

FOOD AND AGRICULTURE ORGANISATION OF
THE UNITED NATION

Preliminary Visit to the Project Site and Discussions
on the Project Document
"Integrated Grading and Solar Drying of Meat"

Project No : TCP./GHA/4452 (c)

Starting Date : September, 1994

Completion Date: February, 1996

Government Ministry
responsible for the Project: Ministry of Food & Agriculture

Project Site : Animal Science Dept., UST, Kumasi

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by National Consultant

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INTRODUCTION

Following the arrival to Ghana of the international consultant for the above project, a familiarisation trip was arranged by the FAO Regional Office for Africa, Accra, for the international and national consultants for the project to visit the project site at the Animal Science Department, University of Science and Technology, Kumasi.

The objective of the trip was to access facilities on the ground for the project and discuss the project document with the other project team members based at the U S T, Kumasi.

Following thorough discussions on the project document, the below listed suggestions and proposals were agreed upon by the project team, in light of the successful execution of the project.

(i) Project Outputs

- a. The project team members agreed that as much as possible, natural convection solar dryers will be the technology of choice, but provision was made for the incorporation of a forced draft when necessary to improve air flow within the dryer and therefore facilitate faster drying rate. The forced draft will be provided by the incorporation of photo voltaic (PV) cells, connected to compatible fans.
- b. In terms of running the natural convection solar dryers at "commercial style", the project team members agreed that raw meat strips of about 30kg. weight to be dried, which is approximately equivalent to the lean on an average cow in Ghana should be regarded as "commercial style" operation.
- c. Most slaughter house by-products were regarded as edible in Ghana and therefore sold as such. The project team therefore agreed that, pet food production for export was technically uneconomical, in addition to international quality standards that must be met before exportation. At best, formulated pet foods will be considered for local use only.

However, inedibles such as blood, gut contents, etc., will be treated and solar dried for incorporation into animal feeds.

- d. With regards to economic feasibility studies on solar dehydrated meat products, it was agreed that additional assistance will be sought from the Ministry of Food and Agriculture sector responsible for extension work and transfer of appropriate technology to the rural and urban population.
- ii. **Work Plan**
 - a. The project team agreed that plain polyethylene sheets locally available in Ghana will be used for the construction of solar dryers.
 - b. It was also agreed that chemical, microbiological and sensory analysis will be spread between the Food Research Institute and the Animal Science Department, UST, Kumasi, as deemed appropriate.
 - c. The international consultant indicated that his programme of visits to the project site will be changed from two to three split missions. His next mission to Ghana was not confirmed but he indicated that it will be between February and March, 1995. During this period, the project team agreed that the international consultant will arrange for the purchase of some listed items (including equipment) required for the project. (Please refer to section (d) below for the list of items.

To take advantage of the remaining dry season for the year (between November 1994 and February, 1995), the project team agreed that some two selected solar dryer designs should be constructed and tried by the national consultant. (Please refer to Annex III for the solar dryer design. The other solar dryer structure not presented in Annex III is similar in design to the one presented. The only difference is that, the drying chamber is completely insulated with two inch thick saw dust compressed between two half-inch thick plywood).

On arrival of the international consultant sometime next year, it was agreed by the project team that the international consultant evaluates the solar dryers constructed and results of dried meat products and weather characteristics obtained from the trials carried out by the national consultant for any modifications.

The national consultant proposed three weeks to accomplish the above task as follows: two weeks for material purchase and solar dryer construction and one week for drying trials and weather data monitoring. This work will be carried out between 1 - 22 December, 1994, depending upon the availability and release of project funds for material purchase.

d. The project team members agreed that the underlisted items and equipment be arranged for purchase abroad by the international consultant:

- Two temperature probes
- Two relative humidity probes
- One anemometer
- Photovoltaic cells or lux meter for measuring solar radiation. In the absence of the above, it was agreed that average data values for solar radiation in Kumasi will be obtained from the Meteorological Ser. Dept.
- Data logger or meter to connect the above units.
- Meat mincer (medium capacity)
- Weighing Scale
- Vacuum packaging machine and vacuum packaging pouches of specific dimensions.
- Protective clothing/aprons/boots/metal gloves
- Electronic thermometer
- pH meter
- Potassium or sodium sorbate
- Potassium or sodium metabisulphite
- A modular tunnel dryer to be used as a reference dryer.

