ACEPartners Project

Sustainable Water Management Network

«NET-WATER»

2020 – 2021 Roadmap

May 5th, 2020
Introduction:

One of the important lessons learned from the implementation of the World Bank’s African Centers of Excellence (ACE) project since 2014 remains the limited academic and scientific collaboration between the Centers. Based on this observation, ACEs working on the water theme initiated discussions during the ACE workshop in Ouagadougou (Burkina Faso) in 2018. These exchanges continued during the various ACE meetings that followed (Djibouti, Senegal, Morocco, Abuja), and led to the establishment of this thematic network on sustainable water management called RES-EAU / NET-WATER. After discussion with AFD and IRD, this network will be supported by the ACEPartners Project as part of the 4 thematic networks funded for a 4 year period (2020-2024).

The RES-EAU / NET-WATER is composed of the following African Centers of Excellence:
- International Institute for Water and Environmental Engineering (CEA-2iE), Burkina Faso
- African Center of Excellence for Water and Sanitation (C2EA), Benin
- Regional Water and Environmental Sanitation Center Kumasi (RWESCK), Ghana
- West African Center for Water, Irrigation and Sustainable Agriculture (WACWISA), Ghana
- African Center of Excellence on Climate Change, Biodiversity and Agriculture (CEA-CCBAD), Côte d’Ivoire

The partners associated with RES-EAU/NET-WATER are the following:
- African Center of Excellence for the VALORisation of waste in high added value PROducts (ValoPro), Côte d’Ivoire
- Mohamed 6 Polytechnic University (UM6P), Morocco

More associated partners may be identified as the network develops.

This roadmap presents the players of the network, their involvement as well as the actions prioritized and budgeted for 2020 and 2021. These actions present a logical framework and results whose objective is to contribute to the influence of the ACEs involved via thematic networking.

I. Presentation of actors

A. NET-WATER’s core members :

1. International Institute for Water and Environmental Engineering (CEA-2iE), Burkina Faso:

The 2iE Institute is an African Center of Excellence for training and research of international standard located in Burkina Faso. Its main mission is to train competent and innovative engineer-entrepreneurs capable of meeting the challenges of the development of the African continent, offer continuing professional training options to executives and technicians from the private and public sectors, and conduct research / development programs for the private and public sectors and contribute to the development of scientific knowledge. The fields of competence of 2iE are Water and Sanitation, Civil Engineering and Hydraulics, Electrical Engineering and Energy, Environment and Sustainable Development, Management and Entrepreneurship... The Institute 2iE brings together teachers, researchers and students of nearly 30 nationalities.

2. African Center of Excellence for Water and Sanitation (C2EA), Benin:

The Africa Center of Excellence for Water and Sanitation (C2EA) of the University of Abomey-Calavi is made up of a network of national, regional and international training and research institutions pooling
their resources and supported by sectoral partners, with the National Water Institute of the University of Abomey-Calavi as its core. Its mission is to lead the scientific and academic development of the sub-region by implementing a policy of capacity building for executives of public and private administrations, training of elites and regional authorities in the areas of water, sanitation and climate change. The C2EA therefore aims to provide Africa with a center of competence, expertise and innovation on water and sanitation. This pole intends to take up the challenge of training highly qualified competent personnel capable of solving the various operational problems which arise in the various countries of West and Central Africa while taking into account the climatic, geological and of each country.

3. Regional Water and Environmental Sanitation Center Kumasi (RWESCK), Ghana:
The Kumasi Regional Center for Water and Environmental Sanitation (RWESCK) seeks to build the capacity of high-quality human resources in Ghana and the subregion to meet the critical mass of human resources needed to meet the challenges of water and sanitation development highlighted in the Africa Water Vision document for 2025 and post-MDG sustainable development goals. This project aims to promote regional specialization in areas that respond to specific regional development challenges and to strengthen the capacities of universities to provide high quality applied training and research, as well as awareness activities associated with industry and academic and scientific partners. The Center offers initial Masters training and Doctorate programs on the themes of Water Resources Management, Environment and Waste Management, Drinking Water Supply and Water Technologies.

