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**FINAL REPORT ON
UNIDO PROJECT NO. US/NIR/02/150**

Submitted by:

**AFRICAN REGIONAL CENTRE FOR ENGINEERING DESIGN
AND MANUFACTURING (ARCEDEM),
IBADAN, NIGERIA.**

Dec 12, 2005

FINAL REPORT ON IMPLEMENTATION OF UNIDO

CONTRACT NO. 2004/096

Introduction

Upon defining the project objectives and components, the African Regional Centre for Engineering Design and Manufacturing (ARCEDEM) and the United Nations Industrial Development Organization (UNIDO) signed a contract in May 2004.

The Contract provided for the delivery of equipment and provision of services in three "Project Areas" – ABIA, OYO and BENUE STATES – of Nigeria.

ARCEDEM planned and executed the fabrication of the contracted Machines/Equipment.

As soon as UNIDO provided contract information on the "Work Sites" in December 2004, ARCEDEM promptly went to work by visiting or otherwise contacting the named officials at the "Work Sites".

OYO STATE

On Tuesday 24th December 2004, a team of ARCEDEM technical staff traveled to Oyo Town to assess the readiness of the beneficiary. The team was received by the Coordinator, Mrs. Alade, who took them to the Work site after a small briefing.

The team inspected the work done and found that the (2) buildings were in fairly advanced stage of completion. The roofing was yet to commence and concreting of the floors had not yet started. Work was still going on, on the factory walls.

Upon completion of the inspection, it was obvious that the "Work Site" in Oyo State was not ready to receive the equipment and services earmarked for it. The Group Leader of Ifelodun Cooperative Processing, Mrs. Alade, formally requested ARCEDEM to postpone sending the equipment until she was ready. She pledged to contact ARCEDEM as soon as they were ready.

The machines were eventually delivered to a temporary location in Oyo on 30th July, 2005. They could not be delivered or installed at the designated place because it was not ready. When ARCEDEM was notified that the site had become ready and secure, a team was sent to undertake installation of the machines (August 25- 28, 2005).

In preparation for the Training Sessions planned for Oyo, a team was sent to Oyo on 24th September to complete the installation and test-run the machines. The training programme commenced on 26th October. Although none of the trainees was selected to be specifically responsible for machine operation, the machines were put in operation and demonstrated throughout October 26 – 28. Full practical exercises started on October 29 with grating of 200kg cassava, pressing with Double Screw Press and production of cassava chips. Because the training concentrated on producing various cassava snacks, only the cassava chipper, the grater and double screw press were extensively used. The pulping machine, sieving machine, dry mill, rotary dryer and fryer were not used in those operations.

The UNIDO Consultant made some observations:

- too much vibration from grater and dry mill,
- exhaust pipe needed to be extended out of frying area.

These observations were noted and rectified October 13 – 14. Machines were concreted as suggested and a silencer extension was provided for the Lister Engine that powered the rotary dryer.

Handing- over activities took place on November 9, 2005 in the presence of the UNIDO Project Coordinator. The machines were again demonstrated and short operational and maintenance training given to operators. At the end, both beneficiary/operator and Project Coordinator expressed satisfaction with the exercise.

Installation problems had prevented the test-run and demonstration of the rotary dryer. These problems were resolved November 12 – 16, 2005.

The dryer was successfully tested and used in processing cassava to fufu, a food item. During test running, the beneficiary's technician was present. He confirmed that the rotary dryer is in excellent working condition for drying.

Finally, the machine and processed cassava were handed over to the beneficiary, thus completing the Oyo segment of the project.

BENUE STATE

An ARCEDEM team arrived Makurdi on 25th January, 2005. The "Work Site" is some 150km from Makurdi, the state capital. Installation works did not begin until two days later. As at 29th January, all machines had been installed. The beneficiary officials however requested postponement of the training component and had not selected the potential trainees.

Early in July, ARCEDEM was notified that a team from UNIDO was to arrive from Vienna to commission the project. The commissioning was scheduled for July 25 and a two-day training session was planned for completion just before the commissioning.

ARCEDEM promptly dispatched its staff for these activities, arriving at the community on 25th July. Training began on 26th July after a brief opening ceremony. Four (4) machine operators, who had been pre-selected, underwent the training which covered:

- ❖ *Basic Introduction to each machine*
- ❖ *Machine Operation Guidelines and Procedures*
- ❖ *Safety Awareness*

The machines supplied were cassava grater, sieving machine, chipping machine, dry mill and double screw press. A cemented platform was provided for drying.

