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Environmental Implications of Yirgalem Integrated Agro-Industry Park (YIAIP) on Smallholder Farmers

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Abstract

This study draws from the research conducted on Yirgalem Integrated Agro-industry Park (YIAIP). The aim is to explore the environmental implications and recommend remedies related to agro-industrial development. Special focus lies on both the displaced people (about 430 households) and park neighbouring farmers who are affected by the park. The research deployed a case study design. Data collection took place between September 2021 to June 2022. Data was collected from the smallholder farmers and policy makers in the form of in-depth interview with key informants and focus group discussions. The data collected through questionnaires was analysed by using statistics using percentage, frequency distribution, diagrams, graphs and mean scores. At the same time, data collected from focus group discussion and key informant interviews were analysed using thematic and narrative approaches. The study results show that the views of the local community and the policy makers diverge. While policy makers/implementers focus on the benefits and contributions of the park, the local community focus on the disadvantages that emanate from the park. Famers believe their livelihoods have changed forever. Moreover, the amounts of compensation paid to them, with no replacement land, was inadequate. It is recommended, among others, that the smallholder farmers should be on board at the initiation of the project. The policy makers should also address some of the important issues related to the changes in livelihoods, wellbeing and health.

Key words: Yirgalem Agro-industrial Park, Displacement, Environment, smallholder farmers, Sidama

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Introduction

Industrial parks contain a cluster of industries designed to meet compatible demands of different organizations within one location (Geng and Hengxin, 2009). Developing countries deploy industrial parks to increase the speed of development, attract capital to areas of concentrated privilege, and spawn growth poles with economic multiples for connected areas (Walcott, 2020). As a part of industrial parks, the development of agro-industrial parks encompasses complex inter-organizational networks of heterogeneous organizations that are geographically proximate (Nuhoff-Isakhanyan et al., 2019) focused on agricultural products.

The United Nations Food and Agriculture Organisation (FAO) (1997) described agro-processing industry as "a subset of manufacturing that processes raw materials and intermediate products derived from the agricultural sector" thus, transforming products that originate from agriculture, forestry and fisheries. Agro-processing involves value-adding transformation of products that originate from agriculture, forestry and fisheries industries. It involves, onsite growing, harvesting, processing and packaging of agricultural products and then delivering them to the market as finished and value-added products.

The government of Ethiopia adopted agro-processing industry as a means of increasing the commercialization of agricultural products and thereby accelerating the structural transformation of the economy. One of the initiatives towards this goal was Promotion of Sustainable Ethiopian Agro-industrial Development (PROSEAD) which contributes toward the development of Agro-industrial parks supported by EU, AfDB, IFAD, GIZ, and UNIDO. PROSEAD started in 2019 with a time frame of 5 years and an estimated overall budget of 320 million Euro in grants and soft loans (PROSEAD, nd, p.4).

Integrated Agro-Industrial Parks (IAIPs) and accompanying rural transformation centres (RTCs) are part of integrating agricultural value chain actors. The development of IAIPs is prioritized in Ethiopia's national development strategy and it is a core component of the Growth and Transformation Plan (GTP II, 2015-2020). It is also part of the government's Industrial Parks Development Corporation (IPDC) strategy to make the country's agricultural sector globally competitive (WSP, 2018). IAIP is a geographical cluster of independent firms grouped together to gain economies of scale and positive externalities by sharing infrastructure and taking advantage of opportunities from bulk purchasing and selling, training and extension service. As an industrial policy tool, aimed at solving the problems of undeveloped value chains.

At the macro level, IAIPs contribute to the increase of exports and substitute imports of agro-industrial products. Subsequently, the government identified four IAIPs in Bulbula (Oromia region), Yirgalem (SNNPR/later Sidama region), Bure (Amhara region), and Baeker (Tigray region) and 28 RTCs in different parts of the country. The RTCs were located in the main commercial towns and around the parks.

The construction design for the integrated agro-industrial parks started in 2014 culminating in their construction from 2017. The feasibility studies of the IAIPs and RTCs were conducted as a collaborative effort between different stakeholders, mainly by UNIDO. The parks attracted around 400 million EUR from development partners (both PROSEAD and non-PROSEAD) in soft loans and grants with the matched contribution from the Ethiopian government. The construction design for the parks started in 2014 and construction started in 2017.

In terms of the business model, integrated agro-industrial parks will host a geographic cluster of firms grouped together in order to share different infrastructure and exploit opportunities from bulk purchasing, selling, training and other services (SIPDC, 2023). The SIPDC states that the basic objectives of Yirgalem Integrated Agro-Industrial Park as agricultural modernization, job opportunity, hard currency generation, technological transformation, and economic transformation. In sum, they were expected to play an important role in the country's economy, reducing poverty and creating a better environment for investors in agro-food and allied sectors.

Yirgalem Integrated Agro-Industrial Park (YIAIP) is located in central Sidama zone, about 40 km south of Hawassa (315km south of Addis Ababa), along the highway to Moyale, a border town with Kenya. (Note that the park is named after Yirgalem, yet the exact location of the park is about 5 kms from Yirgalem City and about 2 kilo metres from Abosto town).The area contains sub-tropical land and the park specializes in agro-processing. Since the establishment of the Sidama National Regional State, the park is under the Sidama Industrial Parks Development Corporation (SIPDC).