4. West African Center for Water, Irrigation and Sustainable Agriculture (WACWISA), Ghana:
WACWISA a semi-autonomous Centre of Excellence specialized in education and research in Water Resources, Irrigation Science and Engineering, Sustainable Agriculture and Climate Change. It has as a vision “to be a leading world-class academic and research Centre specialized in irrigation, water resources, sustainable agriculture and climate change” and, a Mission of “developing skills and knowledge of young men and women to provide practical and sustainable solutions to challenges of water resources, irrigation, agricultural development and climate change in Africa”. It undertakes training of high-level personnel at the Masters and PhD level, career-based short courses as well as conduct cutting-edge research through post-doctoral training in its thematic areas. The Centre aims at bridging the training gap that exists for manpower in the area of water resources, irrigation, sustainable agriculture and climate change especially in the West African sub-region. The center builds on already existing relationships and experiences of industry, national, regional and international partners in developing programmes that suit regional needs. Current programmes include; Integrated Water Resources Management, Irrigation and Drainage Engineering, Soil and Water Conservation and Management, Environmental Management and Sustainability, and Sustainable Agricultural and Food Systems. WACWISA also undertakes applied and advanced research that contributes to new and emerging knowledge and technologies to create opportunities for especially resource poor as well as develop localized and sustainable solutions and technologies for the development and growth of society.

5. African Center of Excellence on Climate Change, Biodiversity and Agriculture (CEA-CCBAD), Côte d’Ivoire:
The Center of Excellence on Climate Change, Biodiversity and Sustainable Agriculture aims for excellence in training, research and governance through initial training and capacity building of administrative and technical staff as well as teachers- researchers. It mainly targets the training of postgraduate students. It emphasizes biodiversity and is part of a preexisting regional network of ten (10) institutions focused on climate change through the WASCAL program. It also represents the institution selected by PASET for the training of doctoral students in the field of food security.

B. Associated members to the network:
1. African center of excellence for the VALOrisation of waste into high added value PROducts (ValoPro), Côte d’Ivoire

The Center of Excellence in Valorization of Waste into High Value-Added Products (ValoPro) intends to develop in Africa, a center of expertise and innovation in the recovery of waste. The center intends to take up the challenge of training highly qualified personnel to effectively address the questions of treatment and recovery of agricultural, agro-industrial, household, electronic, electrical and plastic waste. This training will be backed by a very high-level research program based on a constructive dialogue with the socio-professional sector. The professional sector will play a decisive role in the implementation of co-built training programs to guarantee the adequacy of training and employment.

2. Mohamed 6 Polytechnic University, Morocco

The Mohammed VI Polytechnic University is an institution oriented towards applied research and innovation with a strong focus towards Sub-Saharan Africa. As part of the NET-WATER network, the UM6P plans to strengthen digital analysis capacities for climate modeling and simulation in West Africa in order to ensure the emergence of specialized centers that develop digital simulations. The main scientific priorities addressed by UM6P within the framework of the network are as follows:
- Water management and climate change;
- Integrated water management;
- Hydro-informatics (big data, Artificial Intelligence, modeling);
- Advanced water treatment technologies;
- Climate change and sustainability.

II. Scientific and academic objectives of thematic networking

The general objective of RES-EAU / NET-WATER is to strengthen academic and scientific partnerships between African Centers of Excellence on the theme of sustainable management of water and associated resources. More specifically, the RES-EAU / NET-WATER aims to:
- Development of joint training and research programs between ACEs;
- Develop joint research programs on themes related to water;
- Promote the relationships of the centers with the private sector and other development actors;
- Strengthen the mobility of Master and doctoral students, teachers, researchers and staff between centers;
- Pool human, material and financial resources between centers;
- Strengthen the capacities of the ACE teams on themes of common interest;
- Share good practices and experiences between the ACE (education, research, administrative and financial management, project / program management, etc.)
- Support the centers in the implementation of the ACE-IMPACT project and the achievement of indicators linked to disbursement (DLIs, results framework, benchmarking, etc.);
- Jointly mobilize funding for the ACEs and the sustainability of the network.

III. Operationalization

1- Support facilitation:

The ACEPartners funding offers a series of tools for organizing and structuring thematic networks for centers. It will finance actions in direct link with the objectives and indicators linked to disbursement of each center through inter-ACE partnership.

