

**Youth Engagement  
in Agricultural Research for Development  
with a focus on Sub-Sahara Africa**

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June, 2009  
Nijmegen, the Netherlands

Commissioned by Wageningen International



## Summary

In developing countries, 75 percent of poor people live in rural areas and most of them depend on agriculture for their livelihoods. Agriculture thus remains vital for sustainable development, poverty reduction and food security. At the same time, among the young generation, interest in agriculture in general, and in pursuing careers in agricultural sciences seems to be low and young professionals largely seem to be missing in strategic and policy debates on agricultural research for development. Along with recently-renewed international attention for agriculture as a driver of economic development in countries in the south, new attention is thus also required for engaging young people in the future of agriculture.

This study aims to assess the present situation of youth engagement in agricultural research and examine some of the underlying factors that influence it. It further sets out to assess current relevant initiatives both within and outside of the strict realm of agriculture and aims to make recommendations for possible action. Special attention will be given to Sub-Saharan Africa where agricultural research is considered essential for economic development. This review is largely based on literature review and on data from secondary sources. In addition, key informants have been interviewed about particular initiatives.

Four key issues have been identified that influence the engagement of youth, especially in Sub-Saharan Africa, in agricultural research. These are: (1) career development of young professionals; (2) interest of youth in agriculture as a career choice; (3) quality of educational curricula, infrastructure and teaching methods; and (4) investment in agricultural research.

In most countries in Sub-Saharan Africa, the absolute number of enrolment in tertiary education in the broad field of agriculture is increasing. However, there is a slight declining trend in the share of the studies of agriculture in total enrolment in tertiary education. In Sub-Saharan Africa, enrolment in the various levels of tertiary education is unbalanced, with many students enrolled in the lower levels of the technical education and a smaller proportion that continues to post-graduate levels. Investments in the African tertiary educational system in recent years have been limited and as a result, there is a lack of linkage with other national and international institutes and the private sector, curricula are outdated, inflexible and irrelevant, there are shortages of qualified staff in agricultural education, and teaching methods and facilities are largely inadequate.

Public spending on agricultural research in Sub-Saharan Africa has declined in the last decade. Especially funds from international and bilateral donors have decreased. More recently however, due to renewed attention for agriculture and its role for development, both the African countries and international donors have renewed their commitment to agricultural research and education. In 2002, the African Ministers of Agriculture endorsed the Comprehensive Africa Agriculture Development Programme of the New Partnership for Africa's Development in which aims to revitalize the agricultural sector. World Bank and other donors are also planning to spend more on the African agricultural sector as a whole.

Young professionals face challenges in their career development because they have a lack of work and life experience and there is a lack of time of their seniors to mentor them. Young professionals often have short-term contracts, which may hinder their full involvement in projects. When young professionals have to deal with senior level people, their contributions may not be recognized or appreciated. Young professionals also usually have a lack of access to decision-making levels and funds to attend seminars and other networking and learning opportunities.

A vast number of initiatives exist that attempt to tackle one or more of these problems through approaches such as networking and partnerships, training, information generation and sharing, scholarships and research fellowships, giving hands-on experience and mentorship, curricula development and many other activities. Gaps in the coverage of these initiatives exist including limited attention for specific target groups such as high school students, undergraduate students, the private sector, policy makers, and the public. There are few initiatives with a specific focus on agriculture and Africa. The use of information and communication technologies (ICT) including social software, which is a range of software tools that allow users to interact and share data with other users, has seen an expansive growth in other sectors and has great potential to be expanded for agricultural education and research. Activities such as mentoring and networking could be increased. New initiatives therefore have a potential added value if they concentrate on filling these gaps and address the specific problems of young professionals.

The report makes suggestions of initiatives in the four problem areas:

1. Improving the quality of agricultural education: this includes giving more specific attention to agricultural education, establishing partnership programs between African and developed country universities for curricula development, improving linkages between undergraduate and post-graduate education in Africa, and involving the private sector in curricula development.
2. Increasing investments in agricultural research: this could include the involvement of the private sector in research to stimulate investments and innovation.
3. Stimulating career development of young professionals: (support for) better advocacy for young professionals among different types of national and international research organizations is necessary in order for them to recognize and capitalize on the assets of young professionals (enthusiasm, networking, ICT) and 'mainstream' youth within national and international research organisations. Organisations can also develop the capacity of young professionals to take part in agricultural research and policy debate by supporting mentoring and experience programs, gradually involving them in policy debate, giving more support to youth-led organisations both in terms of funding and mentoring, and promoting pro-activeness among young professionals. There is also a need to make a more thorough assessment of the impact of short-term contracts on young professionals' participation.
4. Creation of youth interest in agriculture: creation of interest for agriculture among the public in Africa, the creation of interest for agricultural careers among high school students and undergraduates through exposure and hands-on experience in Africa, more attention for employment and salaries in African agricultural sector, and improving the awareness of African policy makers for agricultural employment.