All other materials required for the project was agreed to be purchased locally.

- e. It was also agreed that the design of the solar dryers to be constructed must be such that it will have a multi-purpose service, for the drying of other foodstuff such as root crops, vegetables, fruits, herbs, etc.

(iii) **Disbursement of project funds**

It was agreed by the project team members that communication between Rome, FAO Regional Office for Africa, Accra, and the project site at UST, Kumasi must be speeded up to enable quick decision taking and information transfer to facilitate the successful execution of the project in good time.

It was also decided that the FAO Regional Office for Africa, Accra, should advise the project team on modalities in place for the request and transfer of funds required for purchases and other activities connected with the project.

Annex I:**Itinerary of preliminary mission to project site,
UST, Kumasi by the international and national consultants**

4/11/94 : Travel with FAO vehicle from Accra to Kumasi

5/11/94-10/11/94:

- a. Visit to project site at the Animal Science Department farms.
- b. Courtesy call on Dean, Faculty of Agriculture, UST, the Vice Chancellor, UST, and other members of the Animal Science Department, UST, Kumasi.
- c. Discussion on project document and summary of suggestions and proposals.
- d. Visit to the local timber market and other shops to collect material estimates required for the construction of two solar dryers.

11/11/94 : Travel by private vehicle from Kumasi to Accra.

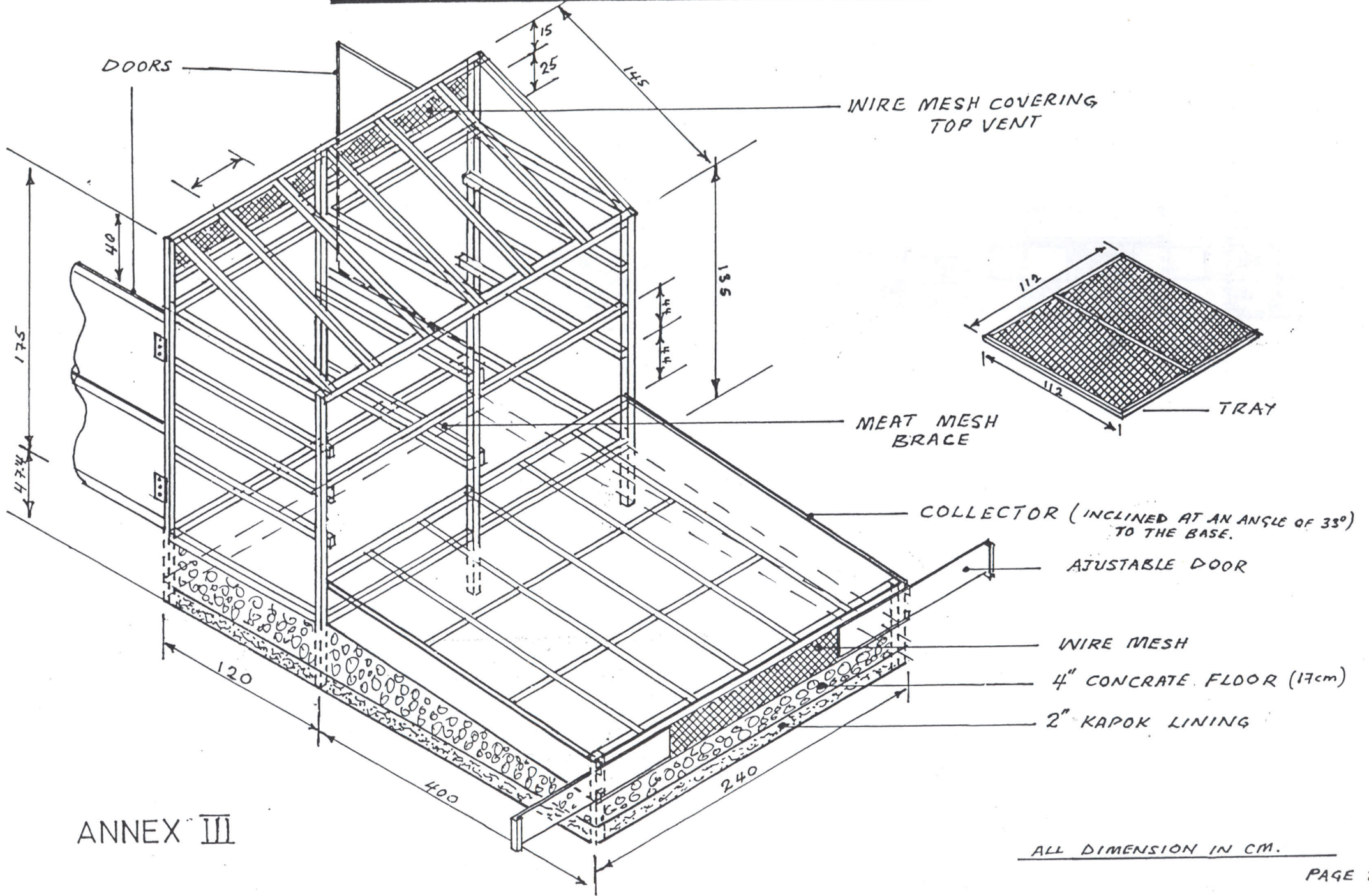
Annex II:

