2iE
International Institute for Water and Environmental Engineering

40 years of experience in 14 countries

A Regional Centre of Excellence expanding throughout the African continent
Centre of Excellence of for West African Economic and Monetary Union

Pr Amadou Hama MAIGA
1- The 2iE: A reality built by 14 countries

2IE merges from EIER and ETSHER which was created in 1970 and based in Ouagadougou, Burkina Faso
The 2iE: Areas of speciality

- Water
- Energy
- Infrastructures
- Environment
The 2iE: A reality built by 14 countries

• A high level platform for water and environmental sciences and technologies
• With regional and multi-cultural dimension
• Collaborating with outstanding universities and research institutes worldwide.

• With more than 5000 alumina of engineers and high qualified technicians working in Africa and abroad (almost all the Executives in the sectors of water, sanitation and environment in West and Central Francophone Africa)

• More than 10,000 persons have benefited from one or more of the yearly 50 sessions of continuing training programme
2iE: Education, training and research
The 2iE initiated as a project for Africa

A Reform was decided by the country members started on February 2005 as response to:

- Numerus clausus/ Quota per country (which was not enough)
- Obsolete financial model (scholarship from France and Countries’ contributions)
- Crisis of Universities in Sub-Sahara Africa (gap between education programs and the need of companies)
- Economic growth of Africa needs more high qualified engineers and scientists for public and private sectors
- Capacity needed to met the MDG in Africa
The 2iE initiated as a project for Africa

The reform covers

- Reorganization and reinforcement of the staff
- Adoption of BMD (Bachelor, Master, Doctorate) system
- Reinforcement and growing of research
- Opening towards the entire African continent, and becoming a bilingual institute
- Suppression of quota for students enrollment
- New system of tuition fees
- New legal status
The 2iE project joins the AIST project
2- The 2iE project joins the AIST project

The 2iE project joins the AIST project in 2005

**2iE**
- 14 Country Members
- 35 years of expertise in research and training in Water, Energy, Environment and Infrastructures
- High level technology platform
- Thousands of trained engineers and technicians

**Nelson Mandela Institution**
- A vision for Africa
- Support from the World Bank Institute
- A world-wide network supported by the African Diaspora
The 2iE project joins the AIST project

Our principales:

1. Africa needs for its development, world class engineers and scientists trained in it’s environment

2. African students can successfully study and work in Africa if:
   - they can find institutes offering high quality of education programmes and equipments
   - the issued diplomas are internationally recognized and are at an equivalent of those of the developed world
   - the graduates easily find job because their education meets needs of public and private sectors
The 2iE project joins the AIST project

PRINCIPAL STAGES OF 2iE/AIST ACHIEVEMENTS

• May 2005: First contact between 2iE and the Nelson Mandela Institution in Dar Es Salaam within the framework of the AIST

• June 2005: Decision of the Council of Ministers regarding the transformation of EIER-ETSher to an International Institute within the framework of the AIST

• December 2005: adoption of the 2iE/AIST Business Plan for 2010 and 2015

• March 2006: the Government of Burkina Faso granted 100 ha of land for the extension of the 2iE campuses
The 2iE project joins the AIST project

PRINCIPAL STAGES OF 2iE/AIST ACHIEVEMENTS

• June 14, 2006: Decision of the Council of Ministers regarding the creation of an International Institute for Water and Environmental Engineering: 2iE

• June 16, 2006: Ceremony of Laying of the first stone of the new buildings of 2iE
The 2iE project joins the AIST project

MAIN ACHIEVEMENTS OF 2iE/AIST

• July to September 2006: Increase of the capacity of housing and study facilities of from 320 to 500 students

• January 16, 2007: Launching of the 2iE Foundation

  Selection of the Architecture proposals for the new buildings and equipments
A new governance: An International Public/Private Partnership

- **The 2iE Foundation**
  - 4 groups of members
    - 14 Country Members
    - Financial and technical partners
    - Scientific and university partners
    - Enterprises

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  **Governing Board**
  1 to 4 Representatives from each college

- **Civil Society: SCEPI**
  Management of property holdings

- **Economic Interest Group: EIG**
  Management of countries stake in the SCEPI, College of country members
2iE’s organization and activities

