiness to embrace change and meet the challenges that the industrial project is expected to bring. For many of them, the project represents new opportunities to better their lives if they get the needed support to develop adequate irrigation infrastructures that enable them to participate in the various levels

¹¹ The Small Enterprise Development Agency (SEDA) is an agency of the Department of Small Business Development that integrates government-funded small enterprise support agencies across all tiers of government with the mission to develop, support and promote small enterprises across South Africa

of its value chain. Interviews with municipality officials also confirmed that the Department of Agriculture Forestry and Fisheries (DAFF) was in close contact with the local administration to provide support as needed in order to help build an agricultural production capacity capable of supplying such an agro-processing & biodiesel factory. The expansion of such capacity will simultaneously constitute an opportunity for providing unemployed youth with the necessary tools to create new sources of income.

Because of the pervasive unemployment in the region, local residents' assessment of risk tends to be very superficial. Most participants seem to emphasize the employment opportunities that the project would generate and attach limited scrutiny to the other aspects that characterise the relationship between the production facility and their own communities (as illustrated in Figure 2 in section 2). Few participants expressed concerns about potential danger of more school drop out if the opportunity to engage in agricultural production becomes more concrete. The same enthusiasm for the benefits and minimisation of risks is apparent in the interviews that we conducted with municipality officials and community leaders. For their association with the long-term function, FGD participants wish to be informed in time about the intentions of the projects and be closely involved in the realisation of its long-term vision. The municipality administration wants, for obvious reason, to align the project with its local economic development planning objectives. Various traditional leaders have expressed, as we evoked earlier, their support for this agro-processing & biodiesel production initiative under the conditions that they also be associated to parts of its implementation, especially the spreading of the sourcing of raw material input.

6.5 Power and influential structures to guide change

In order to understand how relevant power and influence are distributed among local and regional actors, we organised successive meetings with both the formal administrative authorities of the Mogalakwena municipality (main boardroom, Lleka Lekalakala building) and with traditional leaders of the Waterberg district (at the Park Hotel, Mokopane). The aim was to gain first-hand experience of their vision for the communities they lead and gauge the structure of the socio-cultural features that determine the deference to their respective

authority. A meeting with the community task team leaders was equally organised and held at the South Concentrator Lapa Boardroom (Anglo-American Platinum Mine) in Mogalakwena.

Being the local authority in charge of local economic development, the municipality indicated its eagerness to be the main driver of the processes related to the implementation of the project. Municipal officials suggest that once final report on the proposed agro-processing & biodiesel production facility is written up, they wish to receive a copy and host a final presentation. Mogalakwena officials point to past presentations made by Anglo on the guar bean, from which they unfortunately never heard anything anymore. As a key stakeholder in the socio-economic transformations taking place within the communities belonging to their municipality, the municipal administration wishes to be timeously informed of the intended planning and realisations of the projects instead of only being called to assist when there are challenges and problems. Traditional leaders also expressed what they consider as priority domains of collaboration for their respective constituencies.

In this section, we discuss how power and influence are wielded and how such influence can affect the community's incentives to achieve the social changes and steer the adaptation mechanisms. Data collected in the survey conducted among FGD participants as well as desktop review of secondary data sources were used to analyse the coordination of various layers of influence in relation to structural changes implied by the industrial implantation. As is the case in most parts of South Africa, power and influence over rural communities is shared between the formal administrative authority according to established constitutional arrangements, the administrative law and customary law. While the respective competences of each institution and its administrative subdivisions are defined by the South African administrative law, power and influence of any institutional office holders are best reflected by the trust that they enjoy among members of the communities they are in charge of. Persuasion and conviction, rather than coercion is indeed a more sustainable indicator of the ability of leaders to mobilise their followers in order to achieve the intended objectives. Trust also reflect the convergence of interest between leaders and their community members and in therefore likely to represent lasting influences rather than temporary authority.



The trust survey that we conducted among communities in the mining area yielded interesting indicators that enable us to map the relative balances of power and influences as experienced by local residents. We compare the relative scores of trusts towards traditional leaders, local administration representatives at the ward and municipality levels, the provincial authority and the national government in the following interest domains: representing and defending respondent's economic concerns, provide support in case of need and disaster, advance and support opportunities for socio-economic advancement, represent and defend respondent's political views and rights, be a source of reliable information and provide personal and community security.

