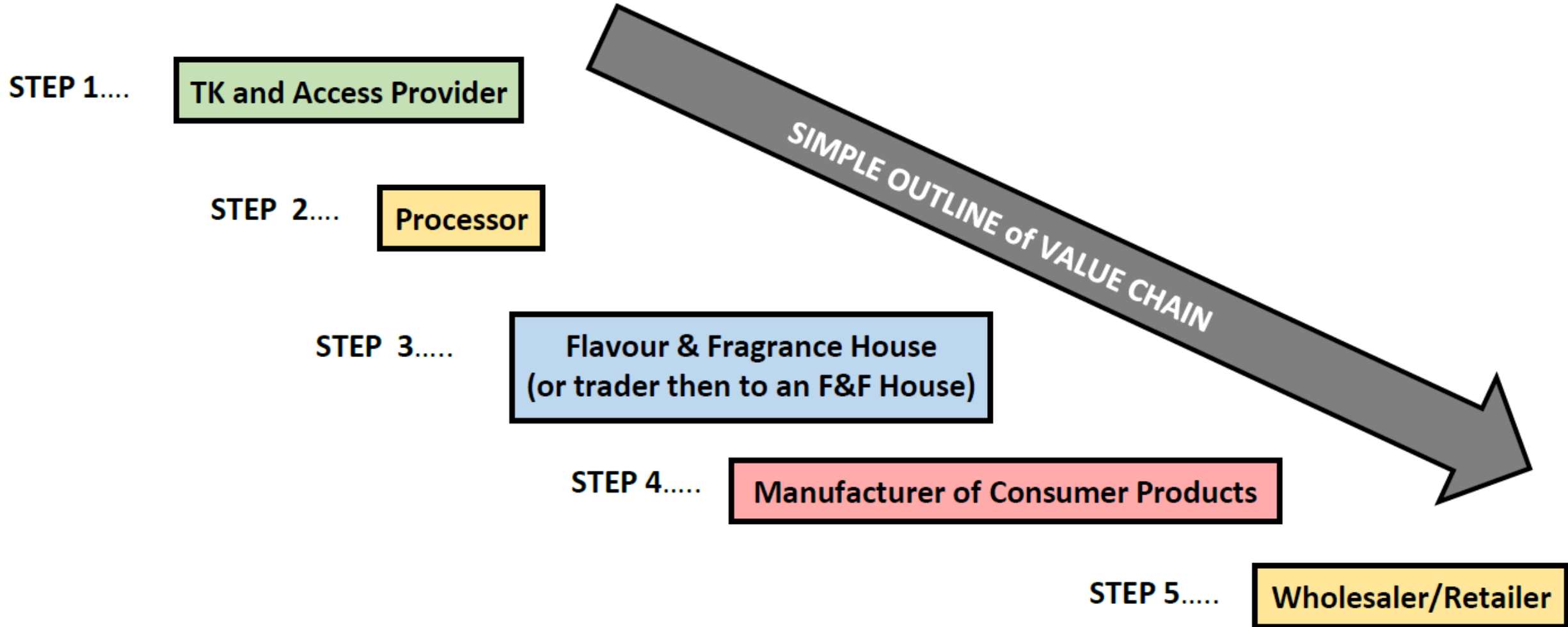


1. An overview of the value chain



In the case of Buchu Oil, there are 5 main steps, each with its own processes.

STEP 1: Starts with the knowledge holder. It also includes the growing and suppling of the wet plant material to the processor.

STEP 2: The Processor converts the material into oil by distillation or even fractionation. It is generally the processor who has to find buyers for the oil. In most case this is a Flavour & Fragrance House.

STEP 3: The Creative team of the Flavour & Fragrance House, who have some 5'000+ aromatic substances to choose from, combine many of these substances to produce a Flavouring or Fragrance Compound to satisfy specific requirements of a Manufacturer of Consumer Products.

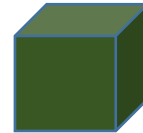
STEP 4: The Manufacturer of Consumer Products develops a product for which they need the Flavouring or Fragrance Compound. They manufacture it and sell it to the Wholesaler/Retailer.

STEP 5: The Wholesaler/Retailer distributes the product to the stores or outlets throughout the world where consumers can buy it.

