Building Africa Capacity for Development

Pr Amadou Hama MAIGA

RISE annual meeting Dar es Salam, October 2012
2iE: Ouagadougou- Burkina Faso

A 40 years initiative of 14 African Countries for Education, Research and Innovation for Development in

- Water
- Energy
- Environment
- Civil Engineering/mining
2iE: Main Goals

– Train in Africa and by Africans the future leading scientists/engineers and business Executives

– Build an African technological innovation capacity and promote business creation

– Reverse the brain drain
2iE in 2012: an Internationally Recognized Institute

- Center of Excellency of **WAEMU** (Sept 06), **ECOWAS** (May 08) and **NEPAD** (Jan 09)
- Member of the French Conference des Grandes Ecoles (March 07), Campus France, CONAHEC, AAU, RESCIF, ARIST....
- An African engineering school **accredited in Europe** (**EUR-ACE** accreditation Jul 09, Commission française des Titres de l’Ingénieur)
- Member of AfWA, CIGR, Wanet/Capnet, ICID, WAWP/GWP, WWC....
2iE in 2012: a multicultural platform

- 45 Senior Faculties of 14 nationalities from four continents
- 25 Adjunct Professors from other the World
- More than 100 visiting lecturers (40% from industry)
- 55 Associate Professors/researchers
- 38 PhD students co-supervised with partner universities
- 2300 Students BEng and MSc of 34 nationalities
2iE in 2012: Multiple Partnerships

Universities
- **American**: Tuskegee University, Princeton, Duke, Texas
- **European**: INSA, ENTPE, EPFL, UMPC, Montpellier II, Perpignan, UTC, Rennes I, Strasbourg, IHE Delft
- **African**: U. of Ouagadougou, KNUST Kumasi (Ghana), AUST Abuja (Nigeria) and AIST Arusha (Tanzania), U Cape Town, IAV Hassan2 Morocco, Univ Abidjan
- **Asian**: U. Hokkaido, U. Koshi, AIT Bangkok, IT Bandung

Research Centers
CIRAD, IRD, CEA/INES, IWMI, Ouranos (Canada), EAWAG

Private Sector TotalSA, Vergnet, VEOLIA, SUEZ, AfWA, Nutriset, Bertin, SIREA, SOGEA, ...
Bachelor
- Bachelor
- Internet and Computer Proficiency
- 7 B. of technology

Master’s Degree in Engineering
- TOEFL
- Engineering Degree
- 5 majors

Specialized Master’s Degrees
- 10 master’s programs
- MBA to be open in 2012

CTI EUR-ACE

AUF

PhD
International and Interuniversity Doctoral School

Research and Training Programs Tailored to Meet Development Needs

5 Laboratories

LEDES
Water, decontamination, ecosystems and health

LEAH
Hydrology and water resources

LBEB
Biomass, Energy and biofuels

LESEE
Solar Energy and Energy Savings

LEMC
Building Eco Materials
# 2iE Graduates in Africa

<table>
<thead>
<tr>
<th>Pays d’origine</th>
<th>1966 à 2005</th>
<th>2006 à 2011</th>
<th>Total</th>
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<tbody>
<tr>
<td>BENIN</td>
<td>256</td>
<td>95</td>
<td>351</td>
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<tr>
<td>BURKINA FASO</td>
<td>483</td>
<td>453</td>
<td>936</td>
</tr>
<tr>
<td>CAMEROUN</td>
<td>344</td>
<td>171</td>
<td>515</td>
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<tr>
<td>CENTRAFRIQUE</td>
<td>59</td>
<td>10</td>
<td>69</td>
</tr>
<tr>
<td>CONGO</td>
<td>172</td>
<td>20</td>
<td>192</td>
</tr>
<tr>
<td>GABON</td>
<td>87</td>
<td>34</td>
<td>121</td>
</tr>
<tr>
<td>GUINEE</td>
<td>81</td>
<td>23</td>
<td>104</td>
</tr>
<tr>
<td>COTE D’IVOIRE</td>
<td>249</td>
<td>114</td>
<td>363</td>
</tr>
<tr>
<td>MALI</td>
<td>164</td>
<td>60</td>
<td>224</td>
</tr>
<tr>
<td>MAURITANIE</td>
<td>61</td>
<td>18</td>
<td>79</td>
</tr>
<tr>
<td>NIGER</td>
<td>283</td>
<td>103</td>
<td>386</td>
</tr>
<tr>
<td>SENEGAL</td>
<td>310</td>
<td>66</td>
<td>376</td>
</tr>
<tr>
<td>TCHAD</td>
<td>164</td>
<td>94</td>
<td>258</td>
</tr>
<tr>
<td>TOGO</td>
<td>259</td>
<td>55</td>
<td>314</td>
</tr>
<tr>
<td>RDC</td>
<td>4</td>
<td>9</td>
<td>13</td>
</tr>
<tr>
<td>AUTRES (10)</td>
<td>19</td>
<td>25</td>
<td>44</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>2995</strong></td>
<td><strong>1350</strong></td>
<td><strong>4345</strong></td>
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</table>

