

# TUNING - AFRICA

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FINAL REPORT

AGRICULTURAL SCIENCES

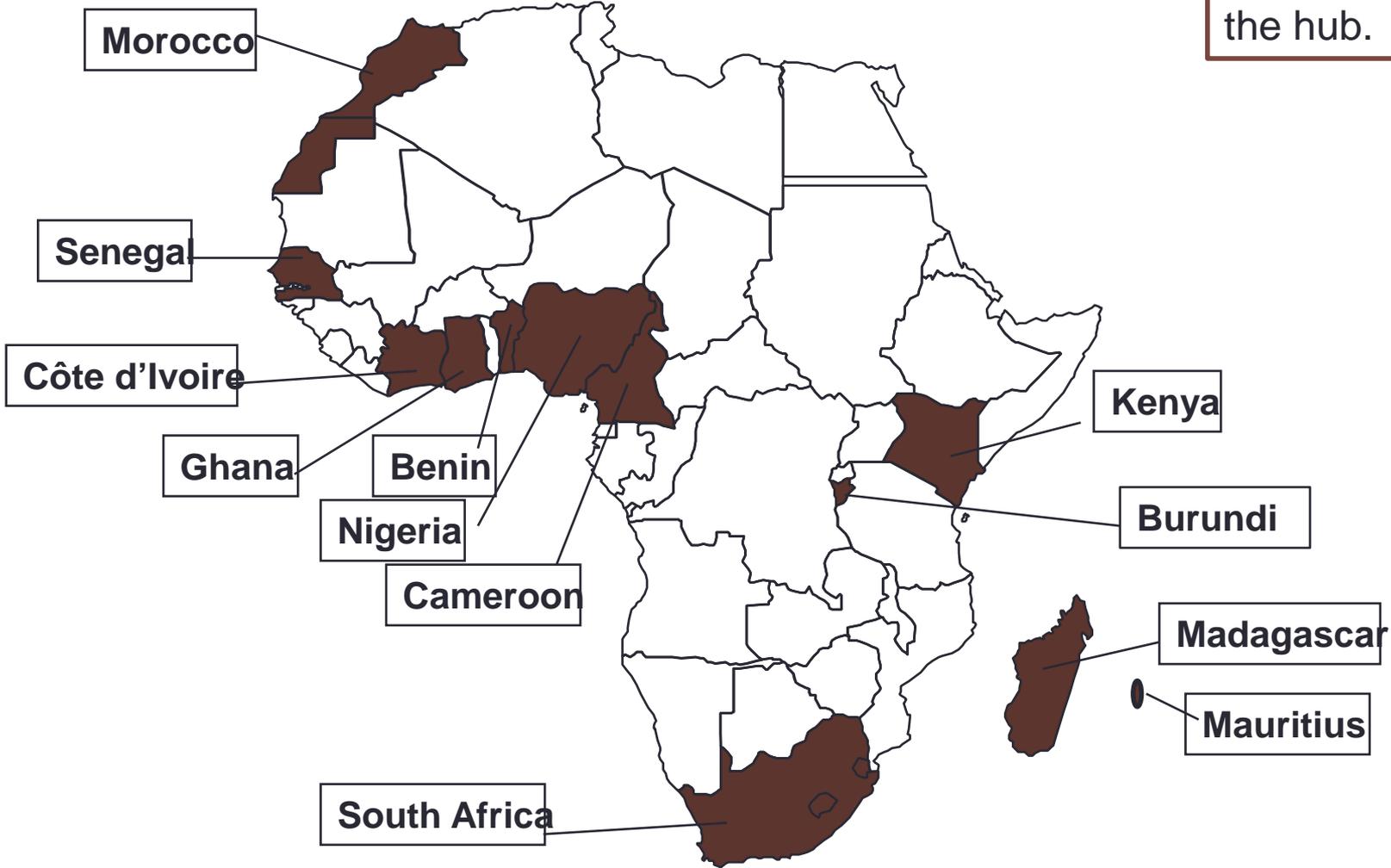
# Outline

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# 1. Introduction

- March 2011: Stakeholders Conference in Nairobi, Kenya,
  - Agriculture identified as one of the major pre-occupations of Africans and selected as one of the five subjects for the Tuning Africa Pilot project
- November 2011: Workshop in Dakar, Senegal
  - Some countries selected to represent Tuning Higher Education in Africa for Agriculture in the pilot project.

