



Energetic Use of Residues from Coffee Production in Central and South America

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The ICO – Background

(www.ico.org)

- ❖ Creation
- ❖ ICA 2007
- ❖ Governance structure
- ❖ Activities



International Coffee Agreement 2007

- Overall objective: to strengthen the global coffee sector and promote its **sustainable** expansion in a **market-based environment** for the betterment of **all participants** in the sector



ICA 2007 – Governance structure

- Council
- Subsidiary bodies
 - ❖ Projects Committee
 - ❖ Promotion and Market Development Committee
 - ❖ Finance and Administration Committee
 - ❖ Statistics Committee
- Advisory bodies
 - ❖ Consultative Forum on Coffee Sector Finance
 - ❖ Private Sector Consultative Board
 - ❖ World Coffee Conference




ICO Activities

- Coffee development projects
- Economics
- Statistics
- Promotion
- Quality and food safety
- Coffee and health
- Information services



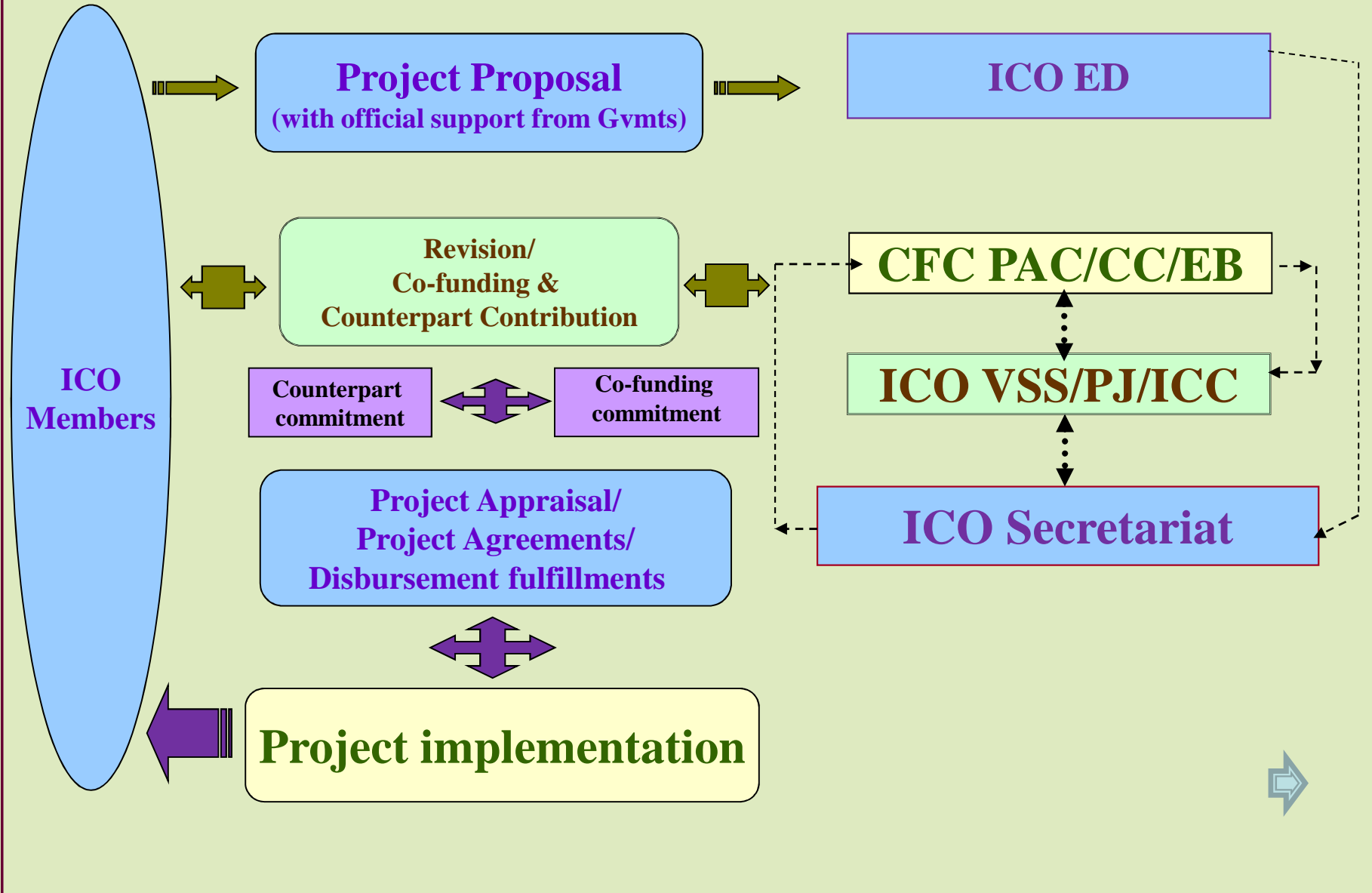
Coffee Development Projects

➤ **ICO role:**

- Establish areas of priority for project activities
- Analyse and advise on the preparation of projects
- Approve projects for subsequent submission to donor or financing organizations, as appropriate 
- Supervise project execution
- Disseminate results



Coffee Projects - Procedures





Coffee Development Projects

➤ **Beneficiaries**

- Populations suffering substantial poverty, as well as populations and economies heavily dependent on coffee.
- Least developed countries (LDCs): ICO has 45 exporting members, 16 of which are LDCs (15 in Africa)




Coffee Projects Funding

- **Common Fund for Commodities (CFC) – main funding body**
 - For the last 15 years the ICO has been the designated Supervisory Body (SB) for the CFC coffee development projects.
 - The ICO is the largest single recipient of CFC funding: circa 18% of the overall financial investment of US\$292.6 million.
 - 34 Projects in Africa, Latin-America, Asia&Pacific have been implemented under ICO supervision by leading specialized Agencies, such as ITC, WB, FAO, CABI, UNOPS and EAFCA.