Examples are given of existing initiatives that could be adapted to be used for youth engagement in African agricultural education and research. Regardless of the course of action chosen to improve agricultural research it remains crucial to give specific focus on Africa and agriculture. It is also important to make more frequent and more innovative use of ICT options.

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## Abbreviations and acronyms

AE	Associate Expert
ARD	Agricultural Research for Development
ASTI	Agricultural Science and Technology Indicators
AVRDC	World Vegetable Center
BA	Bachelor of Arts
BSc	Bachelor of Science
CAADP	Comprehensive African Agriculture Development Programme
CILLS	Permanent Interstate Committee for Drought Control in the Sahel
CIRAD	French Agricultural Research Centre for International Development
CGIAR	Consultative Group on International Agricultural Research
CTA	Technical Centre for Agricultural and Rural Cooperation ACP-EU
GDP	Gross Domestic Product
FAO	Food and Agriculture Organization of the United Nations
FARA	Forum for Agricultural Research in Africa
fte	Full-time equivalent
IAC	InterAcademy Council
ICT	Information & Communication Technology
IFAD	International Fund for Agricultural Development
IFDC	International Fertilizer Development Center
IFPRI	International Food Policy Research Institute
IFS	International Foundation for Science
IRD	Institute of Research for Development
IRS	Internationally Recruited Staff
IAASTD	International Assessment of Agricultural Knowledge, Science and Technology for Development
MSc	Master of Science
NARS	National Agricultural Research Systems
NEPAD	New Partnership for Africa's Development
NRS	Nationally Recruited Staff
PhD	Doctor of Philosophy
R&D	Research and Development
RRS	Regionally Recruited Staff
UN	United Nations
UNESCO	United Nations Educational, Scientific and Cultural Organisation
USAID	United States Agency for International Development
WFP	World Food Program
Wageningen UR	Wageningen University and Research Centre
YP	Young Professional
YPARD	Young Professionals' Platform for Agricultural Research for Development

## 1. Introduction

In developing countries, 75 percent of poor people live in rural areas and most of them depend on agriculture for their livelihoods. In Sub-Saharan Africa, agriculture accounts for 40 percent of GDP, 15 percent of exports and 60 to 80 percent of employment (World Bank, 2007). Agriculture thus remains vital for sustainable development and poverty reduction as a livelihood, a source of economic growth, and as a provider of environmental services (World Bank, 2008a).

The global agricultural research community knows many national and international events such as conferences, workshops, and policy meetings related to agricultural research for development. It is felt that these events are often attended by many senior professionals, while the share of young professionals is low. Largely, it is expected that this situation reflects the staff composition in the various institutions involved, especially those in Africa and that this is a result of dwindling young peoples' interest in pursuing careers in agriculture and agricultural sciences. However, data on staff composition in agricultural research, especially in terms of age, is not consolidated.

Agricultural education has a key role in agricultural growth because it determines the quality of scientists, business professionals, teachers, and civil servants in all areas of agriculture. However, the quality of agricultural education in Africa, has been eroded in the last decade due to dwindling investments. Enrolment in agricultural education is thought to be declining although there is no uniform trend among all African countries.

Along with renewed international attention for agriculture as a driver for economic development in countries in the south, new attention is thus also required for engaging young people in the future of agriculture. Wageningen University and Research Centre aims at developing an international youth initiative that addresses the situation outlined above and that facilitates relevant actions. A recent survey among professionals in agricultural research for development has shown that initiatives that improve the engagement and integration of youth in the agricultural research for development sector and policy debate in this area receive strong support from these professionals and donors (88% of those surveyed supports such an idea) (Crole-Rees and Kruijssen, 2009).