Material cost estimates for the construction of two types of solar dryers

I t e m	Qty.	Unit Cost (Cedis)	Total Cost (Cedis)
Wood			
1. Emery 2"x2"x16'	40	1,400	56,000
2. Emery 2"x4"x16'	15	2,800	42,000
3. Redwood or Emery boards (cut into ½"x2"x16')	5	7,500	37,500
4. Redwood or Emery boards (cut into 1"x2'x16')	10	7,500	75,000
5. Half-inch thick Sapele lined plywood (4'x8')	8	15,000	120,000
6. Planing & cutting charges	-	-	10,000
Other Materials:			
7. Welded mesh (4'x8')	6	13,000	78,000
8. Aluminium netting	2bdles	42,000	84,000
9. Nails: 1", 1½", 2", 4"	5lbs each	3,000 per 5lbs. each	12,000
10. White carpenter's glue	2gals.	12,000	24,000
11. Cast iron or aluminium sheeting (2mm. thickness)	3	15,000	45,000
12. Plain polyethene sheeting (0.04mm thickness)	100m	700	70,000
13. Black enamel paint	4gals	11,000	44,000
14. Thinner	3gals	7,000	21,000
15. Solignum	3 "	4,000	12,000
16. Cement	10bags	4,500	45,000
17. Stone chippings	2trips	45,000	90,000
18. Sand	2 "	35,000	70,000
19. Brass screws	50units	150	7,500

I t e m	Qty.	Unit Cost	Total Cost (Cedis)
20. Brass hinges	4pairs	3000/pair	12,000
21. Staple and hook	4 "	1000/pair	4,000
22. 5inch oil brush	1 unit	2000	2,000
23. Kapok (unprocessed cotton wool)	40bags	3000	120,000
T o t a l			1,081,000
Plus 10% contingency			108,100
GRAND TOTAL			¢1,189,100