Provided by a project management structure based at the IRD headquarters in Marseille and by a network coordinator recruited for each network, the actions of each network can be structured around:
- The establishment of inter-ACE research projects and the search for associated funding;
- The opening of inter-ACE PhD scholarship campaigns;
- The mobility of North and South experts;
- The organization of scientific events of excellence in connection with the themes of the networks;
- The opening of the network to the private sector and to entrepreneurship;
- The organization of inter-ACE technical training workshops (scientific, fundraising, etc.).

The general management structure of the ACEPartners project will be as follows:

The scientific and educational council has been appointed to support the development and ensure the scientific and educational consistency of the ACEPartners project (see appointed members).

General monitoring of the project is carried out by a steering committee made up of experts from the World Bank, the Association of African Universities (AU), AFD, IRD and INRIA.

IV. Networking actions for research, training and innovation

The implementation of the actions below is conditioned by the signing of collaboration agreements between the IRD, the ACE Coordinator of NET-WATER (2iE) and the other centers members. This signing will take place in the first half of 2020.

**Actions planned for 2020:**

1. **Organization of the NET-WATER bootcamp workshop**

The launching workshop will bring together all the stakeholders of the network in order to discuss the network’s academic, scientific and organizational framework. Specifically, the workshop has the following objectives:
- Present NET-WATER and its action plan and define the network’s priorities and strategy;
- Establish the skills directory of the NET-WATER (list of network members with their contacts and areas of expertise);
- Define the associate members of the network who may be involved in NET-WATER activities;
- Define the thesis subjects, the recruitment methods as well as the implementation schedule;
- Discuss all the planned activities and efficient operationalization;
- The workshop will host about 20 people:
  o 2 people per ACE, or 10 people;
  o The Project Manager, the Coordinator and the animator of NET-WATER, that is 3 people;
  o A representative of AFD, IRD, AAU and the World Bank;
  o A representative of the Government of the host country;
  o Special guests.

As far as possible, this workshop could be jointly organized with the ACEPartners’ network on sustainable mining activities in order to share common issues, in particular on water treatment, sanitation and the environment. This grouping will also make it possible to pool the resources of the two thematic networks. The workshop will then include sessions specific to each network and sessions common to both networks.

The workshop will be held in Ouagadougou (Burkina Faso) within the 2iE Institute which coordinates the NET-WATER. The duration is three (3) days and the indicative period is from June 22 to 24, 2020.

In the event that it will not be possible to hold this workshop face-to-face given the current global health situation, a virtual half-day webinar meeting will be envisaged with the various members of NET-WATER members and the IRD / AFD coordination.

2. Implementation of an inter-ACE PhD program:

Scientific research is one of the major priority of the ACE-Impact project. National and regional development challenges in the field of water can be fully addressed through sustainable and efficient collaboration between ACEs involved in this thematic. Strong and promising research axes on water management must be designed for the mobilizing the expertise, knowledge and resources of the centers to address them and provide relevant and innovative responses. This will ensure the network’s visibility and credibility on the scientific level. One of the most effective ways to operationalize this action is to set up an inter-ACE doctoral scholarship program. More specifically, it will involve recruiting five (5) doctoral students in the first year, a doctoral student by center who must be co-supervised with at least one other ACE in the network. The subjects of the thesis should fit perfectly into the thematic commonly defined by the members of the network. We need to agree on the subject matter at bootcamp workshop. The PhD scholarships will include the doctoral student’s allowance, basic functioning (ie research costs) and mobility.

Doctoral students will have to be recruited for the 2020-2021 academic year and will start their research work from September 2020. The recruitment processes (launching of calls for candidates, selections and setting up for the ACEs) will have to take place in July-August 2020.

3. Organization of a workshop dedicated to digital inventory study and digital platform (postpone accreditation and quality assurance to 2021 thematic workshop)

International accreditation is an important indicator of the ACE-IMPACT project and many centers are struggling to obtain it. It is a long, rigorous, difficult and expensive process which involves all the actors in the education system of the candidate. It is therefore essential to strengthen the preparation capacities of NET-WATER’s members on this issue and to share experiences and good practices. Indeed, some centers are already accredited internationally (2iE, RWESCK, ..), and will therefore be able to bring their expertise and experience to the workshop. The workshop will bring together around twenty people, including:

- 3 members of each ACE in the network, ie 15 people;
- 2 experts in international accreditation (CTI / HCERES and AQAS), workshop leaders;
- 3 participants from the ACE associated with NET-WATER;
- The NET-WATER facilitator.