This study aims to assess the present situation of youth engagement in agricultural research and examine some of the underlying factors that influence it. It further sets out to assess current relevant youth initiatives both within and outside of the strict realm of agriculture and aims to make recommendations of possible action. This study will: (1) assess the actual age-distribution within agricultural knowledge institutes in developing countries as far as data is available; (2) make an inventory and evaluation of literature highlighting the (weak) linkages between youths and agriculture and particularly agricultural research and possible solutions for it; (3) make an inventory of current activities aiming at better involvement of young people/professionals in agricultural research for development; (4) identify problem areas in these initiatives; and (5) identify pathways to improve the situation. The review depends largely on literature review and data from secondary sources. In addition, key informants are interviewed about particular initiatives.

The remainder of this report is structured as follows: Chapter 2 contains a definition of some key concepts and a literature review of the present situation of youth engagement in agricultural research and an identification of underlying constraints. Chapter 3 groups existing initiatives into six types and highlights some examples of each of these types, selected from a long list of initiatives, and makes an assessment of gaps and problems of these initiatives to overcome the constraints for the engagement of youth in agricultural research set out in the previous chapter. Finally, Chapter 4 presents some conclusions, proposes four pathways for future action, and concludes with recommendations to Wageningen International and the Netherlands Ministries of Foreign Affairs and Agriculture, Nature and Food Quality.



## 2. Youth in agricultural research: literature review

### 2.1 Definition of youth / young professionals

The definition of youth or young professionals in this context deserves some attention. Youth in its most narrow definition *"is the period between childhood and adulthood, described as the period of physical and psychological development from the onset of puberty to maturity and early adulthood"* (<http://en.wikipedia.org/wiki/Youth>).

Several different age limits are used depending on the context:

- "The United Nations defines [...] youth as those persons between the ages of 15 and 24 years..." - United Nations General Assembly (<http://www.un.org/esa/socdev/unyin/qanda.htm>).
- "Time in a person's life between childhood and adulthood. The term "youth" in general refers to those who are between the ages of 13 to 18." - World Bank (<http://youthink.worldbank.org/glossary.php>).
- "The Commonwealth Youth Programme [...] is dedicated to empowering young people (aged 15-29)" (<http://www.thecommonwealth.org/subhomepage/152816/>).
- The Netherlands Associate Expert Programme of the Ministry of Foreign Affairs states that candidates for the AE positions must be "under 32 years of age at time of application" (<http://www.minbuza.nl/en/developmentcooperation/ExpertProgramme>).

In the context of agricultural research, youth can be broadly defined because we refer to professionals with limited experience. Juniors in research thus also include those that have recently achieved a doctorate degree. It is perceived that in Africa students of doctorate degrees are much older than their counterparts in Europe and the United States. In the Netherlands the average age of receiving a doctorate degree is 33 years (CBS, 2008) and in the United States this was 33.5 years in 2003 ([www.jbhe.com](http://www.jbhe.com), accessed 14 April 2009), while the average age of completion of a doctorate degree in South Africa is 40 years (CREST, 2009). We were unable to find data on average age for other African countries.

In the remainder of this report, when we mention the term young professionals we broadly refer to those people with limited experience in their respective field without limiting the definition to a specific age group. Young professionals in this broad definition also include (under)graduate and post-graduate students. We will refer to high school students as a separate group as the issues for this target group are different from the others. The main target area that needs to be addressed for this group is to develop their interest in agriculture rather than to develop their skills and career (which should follow later).

### 2.2 Added value of young professionals and challenges for their career development

The future of agricultural development and research and the implementation of policies and programs in the agricultural sector will ultimately be the responsibility of the present young professionals. It is therefore important that their ideas and skills are incorporated into current strategies and that they are trained to become the future leaders in their fields. To ensure continuity of research, young professionals need to be included in research and the shaping of strategies and policies early on in their careers for knowledge to be transferred to them.

Young professionals add value to organisations, departments and projects by bringing fresh perspectives and new approaches and skills. They provide morale through their enthusiasm and are more open and frank in the way they assess projects or ideas than their seniors are. Young people in the age range of 19-30 are found to be much more at ease with change and complexity than their elders and therefore often have the ability to adapt quicker to working in different circumstances, cultures and languages. Young professionals are often able to build collaboration and partnerships, as they tend to reject traditional hierarchical and inter-institutional relationships. Young people are usually also much more computer literate than their seniors are and they are faster learners of new technologies. They are typically more aware of new products and modern tools and are more likely to experiment with them for adaptation to use in their environment. In addition, they often transfer their ICT skills to older colleagues (Cole et al., 2001).