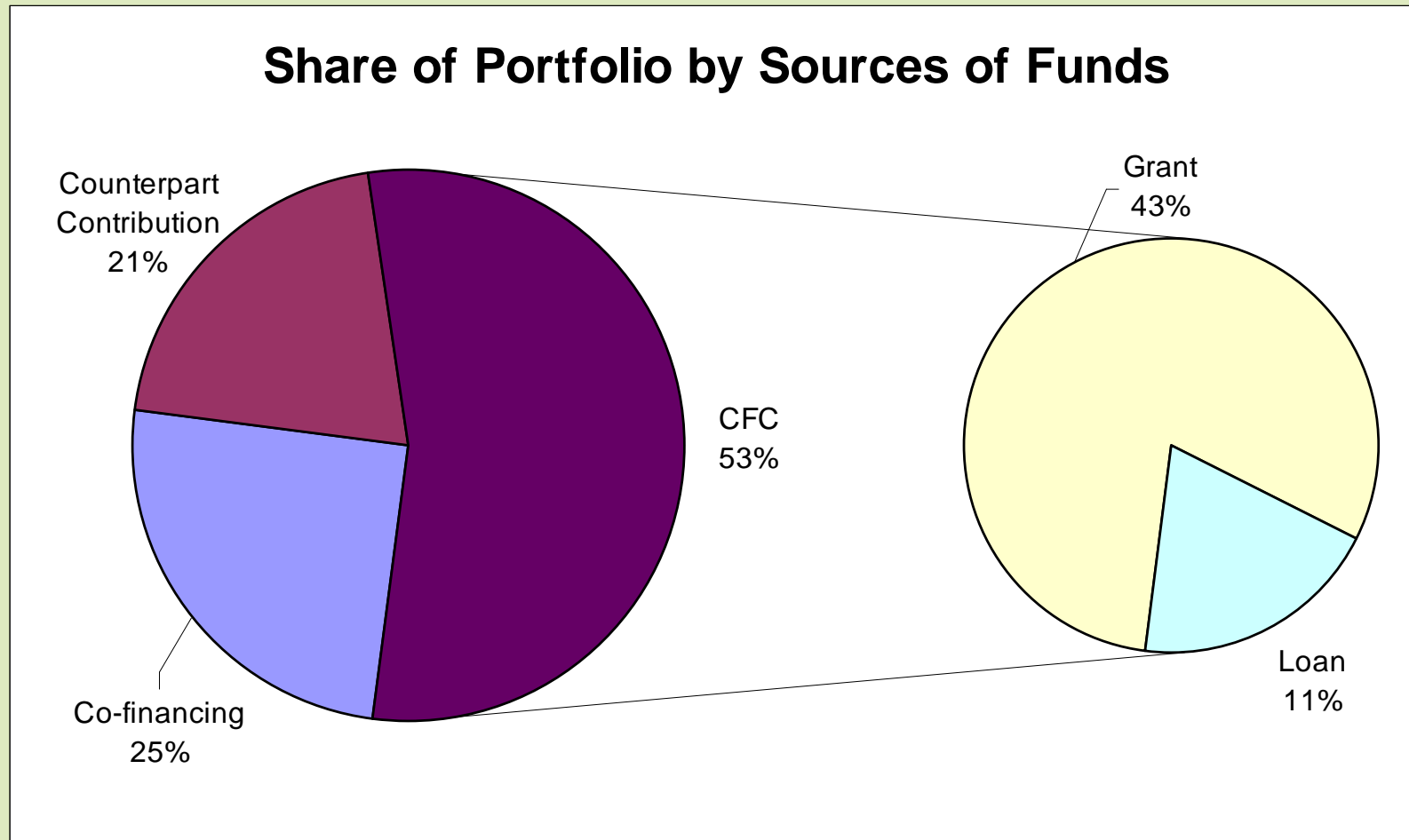
CFC/ICO Coffee Projects

- **34 projects in portfolio (1995/96 to 2009/10):** 
 - Total value: US\$102 million
 - 20 concluded
 - 14 ongoing
- **20 projects in pipeline:**
 - Total value: US\$70 million
 - 6 under consideration by CFC
 - 7 to be considered by other donors
 - 7 under consideration by the ICO