The YIAIP project represents potentially significant development in Sidama and beyond. The park occupies 294.5 hectares of land. The YIAIP was inaugurated on 13 March 2021 following the completion of the first phase of construction. The YIAIP project was initiated in early 2016 with the commencement of the resettlement process and a survey of the people and project area. In early September 2017, the government started contacting affected people to organize the compensation payment.

On 13 March 2021, the Park was inaugurated following the completion of the first phase of construction (Addis Fortune, 28 July 2022; UNIDO, 2021). During the inauguration ceremony, the Prime Minister visited the first three of the 11 factories. The park occupies 294 hectares land, with planned capacity for 152 factories. Initially, only 11 factories were constructed while only about 4-5 factories were operational. The factories occupied by investors included Sunvado Avocado Oil Company, VBM avocado oil processing, Doley Processing, and Hebron Coffee, JOJO milk processing factory and Haro Honey packaging factory. According to UNIDO (2021), the YIAIP required over US$60m in investment; and it is expected to create direct jobs for more than 100,000 people, and indirect jobs for more than 400,000 people.

The building of the park displaced 430 households with financial compensation yet without land or other forms of compensation. Noting the potential for environmental implications of the park, the park

management established Environment and Social Safeguard Directorate tasked with overseeing the environmental dimensions of the park. However, what has happened (is happening) to environment impacts of the park since its formation requires in-depth investigation.

Industrial Parks such as the YIAIP are expected to drive the regional economy. However, they also pose risks to natural environment (Fan and Fang, 2020). Internationally, the experience with IAIPs and their environmental consequences is well documented. In China, such Parks became the main sources of pollution leading to the need for eco-industrial development (Geng and Hengxin, 2009). The Suzhou Industry Park, for example, is reported to consume a great deal of energy and emit greenhouse gases. These and other studies documented environmental problems linked to industrial parks such as pollution, stress on local natural resources, potential hazards, and health issues for local communities emanating from large quantities of resource consumption and intensive pollutants emissions. There is also the possibility of pollution of surface and groundwater due to industrial effluent or liquid waste discharged into a river or the sea. In India, dumping of industrial wastes in the vicinity of industrial areas is reported to cause environmental hazards (Rangaraj et al., 2007). Other threats to environment include the use or storage of large quantities of dangerous substances as well as exposure to machinery generated noise. Therefore, environmental management at Park level is critical in mitigating and controlling these harmful impacts (Geng and Hengxin, 2009; UNEP, 1997).

From the beginning, a survey of YIAIP pointed to potential impacts during the construction and operational phases of the project on soil, surface water, ground water, air quality, climate change, noise, transport and access, waste management, biodiversity and socio-economic environments as well as communal grazing areas, wetlands, and indigenous trees (WSP, 2018).

Agro-industrial Parks are new phenomena entering operation in Ethiopia in general and in Sidama in particular. Research into these parks is also new. Thus, it is critical to study the environmental and climate change implications of the Park on the local people, mainly on smallholder farmers.

The main objective of this study is to explore environmental implications of YIAIP on smallholder farmers. The specific objectives of this study are to:

1. explore environmental implications of YIAIP on smallholder farmers including their perceptions of cost and benefits.

2. investigate implementation of environmental and humanitarian protection in the case of YIAIP.

3. assess the contributions and impacts of agroforestry (expanded plantation of perennial plants such as avocado, mango, papaya, eucalyptus, cat) as a means of climate change adaptation or maladaptation.

The research in this sub-project aims to answer the following questions.

1) What are the environmental implications of YIAIP in the study area?
2) Which groups of people are most affected most (negatively) by the introduction of agro-processing industry?
3) Is there understanding of contributions and impacts of agroforestry as means of mitigation and adaptation to climate change, in the study area?

Materials and Methods

This study is conducted in different locations that are directly linked to Yirgalem Integrated Agro-Industrial Park (YIAIP). The park derived its name from Yirgalem City which is about 6 kilometres from the actual park site which is located at 06°45'N latitude and of 38°25'E longitude with an elevation of 1776 metres above sea level. Yirgalem City is located at 45 kms south of Hawassa.

Two Kebeles are directly linked to the park, namely, Wenne Nataa and Hidaa Qalite. Other areas related to the park included in the study are Bansa Daye, Alata Wondo and Morocho Nagasha. In Bansa Daye, the initial idea of a Farmer Training Centres (FTC) is changed to medium agro-processing area and the communal grazing plot is converted to a Park with no direct displacement of households. In Alata Wondo, park related displacement is minimal. The Morocho-Nagasha locality FTC in Shabadino Woreda was non-functional and therefore no activity was carried out in terms data collection.

