PANEL 2 : PROCESSING

TAKING THE ECONOMIC OPPORTUNITIES OF LOCAL PROCESSING OF CASHEW: HOW DO WE MAKE PROCESSING MORE COMPETITIVE IN THE SAHEL ?

SELECTING THE APPROPRIATE EQUIPMENT FOR CASHEW PROCESSING WITH THE AIM OF ENHANCING COMPETITIVENESS

Presented by ABDOULAYE DENE
Consultant in Industrial Engineeering

OUTLINE

- INTRODUCTION
- REQUIREMENTS FOR COMPETITIVE PROCESSING
- PERFORMANCE INDICATORS OF A CASHEW PROCESSING UNIT
- DIFFERENT TECHNOLOGIES USED IN WEST AFRICA
- PROCESSING MODELS SEEN IN WEST AFRICA
- MAKING A SATISFACTORY TECHNOLOGY CHOICE
- ACQUIRING THE EQUIPMENT
- WHAT DO WE RETAIN ?
- SPECIFIC ADVICE FOR CHOOSING EQUIPMENT

INTRODUCTION

- According to the report “ACI Cashew Equipment Study”, the choice of appropriate equipment impacts the success of processing in 7/9 key factors identified.
- Several results of an analysis of cashew processing in Sub-Saharan Africa show difficulties in the level of mastery of processing technologies. Indeed, the local promoters often make choices of ill-adapted technologies and sometimes at huge costs due to lack of information. The aim of this presentation is to provide processing units with adequate information for the selection of equipment in order to enhance their competitiveness.

REQUIREMENTS FOR COMPETITIVE PROCESSING

Entry	Process	Exit
Quality and less expensive raw materials.	Quantitative and qualitative production at every stage.	Finished products that meet international standards.
In the course of the process, which is the focus of this presentation, it must be noted that competitivene processing requires a quantitative and qualitative production at low expense. For this reason, it is important for every local processor of cashew to acquire suitable and effective equipment. This stands out as a challenge that every local processing unit must address.		

PERFORMANCE INDICATORS DURING THE PROCESS

- **Quantity**
  - Optimal utilization of installed capacity: ≥ 80%
  - Output of the process : 21-23%
- **Quality**
  - Output of whole kernels: ≥ 70%
  - Output of white kernels: > 80%
  - Kernels that do not pose any danger to consumers and meet international standards

ALL THE ABOVE REQUIRE SUITABLE EQUIPMENT AND MASTERY OF THEIR OPERATIONS

THE DIFFERENT TECHNOLOGIES USED IN WEST AFRICA

	Technologies	Characteristics
1	Indian	• Suitable for small and medium-scale units • Average investments • Easy technical control
2	Vietnamese	• Suitable for medium and large-scale units • Average investments • Easy technical control
3	Brazilian	• Suitable for medium and large-scale units • Substantial investments • Technology not mastered in West Africa

	Technologies	Characteristics
4	Sri Lankan	• Small-scale units (satellite units) • Low investments • Easy control
5	Chinese	• In the process of developing • Not very experienced in cashew processing (re-adapted technology)
6	Italian	• Large to very large units • Huge investments • Require advanced technical knowledge
7	Local	• Availability quite uncertain • Low investments • Quality is fair

PROCESSING MODELS

Manual Model
Small Capacity

- **Manual Technology**
- **Small Units (<1000 t/year)**
- Solely suitable for the local market
- **Very Low Initial Investment**
- **Easy supply of raw cashew nuts**

Semi-Mechanized Model
Average Capacity

- **Mechanized technology to a lesser extent,**
- **Average size (1000-5000 t/year),** with gradual expansion
- **Moderate Investment**
- **Low overhead expenses**
- **High productivity**

Mechanized Model
Large Capacity

- **Large-scale mechanized technology**
- **Large-sized plants (>5.000 t/an)**
- **Good hygienic conditions**
- **More appropriate for huge volumes and a large use of capacity**
- **Cost control**

Source : technoserve

Manual Model
Small Capacity

- **Too small** to reach the quality and quantity required at the international level
- **Very high cost of production**, because of very high level of recurrent expenses
- **Poor hygienic conditions**
- Need for a **huge availability of labor force**