However, the creation of environments that are conducive for participation of young professionals has proven to be difficult. Young professionals often lack the life and work experience and the depth of knowledge to implement projects, which may result in errors or delays and they may lack skills to negotiate or resolve conflicts. Time of senior staff that is required to train or supervise the young professional is often lacking. Young professionals are often on short-term contracts, which may hinder

their full involvement in a project, as they do not have sufficient time to develop relationships with project partners. Moreover, the experiences gained and knowledge generated by these young professionals is not embedded in the organisation when their temporary contracts end. When young professionals have to deal with senior level people they may not be taken seriously and their contributions may not be recognized or appreciated. This is especially the case in hierarchical organisations and societies. Strategic debate is normally undertaken at meetings and travel is in some cases seen as a 'privilege' for seniors. Young professionals also usually have a lack of access to decision-making levels (Cole et al., 2001). They also feel that there is a lack of opportunities for them to work at relevant organisations and that they have limited access to seminars and other opportunities to network, mostly due to financial constraints and lack of access to external funds (YPARD, 2005).

### 2.3 Agriculture as a career choice

Agriculture as a career choice is burdened with misperceptions and a lack of information and awareness. A national study in Canada has shown that it is **difficult to recruit and retain skilled staff** in the agricultural sector. This is mostly due to uncompetitive wages, the physical aspects associated with work in the sector and the lack of awareness of what careers in the agricultural sector have to offer. The sector also has a negative image. (George Morris Centre, 2005). An older American study confirmed this by finding that an important consideration that influenced students' decision not to enrol in secondary agricultural education courses was a **lack of career information** explaining opportunities in the agricultural sector (Bell and Fritz, 1994).

Enrolment in agricultural secondary and tertiary education could be seen as an indicator for the trend in interest in agriculture as a career choice. Enrolment trends in post-primary agricultural education are not uniform in Sub-Sahara Africa and there is a lack of clear overview data. While some countries have witnessed increases in enrolment, others have seen stable or declining numbers. In his study on post-primary agricultural education, VandenBosch (2006) shows enrolment trends in six African countries. In **Benin**, the number of **graduates** from three main **agricultural colleges** has **doubled** in recent years, of which 75 percent becomes civil servant. In **Burkina Faso**, enrolment numbers at the private agricultural college of Nanoro have been **decreasing** in recent years because of lack of job prospects for graduates of the college. Enrolment in the Mid-Level Agricultural Technical and Vocational Education in **Ethiopia** has **increased sharply** from about 12,000 students in 2001 to almost 37,000 in 2005. In **Kenya**, the number of students choosing agriculture as a subject **at secondary school level** has remained constant but with increasing enrolment in secondary education, their **share has decreased from 50 to 40 percent** since the early 1990s. In **Mozambique**, the number of graduates of mid-level agricultural institutes has been **slowly increasing** between 1998 and 2004, but their numbers are small, with 74 graduates in 1998 and 132 in 2004 from two institutions. In **Rwanda**, the trend in enrolment is **unclear** (VandenBosch, 2006).

**Students may have other reasons for enrolling in agricultural subjects** at the secondary level than to work in the agricultural sector. In Mozambique, an estimated 30 percent of students enter technical and vocational education programmes because they are unable to find a place in regular secondary schools. Technical (including agricultural) education is used to provide them with equivalent academic qualifications (VandenBosch, 2006). The same was observed in a study conducted among 100 students at the Department of Forestry and Wood Technology of the Federal University of Technology in Nigeria, which found that 68 percent of the students were enrolled in forestry as a second choice. The most common reason for this was their inability to attain the required grade in their examinations to qualify for their desired courses or financial constraints to enrol. The first choice of 42 percent of students was health sciences, because of the perceived financial remuneration of a career in this field. The majority of these students had a lack of prior knowledge about forestry as a profession before they enrolled. Nevertheless, the number of students enrolling at this department each year has multiplied by 2.5 between the years 2000/01 and 2006/07 (Adekunle, 2008).

Data on Sub-Sahara African enrolment in tertiary education is scattered. In the UNESCO statistical database, data were available for 23 Sub-Sahara African countries on total enrolment in tertiary education and in the broad field of agriculture. Table 2.1 shows that student **enrolment in tertiary education** as a whole differs among countries, but is seeing a **general trend of growth** ranging from 0 (Namibia) to 51 (Guinea) percent annually.