Table 2 displays the trust scores for each of the institutions that wields influence on local communities. We note that traditional leaders score systematically higher than any other institution, even though the difference is not strongly significant. For matters regarding economic concern, help in case of need and disaster as well as generating opportunities for socio-economic advancement, community members seem to trust provincial authority slightly more than the national government (average scores of trust at the level: quite well), while the reverse holds true for the domains of defending respondents' political views, providing reliable information and ensuring security. This may be representative of the distribution of competence and performance of each institutional level, but both scores remain slightly lower than those given to traditional leaders. As an indicative comparison, average scores for trust towards family members stay above that for any institution and are between the levels of strong and absolute trust. Likewise, scores for trust towards people from other tribes, who represent remote connectedness to respondents' communities, are systematically lower than those for trust in own institutions for the corresponding trust domains.

Table 3: Trust in institution as an indicator of distribution of influence

Trust domain Institution	Respondent's economic concern	Help and support in case of need	Opportunities for socio-economic advancement	Representation of political views	Source of reliable information	Personal and community security
	Traditional leaders	3.05	3.30	3.06	3.18	3.28
Local representatives	2.69	2.75	2.62	2.73	2.91	2.65
Provincial authority	3.05	3.08	3.02	2.94	2.97	3.05
National government	2.71	3.08	2.91	3.05	3.02	3.08
Family members	4.32	4.70	4.32	4.26	4.35	4.40
People from other tribes	2.32	2.15	2.26	2.24	2.53	2.25

Trust level by score: 1= not at all, 2= somewhat, 3= quite well, 4= strongly, 5= absolutely

What these score averages mean is that the primary institution in which community members put their trust is the traditional leadership. Even though traditional leaders do not hold service delivery duties towards their fellow citizens who fall under their leadership, they are considered as a source of wisdom and guidance for most matters of common interest. Their central role in the land allocation is also a source of considerable influence, which makes their institution a pivotal player in the efforts to mobilise local resources for socio-economic change.

However, the municipal administration retains the ultimate decision making power for resource allocation in local economic policy formulation and for issuing the necessary permits and regulations. The success of a socio-economic intervention such as the establishment of this agro-processing & biodiesel production facility depends therefore on the ability of the



implementers to take these complementary roles into account and cooperate appropriately with each of these institutions.

In the course of our research engagements, we have met and discussed with a total of seven traditional leaders in from the Waterberg district. In addition to those seven leaders, we also spoke to the Senior Administration Officer from the Co-operative Governance, Human Settlements and Traditional Affairs (CoGHSTA) and discussed the opinions of traditional leaders about the proposed project. After extensive explanation of the proposed agro-processing & biodiesel production facility and its ramification to the primary production of feeding crops, the leaders initially seemed hesitant about the idea of having this type of project in Mogalakwena mining area. Their concern was that projects of this nature would not really benefit people in their rural communities but only those who reside closer to the mine. They are chiefly concerned about how their own communities located further afield from the mines would benefit from this project.

The traditional leaders proposed that they be provided with the assistance of soil scientists who could come to their respective localities to examine the suitability of the soil for the plantation of any of the crops listed in the selection for the agro-processing & biodiesel production project. This should be done to ensure that those crops are not only cultivated in the mining area but in their various constituencies as well. Traditional leaders seemed to agree that the benefits of this project should target all areas within the Waterberg District instead of being limited to areas in the vicinity of the Mogalakwena mining region.

To sum up the municipal officials, traditional leaders and the community task team leaders fully accepted and welcomed the proposed project and gave us a go ahead to proceed with data collection. They indicated that they perceive the proposed project as having a great potential for the rural poor and business development in the region. Municipal officials also indicated that there is great potential in terms of land availability as well as the harmonious working relationship they have with the traditional authorities. According to them, the chiefs can work collaboratively with the Town Planners in the region to identify land availability for the production of crops identified for agro-processing & biodiesel production. This

cooperation and the availability of land that can be devoted to crop production was subsequently confirmed during key informant interview with the advisor to Mogalakwena's Mayor for economic and social policy. Both the municipality administration and traditional leaders perceive the project to be of great importance as it could assist in alleviating youth unemployment and also, providing employment opportunities especially to the unemployed agricultural graduates in the region. Here, it is however worth cautioning against high expectations of job creation, because one factory, no matter how big it may be, has only limited capacity in terms of employment creation. Only to the extent that the region can attract industrial clusters connecting to this initial project as a part of a broader economic transformation strategy, could there be a beginning of tackling unemployment problems.