From April 2021, the research team made an initial visit to YAIAP park. During the visit, the team observed operational factories (shades) in the park. They include the Jojo milk processing factory, honey, avocado and coffee processors. The honey and avocado firms were operational but the coffee processor is in a preparation phase. The team also travelled around the surrounding community to assess the logistics and access to the community. In the same month, the team met key informants from Sidama Agro-industry Corporation (SAIC) to receive an update on what is going on with the parks and RTCs. The team was informed that Gedeo Rural Transformation Centres (RTC) are no more part of the Sidama regional agro-industry. This rendered the research team's focus to 4 areas in SAIC and re-think the duration of the project. Instead of the three years completion, as initially envisaged, the team formed the view that the project will complete in 2 years from September 2021 to June 2022. Moreover, the RTCs were transforming into Medium Agro-processing Parks, in addition to the main Yirgalem Agro-processing Park. Thus, work is already started on the Bansa-Daye Medium Agro-processing Park, and other three parks are to follow.

On the basis of the above scenario, the study participants included smallholder farmers impacted by the parks. The farmers include households from all age groups, gender, education, and social status. Other participants include Dale district officials and professionals, professionals tasked with the management of the parks and RTCs and environmental policy makers.

The research deployed case study design with mixed methods of data collection and analysis. The selection of sample participants for qualitative data was done by the team of researchers assisted by local officers at district and kebele level. Two *kebeles* namely Hidda Qallite and Wenne Naata were selected purposefully since they form the intersection of where the park is formed. Bensa-Daye was also included for data collection. No data was collected from Alatta Wondo due to lack of reported displacement. For a household survey, the study engaged 200 smallholder farmers who faced environmental risks associated with YIAIP.

Key informant interviews with policy makers included Dale woreda sectoral offices (Agriculture, Health, Job Creation, Enterprise and Industry Development, as well as Animal and Livestock) administrators and deputy administrators were interviewed for their knowledge about the impacts of YIAIP on displaced and park neighbouring persons and for their continued practice on the daily functions of YIAIP. Individuals selected possess relatively better understanding about the impacts, contributions and opportunities of YIAIP on local persons. Household heads were selected by systematic random sampling.

Data was collected using quantitative tools (survey with farmers) and qualitative tools (e.g. FGD with a group of displaced and park neighbouring as well as key informants, mainly policy makers). Household survey questions were polit-tested. The questions were tried on 15 randomly selected household heads from around the YAIAP, namely the localities of Wenne Nataa and Hida Qalite.Some questions were amended as the result of the pilot test. The questions were then translated to Sidamu Afoo. Subsequently, survey data collection took place from 200 household heads mainly from Wenne Nata, Hidaa Qalite and Bansa. It mainly involved three groups of people: a) those who were displaced by the park, b) those in the kebeles close to the park yet not displaced and c) those from Bansa medium size agro-industrial park. Bansa was initially supposed to be part of Rural Transformation Centre.[1]

Then focus group discussion among park neighbouring and displaced farmers was conducted near the park. Two FGD sessions containing 13 people each from displaced and park neighbouring households. Each of the sessions took 1.5 hours and audiotaped. Participating group members were presented with open-ended questions related to their experience and perception about environmental issues pertaining to agro-industry and its impact on their lives.

[1] Rural Transformation Centres (RTC) differ from previously adopted model of Farmer Training Centres (FTC).

Key informant interviews were made with 8 individuals to capture experiences of the local population. They included knowledgeable persons, community leaders, health workers, development workers, operation managers, and policy makers at local and regional levels. Moreover, observation visit was made in April 2021 to better understand the area, the living conditions of the households and their surroundings. During the site visit at YAIAP park, for example, the team observed factories (shades) in operational in the park.

In the course of the research process, data was collected in the form of notes, images, illustrations, recordings were used to describe settings, people, processes, activities, interactions, and meanings of phenomena from the perspective of the participants. Prior to the commencement of the actual study, research assistants were trained on data collection tools and procedures.

Quantitative data (survey questions) were grouped under socio-demographic information, impacts on displaced people, impacts on park neighbouring farmers, and common impacts. Responses were analysed using SPSS. Besides, qualitative data obtained through key informant interviews were analysed with thematic narratives. Focus group discussion with displaced and park neighbouring farmers was audio-recorded, transcribed and checked for emerging themes and patterns. The same applied for key informant interviews were conducted with key informants from different government sectors including the SIDPC. Based on the abovementioned data collection and analysis, subsequent sections explain the results and discussion of the study.

Results and Discussion

The results of the study emerge from the quantitative and qualitative data. Responses to survey questions (quantitative data) are grouped under socio-demography, impacts on displaced people, impacts on park neighbouring farmers, as well as common impacts. These are discussed in the subsequent section below, followed by results and discussion from qualitative data.

Results

Socio-demographic profile of respondents

Out of total of 200 heads of households, 78% of respondents were male and remaining 22% were female. The mean age of the respondents was 42 years with the minimum and maximum ages of 20 and 97 years. Over half of the respondents were in the age group of 40 or above. In terms of educational status, the majority 27% of respondents belonged to grade 1-6 while 44% had secondary and post-secondary schooling. In terms of marital status, 87% of the respondents reported being married. Farmers formed the majority 61% of respondents in terms of occupational status. In terms of household role, male household heads accounted for 79%. Regarding religion, 82% of respondents belonged to protestant denomination of

Christian faith. The family size of half of the respondents exceeded or equal to five. In terms of land holding size, 45% had less than 0.5 hectares. In terms of residence type, 52% reported to live in rural setting. Regarding monthly income quintile, 44% of the study participants falls under low or lowest monthly income quintiles. Only 37% fall under high- or highest-income quartile.