2. Pictorial representation of what happens to the wet plant material such as Buchu

The diagrams below and on the following slide demonstrate what happens to the 11 grams of Buchu Oil (in RED) made from 1 kilo of wet material (in GREEN)

STEP 1: 1 kilo of wet Buchu is sold to the Processor



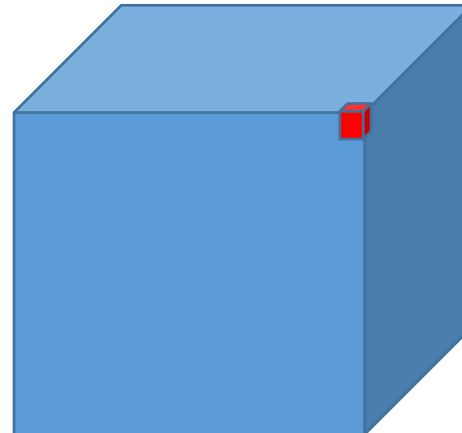
= 1 kilo of wet Buchu

STEP 2: The 1 kilo of wet Buchu produces 11 grams of Buchu Oil



= 11 grams of Buchu Oil

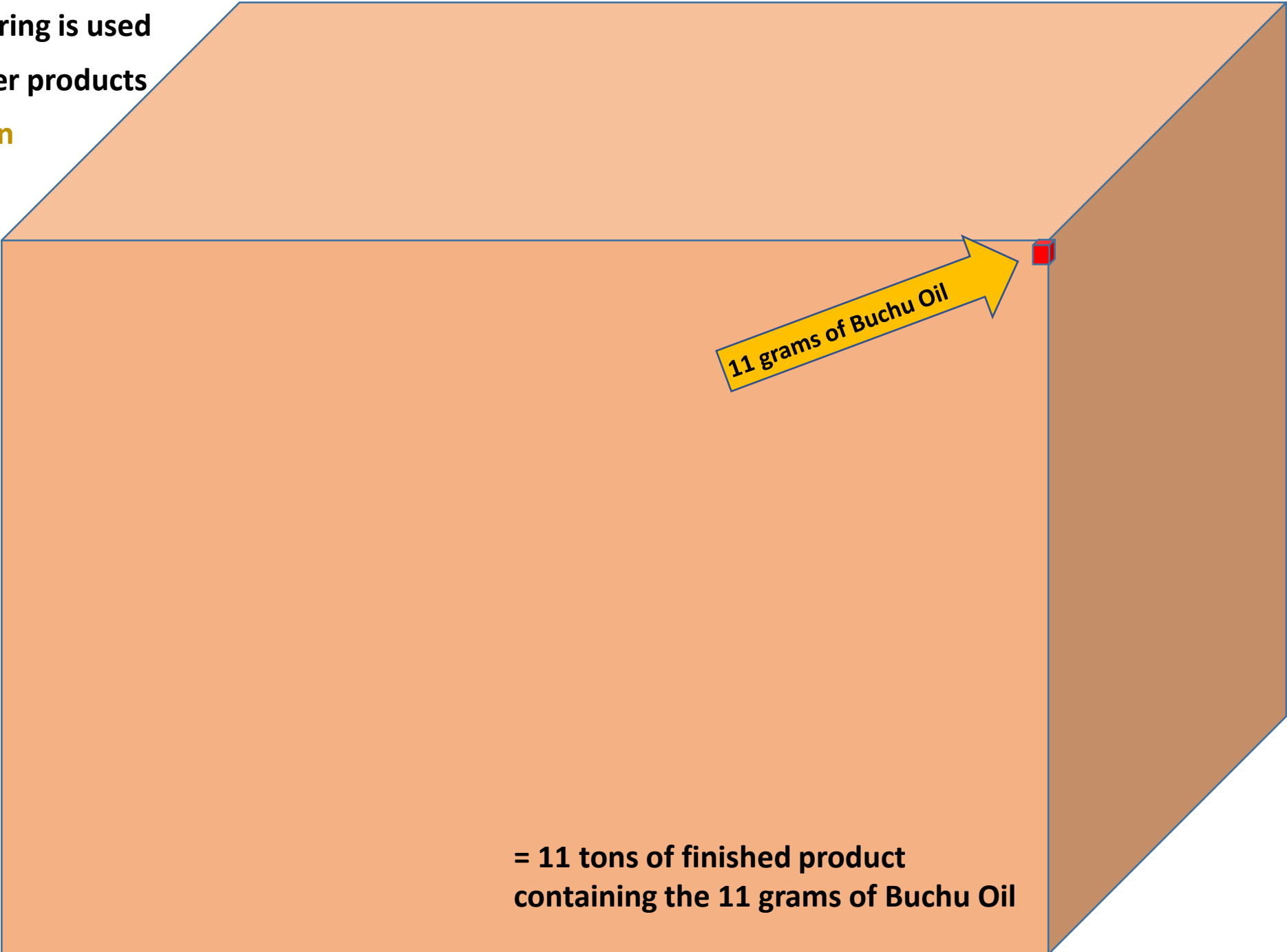
STEP 3: The 11 grams of Buchu Oil are mixed with many other aromatic substances to produce 11 kilos of flavouring (in BLUE)