2iE’s SCIENTIFIC ORGANIZATION AND STAFF

• Four Training and research departments
  - Water/environment Sciences and technologies
  - Energy and industrial engineering
  - Material sciences and civil engineering
  - Management for sustainable development

• 40 Permanent Professors and researchers

• 15 Associates Professors

• More than 60 academics and professionals as visiting lecturers.
2iE’s organization and activities

The current education and training programs:

**Bachelor Degree in**
Water and Environmental Sciences and Technology (for continuation for a Master degree).
Water and Land Management
Civil engineering and rural equipment

**2iE/AIST Master Degree in**
Water and Environmental Engineering
Infrastructures and Hydraulics
Energy and Industrial Process

**Postgraduate Programs**
Integrated Water Resources Management
Sanitary and Environmental Engineering
Energy, Industrial Refrigeration
Hydraulics and Irrigated Systems Management
Computer Science, GIS and Modeling
Urban Infrastructures Management
Advanced Studies for the development of the societies
RESEARCH IN 2iE AIMS TO:

- CONTRIBUTE TO THE MILLENIUM DEVELOPMENT GOALS

- ANTICIPATE AND HELP TO MITIGATE THE IMPACTS OF CLIMATE CHANGES

- DEVELOP KNOWLEDGE AND INNOVATIVE TECHNOLOGIES

- CONTRIBUTE IMPROVEMENT OF EDUCATION PROGRAMMES IN AFRICA
2iE’s organization and activities

RESEARCH LABORATORIES of 2iE:

- Laboratory of Pollutions Control and Water Treatment Processes (LCP-Eau)
- Laboratory of Hydrology, Hydrogeology and Land Management (LEAH)
- Laboratory of Biomass Energy and Bio-Fuels (LBEB)
- Laboratory of Eco-Materials (LEMC)
- Transdisciplinary Platform for Complex Systems (SYSCOM)
2iE’s organization and activities

SOME ONGOING RESEARCH PROGRAMMES:

- Multi-disciplinary analysis of the African Monsoon: Impacts of climatic and hydrological variability on the water resources, erosion and soil hydrodynamism in West Africa
- Innovative technologies for water supply and sanitation to underprivileged areas
- Eutrophication and fulfilling of water reservoirs and lakes in Africa
- Advanced and low cost water and wastewater treatment (filtration on membranes, chemical oxidation and slow sand filtration, electro-coagulation)
- Wastewater treatment by ponds and re-use for agriculture
3.3- 2iE’s organization and activities

SOME ONGOING RESEARCH PROGRAMS: (continued)

→ Optimization of Irrigated schemes in arid regions
→ Water resources and population health risks in hot climate
→ Activation of wood carbon for water treatment
→ Alternative energy for rural areas: biomass and bio-fuel
→ Eco- materials from vegetable fibers (cotton, kapok, coconut) for isolation in buildings
2iE benefits from an international recognition of EIER-ETSHER

Former EIER-ETSHER is well known and recognised as high class education and training institute in West and Central Francophone Africa, at international level for it’s research in the fields of water

- No political dependence to any country
- Professors, researchers and students recruited with merit base only
- Collaboration with high ranked universities and research centres
- Participation of world class visiting professors and professionals in education and research programs
- Regular updating of training programs to meet the need of public and private sectors in partnership with the professionals;
- Diversification of funds sources and participation in international calls for proposals
- Regular assessment of funds use
- Participation of staff lecturers and researchers in international associations and networks of scientists and professionals
Present and projected Infrastructures: site of Ouagadougou
Present and projected Infrastructures: site of Kamboinse

Existing area
Present and projected Infrastructures: site of Kamboinse

New area
The needs of 2iE for its business plan for 2010

Required over 5 years (2005-2010) about 25 million Euro
Completed investments in 2006 have been financed on capital stock for an amount of 400,000 Euro
Mobilized funds or agreement:
  - Burkina Faso: handover of building land, value 2.5 million Euro
  - Switzerland: donation of 2.5 million Euro over 5 years (Started)
  - France MAE: FSP donation of 6 million Euro (signature on June 11, 2007)
  - France AFD: loan of 4 million Euro (to be signed by September 2007)
  - The World Bank/IFC: donation of 2.5 million Euro (under consideration)
  - To be find: 7.1 million Euro
A new financial model