West Africa as the hub.



Geographical distribution of countries participating in Tuning Africa (Agriculture)

## Participating members and institutions (1)

- 1. **Benin Republic**: Guillaume Lucien AMADJI , Professor of Soil Science and the Vice-Dean, Faculty of Agricultural Science at *the University of Abomey-Calavi*, Benin.
- 2. **Burundi**: Jean NDIMUBANDI, Professor of Agricultural Economics and Dean, Faculty of Agricultural Science at the *University of Burundi*
- 3. **Cameroon**: Christopher Mubeteneh TANKOU, Lecturer in Crop Science at Faculty of Agronomy and Agricultural Sciences, *University of Dschang*, Dschang, Cameroon.
- 4. **Ghana**: Samuel KWAME OFFEI, Professor of Biotechnology, and Provost of the College of Agriculture and Consumer Sciences, *University of Ghana*, Accra, Ghana.
- 5. **Côte d'Ivoire** : Taky Hortense ATTA EPSE DIALLO, Professor of Plant Pathology at the *Universite Nangui Abrogoua* (Formerly Université d'Abobo-Adjamé), Abidjan, Côte D'Ivoire.
- 6. **Kenya** Alexander Kigunzu KAHN, Professor of Animal Breeding and Genomics, and Dean, Faculty of Agriculture, *Egerton University*, Egerton, Kenya.

## Participating members and institutions (2)

- 7. **Madagascar**: (a) Jean Roger Emile RASOARAHONA, Professor of Food Science and Dean of Higher School of Agronomic Science, and (b) Randrianary Jean Baptiste RAMAROSON, Professor of Food Science and Technology and Vice Dean, School of Higher School of Agronomic Science, ***Université d'Antananarivo***, Tananarivo, Madagascar.
- 8. **Mauritius**: Kamleshwar, BOODHOO, Professor of Tropical Animal Production and Head of Agricultural Production and Systems, Faculty of Agriculture, ***University of Mauritius***, Reduit, Mauritius.
- 9. **Morocco**: Ahmed ELAMRANI, Professor of Biochemistry and Plant Physiology, and Coordinator, Master of Food Science and Food Safety, ***Mohammed I University***, Science Faculty, Department of Biology, Oujda, Morocco.
- 10. **Nigeria**: Yemi AKEGBEJO- SAMSONS, Professor of Fisheries and Coastal resources Management, ***University of Agriculture***, Abeokuta, Nigeria.
- 11. **Nigeria**: Olubunmi Abayomi OMOTESHO, Professor of Agricultural Economics, Formerly Dean, Faculty of Agriculture, ***University of Ilorin***, Ilorin, Nigeria.

## Participating members and institutions (3)

- **Management:**
- 1. **Olusola OYEWOLE**, Professor of Food Science and Technology, and Vice-Chancellor, ***University of Agriculture, Abeokuta. Nigeria.***
- 2. **Margarete SCHERMUTZKI**, Higher Education Expert - ***Tuning, Germany***

## 2. Context for Curricular Reform and Modernization (1)

- Agriculture = first activities of the early man.
- Agricultural Sciences encompasses broad multidisciplinary fields that cover not only the study of plants, animals, soil, but also the economic and social science contents that are used in the practice and understanding of food production, processing and preservation.

# Importance of Agricultural Sciences to Africa

- Critical role Agriculture in the economic development of most African countries.
  - is an important foreign exchange earner in the continent;
  - It provides the raw materials for many industrial processes.
- A high percentage of the people of Africa depend on agriculture as a source of livelihood.
- Agriculture provides about 70% of employment and 30% of sub-Saharan Gross Domestic Product.
- The study of Agricultural Sciences helps in developing human capacity for the largest source of sustenance to the people and the economies.

## 2. Context for Curricular Reform and Modernization (2)

A well-functioning agricultural educational system is necessary to provide the requisite human capacity for sustaining the enterprise and resources for sustainable development.

Therefore, agricultural education should produce graduates who understand the vital role played by agriculture in the rural and economic development of Africa.

