



4F Crops

Future Crops for Food, Feed, Fibre and Fuel

FP7-KBBE-2007-1

Brussels kick-off meeting
1st July 2008

Peter Soldatos

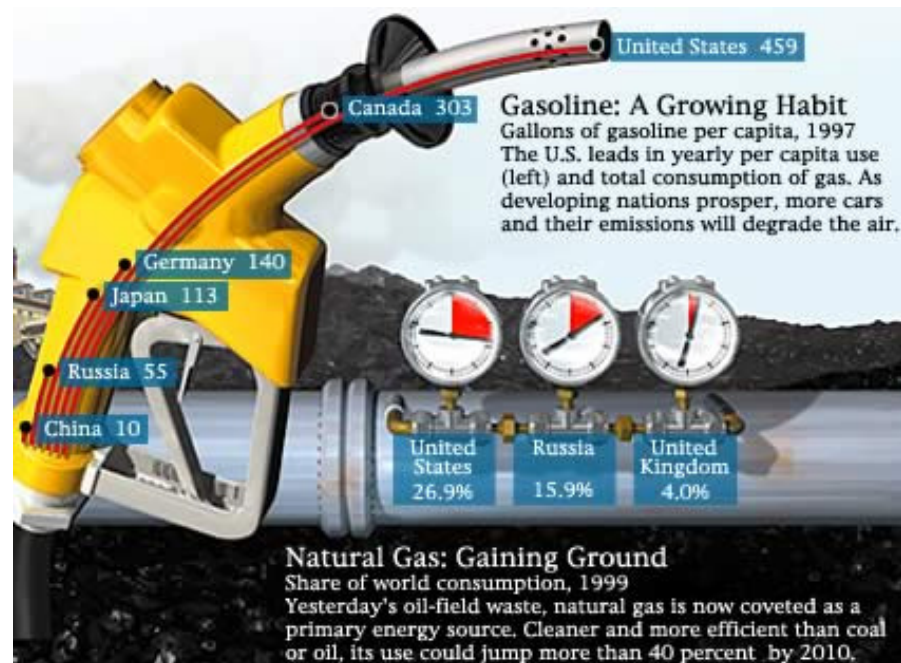
Vassilis Lychnaras

Dimitris Asimakis

Energy ...

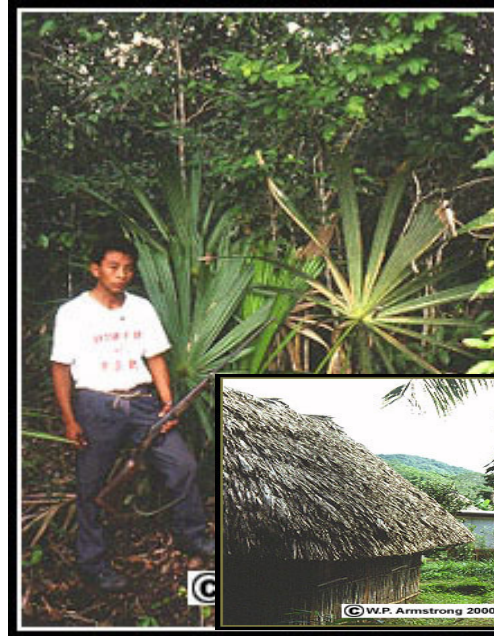
A large variety of Agricultural Products are being used today for energy and, in general, non-food purposes.

This opens new sales opportunities to the Agricultural Sector and re-distributes roles.



and Fibre ...

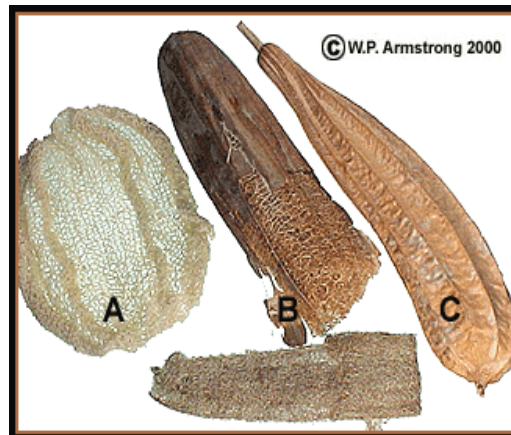
1. Bay-leaf palm
(*Sabal morrisiana*)
2. Panama hat palm
(*Carludovica palmata*)
3. Fiber plants used for wash cloths and bath sponges to remove dirt and excess dead skin cells.
4. Kenaf, for the manufacture of newsprint and other pulp and paper products



1



2



3



4



Corn prices ...