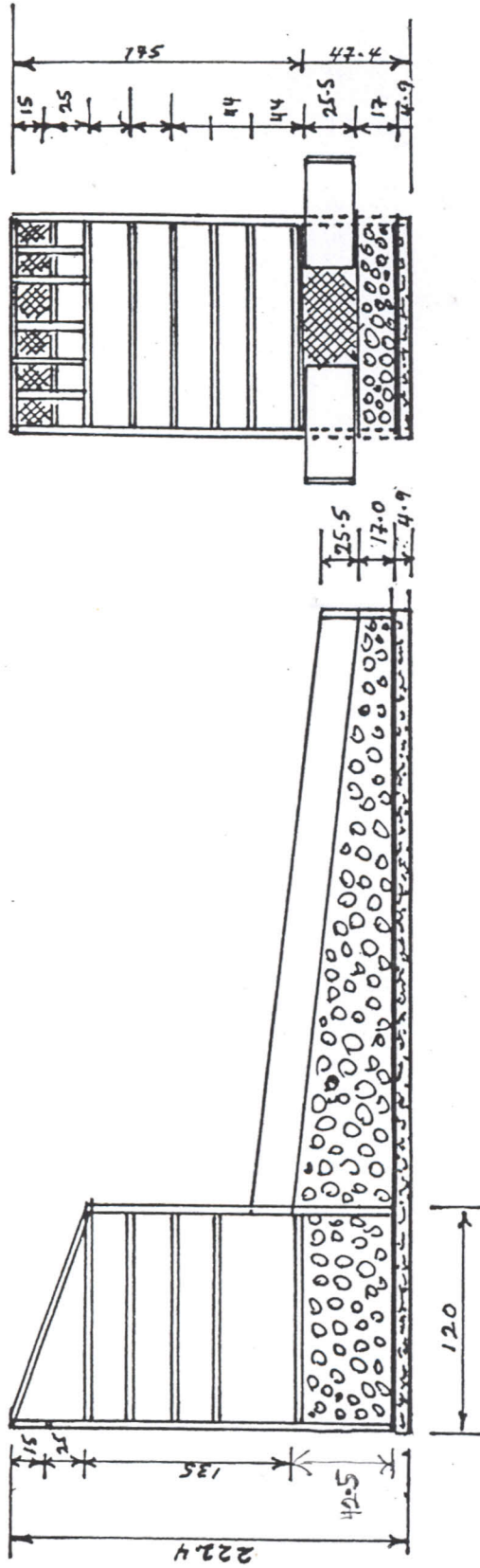
IMPROVED CABINET SOLAR DRYER



ANNEX III

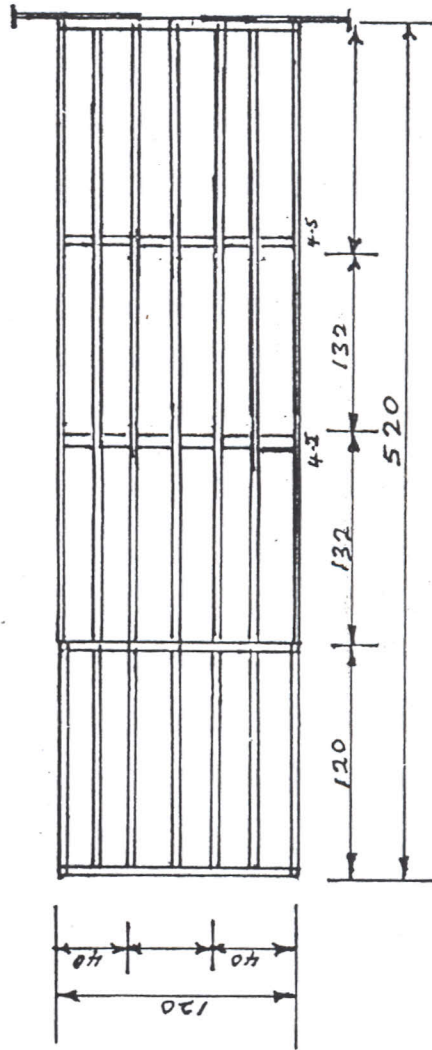
ALL DIMENSION IN CM.

IMPROVED CABINET SOLAR DRYER



END VIEW

FRONT VIEW



PLAN

ALL DIMENSIONS IN CM.