**Table 2.1. Enrolment in total tertiary education and in the field of agriculture (1999-2007)**

Country	Total enrolment in tertiary education			Total enrolment in broad field of agriculture, tertiary level			Share of agriculture in total enrolment**		Share of women in total enrolment in tertiary education***		Share of women in agriculture, tertiary level**	
	Latest number	Growth rate / year	Years*	Latest number	Growth rate / year	Years*	Latest share	Growth rate / year	Latest share	Growth rate / year	Latest share	Growth rate / year
Botswana	10950	16%	1999-2005	112	111%	2001-2002	1.3%	0.6%	49.8%	1.0%	14.3%	-0.8%
Burkina Faso	33459	30%	1999-2007	321	N/A	2007	1.0%	N/A	30.9%	1.0%	21.8%	N/A
Burundi	17061	34%	1999-2006	392	N/A	2002	3.7%	N/A	30.6%	0.2%	15.1%	N/A
Cameroon	120298	11%	1999-2006	696	4%	2004-2006	0.6%	-0.1%	41.8%	0.7%	N/A	N/A
Congo	12456	4%	1999-2003	380	-8%	2001-2002	3.1%	0.0%	15.8%	-1.3%	31.3%	12.5%
Eritrea	4612	3%	1999-2004	416	9%	1999-2004	9.0%	0.3%	13.1%	-0.1%	6.5%	-0.6%
Ethiopia	210456	38%	1999-2007	17884	33%	1999-2007	8.5%	-0.1%	25.5%	0.8%	15.5%	-0.2%
Ghana	140017	22%	2000-2007	3019	8%	2000-2004	4.3%	0.0%	34.2%	1.3%	20.4%	1.8%
Guinea	42711	51%	2003-2006	4670	204%	2004-2006	10.9%	2.8%	21.4%	1.9%	17.0%	4.3%
Kenya	102798	4%	2000-2004	6969	5%	2000-2001	7.4%	-0.1%	37.5%	0.6%	27.4%	-0.2%
Lesotho	8500	16%	1999-2006	356	36%	1999-2006	4.2%	0.2%	55.2%	-1.2%	60.7%	2.5%
Madagascar	58313	11%	1999-2007	1362	10%	2005-2007	2.3%	-0.1%	47.0%	0.2%	41.3%	2.3%
Malawi	6458	13%	1999-2007	490	N/A	1999	15.4%	N/A	33.6%	1.2%	24.5%	N/A
Mauritius	16773	17%	1999-2006	318	-1%	1999-2006	1.9%	-0.4%	52.9%	1.0%	56.9%	1.6%
Mozambique	28298	29%	1999-2005	1477	0%	2004-2005	5.2%	-1.4%	33.1%	0.5%	26.5%	8.7%
Namibia	13185	0%	2001-2006	298	9%	1999-2003	2.5%	****0.3%	46.7%	0.2%	38.9%	0.9%
Nigeria	1391527	17%	1999-2005	261	N/A	2005	0.02%	N/A	40.7%	-0.4%	22.6%	N/A
Sierra Leone	9041	17%	2000-2002	1360	315%	2000-2001	15.3%	10.4%	28.8%	0.0%	19.6%	-30.7%
South Africa	741380	2%	1999-2006	13452	8%	2000-2006	1.8%	0.1%	55.1%	0.2%	43.3%	1.0%
Swaziland	5692	2%	1999-2006	345	4%	1999-2006	6.1%	0.1%	49.8%	0.3%	17.7%	-3.3%
Tanzania	51080	28%	1999-2005	2417	15%	1999-2005	4.7%	-0.3%	32.4%	1.9%	26.2%	0.7%
Togo	18455	11%	1999-2001	166	N/A	2000	1.1%	N/A	16.9%	-0.3%	7.2%	N/A
Uganda	88360	24%	1999-2004	1403	11%	1999-2004	1.6%	-0.1%	38.4%	0.8%	22.1%	0.9%

Note: \*Earliest and last year for which data is available. Absolute number is data from latest year available. \*\*Years are same as for data on agricultural enrolment. \*\*\*Years are the same as for total enrolment in tertiary education \*\*\*\* Based on years 2001-2003. Source: <http://stats.uis.unesco.org/>, accessed on 14 April 2009.

