13 Livelihood Support Programmes for Sustainable Development Goals in Rural Nigeria

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13.1 Introduction

Rural communities in Nigeria like many African countries are characterised by extreme poverty, hunger, illiteracy, gender biases, poor health delivery system, indecent housing, poor management of water sanitation and hygiene, climate change, and underemployment (Egbe 2014; Khan and Cheri 2016). Evidence shows that about 71% of Nigerians live on less than $1 (US) a day and about 92% live on less than $2 a day (Ucha 2010). Only 28% of the 125.4 million rural Nigerians (Agbodike 2010) earn up to $1.9 a day while a lesser percentage have access to decent meal and potable water (Akpor and Muchie 2011). Similarly, 6.2 million of the 16.9 million elementary school-age children in rural Nigeria are either out of school (UNICEF 2012; Haruna and Liman 2015) or must travel for more than 20 min (4 km) to attend one (Kazeem et al. 2010). Thus, Sustainable Development Goals (SDGs) especially goals 1 and 2 and 4 are far from being actualised in rural Nigeria.

One means of eradicating poverty and hunger which incidentally forms the objects of SDGs 1 and 2 is through improved agricultural productivity. Agriculture is noted to account for two-thirds of the means of livelihoods in rural Nigeria (Ojikutu 2018). It has also been affirmed that agricultural production in rural areas has supported household food demands in Nigeria for decades (Ikelegbe and Edokpa 2014; Omotayo 2016). However, rural agriculture in Nigeria is currently constrained by vagaries of factors such as finance, technologies, literacy, and land tenure (Ofana et al. 2016). In recent times, impacts of climate change have added to the problems of agriculture in Nigeria (Enete and Amusa 2010).

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Meanwhile, a lack of power supply in rural areas is a major constraint to alternative sources of income for the rural dwellers. Jack et al. (2018) reported that the lack of electricity to power machines and equipment needed for other trades in the villages contributes to the poverty and hunger for many people. The implication of this is an increase in poverty depth, rural-urban migration with the associated social vices and possibly non-actualisation of the SDGs by 2030.

Meanwhile, university campuses in Nigeria are commonly situated in rural areas where land spaces are believed to be available in relative abundance. Often, these citadels of higher learning are neighbours of rural communities. The establishment of universities in the rural areas of Nigeria from the foregoing is expected to influence rapid human and economic development of rural areas. However, it has not. Instead, it has seen the displacement of thousands of rural populace from their farmlands and primary homes resulting in worsened developmental issues at the grassroots (Oyedepo et al. 2018).

The case of the Federal University of Agriculture Abeokuta is not different; having dislocated over 80 villages with scores of resource-constrained farm-families from 10,000 hectares of land it presently occupies. The plight of rural folks gets worsened when they are dislodged from their place of enterprise and are not promptly resettled (Vanclay 2017). Often, such involuntary resettlement creates setbacks to decent living and hinders rapid attainment of sustainable development goals. According to Uduji and Okolo-Obasi (2016), it is logical that universities within the neighbourhoods of rural communities take up the task of rural development as part of their corporate social responsibility.

In this light, the Federal University of Agriculture Abeokuta; a land grant university saddled with a tripod mandate of teaching, research and extension adopted several rural communities for livelihood support interventions. In its previous outreach programmes, the university has extended several research products and proven technologies to surrounding communities meeting both successes and failures. Against this background, there is an argument that more goal-specific programmes could be carried out to assist rural communities to actualize the sustainable development goals.

Universities are intrinsic to the actualisation of the SDGs (Levi and Rothstein 2018), conceivably because they are uniquely positioned to assist with the intellectualism involved in location-specific strategy formulation critical for the implementation of a number of SDGs. Universities are known for providing knowledge from research, innovations, and solutions that underpin the implementation of development objectives (SDSN 2017). They are also essential in providing think-tanks for policy formulation (Fraussen and Halpin 2016) and creating implementers (Khan and Khandaker 2017). Universities can provide scientifically sound advice and knowledge on the means of policy implementation that can be useful for meeting the SDG targets (Fourie 2018). They do this by actively discussing, analysing, and presenting some innovative approaches and tools to deal with the challenges of policy implementation.

Many universities in different parts of the world are currently examining ways of contributing to the SDGs objectives and targets. One such goal is SDG 4 which strives to "ensure inclusive and equitable quality education and promote lifelong learning opportunities for all" (Bhowmik et al. 2017). Goal 4 has seven targets and three means of implementation. Many targets within this goal are directly relevant to universities, such as the need for all learners to "acquire the knowledge and skills needed to promote sustainable development". In other sustainable development goals, universities are to provide research findings to illuminate grey areas to foster the achievement of SDGs. With extensive research capabilities, universities can, therefore, play key roles in the successfully implementation of SDGs.