As the biggest economic player in the region, Anglo American Platinum wields arguably the most considerable influence over the people living in the villages surrounding the mines and beyond. People look up to Anglo for jobs, economic opportunities and often expect social service delivery, even though this may not be in the company's formal attributions. Anglo's power and influence are exerted in the vicinity through the network of task teams and community relation officers (who are regularly in touch with community members), through the services that it provides to the villages, and through the employment that it provides to members of the surrounding communities who get the opportunity to be recruited. Through its local publications, the company is also a powerful source of information, which can be used to galvanise social energies¹². The expectations for job opportunities are however much higher than what can be justified by the mining operations, bearing in mind that platinum mining is a capital-intensive rather than labour intensive operation, and cannot therefore be expected to absorb the high unemployment levels present in the region. Unfortunately, the data related to trust towards private sector operators in the domains of economic concern and socio-economic opportunities could not be collected, owing to unforeseen changes in the translation

¹² Anglo-American Platinum distributes its own information newspaper and brochures in Mogalakwena mining area, which strongly contribute to shaping local opinions and attitudes.

of the survey questionnaire in Sepedi. Analysis of trust intensity towards private corporations would have provided an additional indicator of the local intrinsic propensity to collaborate with projects initiated by those private operators independently of the pressure caused by the high rate of unemployment.

7. Synthesis and conclusion

This study was intended to analyse the social impact of a proposed agro-processing and biodiesel production facility to be introduced to the Mogalakwena mining area by Anglo American Platinum as part of a programme to shape a sustainable economy of the future for Limpopo.

Absorptive capacity and social capital approaches were used to identify factors that may foster or impede their eagerness to adopt the new production methods implied by the implantation of the agro-processing/biodiesel production facility in their areas. Social capital dimensions were especially useful for understanding the adaptation to social changes that may result from the operations of the new industrial facility in the area. Local absorptive capacity is crucial for the proposed project because the envisaged agro-processing & biodiesel production facility will need to source its raw material inputs from local agricultural production. Capacity to locally produce the identified input crops for this industrial production is essential for an intervention that aims to be anchored in the local economic landscape and contribute to local development.

The capacity approach looked at the availability of human capital, land resources, supportive infrastructure, incentive system and the social capital needed to enable communities to become resilient to disruptive changes. The human capital in the area was estimated to be relatively weak, with average indicator of educational attainment lagging below the matric level, which is in line with other source of data for human capital in Limpopo province, such as those reported in integrated development plans or those found by Dobbin (2016). Land resources are available in sufficient supply, because both Mogalakwena municipality and Traditional leaders who hold strong influence on the allocation of land use will be supportive

of the initiative if it contributes to training and empowering youth to participate in the production of the agricultural raw material inputs. Water shortage being the biggest constraint on agricultural product, the challenge now is in investment in large-scale irrigation infrastructure to bring water from the Olifantsrivier into the target area. The national department of Water Affairs is already implementing a project for piping water from Olifantsrivier to Mogalakwena, as it emerged from an interview with an official from the Mogalakwena Municipality. To fit the project in the long-term development planning of the province, collaboration and alignment of the agriculture development portion of the agro-processing project with the water supply programme of the Water Affairs department would integrate both and create synergy between the water supply objectives of the ministry and the support for building the irrigation infrastructure needed to develop the primary input production. Attracting cluster partners in Mogalakwena area by making use of the existing incentive system aimed to support enterprise cluster development is an efficient way of aligning current project objectives with the long-term view of industrial transformation of the Province.

The analysis of the supply chain for the agricultural input and markets looked at the availability of operators from which inputs and implements can be sourced to support the primary production of the feed crops. Inquiries show the existence of various suppliers capable of providing the needed inputs, chemicals and implements to support the expansion of local agriculture for agro-processing & biodiesel raw materials. Latent local market for the finished food products can also be stimulated by associating local community members to the project (for example the by contributing to mustering resources for financing the irrigation infrastructure), which can considerable increase the agricultural output of the region and provides local residents with the opportunity to raise their future income and purchasing power.

Social capital was analysed as a cluster of factors that determine the eagerness to embrace change collectively and to develop resilience to the disruptions generated by the adoption of new production methods. Cognitive social capital, reflecting bonds of mutual trust and shared

values was perceived to be relatively strong. Bonds of kinship, trust in traditional leaders and faith in national government for providing security are all indications of a healthy network structure in which remote connections are weaker than close ones. The relational social capital was however estimated to be weak because of pervasive unemployment in the region, which makes their decision-making unpredictable in their relation to outsiders and may send a signal of unreliability to those who do not share their bonds of mutual trust. Negative past experience with socio-economic interventions that came to some of the villages also adds to their resentment and constitute a point of mistrust towards outsiders. Because of their strong internal bonds, however, spending some time with them and getting to interact with them creates the possibility of establishing trust for a reliable collaboration.