**Enrolment in the broad field of agriculture** is more uneven. Some countries like **Botswana, Guinea and Sierra Leone have seen a high annual growth rate** in the numbers of students enrolled in the field of agriculture, while most other countries have had little to moderate growth. **Congo and Mauritius have seen a decline** in enrolment in agriculture. **The share of enrolment in agriculture as part of total enrolment in tertiary education ranges from 0.02 to 15.4 percent** with an average of 4.9%. Among the 23 countries, Malawi (15.4%), Sierra Leone (15.3%), Guinea (10.9%), Eritrea (9.0%), Ethiopia (8.5%) and Kenya (7.4%) have the largest share of enrolment in agriculture in total enrolment in tertiary education. The share of agriculture in total tertiary education is **seeing a slight decline** over the years in most countries, only Mozambique has a negative growth of more than one percent annually. Guinea and Sierra Leone have a small to moderate increase in the share of agriculture in total enrolment (<http://stats.uis.unesco.org/>, accessed on 14 April 2009). It should be noted that the data available to calculate the growth rates, especially for enrolment in agriculture, were limited.

In **most Sub-Saharan African countries, women are underrepresented in all areas of agricultural education and research**, as students, instructors, extension agents and researchers, and agricultural innovation processes are hardly ever targeted to female users (World Bank, 2007). In general in Sub-Saharan Africa, women account for one out of every five students in the agricultural sciences and for example in Cameroon almost half of the women that are in agriculture are part of the faculty of economics and sociology, not in plant and animal sciences, agronomy and other biological sciences (World Bank, 2007). The UNESCO database shows the share of women in the field of agriculture in tertiary education, although it is not defined which disciplines are considered to be part of this field. The share of women in total enrolment in tertiary education in 23 countries for which data is available ranges from 13.1 percent in Eritrea to 55.2 percent in Lesotho with an average of 36.1 percent. In most countries, except for Eritrea, Ethiopia and Lesotho, Nigeria and Togo the **share of women in total enrolment is witnessing a trend of slight increase** (Table 2.1). The **share of women in agricultural education at the tertiary level** ranges from 6.5 percent in Eritrea to as high as 60.7 percent in Lesotho but **is below 20 percent in more than one-third of the countries and below 30 percent in almost 75 percent**. On average 26.2 percent of students enrolled in agriculture is female. Trends in the share of women in agricultural education differ. Sierra Leone has seen a strong decrease of over 30 percent annually (with data available for only two years) in the share of women. A moderate increase has been observed in Congo (12.5% annually), Mozambique (8.7% annually) and Guinea (4.3% annually) and a slight increase at a rate of 0.7 to 2.5 percent annually in eight other countries (Ghana, Lesotho, Madagascar, Mauritius, Namibia, South Africa, Tanzania, and Uganda). The remaining five countries for which data is available have witnessed a declining trend of -0.2 to -3.3 percent (<http://stats.uis.unesco.org/>, accessed on 14 April 2009).

The Netherlands has five **vocational training institutes** with courses related to the agricultural sector (up to bachelor level). Between 2004 and 2008, **these five institutes together saw a decrease in student enrolment of 8 percent** and only one of the five institutes witnessed an increase in student enrolment<sup>1</sup> (HBO raad, 2009). **Wageningen University** is, according to the definition of the Association of Universities in the Netherlands, the only Dutch university offering agricultural education at the postgraduate level (in addition to undergraduate education)<sup>2</sup>. In recent years, Wageningen University has seen **increasing student enrolment**. The total number of BSc and MSc students at Wageningen University increased by 4.5 percent to 5,202 between the years 2004 and 2007 (WUR, 2008). The number of PhD degrees awarded increased by 48 percent in the same period. This increase is mostly caused by a large influx of international PhD students, as in this period the international PhD graduates almost doubled to 149 (59 percent of total PhDs awarded). This growth in PhD awards will slow down somewhat in the future as the number of students enrolled in a PhD grew by 21 percent between 2003 and 2007. One of the vocational training institutes, Van Hall Larenstein University of Applied Sciences, and Wageningen University are linked under the framework of Wageningen University and Research Centre (Wageningen UR). Almost 20 percent of all students at Wageningen UR comes from abroad, of which 3 percent is from the European Union, 2 percent from other European countries, 13 percent is from Africa, 39 percent from Asia, and 9 percent from North and South America (WUR, 2008). Hence the interest in agricultural education courses in the Netherlands is declining both at lower and higher level vocational institutes and at graduate level if international students are excluded (Milieu en Natuurplanbureau, 2007).

<sup>1</sup> Between 2004 and 2008 growth rate of enrolment at HAS Den Bosch was 10.4%, at Christelijke Hogeschool Dronten -0.7%, at Hogeschool INHOLLAND -66.2%, at Stoas -8.3%, and at Van Hall Larenstein -9.2%.

<sup>2</sup> <http://www.vsnu.nl/Universiteiten/Feiten-Cijfers/Onderwijs/Downloadbare-tabellen-onderwijs.htm>, accessed on 23 June 2009.