Goal 1 calls for an end to poverty in all its manifestations by 2030 while the second goal calls for total eradication of hunger attainment of food security, improved nutrition, and sustainable agriculture by the same time lapse. The SDG 2 and is subsumed into SDG 1 since the fang of hunger is sharpened by poverty. If today, 815

million of 7.6 billion people are hungry and additional 2 billion people are expected by 2050 (Abegaz 2018), only increased productivity in agriculture, forestry, and fisheries can simultaneously respond to SDGs 1, 2. Improved performance in agriculture will provide nutritious food for all, generate decent employment, increase incomes, and consequently eradicate poverty while supporting people-centred rural development at the same time protect the environment.

The preceding indicates the need for a profound change in the global food system and agricultural productivity. There is an urgent need for experimentation and trials of more pragmatic models to transform the African agricultural system beyond what we are already accustomed to. This chapter illustrates the place of the Agricultural Productivity Programme—a university-led livelihood support research with a primary focus of the transforming rural lives through interventions aiming to increase agricultural productivity.

The University-led Agricultural Productivity Programme (APP) provides an opportunity for universities to help rural communities to gain the capacity to address livelihood issues as entrenched in four SDGs namely: 1, 2, 8, and 13, which are meant to: end poverty in all its forms everywhere; end hunger, achieve food security, improve nutrition and promote sustainable agriculture; promote sustained, inclusive, and sustainable economic growth, full and productive employment and decent work for all; take urgent action to combat climate change and its impacts, respectively. The philosophies of University-led APP align with some of the United Nations SDGs. The APP is a World Bank supported initiative to enhance food security, eradicate hunger and improve nutrition, combat poverty by enhancing the source of livelihood of the rural farmers while also addressing gender imbalance and non-inclusion. The APP in Nigeria at FUNAAB was therefore supposedly catalytic to a part of the sustainable development goals aiming to address the objectives of the first and second goals. The programme gives the university the privilege to further fulfil its obligation in advancing its corporate social responsibility and enhancing economic advancement and livelihoods support of the rural dwellers within the university's immediate environment.

13.2 Methodology

Agricultural Productivity Programme (APP) was a combination of technology dissemination and livelihood support interventions to rural communities. The study targeted communities within 10 km radius from the university. Five villages were selected based on criteria such as acceptability, security, people's interest, existing knowledge, and proximity to input markets. Assessment forms were used as guides to discuss with stakeholders in each community, while each criterion was graded on a scale of 10. The communities were then ranked based on total scores, with five communities selected. A sample size determinant table was used as guide in selecting adult participants within the benefiting communities. This was done in order to secure the commitments of beneficiaries to the intervention programme. One thousand (1000) participants were selected in all. These interventions consisted of three technologies deployed to selected rural communities within 2 years. The result of the project was obtained through an early impacts assessment.

13.2.1 Description of Targeted Communities

The primary beneficiaries of the various agricultural development interventions are from enclaves in the countryside of Abeokuta city. The villages are situated within rain forest area of Ogun State, southwest of Nigeria. They are characterised as secondary forest with dense vegetation cover replete with several wild animal species and seasonal streams. The area is largely agrarian with extensive rain fed agriculture a common practice and limited agricultural produce processing activities. There is a general lack of basic infrastructures such as modern housing (Fig. 13.1), good roads, electricity, health care facilities,

Fig. 13.1 Section of the houses at one of the beneficiary villages

schools, and adequate water supply in the area. These communities characterise typical rural Nigeria like with low population density, underdevelopment, low per capita income, and people living below US$1.90 per day. The main challenges to sustainable development including poverty and exclusion, unemployment, climate change, and humanitarian aid are clearly expressed in all the villages selected for the intervention. Most of the women are resource constrained while the men sometimes resort to labour on other people's farms to earn a living.

13.2.2 Description of Interventions

Four main agricultural technologies namely: (1) Movable Poultry Cage system, (2) Aquaculture from earthen ponds, (3) Beta-carotene cassava, and (4) Quality Protein Maize were introduced to five adopted village in addition to the establishment of Agricultural Research Outreach Centres (AROCs) and Agricultural Innovation Platforms.

Intervention 1 involved the movable poultry cage. The portable cage is an open-sided structure with capacity for 50 egg laying birds and equipped with poultry accessories were stocked with the Black Nera type of chicks (Fig. 13.2). This intervention was aimed at helping rural farmers diversify into egg production in addition or away from maize and cassava they are used to. The diversification intends to deliver sustainable income generation projects as well as the supply of affordable animal protein in the local diets.