The workshop will be held in Kumasi (Ghana) for 3 days in the indicative period from September 07 to 09, 2020.

4. Inventory of digital equipment and platforms of NET-WATER’s members

Digital education is proving today to be a priority for centers. Hence we need to take into account the evolution of technology and training and research needs. Several initiatives are underway, both at ACE and national levels through international partnerships. In order to help better identify the needs and thus facilitate investments in the digitalization of centers, it is essential to have a comprehensive and complete diagnosis of the digital state of the centers for NET-WATER. This study could be undertaken by an ICT expert who will evaluate the strengths and weaknesses of the information systems in centers. The aims will be to present sustainable and cost efficient ways of strengthening and accompanying ways to reach today’s digital requirement in research and higher education.

The study could be carried out over a period of 30 working days and would concern the five (5) ACE of NET-WATER. It would start as soon as the TDRs are ready and the consultant recruited, and would have to end by the 3rd quarter of 2020.

5. Diagnostic study of the relation between NET-WATER’s centers with the socio-economic sector

The private and public sectors will have to play an increasingly important role in the lives of African universities. Scientific and technological competitiveness, professionalization of training and employability of graduates, adaptation to the needs of the socio-professional world and income generation for sustainable financing of centers are core priorities of the ACE-IMPACT project.

This type of partnership can be new for some centers and it deserves to be well designed, organized and implemented. Who are the potential sector partners in the various centers’ countries and in the sub-region? What are their needs and interests? How can ACEs organize themselves individually and collectively to meet the needs of businesses and other development actors? What are the existing partnerships and achievements? What are the new promising niches to prospect?

These are some key questions that will need to be answered, if we are to envision a solid, lasting and beneficial / fruitful relationship between the centers and the private sector. This is the objective of this diagnostic study which will make it possible evaluate ongoing partnerships with the socio-economic sector and to better prepare relations between centers and these partners in the second year of the ACEPartners project (see planned actions in 2021). The study could be carried out by an expert in the field and would take place over 15 working days, preferably in the 3rd quarter of 2020. The ToRs and the recruitment of the expert could be carried out by NET-WATER.

6. Participation of NET-WATER’s members to international events

Participation in international meetings allows NET-WATER’s members to contribute to major debates on issues in water and sanitation management and related sectors. A provision is therefore made for this first year to allow teachers and researchers of the network to take part in international events.

For this year 2020, it is expected that 3 people / ACE will participate in meetings in Africa and 2 people / ACE in meetings outside Africa. The missions for these meetings are of a maximum duration of one week with a trip in economy class.

A few events have already been targeted in 2020:
- 3rd International Congress of the African Membrane Society "Membrane and filtration technologies for sustainable development", 3-6 November 2020 in Dakar (Senegal)
- 4th International Meeting on "Hydrology of the great African rivers", 24 to 28 November 2020 in Cotonou (Benin)
- African water week (dates to be confirmed).

**Actions planned in 2021:**

1. **Organization of a consultation workshop with the public and private sector**

   Following the study on the inventory of partnerships with the socio-economic sector, this workshop will bring together ACEs and the main professional players. This will be an opportunity to meet expectations of companies and ACEs through concrete actions (expertize contracts, agreements in principle and various commitments). The format and content of the workshop will therefore be designed accordingly. The workshop will bring together 3 people per centers, 15 participants from the private / public / NGO sector, and the coordination of the IRD, making a total of around 30 participants. The workshop will be organized in Abidjan (Côte d'Ivoire) during the period from January 18 to 20, 2021 (3 days).

2. **Participation of NET-WATER’s members to international events**

   As in 2020, NET-WATER’s members will also have the opportunity to participate in these international meetings during the year 2021. It is expected that 3 people / ACE will attend meetings in Africa and 2 people / ACE will meet outside Africa. Support includes the economy class round trip ticket, accommodation costs for a maximum of one week and meeting registration fees.

   For 2021, the event already targeted is the ASIH Scientific Assembly to be held from June 28 to July 2, 2021 in Montpellier (France).