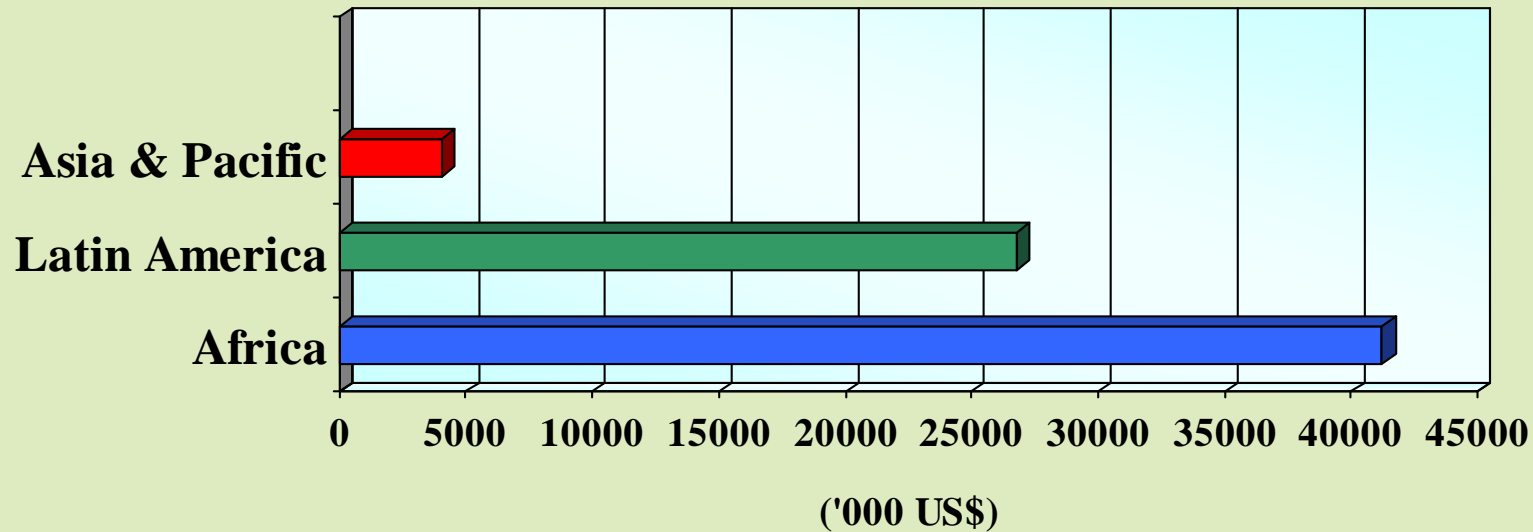
Coffee Development Projects

Share of Portfolio by Sources of Funds



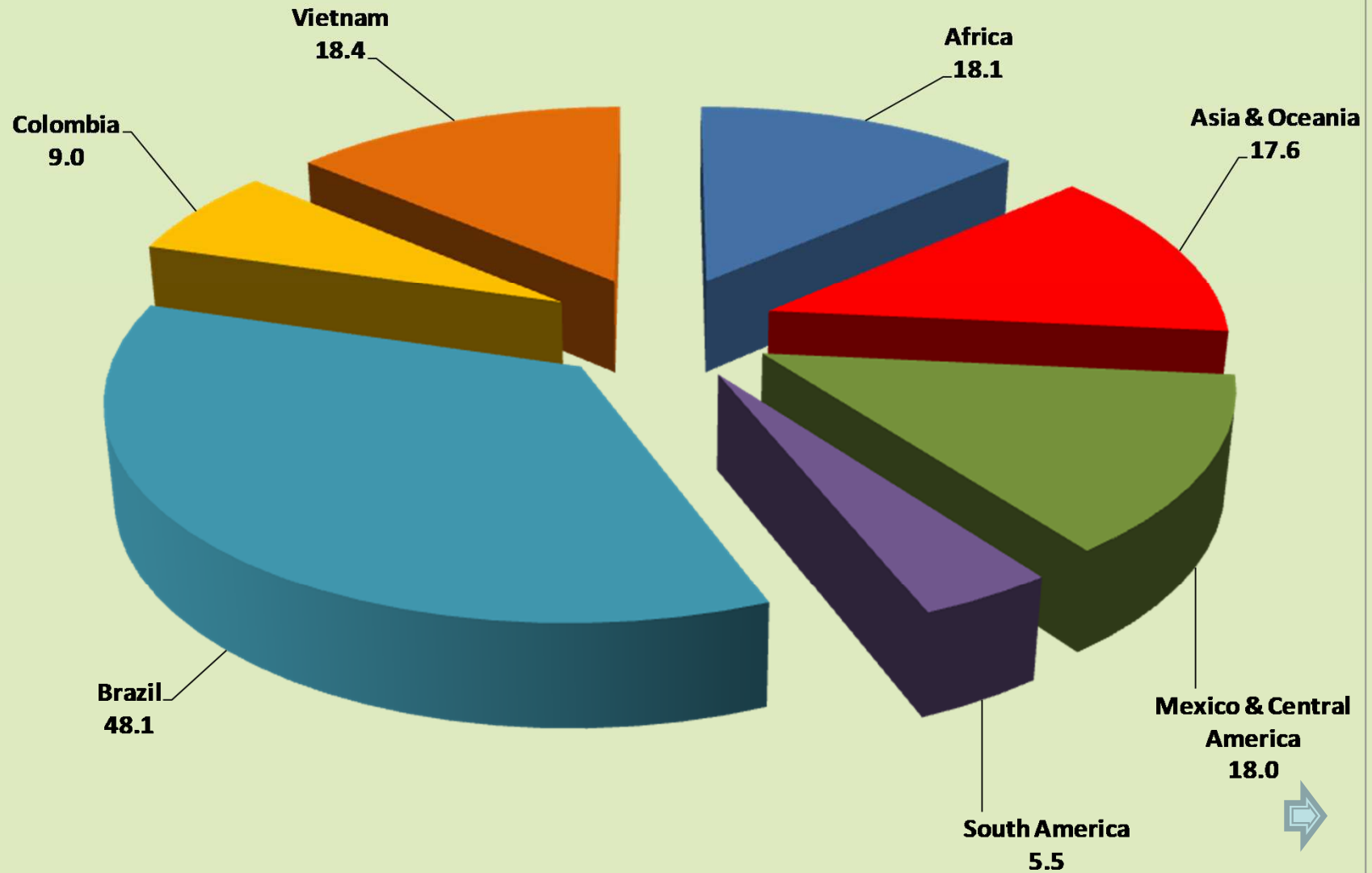