Intervention 2 was in the aquaculture space. This essentially is earthen ponds with a holding capacity for 1200 table size fish. Equipped with a hand-dug well and water pump the ponds were stocked with 1000 African sharp tooth catfish, *Clarias gariepinus* and 200 Nile tilapia *Oreochromis niloticus* types of fish to benefit the villages. The objective was also to give rural farmers better-living condition through alternative improved income and means of livelihood and access to quality protein (Fig. 13.3).

Intervention 3 was the β-carotene cassava. The farmers in the area have a lifelong history with growing cassava. The project sought to take

Fig. 13.2 Moveable poultry cage for egg production

Fig. 13.3 Earthen pond with shallow well for dry season water supply

advantage of this by introducing vitamin A bio-fortified cassava and in the process and improving the nutrition of rural household. Vitamin A deficiency is common in sub-Saharan Africa, specifically, affecting 20% of pregnant women and 30% of children under 5 in Nigeria. The deficiency of vitamin A impairs immune systems and vision, which could sometimes result in death. The high level of β-carotene, which is a precursor to vitamin A, can provide up to 25% of daily-recommended vitamin A intake. Since cassava is a major part of many people's diets, vitamin A bio-fortified with cassava is an appropriate innovation to introduce to the farmers.

Intervention 4 focused on Quality Protein Maize (QPM). Maize (*Zea mays*) of different varieties including sweet corn (saccharata), popcorn (everta), floury corn (amylacea), dent corn (indentata), and flint corn (indurata) is widely cultivated across Africa. Farmers in Nigeria are therefore familiar with its agronomic practices and production. Part of the newest arrivals of maize is the Quality Protein Maize (QPM) variety. The grain of QPM contains nearly twice as much lysine and tryptophan, amino acids that are essential for humans and monogastric animals than other maize varieties. QPM is not genetically modified but has been produced from bio-fortification through conventional plant breeding (Prasanna et al. 2001). The protein deficiency in other common maize varieties informed the inclusion of QPM as part of the technologies introduced to the farmers in the intervention.

Intervention 5 involved Agricultural Research Outreach Centers (AROCs) and Agricultural Innovation Platforms (AIPs). The AROCs are centres where research outcomes are displayed for farmers to learn from. The AROCs latter transformed into the AIPs that seek to develop the breadth and depth of value chain linkages for each of the agricultural commodities under the interventions. Innovation platforms (IP) are windows for show-casing the unregistered or underutilised opportunities in farming. IP emphasises collective problem solving, promotion, and popularisation of agrarian community needs through a participatory approach. Innovation platforms were established as a frantic effort to consolidate the gains of the interventions in the villages. IP also has the objective of expanding frontiers of the interventions and enhancing sustainable livelihoods of farmers through networking of all the stakeholders.

13.2.3 Implementing the University-Led Agricultural Productivity Programme

Technologies and interventions extended to the adopted villages are expected to catalyse actualisation of improved livelihood and other set objectives associated with the development goals. Five villages were adopted by the University employing the four technologies outlined earlier. The adopted village model makes the targeted communities the responsibility of the University. The dissemination of bio-fortified crops was done on demonstration plots in four locations. Similarly, fish culture and poultry interventions were done on demonstration ponds and demonstration pens, respectively. These activities were made possible with the support of the University technical team. The centres were equipped with materials that illustrate modern agricultural technologies and best practices through audio-visual displays. The centres also allowed the farmers to register personal concerns on their farms and get useful feedbacks.

The programme targeted 1000 adult rural dwellers disaggregated into 400 women and 600 men in 2 years. The 60:40 in male-to-female beneficiary ratio is to address part of the focus of SDG 5 which is to "Achieve gender equality and empower all women and girls". A total of 200 adults comprising 120 males and 80 females were targeted in each community.

APP also extended advisory services to interested members of the communities who are not direct beneficiaries of the programme. In the case of innovation platform and research for develop-

ment (R4D), the farmers were organised into commodity groups and interested members of the society were invited to join any of the commodity groups for the introduction of new ideas (innovations) for development of the commodity along its value chain. Invariably, the processors, value addition groups, packagers, and even scientists were encouraged to join any of the four commodity groups namely: Poultry, aquaculture, cassava, and quality protein maize and establish a platform where innovations and novel ideas on how the commodities can be better developed. The innovation platforms were supported with processing technologies such as smoking kilns and other relevant machinery considered basic for the successful take-off of the platform.

