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# Feedstocks for the KBBE: role for 'Developing Countries' in EU strategy?

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With the support of  
the Flemish authorities



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## 1. Feedstocks and DC's

## 2. Many opportunities untapped

The International Industrial Biotechnology Network

## 3. EU and International Development Cooperation:

Experiences from Sub Saharan Africa in  
Agricultural Biotechnology R&D

## 4. Concluding remarks

# 1. Feedstocks for the KBBE and DC's

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- 'Developing countries': wide variety in level of development, resource base, etc among less industrialized nations
  - \* emerging economies: BRICs
  - \* next emerging economies: Mexico, Nigeria, ...
  - \* others are following – matter of time
  
- Renewable plant biomass resources mainly in the Southern hemisphere (cf fossil fuels):
  - more land area,
  - higher biodiversity
  - more favorable climatic conditions for agricultural biomass production

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- BRICs take on increasingly leading role in agricultural R&D globally set on path towards innovation:

Brazil is quickly surpassing other countries in food production and exports (The Global Farm. Nature. 466, July 2010)

China – a cleantech giant: China’s investments in clean energy outstripped those of the USA in 2009 and is set to overtake Europe’s in 2010 (Insight Capricorn. Sept 2010)

China – Learning to innovate: China pieces together a drug discovery system (Biotech in China. Jan 2010)

Over past decade more rapid economic growth of emerging economies and several countries in SSA than anywhere else in the world

## 2. Many opportunities untapped

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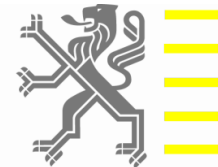
### The International Industrial Biotechnology Network IIBN



A joint initiative of:

**UNIDO**, Vienna, Austria with the  
**IPBO**, University Gent, Belgium  
Supported by the **Flemish government**

With the support of  
the Flemish authorities



## What?

A **South-South / North-South** Cooperation **Network** for the promotion of (agro)-industrial biotechnology for sustainable development

## Mission

Add economic value to underutilized biological resources  
Linking income generation with conservation

## How?

Assist less industrialized nations access and develop biotechnologies for their sustainable (agro)industrial development

# Use science based solutions to address global challenges

## Food



## Health



## Natural, Environmental & Political Challenges



# Technology focus

## The Knowledge-Based Bio-Economy:

Encapsulates the vision of a future society no longer wholly dependent on fossil fuels for energy & industrial materials

### IIBN focuses on:

- the development of novel bio-products and bio-processes
- the production of energy and chemical feedstocks for local use
- the reduction of the environmental footprint of industry



# Network Structure

Network Secretariat: UNIDO, Vienna Austria

Network Coordinator: IPBO, Ghent University Ghent, Belgium

Steering Committee & International Advisory Panel:

monitors activities of the Network;

Chairman Em Prof M Van Montagu

Network Nodes: Research institutes and technology groups in

‘South’: Latin America, Asia, Africa

‘North’: Flanders (VIB), Europe, beyond.

## Broader context

- Trends to ‘domesticate’ (bio)technologies in South, esp in health sector
- *South-South entrepreneurial collaboration in health biotech. Nature Biotechnology 28:407-416. 2010*
  - Market access – primary reason for initiating collaboration
  - ‘definitely scope for third parties to take a more proactive role in initiating collaborations..’

# Activities

- **Connects** North-South and South-South knowledge centers and companies involved in industrial biotechnology
- Develops demand-driven **demonstration projects** as proof-of-concept for further up-scaling
- Facilitates **training and technology transfer** in the area of agro-industrial biotechnology

## Example



= Brazilian SME involved in pharma research, development and innovation related to Brazilian biodiversity

CEO Em Prof A Paes de Carvalho

Partner of IIBN

Brazil holds 22% of  
global plant biodiversity

Could modern  
biotechnologies add  
to potential  
pharmaceutical  
value?