Nonetheless, the pervasive unemployment has become one of the most important factors pushing those communities to want to embrace change in hope of a better future for their youth and children. The structure of power and influence that can determine social mobilisation was analysed on the basis of the perceived intensity of trust towards institutional actors in different structures of power. Traditional leaders enjoy systematically more trust of the citizens under their jurisdiction than any other institutional actors. This means that for matters related to their competence, traditional leaders are the key holders of influence over their fellow citizens. Their competence is however rather limited because the constitution does not assign to them any service delivery duty. This has as a consequence that the municipality retains considerable power over citizens belonging to its jurisdiction.

For the case of Mogalakwena municipality administration and traditional leaders work harmoniously together for the benefit of their citizens. There is consequently no need to compete for power because the duties and responsibilities of each party are clearly delineated. As the biggest economic player in the region, for matters of interest to the citizen, it is therefore much easier to collaborate with both as a network of partners rather than seeking to identify which institution holds more power and influence for collaboration. Anglo American platinum also wields considerable influence on residents of neighbouring villages through its network of task-team leaders, task force, and community relations officers. By being a source

of information employment and service in in the area the companies has a non-negligible capacity to influence local citizens. Data on trust towards private sector operators have not been collected. Provincial authority enjoys slightly more trust than national government for matters of economic opportunity and disaster relief but the national government is slightly more trusted than the provincial authority when it comes to representing and defending political views, providing reliable information and collective and well as individual security.

In conclusion, the absorptive capacity and the social capital available within the neighbouring communities displays strong eagerness to collaborate toward the project implementation, but needs strengthening in the form of technical skills training, irrigation infrastructure to make the land ready for the production of standard quality feed crops and trust building to ensure adherence to standard norms of collaboration processes. Community members are hungry for change and may underestimate costs and the risk associated with the changes. Ultimately, if those changes are introduced as part of a long-term development strategy intended to facilitate structural transformation for a sustainable future, the long-term benefits of those changes will outweigh the short-term cost.

8. Recommendations

In light of the various exchanges made with local community members and on the basis of the reported findings of this study, the following recommendations are formulated:

- Because of the need to produce sufficient quantities of local agricultural raw materials for the agro-processing and biodiesel production, the single biggest obstacle is water shortage. For the project to be viable, it is critical to work together with the national Department of Water Affairs in its planned water supply project. To be able to develop the needed local supply of agricultural input the platform must identify ways in which the construction of an efficient irrigation and water storage infrastructures can be aligned with its objective of Limpopo's transition to a sustainable economic structure.

- Once the water problem has been solved, it is crucial to work together with the municipality and the competent TVET colleges to provide the necessary skills training. This ensures that local community members engaged in the primary production of vegetables, *moringa*, *guar*, cotton, sorghum, soya beans, *solaris*, geranium, etc., have all required tools to meet the desired quality standard. Arrangements for the form of land allocation in lease or in sourcing inputs from local farmers are to be arranged in consultation with Mogalakwena municipality and traditional leaders (the villages falls under Mapela tribal authority)
- Community members, their traditional leaders and the municipal authorities all have displayed an eagerness to be associated with the success of this project and are prepared to put their best efforts to help the project achieve that success. They understand that the success of the project is an opportunity for the betterment of their own livelihoods. It is therefore important to clearly communicate reasonable estimates of job creation (direct and indirect) under alternative scenarios of production in order to avoid a sudden surge of overly optimistic expectations and subsequent frustrations that may alienate local partners when the real job capacity falls short of the formulated hopes.
- The power of one factory to change the lives of communities that have been enduring the hardships of crippling unemployment rates is very limited. For this project to be really transformative, it must be part of a larger development package involving a network of partners with concrete follow up projects and the support of enabling infrastructures funded by public private partnerships. Harmonisation with existing local economic development (LED) structures and integrated development plans (IDP) can be helpful in ensuring long-term alignment and synergy.
- Some local residents keep bitter memories of past development projects which came to their localities. They feel that they have been let down by those projects. The success of this current endeavour will thus depend on better planning and a more candid collaboration with targeted community members and all network stakeholders.



It is critical that community expectations be managed by being clear from the outset about what is possible and what is not in the implementation.

- It is important that the rights and obligations of the communities in any projects be spelt out in details and agreed to before the project gets underway. This will avoid disruptive misunderstandings during project execution. Failure to adequately communicate this could lead to project termination and community feelings of having been misled and let down.

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