13.2.4 Early Impact Assessment

A rapid early impact assessment was conducted to evaluate the effect of the interventions at the end of 2 years. Each of the extended innovations and interventions is regarded as an input which is expected to generate particular outputs. The outputs, in turn, produce effects, and the effects eventually culminate in impacts; thus,

$$\text{Inputs} \gg \text{Outputs} \gg \text{Effects} \gg \text{Impacts}.$$

Since impacts cannot be said to have occurred until about 5 years of applying the inputs, then what is reported in this chapter are, therefore, the results (effects) of the interventions (inputs) of the rural livelihood support project under the Agricultural Productivity Programme.

13.3 Results

The results of the interventions from the early impact assessment of the project as reported in relation to some sustainable development goals revealed some positive effects on the people and their livelihood. In order to have a good basis for reporting, it is important to characterise the targeted beneficiaries in terms of socio-economic status before and after the interventions.

13.3.1 Baseline Report of the Targeted 1000 Rural Farmers

The cross-section of the beneficiaries sampled indicates that 56% of the farmers in the area fall within the 27–55 years age group while about 40% are above 60 years. The majority, 91% are into crop production only 2% are into livestock farming of any kind. The baseline survey also shows that a large percentage of respondents were below the poverty line (1.90 USD per day)

The post-intervention assessment shows that many of the farmers are on their way out of poverty. Average household income from two farm enterprises namely: maize and cassava rose from $1.81 (before intervention) to $3.76 per day (after intervention). This means that most of the direct beneficiaries of the intervention doubled their household income and progressed beyond the $1.90 per day poverty mark.

Table 13.1 summarises the goals set by the various platforms. The goals were premised on felt needs and required a response to such needs.

The interventions were designed based on technologies that are familiar to the beneficiaries. For instance, almost 95% of the rural farmers grow cassava and maize. Most of them are familiar with fish culture and poultry although they had no technical and financial capacities to enhance their activities in these ventures before the interventions. Most encouraging is that the farmers are not strange to the fact that the enterprises are practicable. The interventions, therefore, leverage on this familiarity to introduce the innovations such as yellow flesh cassava, and quality protein maize in addition to aquaculture and egg type poultry. It is therefore understandable that there were a high number of farmers adopting the introduced technologies as shown in Fig. 13.4

The beta-carotene (yellow flesh) cassava variety was fully embraced 100% with only poultry

Table 13.1 Community-driven needs and response (Innovation Platform)

S/no	Commodity	Needs/challenges	Innovation
1	Beta-carotene cassava (BCC)	Availability of stem cuttings and marketing of products	Discussion and multiplication of beta-carotene cassava stems. Sensitising rural household on nutritional potentials of BCC, popularisation, as well as show-casing BCC products for enhanced acceptability and marketing
2	Aquaculture	Additional fish ponds	Production, processing, branding, and marketing (expanding the frontier)
3	Poultry	Quick income venture, finance, and transportation	Promoting meat-type chicken production for fast income generation, processing (to reduce bulkiness and enhance transportation), branding, and marketing (value addition)
4	Quality protein maize	Pilfering of corn and Fulani cattle invasion	Rural socio-economic research to ameliorate pilfering and Fulani cattle invasion

Source: Authors

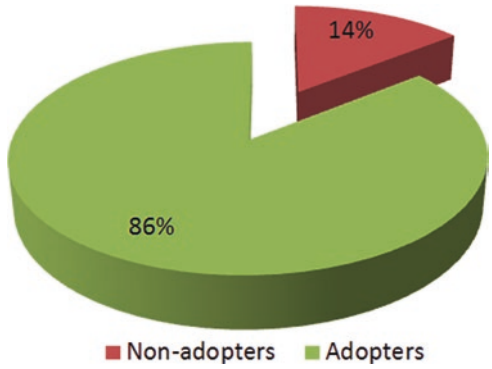

Fig. 13.4 Distribution of farmer adopting and not adopting the availed technologies (*n*=?)

suffering a low level of adoption possibly because of its high capital intensity and high level of risk (Fig. 13.5).

13.4 The Impact of Inventions

The broad objective of APP and related initiative is to improve the welfare of people around the university. This is important given that the construction of the university displaced some people and adversely affected their well-being. This quest addresses the objectives of SDGs.

The productivity of the farmers can only be assessed by comparison of the average commodity yield before and after interventions. Figure 13.6 shows that cassava productivity increased by 40% from previous 7629 kg per farmer to an average 10,688 kg; an increase of 3059 kg per farmer. The increase is attributable to the level of enthusiasm that greeted the introduction of beta-carotene cassava and the training given to the farmers on best agronomic practices. This also explains increased production in maize yield as well. The challenge with further progress in the case of maize is the non-availability of the seeds for introduced type of maize. The programme is campaigning for an increase in the production of QPM seeds as well as beta-carotene cassava stem cuttings.