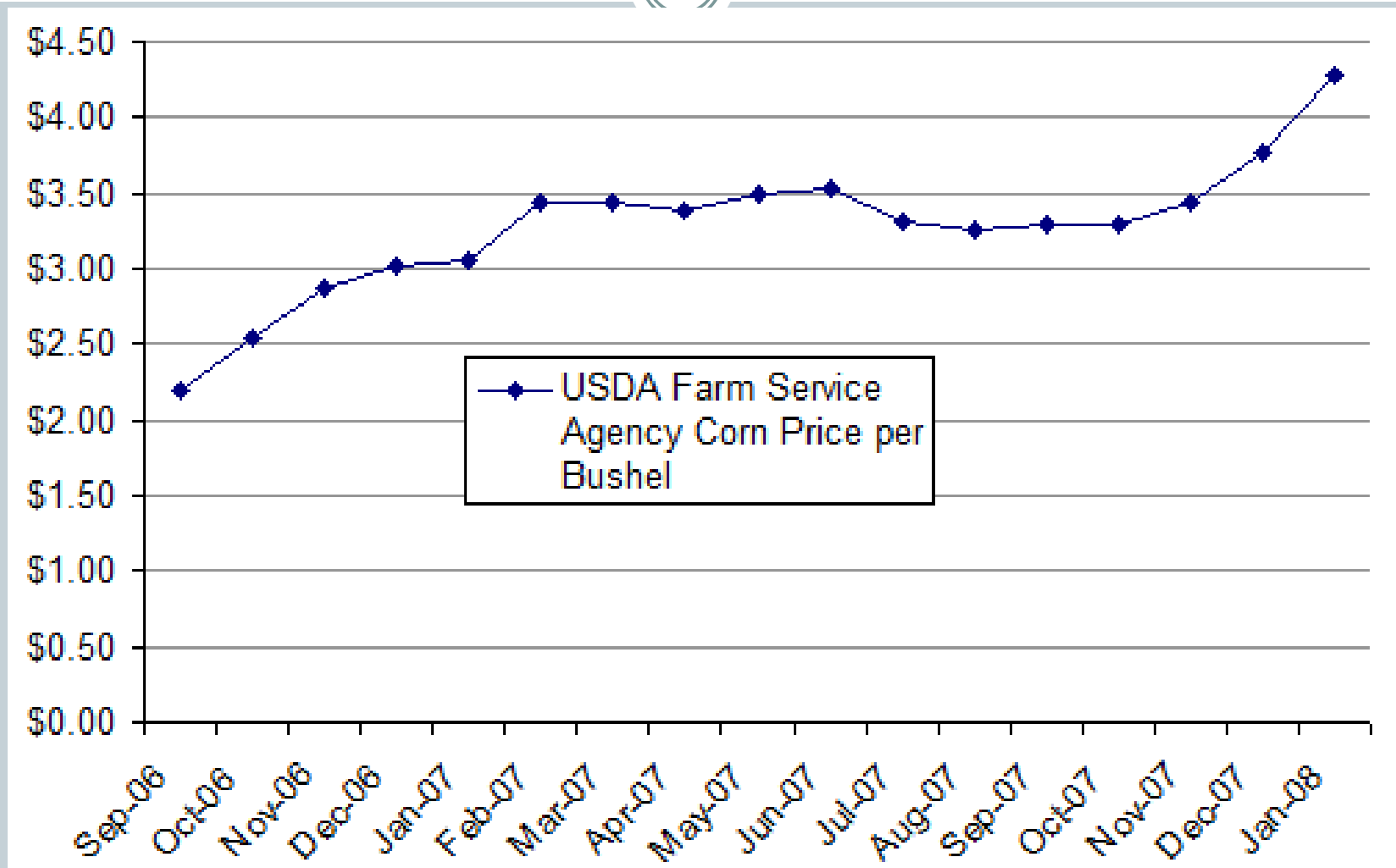
- *Corn prices* have risen sharply, nearly doubled in less than a year, almost entirely because refineries are using corn to produce ethanol
- As the price of corn increases, farmers increase the acres which they devote to corn production in order to take advantage of higher prices.
- This can reduce some of the pressure on corn prices, but can impact the price of other agricultural commodities, particularly *soybeans* which are grown in many of the same areas of the country as corn.