Environmental Conditions

Change in environment

As per the survey data results, most respondents noticed change in the environment in the form of altered temperature, rainfall/flooding in the area. Out of the survey of 200 persons, the majority (80%) of study participants agreed/strongly agreed that they noticed a change in environment in the last 12 months. Only a few, less than 10%, disagreed (see Figure 1).

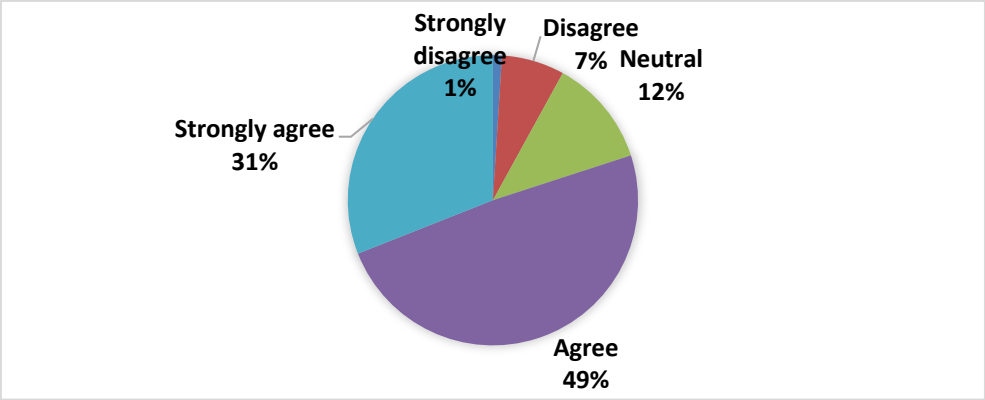

Figure 1: Opinion on Changes in Environnent

Source: Survey, 2022

Air, water and soil pollution: Similarly, respondents noticed air pollution due to the park in the last one year (see Table 3). Moreover, the majority (68%) agreed/strongly agreed noticing water pollution. Around 57% agreed/strongly agreed that there was shortage of potable water in the surroundings. Concerning soil pollution, over half (52%) agreed/strongly agreed that they noticed soil pollution.

Table 1: Survey response to environmental conditions - Pollution

Question/response/ frequency	Strongly disagree (%)	Disagree (%)	Neutral (%)	Agree (%)	Strongly agree (%)
Noticed change in environment	1	7	12	49	31
Noticed air pollution	1	12	16	47	25
Noticed water pollution	5	19	20	36	22
Noticed soil pollution	7	19	23	35	17
Noticed potable water shortage	3	0	10	40	38

Source: Survey, 2022

Agro-industrial waste: More than two third of the study participants (80%) noticed increase in waste from agro-industrial activities while 74%) noticed increased toxic chemical pollution.

Chemical pollution: 75% of participants noticed increased toxic chemical pollution whereas 73% observed storage of large dangerous substance.

Soil fertility: About 73% reported that the soil fertility status has deteriorated.

Soil erosion and agrological practices: About 58% report that soil erosion status has deteriorated and 87% grew trees in their garden. In terms of the purpose of garden trees, 48% reported using trees for sale. About two third grew chat/eucalyptus in their gardens. About 58% of respondents understood the effects of chat and eucalyptus trees on the local environment.

Table 2. Survey response to environmental conditions - Effluent

Question/variable	Response	Percentage
Noticed increased agro-industrial waste	Yes	80
Noticed increased toxic chemical pollution	Yes	75
Storage of large dangerous substance	Yes	73
Soil fertility status	Improved	10
	Deteriorated	73
	Remained the same	11
	I don't know	7
Soil erosion status	Improved	7
	Deteriorated	58
	Remained the same	27
	I do not know	9
Grow tree in garden	Yes	87
Purpose of garden tree	Firewood	23
	Sale	48
	Shade	24
	House construction	2
	Preserve soil fertility	3
Avocado/papaya	Yes	87
Purpose of planting avocado/papaya	Own food	32
	For sale	54
	General selling market	14
Grow chat/eucalyptus	Yes	73
Understand of effects [growing chat/eucalyptus] on ecology	Yes	58

Source: Survey, 2022

In sum, the results of the survey point to environmental damage, high temperature, water and air pollution, bad smell, soil pollution/erosion/degradation, and flooding after the establishment of YIAIP. These impacts are backed up in qualitative data. According to Dale Woreda agricultural office, "the nutrients of the soil has degraded and its fertility has decreased. The agricultural production of the soil has decreased by 50% compared to the previous date." (Key informant interview). On the levels of air and water pollution, one wonders, if the only three factories in the Park can emit this level of pollution, one wonders what the situation would look like when many factories start operation.

The next section discusses results of the study in terms of perceptions about the impact of the park on residents and the policy responses.

Discussion

Policy Responses to YIAIP Impacts

In recognition of the impacts of the YIAIP, the main stakeholders and local policy implementers recognized some of the problems. The main stakeholders are the YIAIP management (including SIPDC) and the local government sector offices as policy implementors.

SIPDC Responses

The key stakeholder in the park management is the Sidama Industrial Parks Development Corporation (SIPDC). The SIPDC official described the progress of YIAIP along three parameters: namely, physical infrastructure development, operation related progress and beneficiaries. (KII with SIPDC officer).