Culture fishery as against capture fishery has improved the quantity of fish protein available in rural areas from 1310 to 9453 kg per year as depicted in Fig. 13.6. Prior to the intervention, there was no aquaculture in these communities. Instead all the consumed fish were from the local waters—streams and rivers. While this approach did avail fish to the local diet, it was inadequate to meet the dietary protein demand in these localities. The poultry proteins from eggs and spent layers have also improved the diet of many in rural communities. Figure 13.6 shows that the intervention added 1160 kg poultry meat to the protein from poultry in the study area.

Although the cassava yield was below the standard value recommended by the International Institute of Tropical Agriculture (IITA), there is an increase in the improvement from yields using old farming practices before the intervention. This suggests greater hope for

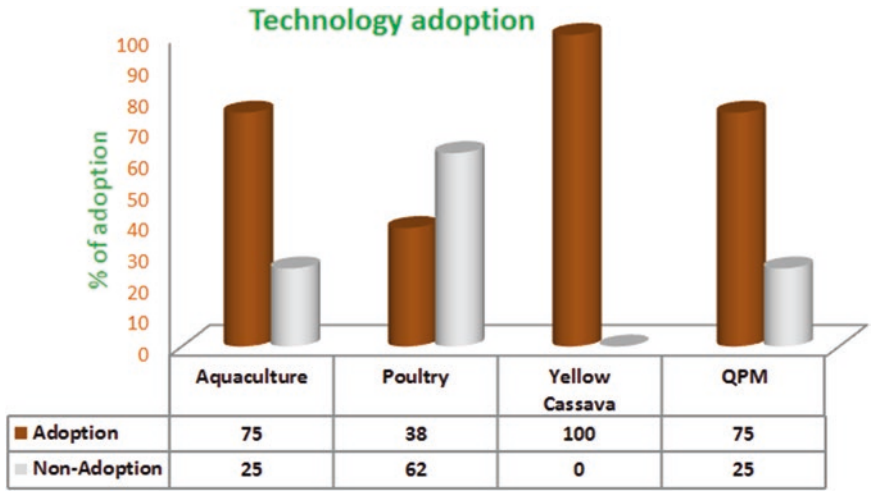

Fig. 13.5 Technology adoption rates for each intervention

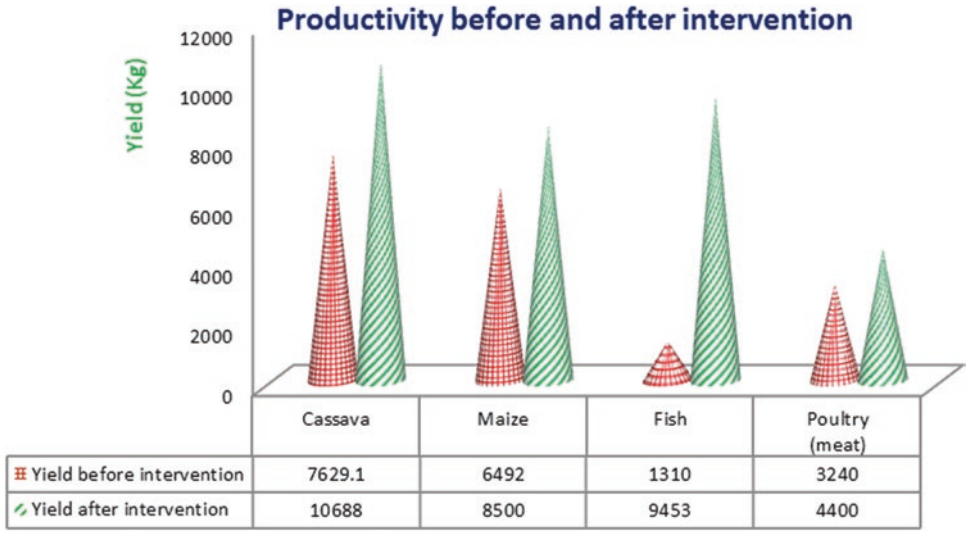

Fig. 13.6 Agricultural productivity before and after intervention

improved income as well as livelihoods of the cassava farm-families in these villages and perhaps beyond should other communities imitate the practices and varieties introduced by the intervention. This is an indication of a possibility of attaining the targets of SDGs 1 and 2 as well the potential for the achievement of the gender equality goal (SDG—Goal 5).