They were test-run individually and severally in the presence of the UNIDO team. Demonstration sessions were conducted involving full cassava processing.

From the feed-backs we got, we concluded that both the community leaders and beneficiaries, the UNIDO representatives and the trainees were satisfied with the machine quality and the quality of operational training.

The closing ceremony took place on Friday July 29, 2005.

Although, all the machines first delivered in January were successfully test-run in July and were in use since then, ARCEDEM was notified in October that the Grater and Dry Mill were "not functional". Our enquiries indicated that the prime movers functioned perfectly, and that whatever problems arose were minor and could have been handled by local operators in Benue State without ARCEDEM's involvement.

Nevertheless, at the insistence of the UNIDO Consultant in Lagos, we again sent our technical crew to Makurdi on Dec. 7, 2005 to rectify any problems. Our technician arrived at the site on 8th December and immediately contacted the project staff. He discovered that some parts of the grating device had become rusty as a result of non-cleaning of the machine after use. The acid content in cassava makes such cleaning mandatory, as had been pointed out during the *training programme*.

Furthermore, the project staff had changed the packing planks supplied by ARCEDEM. In the absence of a carpenter, new packing device could not be constructed. So, the old planks were put together to reset the machine. The grater was now tested and it performed well. The project staffs were advised to produce another wood packing based on the ARCEDEM sample, whenever a carpenter was available. This would ensure excellent performance. The technician then inspected the Dry Mill about which there was a complaint. The project staff said they could not operate it because of some adjustment that was required on the grinding discs. Our technician made the adjustment instantly and showed them how. He then lubricated some major, moving parts for effective operation December 8-9. Thereafter, the machine was tested using it to grind over 30kg of dried cassava. The machine worked and the output was excellent.

Finally, our technician briefed the project team of the need for proper maintenance. He stressed the need for a competent local technician to take care of the machines and handle minor problems as they arose.

It was clear that the complaints reported were so minor that competent local technicians could have resolved them without ARCEDEM's intervention.

ABIA STATE (UMUAHIA)

Enormous efforts were made early in 2005 to contact the official at the Abia State "Work Site". These efforts ultimately yielded results when the responsible official,

Dr. Okoro, was located in Houston, Texas, where he had been on an official assignment. He subsequently informed ARCEDEM that he was not planning to be back at the "Work Site" before mid-February, 2005. He requested that the ARCEDEM team contact him around then to work out a plan for providing the equipment and services thereafter.

The machines were delivered to site on 11th July 2005. Installation commenced on Tuesday 12th July and was completed within 48 hours. The machines delivered with their accessories were:

- Cassava Grater (1)
- Dry Mill (1)
- Double Screw Press with 30t Jack (2)
- Sifting machine with petrol engine (1)
- Chipping machine with diesel engine (1)
- 6HP Diesel Engine
- Stainless Frying Pan (1)

An earlier training programme fixed for October 10 could not begin as the UNIDO consultant had made some observations which ARCEDEM was required to confirm and, where necessary, address.

The observations were in the following areas:

- ❖ Need to install and test-run all machinery,
- ❖ Need to install the fryer and chimney "professionally"
- ❖ Installation of the exhaust pipe/wrong size and location of the drying platform
- ❖ "Rough finishing" of the installations

ARCEDEM therefore sought postponement by at least one week.

However, ARCEDEM sent its personnel to Umuahia, October 26-29 to address the observations in readiness for the Training and Commissioning.

The ARCEDEM personnel arrived Umuahia October 27 but could not get to the site as a result of a violent attack by some apparently aggrieved villagers. On Friday 28th October, the situation was better and our staff proceeded to ascertain the level of work required to be done. Work was also commenced on the drying platform. Because, of the hard flooring surface, the machines earlier installed could not be removed. However, special concrete provisions were made for their legs to minimize vibrations during operations. A

new frying pot was completed and put in place to replace the one earlier built. All necessary parts of the machines were installed and the machines were test-run. In view of the security situation at the Work Site, the UNIDO Consultant put off the training which we had expected to begin on 1st November.