Portfolio distribution by Region



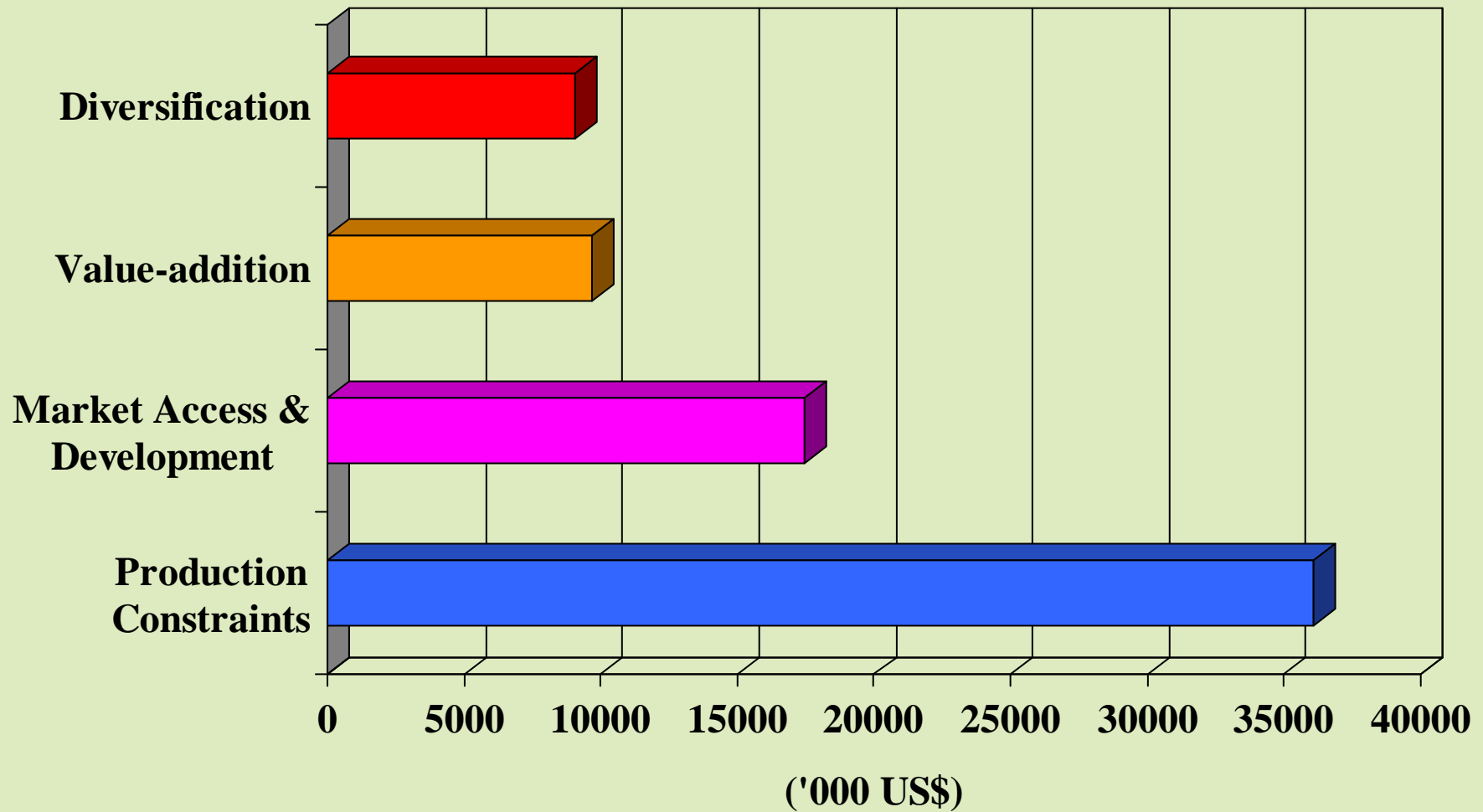


Total production in 2010/11





Portfolio distribution by Areas of Action





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Context



The big challenge today is to provide:



World primary energy supply today is circa:

80% fossil fuel

<10% combustible renewable and waste

<5% nuclear

<5% hydroelectric power

<1% geothermal, solar, wind



The use of coffee waste and by-products = an opportunity for the sector:

- For research and technology
- To improve demand and supply side management
- To unlock potential for safe options to reduce carbon intensity
- For capacity building – to train future experts to operate new technology to be used in farms



Coffee Waste Management

Sustainable coffee processing - Common requirements:

- By-products must be reused as fertilizers, mulch, or energy source.
- Inorganic, non-recyclable wastes may not be burned as waste.
- Farms must employ a waste management plan to avoid or reduce waste and encourage proper disposal of non-reusable wastes other than burning.



What is needed to improve use of renewable resources for energy?



What is the ICO doing to encourage the use of coffee residues for energy?





ICO - Basic research versus alternative uses of coffee waste and by-products

➤ **Studies:**

- ‘Potential alternative uses of coffee wastes and by-products’, by the International Centre for Science and High Technology – United Nations Industrial Development Organization (ICS-UNIDO) and University of Trieste, Italy (ref. ED 1967/05)
- ‘Coffee: Alternative uses’, by the Natural Resources Institute- United Kingdom (ref WP Board N.953/04)
- ‘Improving the global coffee supply/demand balance through measures designed to eliminate low-grade coffees’, by the Economic and Social Institute of the Free University of Amsterdam (doc EB 3778/01)

➤ **Seminars/Round Table discussions:**

- ‘Coffee produced by “organic” farming methods - role of certifying agencies and certification’, held in September **2000**
- ‘Coffee and the Environment’, held in May **1996**

➤ **Action**

- The concept behind the studies and discussions was primarily to seek concrete solutions to address the lack of balance between supply and demand that generated the coffee price crisis between 2000-2005, which skewed distribution of income in the supply chain, and lead to unacceptable levels of poverty for coffee farmers.



ICO - Basic research versus alternative uses of low grade coffee and by-products

‣ **Project proposals:**

- ‘Development of a network of focal points and of a web based consortium to identify and exploit potential uses for low grade coffee and by-products in **Central America** facilitating dissemination of the associated technologies’, submitted by International Centre for Science and High Technology (ICS) of UNIDO, Trieste- Italy **2006**
- ‘Use of coffee by-products and alternative uses for low-grade coffee’, submitted by ICAFE /UNIDO, **Costa Rica 2003**
- ‘Technological innovation project development of technologies for the use of coffee with defects’, submitted by the Brazilian Institute of Food Technology (Ital), **Brazil 2001**

‣ **Action**

- ✓ The above project proposals have remained in the pipeline without funding for implementation, since most activities envisaged basic research, which is not considered a priority for CFC funding.
- ✓ This highlights the importance of broadening sources of project finance for the Organization.



ICO – Diversification versus alternative uses of low grade coffee and by-products

‣ **The challenge**

- To simultaneously meet development and sustainability goals while increasing profitability.

‣ **Seminars/Round Table discussions:**

- ‘The International Coffee Crisis – Looking for long-term solutions’, an ICO/World Bank high-level Round Table held in May **2003**

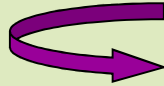
‣ **Projects ongoing in Latin-America:**

- CFC/ICO/39 ‘Enhancing the potential of gourmet coffee production in Central American countries’
- CFC/ICO/32 ‘Diversification of production in marginal areas in the State of Veracruz, Mexico’
- CFC/ICO/31 ‘Reconversion of small coffee farms into self-sustainable agricultural family units in Ecuador’
- CFC/ICO/11 ‘Pilot rehabilitation of the coffee sectors in Honduras and Nicaragua’



Main results obtained from ICO/CFC projects

Gourmet coffee in Central America(IAO)



Demonstrated that farmers income could be increased by using residues from coffee processing to produce mushrooms (*Pleorus ostreatus*), fertilizers and mulch.