3. **Organization of a workshop on themes of common interest (income generation, regional attractiveness, etc.) – thematic workshop on programs accreditation, quality assurance, income generation, regionalization,**

   By drawing lessons from the first project of the African Center of Excellence of the World Bank (2014-2019), it turns out that centers are experiencing difficulties in reaching certain indicators (DLIs) needed to ensure their sustainability and their sub-regional influence. Income generation and attractiveness of regional students are among these performance challenges. It is therefore essential to raise the awareness of the members of NET-WATER and to strengthen their capacities on these important themes in the implementation of the ACE-IMPACT project. The workshop will therefore target these objectives. Depending on the interests of NET-WATER’s members and the time available, other themes may be added and dealt with during the workshop.

   The workshop will be held in Cotonou (Benin) from **April 5 to 7, 2021** (3 days). It will bring together around twenty participants including 3 people / ACE.

4. **Organization of a scientific workshop on "Water and adaptation to climate change observation using satellite imagery"**

   Africa is severely and variously affected by climate change with often disastrous consequences, particularly on water resources. Adapting to climate change combined with other major demographic and environmental changes remains a major challenge for scientific research. This theme will be at the heart of the network’s scientific priorities. The development of modeling and decision-making tools to dynamically and retroactively integrate these changes would be a major scientific advance, particularly in the area of water
resources. The UM6P, which capitalizes on a long and rich experience on these issues with large digital capacities, intends to host a scientific workshop on water and adaptation to climate change observation using satellite imagery. This workshop will be held at UM6P (Ben Guerir in Morocco), from **June 14 to 18, 2021** (5 days) and will involve the participation of 2 people by centers and associated partner, or a dozen people.

5. **Development of a digital platform for sharing and disseminating NET-WATER’s knowledge**

One of the major challenges of African scientific research is the lack of visibility and knowledge/results dissemination. It will therefore be important to develop a platform that will achieve the following objectives:

- Capitalize on the knowledge and scientific results of the NET-WATER’s centers;
- Ensure visibility on research carried out in the centers;
- Display the service offers and skills of the ACEs for the private sector;
- Disseminate the needs of companies (internships, jobs, services, short term training, etc.);
- Serve as a portal to the websites of ACEs and other specialized sites and knowledge / data bases.

A consultant will be recruited for the development of the platform. It will be hosted at the 2iE and will be managed by the network’s leader. The design of the platform will start at early 2021 and should be operational during the second quarter of 2021.

6. **Development of a MOOC bringing together all the centers on a relevant theme on sustainable water and sanitation management (for Master and PhD students)**

MOOCs are emerging today as a complementary method of training in universities. In order to pool their efforts and skills, the centers will develop a MOOC on a theme related to water management for the benefit of students. The theme will be discussed and agreed during the bootcamp in 2020.

A consultant will be recruited for the development of the MOOC which will be released in the 3rd quarter of 2021.
V. 2020-2021 estimated budget:

**2020 estimated budget:**

<table>
<thead>
<tr>
<th>Activities</th>
<th>Quantity</th>
<th>Unit cost (EURO)</th>
<th>Total cost (EURO)</th>
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<td><strong>2. Establishment of a joint thesis scholarship program between ACEs</strong></td>
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<td>Recruitment of 5 doctoral students* (funding provision for the first year)</td>
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<td><strong>4. Realization of the inventory of digital equipment and platforms of NET-WATER’s members (3rd Quarter 2020)</strong></td>
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</table>
Recruitment of a consultant (30 working days) (Task each ACE to do the study) | 30 | 610 | 18 293

**Subtotal 4** | 18 293

5. Carrying out of a diagnostic study on the situation of the ACE partnerships of NET-WATER with the socio-economic world

Recruitment of a consultant (15 working days) (Task each ACE to do the study) | 15 | 610 | 9 146

**Subtotal 5** | 9 146

6. Participation of NET-WATER’s members in international events and demonstrations

Participation in conferences outside Africa (3 people per ACE = 15 people) | 15 | 1 220 | 18 293

Participation in conferences in Africa (2 people per ACE = 10 people) | 10 | 3 049 | 30 488

**Subtotal 6** | 48 780

**TOTAL 2020** | 412 378

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*The total budget of a PhD thesis over 3 year is 105 000 Euros.*