In theory, with agriculture making up such an important part of most African economies and societies, there should be sufficient job opportunities for graduates in the agricultural sector. However, in practice **few graduates are absorbed by the agricultural sector** as is shown in a study on graduates of Makerere University in Uganda. While the share of the agricultural sector in total GDP in Uganda is 60 percent, only 4 percent of the graduates of the Faculty of Arts (BA.) and 8 percent of the graduates of the Faculty of Sciences (BSc.) of Makerere University are absorbed as employees in the agricultural sector. Employment opportunities in general seem to be limited in Uganda. One out of three BA graduates of Makerere University and one out of five BSc graduates is still looking for a job 12 months after graduating. A study that has made an overview of Sub-Saharan Africa's Strategic Poverty Reduction Papers (PRSPs) finds specific mentioning of graduate unemployment in many of these PRSPs (e.g. Malawi and Mauritius) (Bloom et al., 2006) showing that unemployment is a problem in many African countries.

## 2.4 Agricultural education and training

Strong agricultural education and training systems are at the core of the productivity gains that are necessary for economic growth and poverty reduction in developing countries, because they determine the quality of scientists, business professionals, teachers, and civil servants in all areas of agriculture. Education is necessary to build 'a critical mass of scientists'. This refers to "*a minimum talent pool, or the basic minimum of well equipped and trained scientists in a range of disciplines, required for resolving problems in a specific sector. Sufficiently aligned with the international scientific community, these scientists can effectively respond to new and existing challenges, enabling sectors relating to development to improve their productivity and stay ahead of their competitors*" (<http://knowledge.cta.int>, accessed on 14 April 2009). Achieving a critical mass of scientists thus refers to both quantity and quality of graduates and heavily relies on the availability, desirability and quality of agricultural higher education.

The **number of African higher education institutions has substantially increased** over time from less than 20 universities in 1960 to more than 200 by the early 2000s, with at least 96 faculties of agriculture or agriculture-related sciences. About three-quarters of the higher education agencies provided at least MSc training, while 57 percent offered doctorate degrees (Beintema and Stads, 2006). Most of these programmes are relatively recent, as half of them were initiated after 1990. It is therefore not surprising that a study in ten Anglophone African countries, conducted in 1991, found that at least 85 percent of faculty staff with doctorate degrees had undertaken their degrees overseas, and about 75 percent had also taken their Master's degrees abroad (Beintema and Stads, 2006). However, **since the 1990s, investments in African agriculture and agricultural education have declined** sharply. Graduate training in developed countries has high costs and many of the graduates did not return to their home countries after graduation. Nowadays, many graduates are sent to other developing countries for training or are trained through cost-saving programmes such as the sandwich programme (Beintema and Stads, 2006), which will further be discussed in Chapter 3.

The reduction in investments in education has eroded the quality and relevance of agricultural education in Africa (World Bank, 2007). World Bank (2007) has defined five major weaknesses of the agricultural education and training systems in Africa, which are described below.

Enrolments in agricultural education are distorted. The share of all tertiary-level students that are in the field of agriculture is much higher in Africa than elsewhere (5.2 percent versus 1.4 percent in Europe and 1.2 percent in the United States) however the **division of students among the various levels of technical education are considered to be unbalanced** (World Bank, 2007). World Bank (2007) has compared data on technical education pyramids of 15 countries in Sub-Saharan Africa with four of the top-10 ranked countries in terms of global competitiveness (Switzerland, Sweden, United Kingdom, United States). The findings show that African countries have a much larger proportion of technical education enrolments in the lower levels of this pyramid (technical / vocational training) than do the highly competitive countries. It then logically follows that the highly competitive countries have much larger shares of enrolment of university students into science, technology, and engineering fields for both undergraduate and postgraduate studies than do African countries. There are a few exceptions as Kenya and Ghana have achieved a better balance than the average for African countries. There is also differentiation between Anglophone and Francophone countries, with the first having a better balance than the latter (World Bank, 2007).