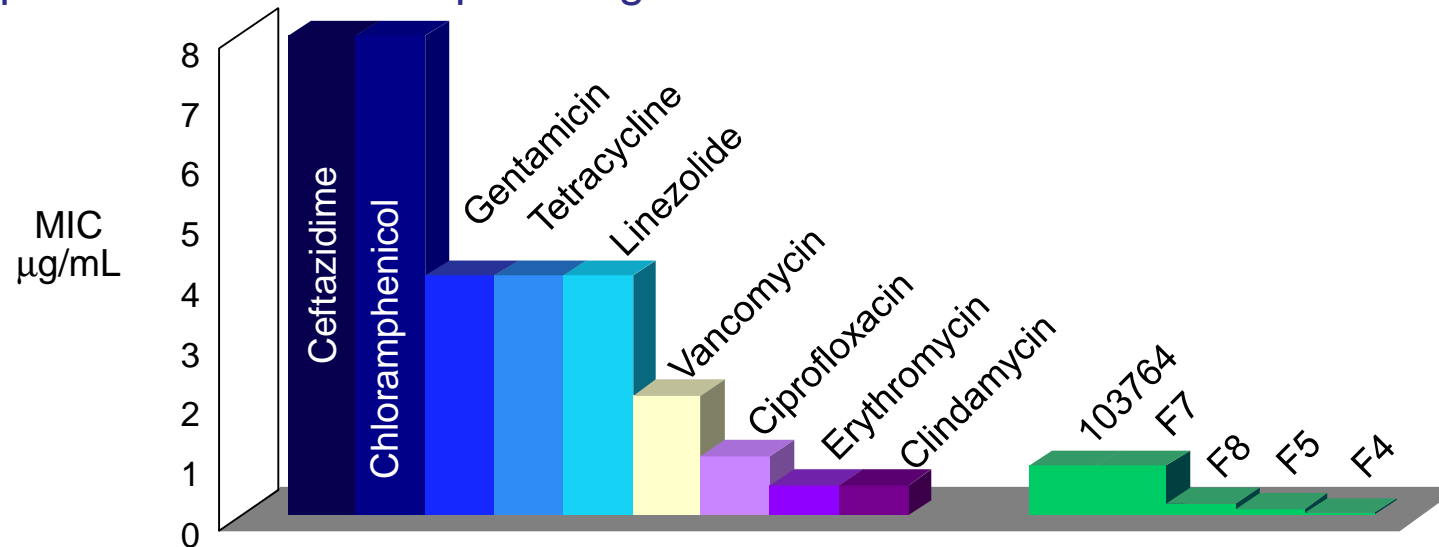


–Extracta represents land- and IP-holders enabling protection of inventions with promise of future benefit sharing to landowners

–4,905 plants collected from ~10,000 km yielding 31,492 crude extracts

–extracts screened for various pharmaceutical activities, eg antimicrobial activities

–27 hits with activity against methicillin-resistant *S aureus*: eg extract 103764 and its purified fractions compared against commercial antibiotics



## Antibiotics from Brazilian Biodiversity

Suggested collaboration between Extracta and prospective partners in Flanders and beyond:

- Structural identification of Extracta positive hits
- Clonal propagation of the plants producing the bio-active molecule
- Biomass production of cells/organs producing the bioactive molecule
- Identification of the metabolic pathway of the bioactive molecules with high market/socio-economic value for future production in other organisms (yeast and/or non-food crop plant)
- Screening for other bio-active molecules of industrial interest
- Search of Industrial Candidate for Co-Financing and Licensing

# 3. EU and International Agric Development Cooperation

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## Experiences from Sub Saharan Africa in Agricultural Biotechnology R&D

- Great demand and interest in accessing advanced technologies in area of life sciences
- Coherent EU strategy for international agricultural research (esp in advanced life sciences) largely missing (or not visible?)
  - support is mostly through bilateral programs, fragmented:
  - few EU countries have strong national programs (France, UK),
  - others much smaller, not coordinated: lack impact, create confusion
- Are EU agricultural policies applicable to DC's? EU situation ≠ SSA situation
  - eg EU position on GM crop technology extremely influential in SSA
    - can EU continue to oppose in view of technology uptake by Brazil, China (others)? Opportunity loss
    - is causing human disaster (Zambia food crisis – 2002: 'GM maize is poison')
- Collaboration and support often (too) strongly influenced by 'colonial politics'



# 4. Concluding remarks

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- Need substantial, coordinated EU investment & strategy in international agricultural research
  - in Anglophone countries, USA/UK, charitable foundations largely absent in mainland EU
- Establish more pragmatic approach to international cooperation focusing more on technical issues (less on ideology)
  - seek two-way collaboration with win-win situation, share risks, resources, accountability

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# Thank you



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