ARCEDEM

AFRICAN REGIONAL CENTRE FOR
ENGINEERING DESIGN AND
MANUFACTURING



CENTRE REGIONAL AFRICAIN DE
CONCEPTION ET DE FABRICATION
TECHNIQUES

(SPONSORED BY UNITED NATIONS ECONOMIC COMMISSION FOR AFRICA)
(PARRAINE PAR LA COMMISSION ECONOMIQUE DES NATIONS UNIES POUR L'AFRIQUE)

505/Vol.IV/001/05

Ibadan 25th January, 2005

DELIVERY NOTE

UNIDO Representative,
Benue State,
Nigeria.

S/N	DESCRIPTION	QUANTITY
1.	Dry Mill Machine	1 pc.
2.	Chipping Machine	1 pc.
3.	Shieving Machine	1 pc.
4.	Cassava Grater Machine	1 pc.
5.	Pan Fryer	1 pc.
6.	Lister Diesel Engine	1 pc.
7.	Double Press Machines	2 pcs.
8.	Installation Accessories	

Dinnah Alune
Alune

Received By/Date

27/01/2005

Delivered By/Date

29/01/005

GUBEI WOMEN CASSAVA PROCESSORS
COOPERATIVE SOCIETY LIMITED,
KWANDE LGA, BENUÉ STATE,
27th JANUARY 2005.

THE DEPUTY DIRECTOR,
ARCEBEM,
IBADAN.

SIR

RECEIPT OF MACHINERY AND ACCESSORIES.

This is to write and acknowledge the receipt of the Cassava Processing Machines and other Accessories sent to the Cooperative Society.

The Machinery and Accessories were received on the 27th day of January, 2005. And we are very happy over the receipt of these. The installation has also been performed. However, the Society is yet to receive training on the machines.

We are therefore requesting that your recourse persons be sent to us so that they will start the training with us on the 7th February 2005. The Cooperators would be happy if request is honoured and given a considerable attention. Since they are eager and willing to start production.

Thanks for your cooperation in anticipation.

Yours

Sincerely

[Signature] 28/1/2005

Comfort M. Shande *[Signature]*
PRESIDENT, 28-1-05

ASST. DIRECTOR WIA BENUÉ

GUBEI WOMEN CASSAVA PROCESSORS
COOPERATIVE SOCIETY LIMITED,
BENUÉ STATE

STATE

ARCEDEM

AFRICAN REGIONAL CENTRE FOR
ENGINEERING DESIGN AND
MANUFACTURING



CENTRE REGIONAL AFRICAIN DE
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(PARRAINE PAR LA COMMISSION ECONOMIQUE DES NATIONS UNIES POUR L'AFRIQUE)

260/FAO/008/05

Ibadan, 7th July, 2005

DELIVERY NOTE

UNIDO Representative,
Abia State,
Nigeria.

S/N	DESCRIPTION	QUANTITY
1	Cassava grater machine	1pc.
2	Dry mill machine	1pc.
3	Double screw press + 30T Jack	2 pcs.
4	Double pan stainless fryer on firing chamber	1 pc
5	Shieving machine	1pc.
6	Chipping machine	1pc.
7	6 HP Diesel Engines	
8	Installation Accessories	

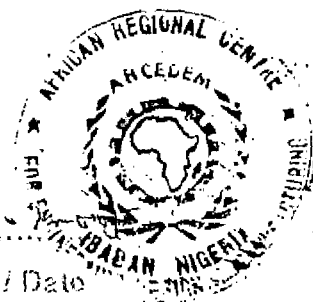
Peter Onwuka
10/7/2005

Received By / Date

Peter Onwuka
10/7/2005

Delivered By / Date

Yusuf S.K. 10-07-005



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260/YAO/009/05

27th July, 2005

Oyo UNIDO,
Oyo Town,
Oyo, Oyo State.

WAY BILL

<u>S/N</u>	<u>DESCRIPTION</u>	<u>QUANTITY</u>
1.	Cassava Grater machine	1 pc.
2.	Shifter machine	1 pc.
3.	Chipping machine	1 pc.
4.	Double Screw Press machine	2 pos.
5.	Dry Mill machine	1 pc.
6.	6 HP Diesel Engine	1 pc.
7.	Pulping machine	1 pc.
8.	Stainless Fryer	1 pc.
9.	Rotary Dryer	1 pc.
10.	Hydraulic Jack 30T	2 pos. <i>sub total</i>
11.	Installation Accessories	
12.	8 HP Diesel Engine	1 pc.

M. Ade 30-07-05
.....
Dispatcher's Signature/Date

A. Ade 27/7/05
.....
Receiver's Signature/Date