13.4.1 Success Stories

The FUNAAB-led APP appears to be yielding desired results concerning improving livelihoods, income, and nutrition. The programme reached about 1000 adult rural dwellers disaggregated into 400 women and 600 men in 2 years. The project contributed to the sustainable

Fig. 13.7 Laying birds in a personal farm of one of the beneficiaries (Source: Authors)

development goals in several ways. Foremost was an improvement of nutrition due to the availability of eggs, fish, quality protein maize, and beta-carotene cassava in the rural areas. Several women had a hope of earning a living rekindled; many children returned to school while some families made progress towards out of poverty bracket. Narratives for beneficiaries of the intervention attest to the positive effects of this intervention over a 2-year period. For instance, a woman who is an agricultural science teacher in a secondary school 6 km from the university campus transformed her husband's uncompleted building into a big poultry house after being inspired by the APP demonstration plot. She started with 140 birds just a few weeks after the capacity training. She said

> I developed an interest in poultry farming during my college days as an NCE student, but I did not receive encouragement from my parents. Probably I would not have ended up as a college tutor today but a farmer. The arrival of the university-led APP, however, served as a great impetus for me. I started with a few birds in my husband's uncompleted building and today with this success, I think I am a very happy poultry farmer. I have learnt quite a number of lessons and received some technical training ... I say thank you for this programme.

A 70-year-old crop farmer in a remote village called Ajegunle-Adao (about 20 km from the University campus) started with 210 pullet chicks. At the time of this study, he had a total of 783 birds comprising 278 layers and 505 (10 weeks old) pullets (Fig. 13.7). The project team was given the necessary technical support, including inputs sourcing and advisory services on pen construction, purchase of feeders, drinkers, feed, drugs, and vaccines. The man's household, now enjoys the steady income from poultry and fish production.

Two other farmers started their own poultry with 150 and 100 DOC (pullets) each, respectively. They equally made purchases of various utilities and equipment required for production. They were encouraged to brood together to minimise cost, maximise resources, and allow for effective management. One of the farmers from Lagos (the commercial capital of Nigeria) came to the area on the invitation of his late friend in the village. After the death of his friend, he decided to stay in the village cultivating land and taking daily wage as farm labour until the arrival of the APP. Today, he is grateful for the intervention as his livelihood and dignity have improved. He remarked:

Fig. 13.8 Harvest of fish from demonstration pond at Ajegunle-Adao (Source: Authors)

> I left Lagos to this village about fifteen years ago on the invitation of a friend (now late) who was an indigene of this village. The invitation was for me to come and start farming when things were rough economically in the city as a refrigerator technician. I have been growing crops, but the advent of APP interventions has transformed things for me; I now have a new ray of hope in life and in finance.

Fish were successfully reared to table size by the rural dwellers of Ajegunle-Adao and Agbede villages (Fig. 13.8). The practical training on fish culture and the sales of table size fishes tremendously improved the livelihood of the villagers. Their protein intake, as well as technical knowledge on aquaculture, was boosted. The demonstration afforded the project beneficiaries express their gratitude to the University for the interventions.

13.4.2 Interventions and the SDGs

There are clear indications that the activities of the APP in the adopted villages yielded results that relate to a few SDGs. The interventions effect on the people's attitude to agriculture and the outputs are becoming noticeable. Most encouraging is that there also are increases in productivity of some commodities such as yam, pepper which fall outside the targeted commodities. As a result, there is noticeable eagerness by many farmers to adopt the technologies currently being disseminated. Many non-beneficiaries close to communities where demonstrations are done are clamouring for the same type of interventions.

SDG 1 which harps the ending poverty in all its forms, everywhere has seven associated targets namely:

1. Improving access to sustainable livelihoods, entrepreneurial opportunities, and productive resources
2. Providing universal access to basic social services
3. Progressively developing social protection systems to support those who cannot support themselves
4. Empowering people living in poverty and their organisations
5. Addressing the disproportionate impact of poverty on women
6. Working with interested donors and recipients for poverty eradication
7. Intensifying international cooperation for poverty eradication

A careful assessment of the intervention outcomes indicates that four out of the seven targets

(1, 4, 5, and 6) are being addressed by the APP intervention. The project has contributed to the improvement of access to sustainable livelihoods of about 1000 farmers through the poultry and aquaculture projects introduced to the communities. With regular maintenance of ponds and other infrastructure, the benefiting communities can produce 600–1000 tons per annum of fresh fish, which can be taken up by the innovation platform and processed into the smoked form for a longer shelf life. Similarly, the supply of at least one crate of eggs per day is guaranteed in each community from the joint community project. In addition, beta-carotene cassava and quality protein maize are available in greater quantities in the communities. The value chain development by the innovation platform creates entrepreneurial opportunities and productive resources. The development of the value chains can provide more decent employment for the rural dwellers thereby empowering people and in the progress reducing or eradicating poverty.