= 11 kilos of flavouring containing the 11 grams of Buchu Oil

(See example recipe in box 1 below)

**STEP 4: The 11 kilos of flavouring is used
the manufacturer of consumer products
to make 11 tons of product (in
Beige)**



11 grams of Buchu Oil

**= 11 tons of finished product
containing the 11 grams of Buchu Oil**

STEP 5: These 11 tons of product are distributed throughout the world to wholesalers and/or distributors for millions of consumers to buy

Box 1

A typical recipe/formula of a blackcurrant flavouring used by a manufacturer of a consumer product 

The flavouring uses Buchu Oil at 1 part in a 1000 parts of concentrated flavouring. The flavouring is then incorporated into the finished consumer product at 1 part in a 1000 parts.

This means that the Buchu Oil is present in the finished consumer product at 1 part in a million parts, or 1 gram in 1 ton.

Here is a typical recipe/formula (BoM = Bill of Material) for a concentrated flavouring using Buchu Oil as one of the aromatic flavouring substances. It would have been created by a flavourist of one of the Flavour Houses to be bought and used by manufacturers of Fast Moving Consumer Goods (FMCG).

BLACKCURRANT FLAVOURING

CARYOPHELLENE	1.45
ETHYL ACETATE	12.00
ETHYL BUTYRATE	3.00
ETHYL HEXANOATE	0.10
HEXANAL	0.05
CIS-3-HEXANOL	0.05
ISOAMYL ACETATE	0.30
ISOBUTRALDEHYDE	0.05
LIMONENE	0.10
METHYL SALICYLATE	0.08
METHYLBUTRALDEHYDE	0.04
PINENE	0.60
TERPINENOL	2.20
DMS	0.50
BUCHU OIL	1.00
PROPYLENE GLYCOL	978.48

	1000.00

This flavouring would be used by an FMCG manufacturer, such as Unilever, Nestle, P&G, Pepsico, AB InBev, Coca Cola, in making their sweets, drinks, ice lollies, jellies, fondants, cream fillings and UHT products etc. at a dosage rate of between 0.8 - 1.2 grams in 1 kilo of consumer product.

This means that the Buchu Oil would be present in the consumer product at a level of between 0.8 -1.2 grams per ton (0.8-1.2 parts per million).

This flavouring could be used by hundreds of FMCG manufacturers all over the world in any number of applications (end products).

Buchu Oil, and other South African IBRs, could well be used in hundreds of different BoMs, being a wide variety of flavourings or fragrance compounds.

3A. How Buchu Oil passes through STEPs 2, 3, 4 and 5 in the value chain

From STEP 2, a Processor sells Buchu oil to a F&F House e.g. PAN (or a trader who sells it to PAN), being one of many.

In STEP 3, PAN creates several flavourings and fragrance compounds using the Buchu Oil. Undertakes technical tests and market research until finalizing the recipe.

In STEP 4, PAN sell one flavouring and one fragrance compound to three different manufacturers of consumer products, for example - UNIP, MAD and RED.

In STEP 5, the three manufacturers sell the products they have developed using the flavourings and fragrance compounds from PAN to various wholesalers/distributors all over the world.

3B. How Buchu Oil passes through STEPS 2, 3, 4 and 5 in the value chain in diagrammatic form