### 2021 estimated budget

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<td>3 000</td>
</tr>
<tr>
<td>e) Organization costs</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Restoration</td>
<td>ff</td>
<td>22 866</td>
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<tr>
<td>Logistics</td>
<td>ff</td>
<td>18 293</td>
<td>18 293</td>
</tr>
<tr>
<td>Participants file</td>
<td>ff</td>
<td>7 622</td>
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<tr>
<td>Communication</td>
<td>ff</td>
<td>15 244</td>
<td>15 244</td>
</tr>
<tr>
<td>f) Miscellaneous and unforeseen</td>
<td>ff</td>
<td>5 000</td>
<td>5 000</td>
</tr>
<tr>
<td><strong>Subtotal 1</strong></td>
<td></td>
<td></td>
<td><strong>113 201</strong></td>
</tr>
</tbody>
</table>
### 2. Participation of NET-WATER members in international events and demonstrations

| Participation in conferences in Africa (3 people per ACE = 15 people) | 15 | 1 220 | 18 293 |
| Participation in conferences outside Africa (2 people per ACE = 10 people) | 10 | 3 049 | 30 488 |

**Subtotal 2**  
48 780

### 3. Organization of a workshop on themes of common interest (income generation, regional attractiveness, etc.)

- **a)** Support for ACEs participants (17 pers. for 5 days)
  - Plane tickets: 17 | 534 | 9 070 |
  - Perdiems: 85 | 137 | 11 662 |

- **b)** Support for IRD participants (2 pers. for 5 days)
  - Plane tickets: 2 | 1 000 | 2 000 |
  - Perdiems: 10 | 137 | 1 372 |

- **c)** Support for expert trainers
  - Plane tickets: 2 | 534 | 1 067 |
  - Perdiems: 10 | 137 | 1 372 |
  - Fees: 6 | 1 000 | 6 000 |

- **d)** Organization costs
  - Restoration: ff | 15 244 | 15 244 |
  - Logistics: ff | 15 244 | 15 244 |
  - Participants file: ff | 4 573 | 4 573 |
  - Communication: ff | 15 244 | 15 244 |

- **e)** Miscellaneous and unforeseen
  - ff | 5 000 | 5 000 |

**Subtotal 3**  
87 848

### 4. Organization of a scientific workshop on "Water and adaptation to climate change with the use of satellite images"

- **a)** Support for ACEs participants and associated partners (12 pers. Pdt 7 days)
  - Plane tickets: 12 | 686 | 8 232 |
  - Perdiems: 84 | 137 | 11 524 |

- **b)** Support for IRD participants (2 pers. Pdt 7 days)
  - Plane tickets: 2 | 1 000 | 2 000 |
  - Perdiems: 14 | 137 | 1 921 |

- **c)** Contribution to organizational costs
  - ff | 25 000 | 25 000 |

**Subtotal 4**  
48 677

### 5. Development of a digital platform for sharing and disseminating RES-EAU knowledge

- Design and development of the platform: ff | 5 000 | 5 000 |
- Platform hosting and maintenance costs: ff | 2 500 | 2 500 |

**Subtotal 5**  
7 500

### 6. Development of a MOOC bringing together all the centers on a relevant thematic on sustainable water and sanitation management (for Master and PhD students)
<table>
<thead>
<tr>
<th>Project Description</th>
<th>FF</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>MOOC design and development</td>
<td>ff</td>
<td>10 000</td>
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<tr>
<td>MOOC management and animation</td>
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<td><strong>15 000</strong></td>
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<td>7. Establishment of a joint thesis scholarship program between the ACE</td>
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<td>Financing of the 5 recruited doctoral students (provision for the 2nd year)</td>
<td>5</td>
<td>35 000</td>
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<tr>
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<td><strong>175 000</strong></td>
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<td><strong>TOTAL 2021</strong></td>
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</tbody>
</table>
VI. Expected results

The main expected result concerns the intensification of collaborations between centers on training and research, on scientific productions, on mobility programs, the impact of which will be evaluated by a results framework and a final evaluation.

The network is expected to support:

1. The creation of a joint research and training program (short and long term),
2. The smooth running of priority scientific events and workshops,
3. The increase in collaborations with socio-economic partners,
4. The response to inter-ACE tenders in order to increasing revenue generation.