As mentioned earlier, the project deliberately included 40% of women in the interventions, especially the value addition component which is of greater value in fighting poverty. It is important to note that individual members of the targeted community who adopted the innovations are better off in terms of livelihood; they are even potential employers of labour in rural areas and West Africa Agricultural Productivity Programme is recognised for funding the project.

SDG which aims at ending hunger, achieving food security and improving nutrition while promoting sustainable agriculture, also has five-point strategies namely:

1. Improve income of the most vulnerable in order to raise the purchasing power of the poorest two billion people, which in turn will create incremental demand, generating new jobs and jump-starting local economies. Investing in inclusive development is not just the right thing to do; it makes good business sense
2. Pave the road from farm to market
3. Reduce food waste
4. Encourage the cultivation of sustainable variety of crops
5. Make nutrition a priority, starting with a child's first 1000 days

The APP interventions directly address three out of five of these target strategies. Increased food production is already reducing hunger. Meanwhile, introduction of yellow flesh cassava, quality protein maize, culture of fresh water fish and modest egg type poultry will augment and eventually eradicate poor diet and nutrition issues as more rural people engaged is such activities. Furthermore, poverty is addressed through the improvement of income and provision of decent work directly linked to agriculture. More farmers have received a boost in their income because of the increase in yields.

Concerning attainment of goal number 2, the APP has immensely contributed to the improvement of income among the most vulnerable people in the communities. The project contributed to raising the purchasing power of at least 1000 poorest people in the target areas though daily income from eggs, fish, and products from yellow flesh (beta-carotene) cassava. The multiplier effect of this is incremental demand in processed food items thus generating new jobs thus propelling economic growth in the local economies in these rural areas. If sustainable, increases in agricultural productivity will pave the road from farm to market as consumers move from far and near into the village for the produce and products.

The interventions also touched on SDG 5 by addressing the first and fifth targets; ending all forms of discrimination against all women and girls everywhere and ensuring women's full and effective participation and equal opportunities for leadership at all levels of decision-making in political, economic, and public life. The project erased the wall of barrier between genders by the policy of including at least 40% of the women in the interventions.

Meanwhile, SDG 8 whose aim is to promote sustained, inclusive, and sustainable economic growth, full and productive employment and decent work for all was addressed by increased productivity targets. The promotion of the innovation platform is likely to foster the development

and growth of small- and medium-scale enterprises (SMEs) and skills development.

13.5 Conclusion

The outcomes of the 2-year FUNAAB-led APP suggest the entry points for direct participation by universities in the attainment of the sustainable development goals. Village adoption approach is a plausible way of establishing good university–community relationships. In the case of rural universities in developing countries, it breaks barriers between the intellectual communities in the universities and the rural population; giving the rural dwellers sense of attachment to institutions of higher learning. Such agriculture extension of activities directly hinged to specific SDGs and their targets. An enhancement of such activities presents a mean of demolishing development challenges and accelerating attainment of SDGs in the areas. With over 100 universities in Nigeria and 20 out of this 100 situated within rural areas, over 60 million rural Nigerians would be positively affected within a short time. This experience provides a model for other universities across Africa to assist in the push to realise the objectives of SDGs ensuring that these goals avoid the pitfall of the way MDGs.

References

Abegaz, K. H. (2018). Prevalence of undernourishment: Trend and contribution of East African countries to sub-Saharan Africa from 1991 to 2015. *Agriculture & Food Security, 7*(49). https://doi.org/10.1186/s40066-018-0198-9.

Agbodike, C. C. (2010). Population growth and the dilemma of rural life and economy in Nigeria. *Unizik Journal of Arts and Humanities, 11*(1), 1–21. https://doi.org/10.4314/ujah.v11i1.66304.

Akpor, O. B., & Muchie, M. (2011). Challenges in meeting the MDGS: The Nigerian drinking water supply and distribution sector. *Journal of Environmental Science and Technology, 4*(5), 480–489.

Bhowmik, J., Selim S. A., Huq, S. (2017). *The role of universities in achieving the sustainable development goals. CSD-ULAB and ICCCAD Policy Brief*. ULAB, Dhaka. Retrieved March 5, 2019, from http://www.icccad.net/wp-content/uploads/2015/12/Policy-Brief-on-role-of-Universities-inachieving-SDGs.pdf

Egbe, E. J. (2014). Rural and community development in Nigeria: An assessment. *Arabian Journal of Business and Management Review (Nigerian Chapter), 2*(2), 17–30.