## 2. Context for Curricular Reform and Modernization (3)

- Agricultural production in Africa has not been keeping pace with developments; farmers use rudimentary tools and follow age-old technologies with little exposure to modern day technological developments.
- Places of higher education training in Agriculture in Africa:
  - Faculties or Colleges of Agriculture in many conventional universities;
  - Few specialized universities which are exclusively dedicated to Agriculture;
  - Polytechnics and other Higher Colleges of Agriculture.

## 2. Context for Curricular Reform and Modernization (4)

- Higher Education courses in Agriculture offered at first, second and third cycles and usually leading to the award of:
  - Diploma,
  - Bachelor/Licence,
  - Masters degree (MSc/Mphil),
  - PhD

(in Agriculture and related fields).
- Duration of the study programme
  - first cycle programmes: 3-5 years,
  - second cycle programmes: 1-2 years,
  - PhD: 3-5 years.
- First 2 or 3 years: usually a broad based general training offered; followed by a specialization (in a particular area of agriculture) in the final stages of the Bachelors degree program.

## 2. Context for Curricular Reform and Modernization (5)

- Challenges: the failure of many African agricultural graduates and professionals to impact the rural farmers and bring to bear on the industry, the **skills** and **competences** that they are expected to have acquired in their various institutions.
- This is the context in which the Tuning Agriculture in Africa is addressing the challenges.
- The project therefore committed to drawing out the series of **generic** and **specific competences** that will **advance agricultural education** throughout **modern reforms**.

# 3. Methodology

- **Degree Profiles** at participating institutions presented.
- Typical occupations / fields of work / labor market segments of Agricultural graduates in Africa listed (in relation with the degree).
- **Core - elements** and academic scope covered in the training of Agriculturists in Africa discussed.
- Stakeholders (**academics, students, employers** and **graduates**) consultation and development process.

# 4. Generic competences - A thematic perspective

- 18 Generic competences.

## List of Generic Competencies

- 1 Ability for conceptual thinking, analysis and synthesis
- 2 Professionalism, ethical values and commitment to UBUNTU
- 3 Capacity for critical evaluation and self awareness
- 4 Ability to translate knowledge into practice
- 5 Objective decision making and practical cost effective problem solving
- 6 Capacity to use innovative and appropriate technologies
- 7 Ability to communicate effectively in official /national and local language
- 8 Ability to learn to learn and capacity for lifelong learning
- 9 Flexibility, adaptability and ability to anticipate and respond to new situations
- 10 Ability for creative and innovative thinking
- 11 Leadership, management and team work skills
- 12 Communication and interpersonal skills
- 13 Environmental and economic consciousness
- 14 Ability to work in an intra and intercultural and/or international context
- 15 Ability to work independently
- 16 Ability to evaluate, review and enhance quality
- 17 Self confidence, entrepreneurial spirit and skills
- 18 Commitment to preserve and add value to the African identity and cultural heritage

## Responses to questionnaire

Subject areas	Number of Respondents to Questionnaire on Generic Competencies				
	Academics	Employers	Students	Graduates	Total
Agriculture	312	204	381	306	1203
<b>TOTAL</b>	1130	838	1304	1051	4323

- **Ratings** of Stakeholders on the *Importance* and *Level of Achievements* and the difference between the rating of the *perceived importance* and the *real achievement* (**gap**) of the 18 Generic competences determined.

## Exemples of highest ranked generic competences

- All stakeholder groups ranked first ***the “Ability to translate knowledge into practice .***
- ***The “Ability for conceptual thinking, analysis and synthesis”*** was ranked second by the stakeholders except the students (ranked fourth).
- ***“Professionalism, ethical values and commitment to UBUNTU (respect for the well-being and dignity of fellow human beings)*** was ranked 3<sup>rd</sup> by the academics, 5th by the employers and 6th by students and graduates.

## Exemples of lowest ranked generic competences

- ***“Commitment to preserve and to add value to the African identity and cultural heritage”*** was ranked 18th by employers and academics, 17th by graduates and 15th by students.
- ***“The ability to work in an intra and intercultural and/or international context”*** was ranked 18th by graduates and students, 17th by employers and 16th by academics.