Historical and USDA forecasted Corn prices per bushel

(source: http://www.wikinvest.com/concept/Corn_Prices)



New CAP ...

In countries like Greece and Spain, the decoupling of subsidisation has stimulated changes in the use of land.

Cotton crops are not as profitable any more and, given the subsidisation method, are replaced, in some cases by energy crops, while the value of land is dropping.



Encarta Encyclopedia, Oxford Scientific Films/John McCammon





Second generation ethanol

- 7

- The potential for the production of large volumes of ethanol lies, therefore, in what is known as **second generation ethanol** or **cellulose ethanol**. This is ethanol produced from cellulose found in various by-products of farming and forestry and other biomass.
- ...



... Nearly all of the petrol sold in **Sweden** today contains 5 per cent ethanol, which is the highest permissible blend ratio within the EU. However, an increase to a blend ratio of 10 per cent is not far off ...



Abengoa Bioenergy Opens Pilot Cellulosic Ethanol

- 8

... The *pilot Cellulosic Ethanol* plant is located adjacent to Abengoa's 55 mio gallon-per-year ethanol production facility, and will research and test proprietary technology for ultimate use in commercial-scale conversion of biomass into ethanol.

- *Date Posted: Oct. 16, 2007*



Location:
York, Nebraska



Cellulosic Ethanol Plant in the USA...

- 9



- The first *commercial* cellulosic ethanol biorefinery plant in the United States, built to produce 1.4 million gallons of ethanol a year from cellulosic biomass in Jennings, LA.

1 US gallon= almost 4 litres
May 2008

The plant will make ethanol from agricultural waste left over from processing sugarcane.