Semi-Mechanized Model
Average Capacity

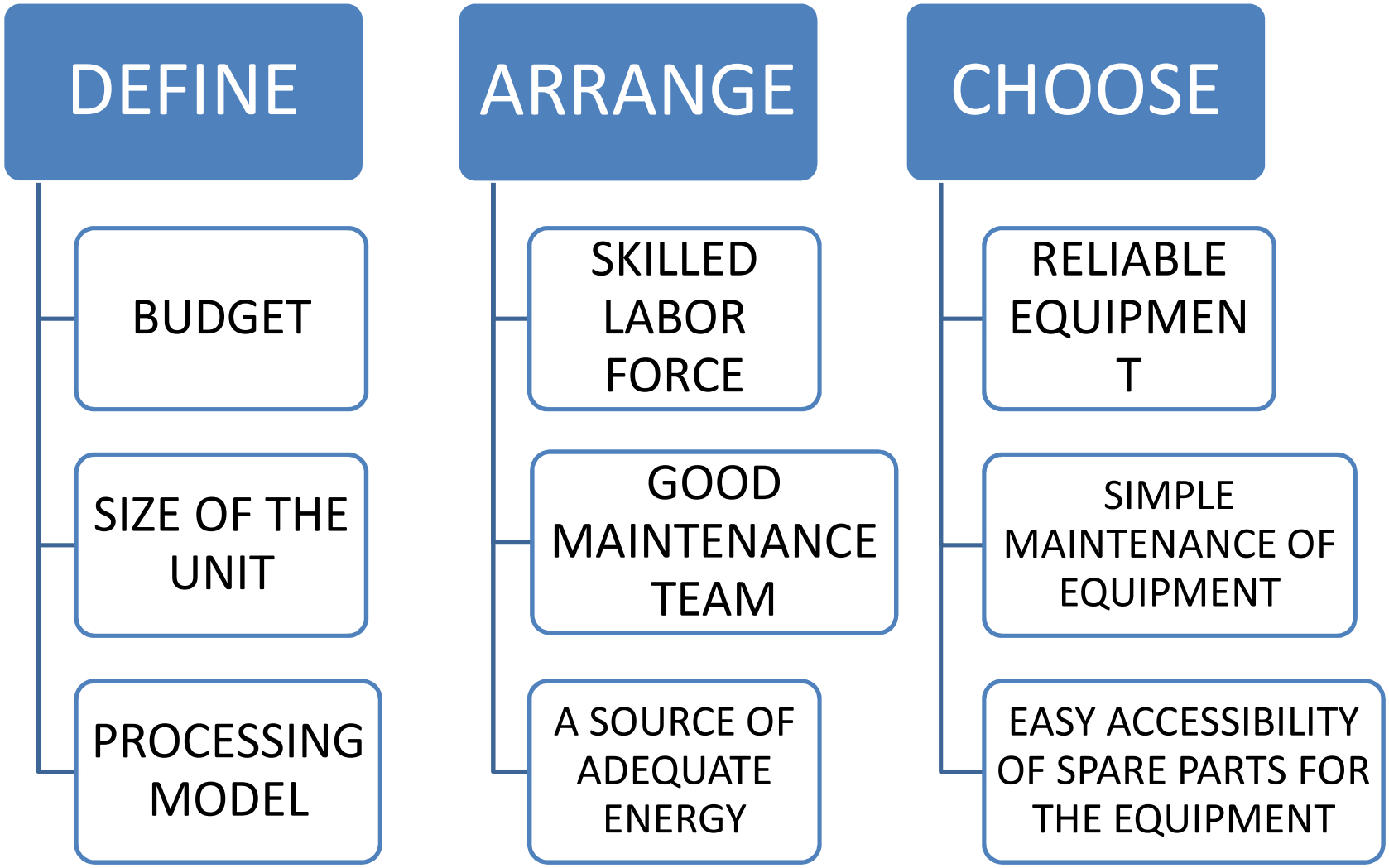
- **Very good quality** (lots of whole kernels and white almonds)
- **Direct link with the producers**
- **Need for in-depth managerial training**
- **Easier quality certification**
- **Need for a huge labor force**

Mechanized Model
Large Capacity

- **Management is more difficult** (need for foreign expertise)
- **Huge Investments**
- **Very high maintenance costs**
- **Supply of raw cashew nuts is highly problematic**

Source : technoserve

HOW DOES ONE MAKE A SATISFACTORY TECHNOLOGICAL CHOICE?



HOW TO ACQUIRE THE EQUIPMENT

Preparation

- Select the suppliers;
- Request for three quotations.

Analysis

- Visit the suppliers;
- Visit the plants already using the equipment of these suppliers and assess the equipment;
- Analyze the offers;
- Keep one or several suppliers.

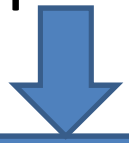
Choice of equipment

- Assess the processing stages according to the model and size;
- Choose the appropriate equipment for each stage;
- Order the equipment.

It must be noted that to succeed in these stages, the processing unit may need the support of advisory bodies such as ACA or the support of consultants.

WHAT ARE THE TAKE-HOME MESSAGES?

- Selection of equipment appropriate for your case is critical for your competitiveness.
- Main concern of most equipment manufacturers is purely to market their products, and therefore the processor must not simply rely on information provided in the brochure or on an internet website.
- Disadvantages of a poor selection of equipment will persist over time and impede our competitiveness.



COMPLY WITH THE STAGES RECOMMENDED FOR THE CHOICE AND THE ORDER FOR THE EQUIPMENT IS A GUARANTEE OF YOUR COMPETITIVENESS.