Physical infrastructure development is expressed in the form water, electricity, internet, public services like banks, schools, health clinics, and companies in operation representing progress in physical infrastructure. Moreover, access roads and electric substations are being built.

Operational progress includes the engagement of business firms in the park. Eleven industrial units or companies lined up to occupy the factory floors. Five firms are functional while all of the 11 companies pay rent for space occupation. All of the 11 firms are expected be functional when work on the required facilities are complete. So far, those in operation are those involved on avocado, milk, honey, and coffee processing. From the outset, the SIPDC set high expectations for the park. It expects about 142 companies to occupy the Park. Eleven companies have rented or leased land in the park. "When we hand over land, companies will build own shades. In this way, 4 companies had land leased to them" (KII with SIPDC officer).

The other parameter relates to *benefits to farmers* involved in the *value chain*. In the beginning, avocado oil started to be supplied to intentional market. One company alone is buying 100,000 kg of

avocado from farmers. About 88,000 farmers reportedly supplied avocados to the companies in 2021. When an additional company starts operation, 47,000 farmers were expected to supply avocado fruit. Together this makes over 120,000 farmers. When the two companies are combined, they buy 200,000 kgs of avocado a day. The milk company engages 30,000 people who supply milk. The company requires 1,500 litters of milk per day, operating under capacity whereas the full capacity can go up to 10,1000 litres a day. The number of people supplying the products are increasing and the most organized suppliers are local cooperative associations. In all, over 150,000 people are expected to benefit in terms of earning income and subsequently improving their livelihood (KII with SIPDC officer).

In response to concerns raised by the local people about the contamination and smell from avocado oil processing plant, about health post/unit replacement, and polluter pay principle, the respondent from SIPDC office admitted that these claims exist. He added that at the beginning of the park, he was the member of the committee that oversaw the initiation of the park project, as a chair of the committee. He believes that compensation was paid as per the regulations. The legislation recommends two things: First, where replacement land is on offer, a recompense will be paid in monetary payment calculated on the basis of one year's revenue from the land. Secondly, if there is no land replacement, a payment of household's farm value multiplied by 10 years will be made. "Initially, we calculated one year's worth of money plus land. This has caused big upset. They did not want land. We mentioned the problem of displacement caused in the nearby Awaada *kebele* for Hawassa University's new campus in 2010. However, farmers refused to take the land option. We tried to convince them for one month ... and in the final day, they boycotted the meeting. As an agricultural officer, I nearly begged them advising that the land offer is better for them, and they agreed. Then we calculated financial payment alongside a land offer of 500 square meters per household. We agreed as the committee about the package, and I left the country [for further education]." (KII with SIPDC official). Unfortunately, the land offer did not materialize, farmers received only monetary payment.

The same interviewee added that the existing health post was part of public institution and compensation payment was made. If this is not the case, a follow up what happened to the replacement needs to investigate. Addressing the concerns raised by the local population, the interviewee reckons they a had a wrong perception in thinking that all jobs belong to them. Asked if the SIPDC had an environmental safety guideline and/or agreements with the companies about environmental handling, he noted that "it is documented; we have agreements. Nationally, there is a framework of Ethiopian Investment Commission. When investors come here, we sign agreement." Finally, asked if SIPDC and YIAIP engage local small holder farmers or if there is a framework to involve them on impact assessment, the interviewee responded: "The local people, via their representatives, are members of the park committee. So, they jointly manage

the Park. The kebele chairs, … the representatives exist. What is lacking is conducting impact assessment study … we need to do satisfaction survey …" (SIPDC official).

YIAIP's Business Development and Communication Directorate officer assessed the progress of the park positively. As a person who has been working in the park since its establishment, he noted that the Park is really hopeful project at the national level. He informed that the construction of the infrastructures reached 70%. Apart from international companies, a few local investors have been participating in the park on different projects. The park has been receiving electric power from Waara Power Station, a few kilo meters outside of the park. However, the Federal government is building Electric Power supply station in the park, and 30% of this project is completed. This project is highly promising to address the electric power issue in the park. It can also cover the electric power demand of the local community (as well as the whole Yirgalem City).

The officer also revealed that water supply to the park, is highly promising since there are enough water sources in Awada. In addition, there are six deep ground water sources in the park. In total, there are eleven water sources in the park.

Regarding waste treatment plant, a design was said to be prepared; yet it was not implemented due to shortage of money to finance (the total cost is more than 1 billion ETB). So far, the SIPDC received around 100 million ETB from African Development Bank to start the first phase of the project. Accordingly, he said that the park has invited tender and selected the contractor to start the first phase of the project.

The interviewee stated that the feasibility study on environmental impact assessment was done and the waste treatment project was among the priority consideration. However, the establishment of the new Sidama Regional State in 2019 (curved out of the SNNPR) coupled with the shortage of money led to the delay.

The interviewee recognized that the park might have caused some negative impact on environment. Moreover, the problems of displaced person from locality is recognised as a challenge for the sustainability of the park in the future. The social and economic (agriculture) life of displaced people has demonstrably changed. Yet, the impacts on displaced persons can be a matter of further studies.