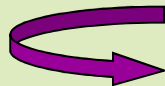
Introduced landscape amenities, by defining 'La Ruta del Café', as an income generating activity for the coffee regions.

• **Encouraged** direct trading of gourmet coffee between farmer cooperatives and European roasters under the standards of 'Slow Food Presidia'

Critical success factors:

- Setting up a dedicated coffee **knowledge-sharing platform** (www.cafeycaffe.org)
- The inclusion of traditional practices in most project activities as a way to preserve the local cultural heritage.

Diversification in Veracruz (Univ. Veracruzana)



Offered to unproductive coffee farmers concrete options for multi-output activity so as to produce not only coffee but also food, feed, timber, fibers, agrofuels, medicinal products and cut flowers.

Created options for non commodity outputs such as environmental services.

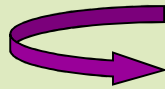
Main drivers:

- Technical support offered by the local university
- Financial sustain offered by local authorities.



Main results obtained from ICO/CFC projects

Reconversion in Ecuador (COFENAC)

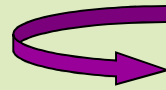


Key element of the reconversion has been the forest, water and coffee waste management plan (**'3Rs' =reduce/re-use/recycle**) adopted by 1200 cooperatives, which created a nation-wide network to promote forest resilience and farm profitability.

Main drivers:

- Full involvement of farmers in the decisions process of designing the reconversion of their farm.
- Knowledge sharing with the local university/institutions.

Rehabilitation in Honduras & Nicaragua(IICA)



Introduced cleaner environmental technology to replace coffee wet processing capacity in both countries.

Offered workable standards for wet coffee processing, allowing **national authorities** to enforce environmental regulations on water and waste management and disposal.

Critical success factors:

- High standard of the institutions involved
- Well organized cooperatives, which facilitated smooth knowledge transfer and innovation absorption by farmers.



Beyond Latin-America

- **Value addition** - Relevant ICO sponsored projects include:
 - CFC/ICO/01 ‘Development of gourmet coffee potential’
 - CFC/ICO/05FT ‘Characteristics of the demand for Robusta coffee in Europe’
 - CFC/ICO/31FT ‘Building capacity for coffee certification and verification in Eastern Africa’
 - CFC/ICO/43FT ‘Enhancing competitiveness of African coffee through a value chain analysis’
 - ICO seminars on ‘Geographical Indications’ (2008) and ‘Equitable Trading’ (2004).



Beyond Latin-America

- **Environmental sustainability** - Relevant ICO sponsored projects/studies include:
 - **Project proposals:**
 - CFC/ICO/10FT ‘Worldwide comparative analysis of coffee-growing areas’ which generated a tool to assess costs and profitability by examining the distribution of value through the coffee marketing chain - **Concluded.**
 - ‘Adaptation to climate change in the PROMECAFE region’ - **pipeline.**
 - **Studies/documents:**
 - ‘The sustainability of the coffee supply chain versus climate change adaptation and mitigation using the life cycle assessment’ (Oxford University Consulting) - **pipeline.**
 - Climate change and coffee (Ref. ICC-103-6 Rev. 1) – published in 2009
 - A document was prepared for submission to the United Nations Climate Change Conference in Mexico in 2010.



What are the constraints?

State of knowledge transfer

- Innovation takes place too slowly = universities and business (concept and commercialization) need time to ‘marry’ their vision.

How to speed up knowledge transfer?

- Knowledge sharing and Corporate Social Responsibility (CSR) investments have potential



How to put knowledge into action?

- ▶ Combining the crucial role of the **Private Sector**, as the major source of technological innovation and the principal conduit through which cleaner technology is diffused, with **International Cooperation** to assist developing countries.

To be noted:

- While some countries may have the capacity to actively engage in advanced domestic biofuel R&D efforts, arrangements are needed to address the issue in some developing and for small farmers.
- Cooperatives in coffee producing countries have proven to be a good tool to effectively deliver the adoption of clean technologies.



Actions that could help to promote better use of coffee residues into energy

- ▶ **Promoting R&D**
- ▶ **Development of product standards and dissemination of knowledge**
- ▶ **Local capacity building**
- ▶ **Access to finance**



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