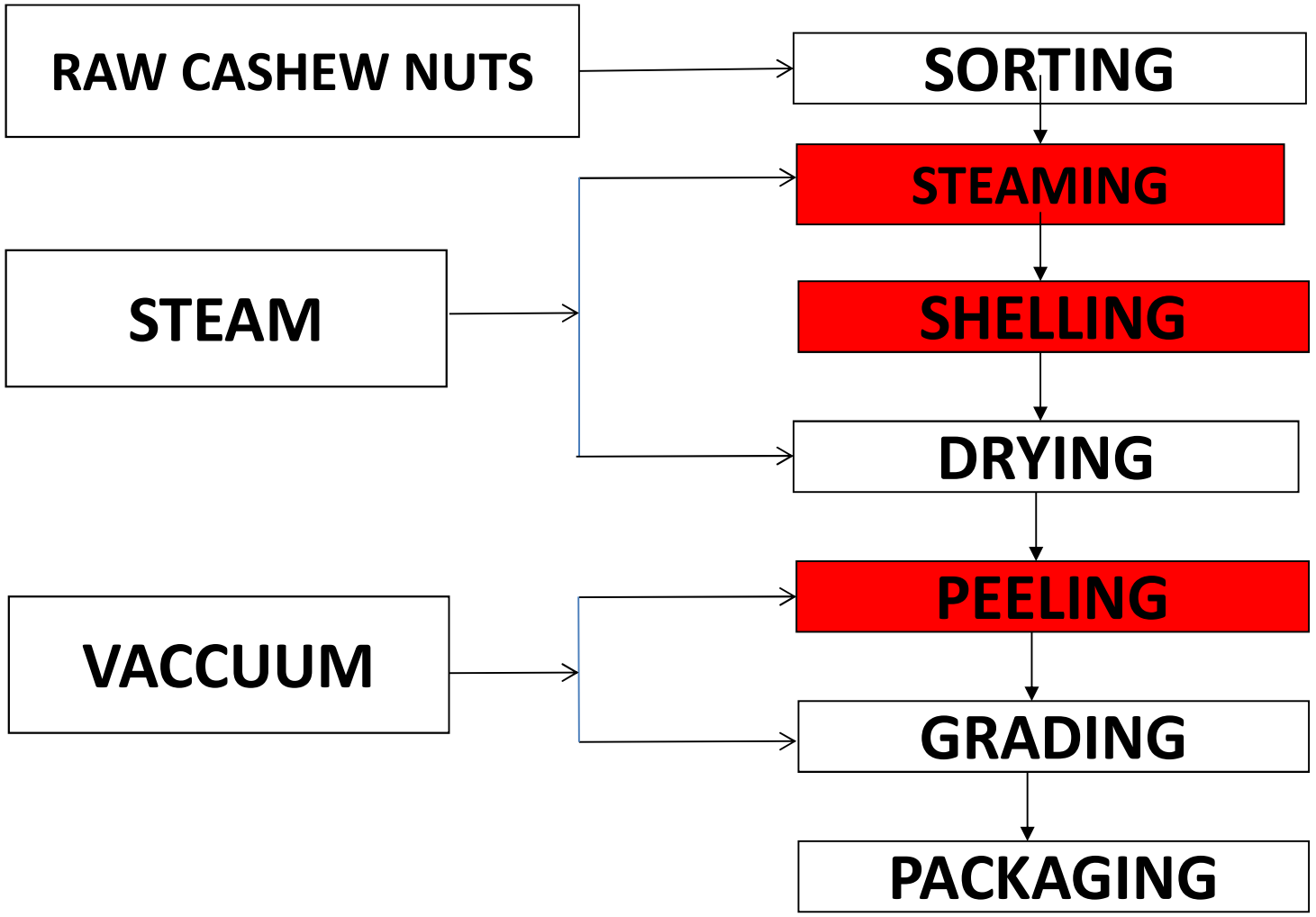
SPECIFIC ADVICE FOR CHOOSING EQUIPMENT

Semi-automatic model

Vietnamese technology

Average capacity: 3 000 tonnes/an

THE DIFFERENT PROCESSING STEPS



LISTE DES EQUIPEMENTS DE PRODUCTION

Raw nut cleaning machine 01

- Capacity : 2 000-4 000 kg/h

Sorter/Calibrator 02

- Capacity: 1500-2000 Kg/h
- Calibrated raw cashew: AI, A, B, C, D

Steamer 02

- Capacity 800 kg/batch (time of batch: 10-20 min)

Deshelling line 02

- Capacity: 800 kg/hour
- Broken kernels: < 10 % (AB < 6 %, CD < 10)

Drying oven 02

- Capacity 2.0 ton/batch (8-12 hour/batch).

Humidifier (thermal shock) 01

- One carrier

Peeler 01

- Capacity : 300 kg/h
- Percentage of whole kernels: 75-90%
- Percentage of peeled kernels: 75-85%

Color sorter 01

- Capacity: 1500-4000 kg/h

Packaging line 01

- Capacity: 50-70 packs/h

LES EQUIPEMENTS AUXILLIAIRES

Vapor machine 01

- Max. pressure: 10 kgf/cm2
- Operating pressure: 8 kgf/cm2

Compressor 01

- Operating pressure: 8,5 kg/cm2
- Air flux : 6.5 m3/min

QUOTATION EXAMPLE

ANNEX

Spécifications des machines.docx

MERCI DE VOTRE

AIMABLE ATTENTION

THANK YOU FOR YOUR KIND

ATTENTION

Contacts : gcasheco@gmail.com