The interviewee added that before the park commenced its normal work, a pilot study was made. During this phase, only one plant (Sanvado) was releasing some liquid waste to the local water source outside the park. After taking lessons from the pilot, the park management quickly blocked the sewage from further entering the local water and maintained waste in the reservoir inside the park. Yet, this conflicts with the community members complaint of overflowing of waste into their land and into the nearby river.

The interviewee mentioned the benefits of the park in terms of new jobs, introduction of new technologies and awareness, etc. For example, more than 6000 workers were employed of which around 700 were permanent workers (70% came from the local community). During recruitment of new employees,

priority was given to those applicants from displaced local community around. The park introduced new technologies and awareness to the workers and to the community as a whole. This avocado fruit coming from the community has increased. Besides, the community's culture of fruit production (agro-practice) is expected to yield positive results. Different local communities started to breed modern livestock to provide milk to the park. The existence of medical institutions within the park is also mentioned as providing free service to the community. Moreover, the park is said to provide water and electric power to the community. The possible disadvantages of the park, as per the respondent, are the lack road that connects communities. This is thought to be a challenge and that the regional government has to support in building roads to the community.

In relation to employment related criticisms, the manager blamed local kebele administrations for the challenges during employment of local people in the park by enlisting most people as members of the displaced persons. The same problem happened when they were selecting children of park neighbouring persons to join the community school within the park. The same people reportedly sold the water that the park provided to the community. This shows lack of verification mechanism on reports and lack of close working/knowing the local community by the park management.

In terms of engaging the local community, the park manager claimed to offer training on manufacturing practices to the local people. This work is done through *kebele* administration since the park is not directly linked to the community. Regular discussions are said to take place with community representatives on matters of peace and security. The park management also reported the plan to provide electricity to the community, which needs discussion with Dale Administration on how to manage the costs and payment for electricity supply.

In response to criticisms from the displaced and park neighbouring farmers, the park manager reckons that the local people failed to look to the common good (sustainable benefit to the society); rather many of them focus on temporary cost and benefit. Another criticism centred around waste treatment. The park management argued that, initially, there was a design to build waste treatment plant. But it was not implemented due to shortage of finance. The park has received financial support from African Development Bank to start the first phase of this project. Then the Park has invited tender and selected the contractor to start the first phase of the project.

The park management and policy administrators recognize some of environmental problems. For example, an interviewee of the park management said that the park might have some negative impact on environment. These relate environmental harm associated with solid and liquid waste that come out of factories in the park affecting the local community around the park leading to increased risk of exposure to different diseases. Malaria incidence is said to increase. Water borne diseases also showed increased incidence.

Local Policy Implementors' Responses

The **local government** (e.g. Woreda sector offices) held diverging views from the local community. In terms of *supporting displaced persons,* the local government administration (Dale Woreda) is reported to establish a taskforce to address the problems of the local community including displaced people. It established a steering committee that contains members from agriculture, job creation, livestock, urban development, health, education sectors is chaired by the Woreda administrator. It also worked with non-government agencies to address some of the issues related to the park. From among sector offices, agricultural officer noted that, after the formation of the park, some kebeles were included in the Yirgalem City Administration and moved from rural Dale Woreda. Yet, the Woreda office supported some people by distributing small amount of food (for example, 15 kg of wheat) to a household per month for 2 months. Yet some poor displaced people were left out during the counting or registration for aid and food safety net programmes. The office was exploring ways to include displaced poor people into Safety Net programme which is part of the government's support or transfer payment to severely poor people.

In relation to *landlessness, food insecurity and poverty* induced by displacement, Dale Woreda agricultural office mentioned its effort to address the immediate problems of the communities through food aid and safety net programmes: "We train and advise the community to use compost and introduce new cropping system like bean cropping." Moreover, "bean cropping that has multipurpose for the farmer to use it for food or convert it into cash" (Dale Woreda Agricultural officer). At the same time, the Woreda agricultural office stated their efforts to work with the local community by advising them to use compost and new cropping practices like bean cropping that offers multipurpose benefits for the farmers to use it for food or convert it to cash.

With regard to *employment situation,* Dale District Job Creation, Enterprise and Industry Development Office noted that "the park is expected to address unemployment problem of the youth in the area … the park has brought few employment opportunities to displaced persons" in the form of manual work and such jobs are mainly temporary. Most of the displaced people is claimed to have faced unemployment problem even after the park started operations. The interviewee further stated that there are "challenges of frequent termination of employment from YIAIP due to different factors. The office suspects unfavorable working conditions and the employees' reluctance for permanent work in the park. For example, it is reported that around 120 people who got employed in the park later terminated their jobs due to different factors. Some employees needed to travel from Yirgalem City to the park location near Abosto town. In addition, some employers were criticized for non-transparent employment system. At the time of

this study, the Human Resource Office of the Park was based in Hawassa City, away from the park near Yirgalem City.