550 diplômés quitteront 2iE chaque année.
Student rapidly employed in Africa

<table>
<thead>
<tr>
<th>Year</th>
<th>2007</th>
<th>2008</th>
<th>2010</th>
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<tbody>
<tr>
<td>3 months after</td>
<td>87%</td>
<td>83%</td>
<td>81%</td>
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<tr>
<td>graduating</td>
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<tr>
<td>6 months after</td>
<td>93%</td>
<td>97%</td>
<td>92%</td>
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<tr>
<td>graduating</td>
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<tr>
<td>12 months after</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
</tr>
<tr>
<td>graduating</td>
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</tr>
</tbody>
</table>
Distribution area of employment: 2010

- Public works: 30%
- Sanitation/Environment: 18%
- Energy: 7%
- Water: 45%
- Sanitation/Environment: 18%
2iE : Sustainable partnership with Private Sector
2iE Incubating new African entreprises
Research at 2iE
Doing research for development
Organizing 2iE as Common and Open Centers

1. Research Center on Water and Climate
2. Research Center on Sustainable Energy and Habitat
3. Center on Innovation and Social Entrepreneurship
4. E-Center
5. International Doctoral Program
The 2iE Research Center on Water and Climate

**2iE**
Team of 30
Ouagadougou

**CIRAD**
Team of 10
Montpellier

**IRD**
Team of 15
Montpellier

**Hokkaido**
Team of 10
Sapporo

**IWMI**
Team of 5
Ouaga

**EPFL**
Team of 10
Lausanne

**OURANOS**
Network
Montreal

**INP**
Team of 10
Grenoble

**Private Sector:**
African Water Association, SUEZ, Vergnet, Véolia

**Scientific Partners:**
University of Ouagadougou, Tuskegee, CILSS, UNICEF...
Laboratory of Pollution Control, Water Treatment Eco-Health in Tropical Climate (LEDES)

- Surface and Ground Water Pollution Assessment and impacts on Health and environment
- Water and Wastewater treatment and re-use in agriculture
- Innovative technologies for water supply and sanitation to underprivileged areas
2iE: Research on waste water treatment
Laboratory of eco-hydrology and Water resources management in Sub-Sahara Africa (LEAH)

- African Monson Multidisciplinary analyses (AMMA): Water cycle at local scale; Land surface processes; Human processes and food security; Climate change impacts on Water resources
- Soils hydrodynamics regimes for water economy in irrigated agriculture in Sub-Saharan Africa
- Groundwater assessment for water supply in the West Africa area
2iE/LEAH: Research on land reclamation
The 2iE Research Center on Sustainable Energy

2iE Team of 40
Ouagadougou

CIRAD
Team of 15
Montpellier

KNUST
Team of 10
Kumassi

PROMES – CNRS
Team of 10
Perpignan

INES CEA
Team of 20
Chambéry

Ecole des Mines
Team of 10
Albi

Scientific Partners:
INSA Network, University of Ouagadougou, Duke, EPFL, ...

Private Sector:
Total, Sonaby, SIREA, Photalia, Bertin Technologies, EDF, EDM, Sonabel, SEEG, Véolia, ...
Laboratory of Solar Energy and Energy Savings (SEESL)

• Accurate assessment of the solar resource and energy needs in Africa
• Concentrating solar power plants (CSPP)
• Bioclimatic architecture & Solar PV / thermal (low temperature) Systems
• Optimal design and thermodynamic optimization of energy systems & Energy Efficiency
Pilot of « Flexy Energy »
Laboratory of Biomass Energy and Biofuels (LBEB)

- Alternative energy for rural areas: biomass and bio-fuel, thermochemical conversion
- Adaptation of gasoline engines to vegetal oils
- Esterification of vegetal oils to biofuels
- Activated carbon for water and waste treatment
2iE/LBEB: Research on Biofuels
Laboratory of Eco-Materials and Construction (LEMC)

- Life cycle of local materials in construction works/ innovative technologies using local materials
- Sustainable cities: sustainable management of urban areas and transport
2iE Center for Innovation and Entrepreneurship

Private Sector:
- HR Directors’ Club, Career Fairs, Thematic days
- Total, Bertin Technologies, Vergnet, Bank of Africa, Nutriset, SIREA, Essakane

Technopole
- Business Nursery and Incubator
  - 20 H

Business Center for Companies

2iE
- Team of 15
- Ouagadougou

Management of Innovation
- MBA

Professional and Continuing Education

Alumni Services and Placement

Academic and Scientific Partners:
- Dauphine, Maison de l’Entreprise (BF), CESAG, Institut d’Afrique...
2iE e-Center

Private Sector:
Kelis, Nutriset, Microsoft

Virtual Library

Language Center

2iE
Team of 12
Ouagadougou

Web Management

E-learning Education

IT Services and Equipment

Academic and Scientific Partners:
Agence Universitaire de la Francophonie, UTC, UVED,
University of Savoie, UQAM...
Thank you for your attention

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