



Vrije Universiteit Brussel

# A centre for cleaner production at Cienfuegos, Cuba

A contribution to the local socio-environmental development

Luc Hens <sup>(1)</sup>

Carlo Vandecasteele <sup>(2)</sup>

Pedro A. Ochoa George <sup>(3)</sup>

(1) Human Ecology Department, VUB

(2) Applied Physical Chemistry and Environmental Technology, KU Leuven

(3) Studies on Energy and Environment, U Cienfuegos (UcF)



# Problem formulation

- Outdated industrial patrimony
- Bay as an environmental accumulator
- Societal transition in Cuba
- North American blockade; changed relations with Russia



# Environmental specifics

1. Waste of fuel “culture”
2. High material consumption rates
3. Important waste streams
4. Waste water



# Area

QuickTime™ and a  
None decompressor  
are needed to see this picture.



# Aim

1. A university centre focusing on training, research and information on cleaner production and environmental management
2. Contribution to long term economic and environmental sustainability



# Core characteristics of Cienfuegos

1. Area 4180 km<sup>2</sup> of which 88 km<sup>2</sup> of bay
2. Population: 400 976 (density 95.9 inch/km<sup>2</sup>)
3. Average income 388.6 pesas; Unemployment rate 3%
4. HDI: 0.72
5. Industry: sugar (12), cement (1), paper (2), mechanics (2); starch (1); line (1), oil refinery (1), etc.
6. Services: hospitals (3), hotels (5)



# Activities

1. Master degree on cleaner production and environmental management
2. Research on environmentally sound production methods and products
  - Technical aspects
  - Managerial aspects
3. Information centre on cleaner production



# Master degree

1. 1 year
2. Prepare: program, lectures (TOT), logistics
3. Cuban recognition procedure
4. Establish program (year 3)
5. Student exchange





# Research

1. Realize master theses set up Ph.D.s
2. 4 research lines
  - Cement,
  - Hydrocarbons,
  - EIA/SEA,
  - EMS (industry; service sector)
3. Publications (IPRJ)



# Information

1. Information centre on CP/EM
2. Brochure, newsletter (2 issues year<sup>-1</sup>), website
3. Stakeholder forum



# Assumptions - Limitations - weaknesses

1. Preparedness of Cuban society
2. Motivation of UcF
3. Practical/organization support



# Conclusions

- Feasible, timely, effective-impact
- Call for collaboration



Vrije Universiteit Brussel

# Thank you