Regarding *environmental conditions*, industrial waste is viewed as an important factor. According to an interviewee from Dale Woreda Agricultural Office, waste from Sanvado Factory from the Park and Awaada Furniture Wood Production Factory (outside the Park) are known to enter into Gidawo river directly, causing water pollution. It is also noted that "the waste that come out of the park are not recyclable. Currently, there is no technology to recycle the waste" (Key informant interview). Subsequently, the problems associated industrial waste expose people and livestock to diseases. Hence there is increased risk of exposure to different diseases." Water borne diseases expose the local people to different illnesses such as diarrhea. Mosquito related diseases including malaria also show increased tendency." (Key informant interview). However, it is problematic to attribute all the problems related to waste as emanating from the park. Hence, the nature of the waste requires further analysis.

Contributions and Opportunities of YIAIP

The contributions and opportunities of YIAIP are highly pronounced by the park and its management. An official of the SIPC noted that "there was huge expectation from the community that the park would bring several advantages to local community, region and country at large." (Key informant interview). The expectation is partly based on the form of increased urban development and expansion of infrastructural developments in the area. Mention is also made of future opportunities for the local people to access potable water and electricity from the park at a minimum cost. Similarly, the park is expected to create demand for inputs. The assumption is that when there is demand, it incentivizes, attracts and redirects supply.

Moreover, the park brought employment opportunities to the local community. Some firms were better than others in terms of their employment options. For example, JOJO milk processing factory had created job opportunity for 23 youth. The same interviewee stated that the working condition of workers in this factory was good. The factory provides lunch, dinner and transportation to workers (KII with Dale Woreda Job Creation Officer). On the other hand, Sanvado factory is reported to have less non-transparent employment system. According to the YIAIP management, the park is a hopeful project at the national level and beneficial to the local community. The benefits of the park are listed in the table below.

Table 5: YIAIP Benefits to Community and Country

Benefits to community	Benefits to the country
Limited jobs for skilled and manual workers ranging from production manager to daily labourers. Priority is given to members of local community who have the required skill and knowledge during employment during the park's construction phase and onwards. Awareness among producers to focus on products that can be used as input to the park. Different factory owners are working with farmers to increase their productivity, from start-up to post-harvesting stage of value chain. Marketing opportunities are created for products such as avocado. However, the prime beneficiaries are brokers and vehicle operators who purchase large quantities, not small-scale producers.	Export promotion and import substitution hence economic development.
Provision of water and electric power to the community. It provides primary school places for 100 children of displaced person in the first round and added another 100 children to the school. It provides free medical service and free drinkable water to the surrounding community.	Technology advancement, knowledge transfer and agricultural transformation.
Urbanization. The area of the park was previously under Dale Woreda, but after the park, it is included under Yirgalem City Administration. Since the industry need cities and the cities also need the industry, they jointly make the Local Development Project (LDP) Study as well as planning land filling projects together.	Foreign currency
Attitude change in society is part of the park development. Engagement in business activity	

Very few participants among smallholder farmers made reference to the direct benefits of the park. They include income gain from manual work and acquisition of new skills of survival. The park also exposed people to new ideas and people. According to one account "different people come; we see them, we learn from them; and that is good. The park is developmental, but its disadvantages outweigh its benefits for us." (FGD participant). Another participant cited the decline in petty crime; arguing that those who were involved in petty crimes like theft have gone to the park to do manual work, giving the area respite from theft.

For park neighbouring farmers, YIAIP has different opportunities. It brought income from employment and sale of agricultural products, and development possibilities and transfer of knowledge and new skills for life.

Conclusions and Recommendations

Summary of Main Findings

Thorough examination about the impact of the parks on smallholder farmers can fully materialize once the project is in full operation. Yet this study found it imperative to assess the practice of agro-processing processes with the legal provisions on environmental protection and their implementation.

The study into the YIAIP identified some opportunities. For the local community, the benefits include job opportunities, skills development, improved awareness, input/service provision, etc. The country expects to benefit from prospects for economic growth and development, urbanization and modernization, technology transfer, and acquisition of foreign currency.

The views from the policy makers and from the community diverge in important ways. On the one hand, policy makers/implementers focus on the benefits and contributions of the park. They justify the benefits of the park in terms of jobs, input supply and income thereof and compensation paid. The local community, on the other hand, list the disadvantages that emanate from the park. The latter were initially pleased with the project for its promised job-creation potential and improvement in their local livelihoods. However, they have concerns on the way they were moved out of their habitual lands to make way for the park. They believe livelihoods have changed forever and inadequate amount of compensation was paid after 3 years of waiting with no replacement land. The change of livelihoods affected the wellbeing of displaced people.

In the process of exploring these claims, the study identified several challenges and disadvantages. *First,* the displaced people lacked skills, financial literacy to manage financial affairs, not given replacement land, and eventually got worse. Some become day labourer's in the park, others become homeless, landless and poorer. *Second*, the enclosure for the park closed pathways (e.g. the roads to clinics, schools, markets, etc). *Third,* industrial waste (especially from avocado factories) affected water systems including Gidawo river. Livestock and human affected.

Conclusions

There are currently 3 functional agro-processing industrial parks in Ethiopia (Yirgalem, Bulbula, Bure). This study is the first of its kind to explore the impacts of such parks. The study brought important issues to the forefront. The YIAIP engendered opportunities and changes. The SIPDC states the basic

objectives of YIAIP as agricultural modernization, job opportunity, hard currency generation, technological transformation, and economic transformation. In terms of opportunities, marketing opportunities created for products live avocado. The beneficiaries are brokers and vehicle operators who purchase large quantities of produce.

