



# ZiE

International Institute for Water  
and Environmental Engineering

**40 years of experience in 14 countries**

**A Regional Centre of Excellence expanding  
through out the African continent**

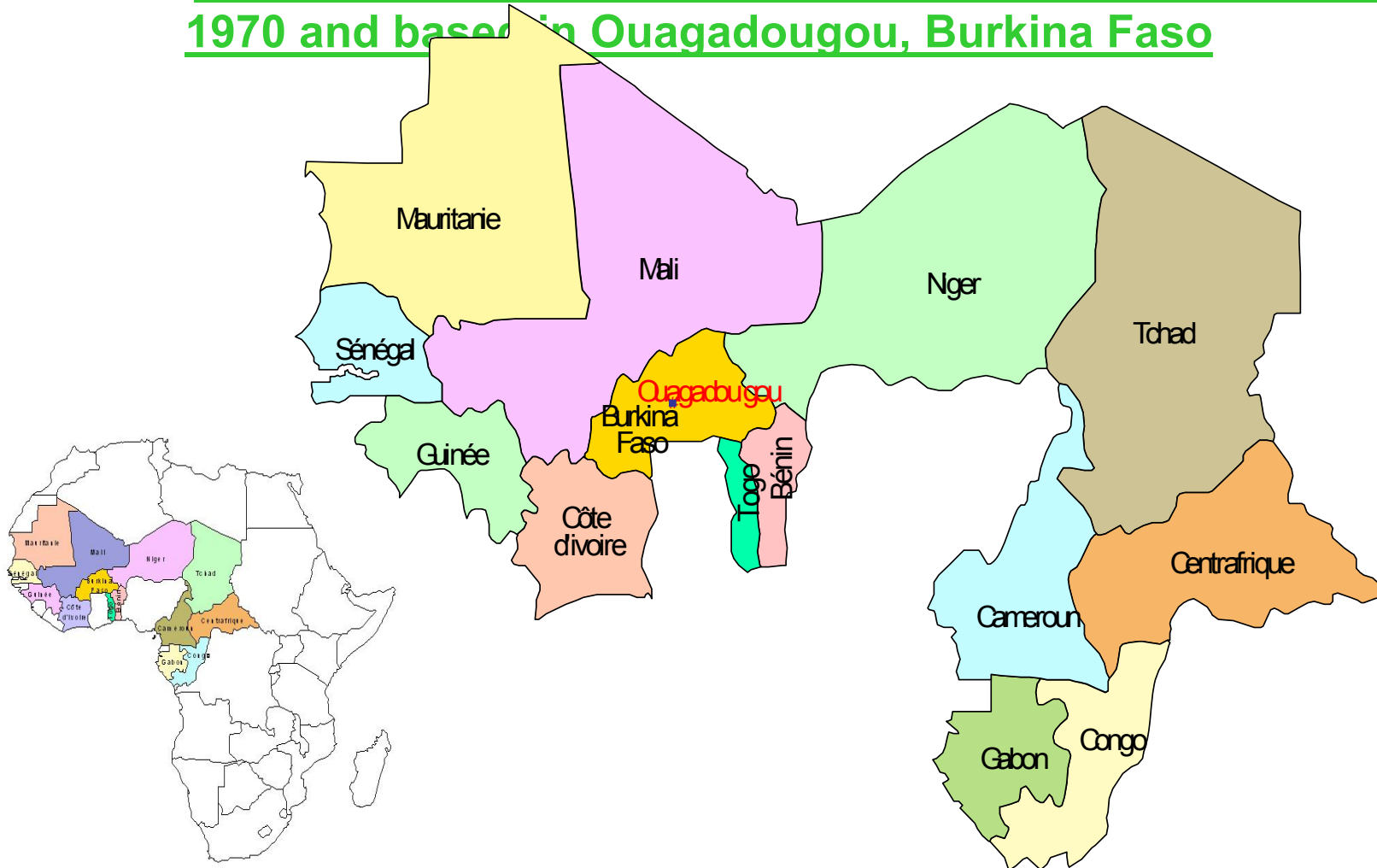
**Centre of Excellence of for West African Economic and Monetary Union**

**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





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## The 2iE: Areas of speciality

- **Water**
- **Energy**
- **Infrastructures**
- **Environment**



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## 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 word wide.**
- **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 continus 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



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**The 2iE project joins the AIST project**