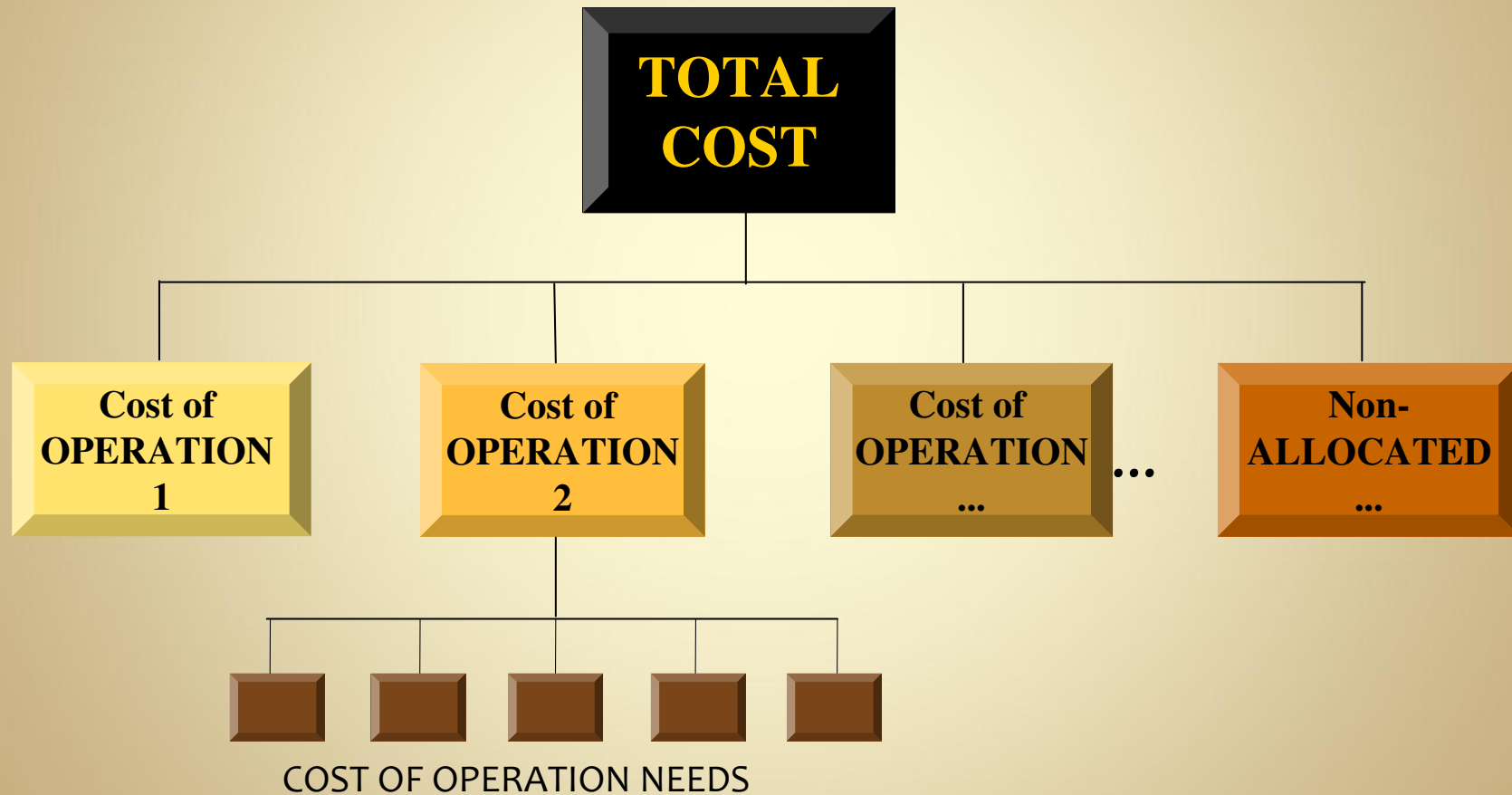


AUA Contribution to 4F Project

- I. *Methodology for Cost Analysis of crop Production*
- II. *Use of Cost Analysis models for uniformity of cost estimates*
- III. *Calculation and Review of cost estimates for the production of selected crops in selected countries*
- IV. *Cost analysis Reports for selected crops and countries*



Activity Based Costing





Sources of Information

- **Crop Selection**
 - Choice of crops / countries from **WP2**
- **Machinery**
 - Web and direct contacts with suppliers
- **Yields & Cultivation Practices**
 - **WP2** – Literature – **PARTNERS** – AUA Experience – FAO – Eurostat
- **Raw Materials**
 - Eurostat
- **Land and Labour**
 - Eurostat and **PARTNERS**
- **Irrigation**
 - **PARTNERS**
- **Conventional Product Prices**
 - Eurostat – FAO



Cost Analysis Detail

INCLUDES

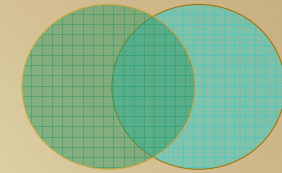
- Direct and Indirect Costs
- Paid Expenses & Imputed Costs
- Fixed and Variable Expenses
- Controllable & External Costs

PRESENTATION

- Cost by operation
 - Cost by input Factor
-
- By Crop – By Country
 - Per hectare – Per tonne



What is full Cost ?



Measures all costs, ***paid and imputed*** and assigns costs to final products. Imputed Costs, although not paid, they DO exist and should be included!

Land & Labour are valued at market rate or opportunity cost

Machinery & Buildings are valued at Capital Service Cost

Capital Cost Borrowed at ST or LT interest paid / Own at WACC

Materials are valued at purchase cost

SUBSIDIES

CAP provisions are used for alternative Land Use considerations.



Why need a model ?

- Common format for the analysis
- Comparability between
 - conventional and future crops,
 - annual and perennial
- Sensitivity analysis made easy
- Analyses of various case studies
- Easy to update
- Standard Cost Reports:
 - By operation or factor, total, per hectare, per tone etc.



Questions Answered

- What is the *cost of producing one tonne* of intermediate or final product?
- Given a sales price, what is the *profit per hectare or per tonne* from the cultivation?
- What is the effect of various *Agricultural Policies* in the farmer choice?
- Is it worth for farmers to *shift* to non-food crop production? What is the price at which the *use of land* will change
- Under which economic conditions entrepreneurs will be *willing to invest* in non-conventional crops?