## 5. Identification of specific competences

List of Specific Competencies	
1	Have the Knowledge and understanding of Agricultural production, and basic sciences
2	Should be able to identify problems and apply knowledge to solving day to day agricultural challenges
3	Ability to evaluate and manage agricultural projects, as well as carry out financial appraisals
4	Should possess entrepreneurial and creative skills
5	Should be able to design, plan and implement agricultural research
6	Should be able to do business in any part of the world
7	Ability to understand, and adapt to new and emerging technologies in Agriculture, including ICT
8	Ability to implement sustainable practices and technologies for the management of natural resources
9	Have ability for independent thinking and be able to work with minimal supervision in the area of agriculture
10	Ability to adapt and transfer technology, as well as be able to create new technologies
11	Ability to know, advice and implement agricultural policies, and regulations

## List of Specific Competencies (continued)

- |    |                                                                                                                    |
|----|--------------------------------------------------------------------------------------------------------------------|
| 12 | To make sustainable use of water and other natural resources for agricultural use                                  |
| 13 | Ability to understand and work within the organization, business and community management of the rural sector      |
| 14 | Ability to identify pests, pathogens, and weeds associated with crops, animals and their products                  |
| 15 | Ability to improve quality and safety along the agricultural value chains                                          |
| 16 | Ability to select and manage machinery, implements and equipment for agricultural use in different farming systems |

**Ratings** of Stakeholders on the *Importance* and *Level of Achievements* and the difference between the rating of the *perceived importance* and the *real achievement* (gap) of the 16 Specific competences determined.

## Exemples of highest ranked specific competences

- “All the stakeholders, except the graduates considered ” ***Having the Knowledge and understanding of Agricultural production, and basic sciences***” as the first priority competence.
- Except the graduates who ranked first the “***Ability to identify problems and apply knowledge to solving day to day agricultural challenges***”, all other stakeholder ranked it second.
- ***The “Ability to possess entrepreneurial and creative skills”*** was ranked 3rd by employers and graduates, 4th by academics and 5th by students.

## Exemples of lowest ranked specific competences

- All four groups ranked the ***“Ability to understand and work within the organization”***, the ***“Ability to select and manage machinery, implements and equipment for agriculture use in different farming systems”*** and the ***“ability to design, plan and implement agricultural research”*** among the last 6 competences.

## 6. Consultation and Reflections

- **Strongest correlation** between **academics** and **employers** with both the generic and subject specific competences regarding *importance*, *achievement* and *ranking*.
- **Weakest correlation** between **students** and **academics/employers** in the generic and subject specific competences.
- *Big difference* between **importance** and **achievement**.
- *High agreement* between the **rating** and the **ranking** of the groups.

## *Analysis of the findings (1)*

- Overall results in line with the expectations.
- The high correlation between academics and employers in all aspects lays in the very close cooperation and the interaction between them.
- The reasons for differences between academics and graduates:
  - No selection of agriculture science students
  - Different expectations (students are still in education and therefore would not have a fully knowledge of their needed competences)
- The reason for the big differences between graduates and employers lies in the different workplaces. Graduates of agriculture science very often don't find jobs in the field of agriculture.

## *Analysis of the findings (2)*

- **Big gap between importance and achievement:**
  - Considered as realistic by Academics. Gap due to the lack of entrance requirements for Agricultural Sciences students, the high number of students and the limited facilities.

# 7. Elaboration of Meta-Profile (1)

- **The Core Elements** for Agriculture identified as follows:
  - S1 Have the Knowledge and understanding of Agricultural production, and basic sciences.
  - S2 Should be able to identify problems and apply knowledge to solving day to day agricultural challenges.
  - S3 Ability to evaluate and manage agricultural projects, as well as carry out financial appraisals.
  - S4 Should possess entrepreneurial and creative skills.
  - S5 Should be able to design, plan and implement agricultural research.