In terms of challenges and impacts, the enclosure for the park closed pathways (the roads to clinics, schools, markets). Second, industrial waste (specially from avocado factories) affected water systems including Gidaawo river. The social groups most affected are the displaced people. They lacked skills, financial literacy to manage financial affairs, not given replacement land, and eventually got worse. Some become day labourers in the park, others become homeless, landless and poorer. Among them, older people found it hard to adapt to changed situation, especially landlessness and they felt being uprooted. The trauma following displacement and landlessness caused physical and psychological harm, especially to the older people. The people who are not displaced and resident near the park lost access to the commons, affecting their livestock. They also lacked access to utilities, the most pressing problems being water, electricity, and roads. The dominant perception among respondents is that the local people are not beneficiary of the park.

Recommendations

The following recommendations are made with the offer useful advice and lessons for the YIAIP and other agro-industrial parks under formation or planned in other parts of Ethiopia or even in Africa and beyond. They are divided into recommendations for smallholder farmers, the Park as well as the local and central/federal government.

Smallholder farmers need to consider diversification into different agricultural products alongside subsistence production. For example, agroforestry form of activity such as growing edible fruits such as avocado, mangoes, apple (mainly in the highlands), papaya, etc. has benefits to farmers and the Park. Moreover, agro-forestry is also known to support adaptation to climate change.

On the other hand, the Park need to better focus on stakeholder engagement, improvement and transparency of employment needs, working conditions, environmental conditions, corporate social responsibility, information base and further research.

1. Engage all stakeholders in critical issues that affect the livelihoods of local people. This includes local government, federal government and NGOs including UNIDO. It is also important that farmers who handover communal and private land for parks should be consulted. Moreover, it is essential to consult local banks and microfinance institutions who engage farmers on savings and investment options. These finance institutions could have supported in the provision of basic financial literacy training or awareness to smallholder farmers impacted by displacement or

potentially exposed to displacement. The training could be offered through extension services or other mechanisms in collaboration with finance institutions. In short, the park needs to undertake regular stakeholder engagement or conduct customer satisfaction surveys.

2. Prioritizing the employment of local staff contributes to sustainability of enterprise. When skilled manpower cannot be found locally, it becomes inevitable to go beyond. Moreover, the improvement of working conditions is useful, especially availing transport from Yirgalem City, which is located 5-10 kms, to the park. A sort of shuttle bus to and from the workplace is something the companies may consider.
3. It is vital to include waste treatment options and cost in the environmental impact assessment feasibility studies of the projects. For instance, the firms should consider the "polluter pay" principle, a commonly accepted practice that those who produce pollution should bear the costs of managing it to prevent damage to environment. This may mean compensation for losses or harm to local community.
4. The park management need to ensure that firms in the park who occupy space to fulfil corporate social responsibility. At the same time, companies that operate within the park should consider environment issues not only for the community but also for their international reputation and operational sustainability. Local investors too need to consider and receive sufficient information about the possible impacts of their operation on the environment. Moreover, they need to demonstrate willingness and ability to support local community who lost communal grazing land and livelihoods to make way for the park. The implementation of social responsibility actions can be coordinated by SIPDC and the park management.
5. The park needs to have information about the both the displaced people and local community who are directly and negatively affected by the park. It needs to maintain a list or database of these people, their predicament and development.
6. The park and its occupants need further research into customer satisfaction to assess dynamic situations arising from their operations. There is evident need for science- based laboratory testing on river water, air conditions, and soil conditions for possible pollutants.
7. The park and firms need particular engagement with the local community who provide inputs (labour and agricultural raw materials). This could mean establishing and developing rapport with the local community via employing local staff, and regular consultations. This ensures short term safety and security of the firms as well as long term sustainability of the parks.

Similarly, the local and federal government need to consider the following actions:

1. Never overpromise smallholder farmers. Be transparent from get go. Transparency in matters of compensation and the overall impact of the project to local stakeholders who host the parks.
2. Compensation. Paying reasonably adequate compensation as per the laws reduces grievances of local community affected by development-induced displacement. Reliance on monetary compensation alone is unsustainable for smallholder farmers whose skills are limited to farming and with less off-farm activities or financial literacy.
3. Replacement land. The provision of replacement land to people being displaced by the park, even if it means 500 meter square in their vicinity where they can reside and eke livelihoods. Farmers in this context are constrained by several factors including financial literacy, general education, economic circumstances, etc.
4. Support to displaced people: Government need to provide funding and support to heavily impacted people or displaced people who became landless and homeless in the form of urgent emergency relief assistance and ensure the inclusion of such people under Safety Net programme or other relief initiatives. Moreover, those who are most affected by the park, need more focused attention.
5. Plan well: In the long term, the government should plan well; engage with key stakeholders; take the views of the local communities into consideration. More importantly, local lives and livelihoods need critical attention while considering enclosures for development initiatives.
6. Role of brokers: The role of brokers need to be moderated, managed and regulated by developing efficient market and value chain management that removes unnecessary cost on inputs and marketing. This may also take the form of legal regulation of brokerage (*dellala*) system at the local and national level.
7. Impact understanding: All stakeholders need to have better understanding of environmental impacts of industrial parks.

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