Medium hypotheses for the increasing of students:

Evolution of the number of students:

<table>
<thead>
<tr>
<th>Year</th>
<th>2005</th>
<th>2006</th>
<th>2007</th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>304</td>
<td>455</td>
<td>620</td>
<td>840</td>
<td>1,030</td>
<td>1,030</td>
</tr>
</tbody>
</table>

Evolution of the number of students’ origins:

<table>
<thead>
<tr>
<th>Year</th>
<th>2004</th>
<th>2005</th>
<th>2006</th>
<th>2010 Objective</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pays</td>
<td>12</td>
<td>14</td>
<td>18</td>
<td>Enrollment of a significant number of students from English speaking countries</td>
</tr>
</tbody>
</table>
A new financial model

**PROJECTION: Coverage of Expenses**

Millions francs CFA

<table>
<thead>
<tr>
<th>Year</th>
<th>2006</th>
<th>2007</th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
</tr>
</thead>
<tbody>
<tr>
<td>Turnover (without subsidies)</td>
<td>1266</td>
<td>1660</td>
<td>2115</td>
<td>2614</td>
<td>2978</td>
</tr>
<tr>
<td>Charges</td>
<td>2480</td>
<td>3127</td>
<td>3446</td>
<td>3590</td>
<td>3962</td>
</tr>
<tr>
<td>% Expenses Covered</td>
<td>51%</td>
<td>53%</td>
<td>61%</td>
<td>72%</td>
<td>75%</td>
</tr>
</tbody>
</table>
3.4 A new financial model

**HYPOTHESES:**

Availability of target public:

- Economic growth of Sub-Saharan Africa higher than 5%
- Emergence of middle class and high-class
- High cost of studies in Europe and North America
- Tougher stance of Immigration Laws
- Expansion of recruitment to the entire African continent
- Competitive positioning price
### 3.4 A new financial model

**HYPOTHESES:** Concurrent Prices:

<table>
<thead>
<tr>
<th>Education Institutes</th>
<th>Tuition Fees</th>
<th>Accommodation Cost</th>
<th>Life Cost</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>2iE First Year</td>
<td>1,700,000</td>
<td>180,000</td>
<td>500,000</td>
<td>2,380,000</td>
</tr>
<tr>
<td>2iE First Year</td>
<td>1,200,000</td>
<td>180,000</td>
<td>500,000</td>
<td>1,880,000</td>
</tr>
<tr>
<td>Dakar University (CAD) in Dakar Senegal</td>
<td>150,000</td>
<td>350,000</td>
<td>750,000</td>
<td>1,250,000</td>
</tr>
<tr>
<td>ESP Dakar Senegal</td>
<td>1,500,000</td>
<td>350,000</td>
<td>750,000</td>
<td>2,600,000</td>
</tr>
<tr>
<td>UCAAC Cameroon</td>
<td>1,700,000</td>
<td>250,000</td>
<td>800,000</td>
<td>2,750,000</td>
</tr>
<tr>
<td>Polytech Yaoundé, Cameroon</td>
<td>600,000</td>
<td>250,000</td>
<td>600,000</td>
<td>1,450,000</td>
</tr>
<tr>
<td>ESITC CAEN, France First Year Engineer</td>
<td>1,300,000</td>
<td>1,600,000</td>
<td>2,400,000</td>
<td>5,300,000</td>
</tr>
<tr>
<td>ESITC CAEN, France First Year Engineer</td>
<td>3,280,000</td>
<td>1,600,000</td>
<td>2,400,000</td>
<td>7,280,000</td>
</tr>
<tr>
<td>EFREI, France Preparation Engineer</td>
<td>4,260,000</td>
<td>1,600,000</td>
<td>2,400,000</td>
<td>8,260,000</td>
</tr>
<tr>
<td>EFREI, France Preparation Engineer</td>
<td>4,430,000</td>
<td>1,600,000</td>
<td>2,400,000</td>
<td>8,430,000</td>
</tr>
</tbody>
</table>

NB: Of all the institutions, the 2iE is the only one that needs to cover 100% of its salary and operational expenses.
THANK-YOU FOR YOUR ATTENTION

www.2ie-edu.org

The Partners of 2iE