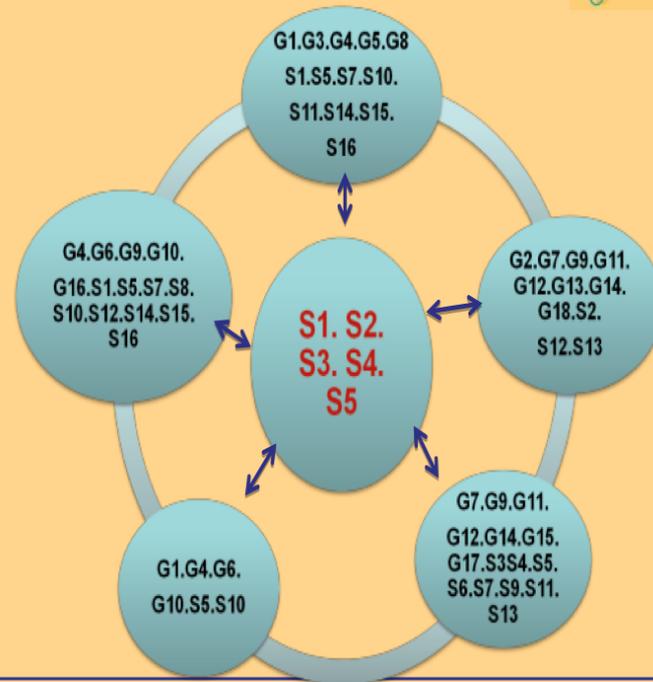
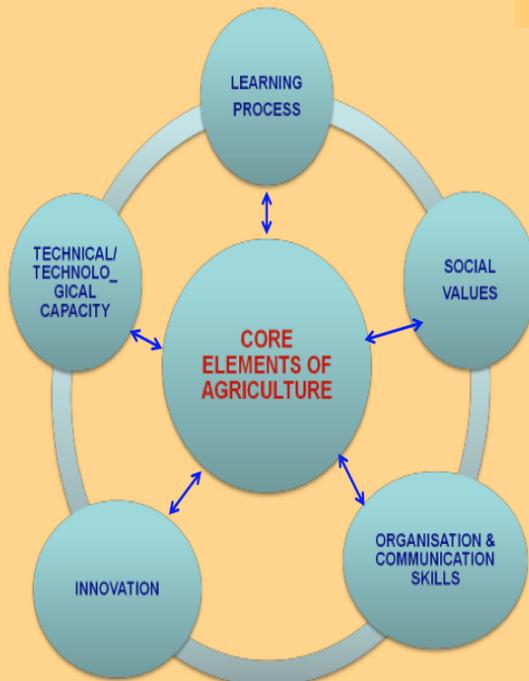
## 7. Elaboration of Meta-Profile (2)

The **Supportive Elements** identified, and categorized into the following groups:

- Learning Process
- Social Values
- Organisation and Communication Skills
- Innovation
- Technical / Technological capacity