## 2- The 2iE project joins the AIST project

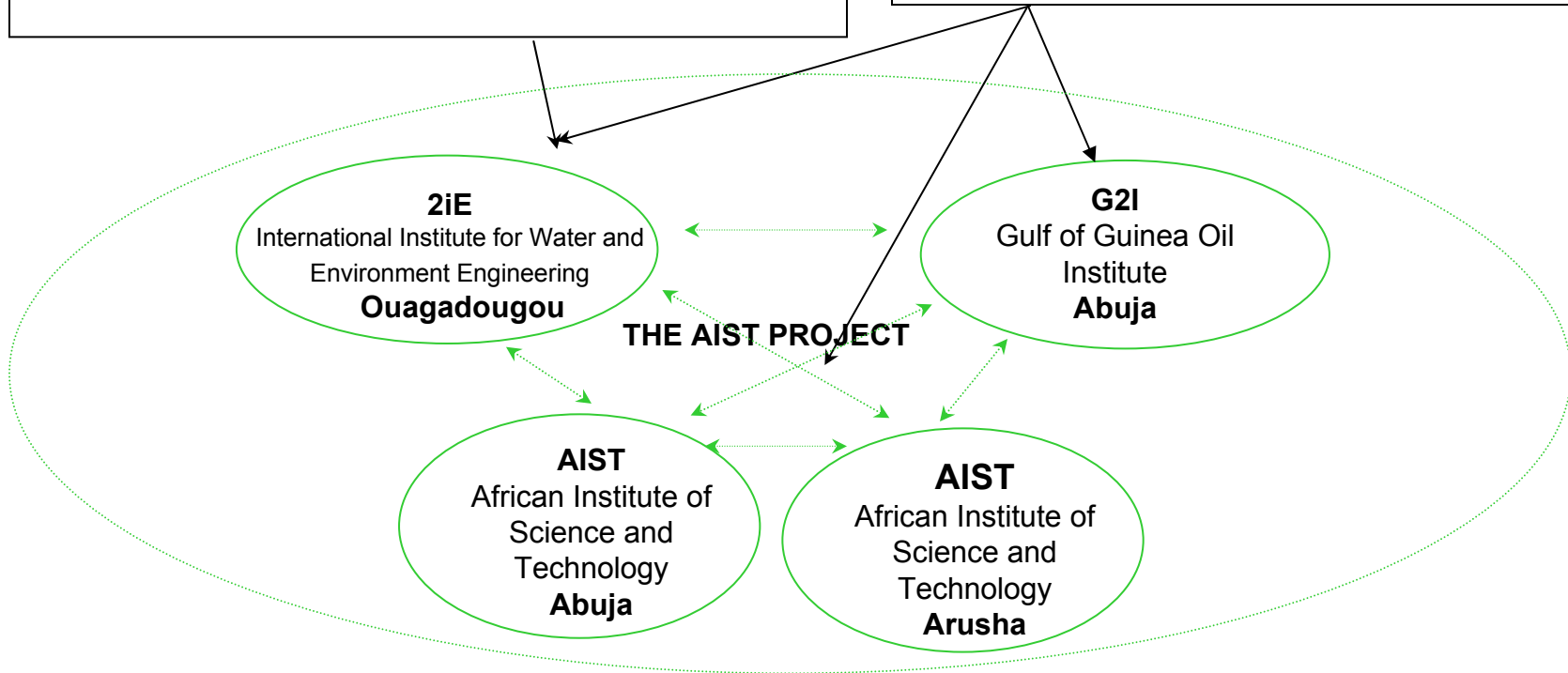
### The 2iE project joins the AIST project in 2005

#### 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





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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





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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



## 2iE: A New Governance

A new governance: An International Public/Private Partnership

### •The 2iE Foundation

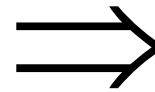
4 groups of members

14 Country Members

Financial and technical partners

Scientific and university partners

Enterprises



**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



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## **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.**



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## 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





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## 2iE's organization and activities

### 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 hydro-dynamism 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**



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## **ZiE 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 it's 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

2005	2006	2007	2008	2009	2010
304	455	620	840	1,030	1,030

#### Evolution of the number of students' origins:

2004	2005	2006	2010 Objective
12 Pays	14 Pays	18 Pays	Enrollment of a significant number of students from English speaking countries



## A new financial model

### PROJECTION: Coverage of Expenses

Millions francs CFA

Year	2006	2007	2008	2009	2010
Turnover (without subsidies)	1266	1660	2115	2614	2978
Charges	2480	3127	3446	3590	3962
% Expenses Covered	51%	53%	61%	72%	75%



## 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:

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

**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](http://www.2ie-edu.org)

The Partners of 2iE