Enete, A.A., & Amusa, T. A., (2010). *Challenges of agricultural adaptation to climate change in Nigeria: A synthesis from the literature*. Field Actions Science Reports [Online], Vol. 4. Retrieved from http://journals.openedition.org/factsreports/678

Fourie, W. (2018). The role of researchers. In W. Fourie (Ed.), *Implementing the sustainable development goals in South Africa: Challenges & opportunities* (pp. 40–45). South African SDG Hub.

Fraussen, B., & Halpin, D. (2016). Think tanks and strategic policy-making: The contribution of think tanks to policy advisory systems. *Policy Sciences, 50*(1). https://doi.org/10.1007/s11077-016-9246-0.

Haruna, M. J., & Liman, B. M. (2015). Challenges facing educating Nigerian child in rural areas: Implications for national development. In *Proceeding of the 3rd Global Summit on Education, Kuala Lumpur, Malaysia*. Retrieved March 5, 2019, from https://worldconferences.net/proceedings/gse2015/paper%20gse15/G%20088%20CHALLENGES%20FACING%20EDUCATING%20NIGERIAN%20CHILD%20IN%20RURAL%20AREAS%20IMPLICATIONS%20FOR%20NATIONAL%20DEVELOPMENT%20%-20M.%20J.%20HARUNA.pdf

Ikelegbe, O. O., & Edokpa, D. A. (2014). Agricultural production, food and nutrition security in rural Benin, Nigeria. *African Journal of Food, Agriculture, Nutrition and Development, 13*(5), 8388–8400.

Jack, J. T. C. B., Ogbanga, M. M., & Odubo, T. R. (2018). Energy poverty and environmental sustainability challenges in Nigeria. *Ilorin Journal of Sociology, 10*(1), 19–31.

Kazeem, A., Jensen, L., & Stokes, C. S. (2010). School attendance in Nigeria: Understanding the impact and intersection of gender, urban-rural residence, and socioeconomic status. *Comparative Education Review, 54*(2), 295–319.

Khan, A. R., & Khandaker, S. (2017). A critical insight into policy implementation and implementation performance. *Public Policy and Administration, 15*(4), 538–548. https://doi.org/10.13165/VPA-16-15-4-02.

Khan, A., & Cheri, L. (2016). An examination of poverty as the foundation of crisis in northern Nigeria. *Insight on Africa, 8*(1), 59–71.

Levi, L., & Rothstein, B. (2018). *Universities must lead on sustainable development goals*. University World News. Retrieved March 5, 2019, from https://www.universityworldnews.com/post.php?story=20181106131352348

Ofana, O. G., Efefiom, E. C., & Omini, E. E. (2016). Constraints to agricultural development in Nigeria. *International Journal of Development and Economic Sustainability, 4*(2), 19–33.

Ojikutu, A. (2018). Livelihood diversification and welfare of rural households in Ondo state, Nigeria. *Journal of Development and Agricultural Economics, 5*(12), 482–489.

Omotayo, A. O. (2016). Farming households' environment, nutrition and health interplay in southwest, Nigeria. *International Journal of Scientific Research in Agricultural Sciences, 3*(3), 084–098.

Oyedepo J. A., Oloruntoba, A. O., & Oyedepo E. O. (2018). Spatial characterization of project displaced communities for geographical targeting of interventions. In *Proceedings of the 7th Digital Earth Summit*, *Eljadida Morocco 17-20 April, 2018* (pp. 145–167). Chouaib Doukkali University.

Prasanna, B. M., Vasal, S. K., Kassahun, B., & Singh, N. N. (2001). Quality protein maize. *Current Science, 81*(10), 1308–1319.

SDSN General Assembly. (2017). *The role of higher education to foster sustainable development: Practices, tools and solutions*. Position paper. Retrieved from www.sdsn-mediterranean.unisi.it/wp-content/uploads/sites/30/2017/08/Testo-positional-CON-FIG-1.pdf

Ucha, C. (2010). Poverty in Nigeria: Some dimensions and contributing factors global. *Majority E-Journal, 1*(1), 46–56.

Uduji, J. I., & Okolo-Obasi, E. N. (2016). Multinational oil firms' CSR initiatives in Nigeria: The need of rural farmers in host communities. *Journal of International Development banner, 29*(3), 308–329.

UNICEF. (2012). All children in school by 2015: Global initiative on out-of-school children. *Nigeria country study conducted within the conceptual and methodology framework (CMF)* (p. 91). Retrieved March 4, 2019, from http://allinschool.org/wp-content/uploads/2014/08/nigeria-ooscireport-2012.pdf

Vanclay, F. (2017). Project-induced displacement and resettlement: From impoverishment risks to an opportunity for development? *Impact Assessment and Project Appraisal, 35*(1), 3–21.