# Meta-profile

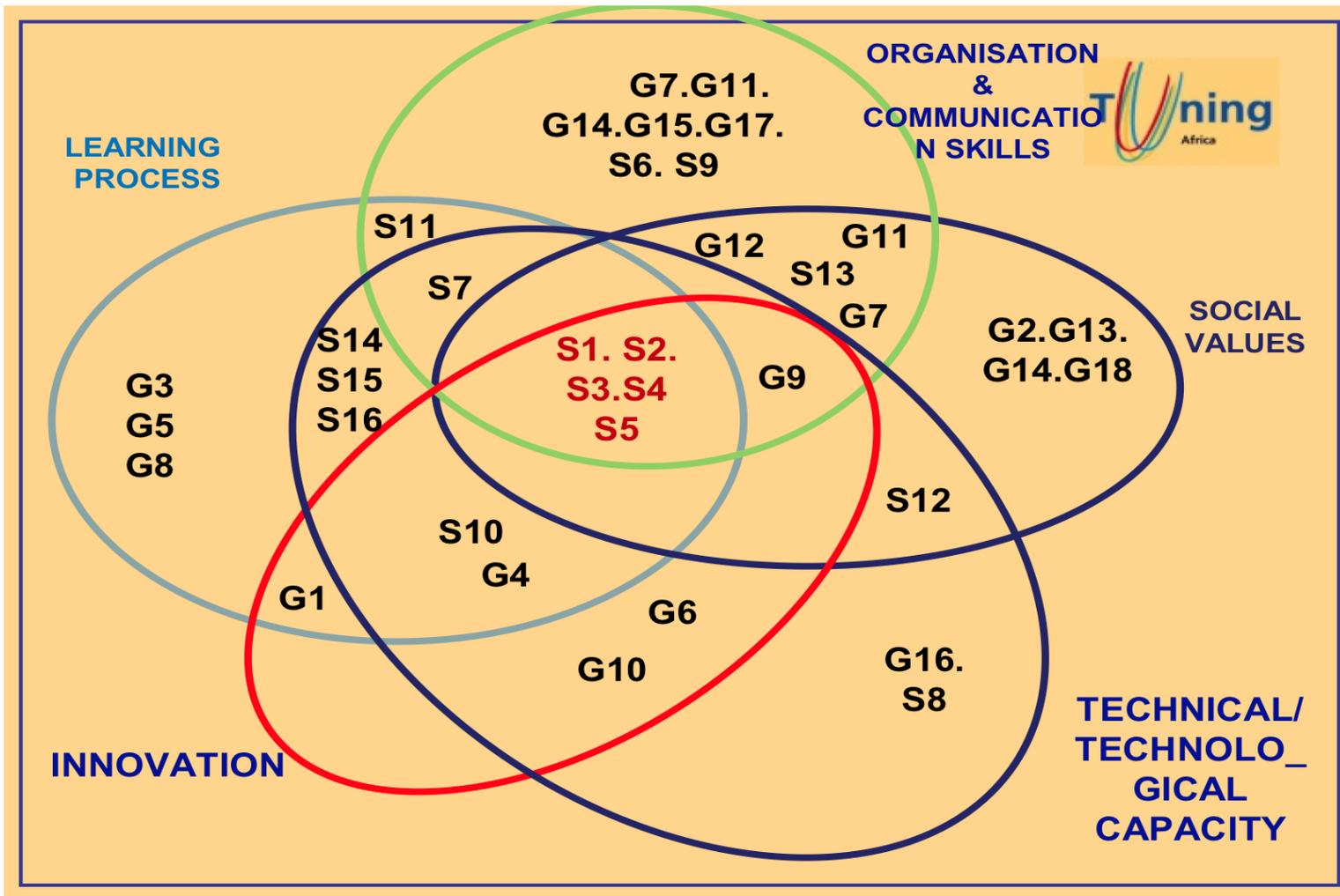
## CATEGORIES OF META PROFILE



## Learning process

- G1 *Ability for conceptual thinking, analysis and synthesis*
- G3 *Capacity for critical evaluation and self-awareness*
- G4 *Ability to translate knowledge into practice*
- G5 *Objective decision making and practical cost effective problem solving*
- G8 *Ability to learn to learn and capacity for lifelong learning*
- S1 Have the knowledge and understanding of Agricultural production, and basic sciences
- S5 Should be able to design, plan and implement agricultural research
- S7 Ability to understand, and adapt to new and emerging technologies in Agriculture, including ICT
- S10 Ability to adapt and transfer technology, as well as be able to create new technologies
- S11 Ability to know advice and implement agricultural policies, and regulations
- S14 Ability to identify pests, pathogens and weeds associated with crops, animals and their products
- S15 Ability to improve quality and safety along the agricultural value chains
- S16 Ability to select and manage machinery, implements and equipment for agricultural use in different farming systems

'S' against the number represents Subject Specific competence, while 'G' indicates Generic Competence



**Venn Diagram of Agricultural Science Meta-Profiles  
( Core and Supportive Profiles)**

## 8. Contrast of meta-Profiles at African Institutional and Regional Levels (1)

- A special matrix was developed to capture the current ability of institutions in Africa to achieve.
- The purpose: to make it easy for universities in Africa to **assess their performance** in **ensuring** that the **generic** and **subject level competences** are covered in their various **curricular**.

COMPETENCES		COURSES MEETING THE COMPETENCE IN YOUR UNIVERSITY PROGRAMS [ Codes and Credit Units.]. E.g. AGR 403 (3).	NUMBER OF UNITS IN YOUR DEGREE PROGRAM DELIVERING THIS COMPETENCE (i.e. Extent or Degree of Coverage in Program	ACTION THAT NEEDS TO BE TAKEN BY YOUR UNIVERSITY IN RESPECT OF THIS COMPETENCE
<b>1.0 CORE ELEMENTS</b>				
S1	Have the Knowledge and understanding of Agricultural production, and basic sciences.			
S2	Should be able to identify problems and apply knowledge to solving day to day agricultural challenges.			

## 8. Contrast of meta-Profile at African Institutional and Regional Levels (2)

### Observations:

- All the generic competences considered **relevant** and **important** but **not always covered**.
- **Core elements** covered in all of the agricultural programmes.
- **Good fit** between the **competences** identified and the **subject competences**.
- **Few specific competences not found** in current programmes of some of institutions; but members expressed the desire by their institutions to incorporate them in their courses.
- Members of the team were concerned about **teaching and learning methods** of some of the competences like

# Challenges in effective incorporation of competences in agricultural programmes

- **Funding**
- **Attitude and response by students** (to innovations and changes in the content of their programmes).
- **Quality of teachers and Teaching methods** (need for re-tooling/re-training).

## 9. Contrast of meta-Profile with findings in other Tuning project (Latine America)

# PART II

# 10. Conclusions and Recommendations (1)

- The **Tuning Africa project**: agricultural academics from the **five regions of Africa** and covering **12 countries deliberate** on the **skills** and **competences** needed by graduates of Agriculture in African universities.
- The team identified generic and subject specific competences, analyzed the current situation in participating universities, noting the need to improve the curricula in order to ensure that graduates are better equipped with those competences.

# 10. Conclusions and Recommendations (2)

- A meta-profile for agricultural science was developed.
- A matrix that can be used by any university in Africa to evaluate their agricultural programs was developed.
- Participants were able to benchmark their institutions curricular against the developed meta-profiles.
- A recommendation is hereby made that agricultural institutions should carry out regular evaluations of their curricula to ensure that the expected competences are being delivered.

# The way forward

1. The **report of this pilot project** should be **shared** with the relevant stakeholders and departments in the participating universities. The report should be placed on the web sites of the participating universities.
1. Efforts should be made to promote the **Tuning approach** at national levels in the various countries.
1. Strategies are proposed to move forward the Tuning project: **Validation, Dissemination and future Focus**.

## a. Validation (1)

### **Objectives:**

- To subject the outcomes of this Pilot Project to external review.
- To carry internal awareness and validation of Tuning in the participating institutions and documenting the process and outcomes.

## a. Validation (2)

### Activities:

1. Presentation of the outcomes for discussion in different fora (Seminars, Scientific associations , QA meetings).
1. National discussions and validation of the Tuning Process.
1. Domestication (adaptation) of Tuning Africa in individual countries.
2. Orientation of tertiary educational authorities on Tuning and competences.
1. Teachers and institutional leadership will be encouraged to take ownership of Tuning approach in their institutions.

## b. Dissemination (1)

### Objectives:

- To further promote awareness of Tuning Process in participating universities
- To create awareness and encourage the adoption of the Tuning approach to curriculum development and competence promotion.
- To get the buy-in of the stakeholders in Tuning.
- To promote Tuning methodology in curriculum development.

## b. Dissemination (2)

### Activities:

1. Development of a database of Tuning Champions in Africa
1. Creation of a Tuning Africa as a platform for interactions among Tuning champions.
1. Development of a Tuning Africa web site.
1. Awareness creation among key stakeholders: Government agencies, policy makers, university communities and partners, Regional organizations/Net works- such as Ruforum, ANAFE, FARA, Development Partners such as UNESCO, World Bank, DAAD, etc.

## c. Future Focus: New Profile Design

- Credit and Students Work loads
- Learning Outcomes
- Teaching and Assessment methods
- Distance Learning
- Training on Curriculum Development and Program Design.
- Application of Tuning to Masters and Doctoral Studies
- Further elaborations on Competences, and Meta-Profiles.
- Development of the African Credit Transfer System.
- Joint Programmes.
- Linkages with stakeholders ( Work-Placements)
- Mobility of Staff and Students.

# Acknowledgement and Appreciation

- The Tuning Africa - Agriculture team is grateful for the opportunity to participate in this Tuning Africa Pilot project.
- acknowledges the funding from the European Union for the project and other supports for higher education in Africa. Special appreciation is being extended to the following:
- hereby appreciates the following:
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  - The Tuning Africa Management Committee;
  - The African Union Commission,
  - The Association of African Universities.

**THANK YOU**