Educational institutions are isolated and fragmented. Agricultural education and training institutions in Africa lack linkages with other both national and international institutions and the private sector. In Sub-Saharan Africa, there are **hardly any education strategies** to generate the skills needed for

national agricultural strategies. They also have **weak linkages with the private sector**, which means employers are not or hardly involved in defining the learning contents and quality standards (World Bank, 2007). The mostly traditional network linkages can be explained by organisational problems, motivation or incentive problems, and a lack of equipment and time (Davis et al., 2009). In addition, educational institutes are placed under different Ministries, with some universities in the same country residing under the Ministry for Education while others are under the Ministry for Agriculture, making it difficult to collaborate (World Bank, 2007). The African science and education systems are not **well connected to global sources** of scientific literature. Budgetary restrictions lead to a great lack of computers and access to internet. In addition, few African universities have established linkages with international research institutes (World Bank, 2007).

Curricula at the tertiary level are often outdated, inflexible and irrelevant to the demands of the labour market. They are often still production and commodity oriented and structured around primary disciplines, leaving out others such as agricultural economics, environmental management and agribusiness (Saint, 2005). Curricula are often highly specialized, resulting in a **lack of interdisciplinary and cross-disciplinary studies** (World Bank, 2007).

Shortages of qualified staff in agricultural education are common in many African countries. Staff is often undertrained with low shares that have reached advanced degrees and they often have lack of experience. This problem is aggravated by **brain drain** due to missing rewards for professional excellence and low salaries, retirements, and health-related problems such as HIV/AIDS (World Bank, 2007). The issue of staffing will further be discussed in section 2.5.

Teaching methods and facilities are often inadequate. The teaching methods in African countries are mostly traditional and lecture focussed with little opportunity for students to develop their problem-solving skills and technical competencies. Practical training is minimal and adequate learning facilities are missing (World Bank, 2007). An employer survey in Ghana confirms this, showing that there is a **need for more practical training and problem solving and results-orientation** among the recent graduates (Saint, 2005).

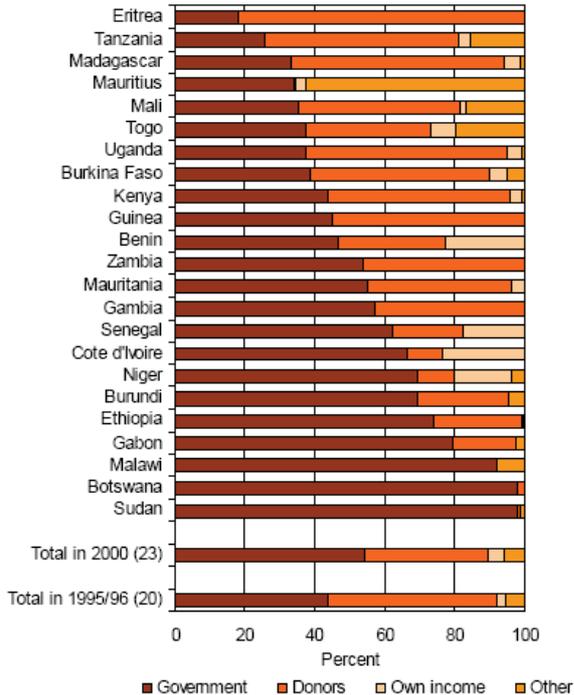
These five weaknesses are interrelated. Due to a lack of linkage between universities and the private sector, the latter does not have any influence on the university curricula and the skills students develop during their years of education. This results in a mismatch between the demands of the employers and the skills recent graduates have to offer.

## **2.5 Investments in agricultural research**

Spending on public agricultural Research and Development (R&D) in Sub-Sahara Africa increased rapidly during the 1960s. However, since then expenditure growth stalled for the region as a whole. In 2000, spending on public agricultural R&D in Africa was US\$1.5 billion in 1993 international dollars. Of this, 32 percent was spent in East Africa, 24 percent in West Africa, excluding Nigeria where 7 percent of total public funds were spent, 25 percent was spent in South Africa, and the remaining 12 percent was spent in the rest of southern Africa (Beintema and Stads, 2006). There are large variations among the countries. Data compiled by the Agricultural Science and Technology Indicators (ASTI) initiative of the International Food Policy Research Institute show that out of a sample of 27 African countries, **about half has experienced a contraction in agricultural R&D spending** (some of more than 10 percent annually) whereas some other countries have seen a growth of 5 percent annually. Donor funding for agricultural R&D from institutes such as World Bank, FAO, USAID and other bilateral donors have declined and the private sector is contributing little: an estimated 2 percent of total research spending in Africa (Beintema and Stads, 2006).

While in the early 1980s 34 percent of total spending on agricultural research came from loans and grants from international donors, this was 43 percent in 1991 (for a sample of 22 countries). In 2000, **donor spending had declined** again and made up 36 percent of total agricultural research spending. African governments fund about half of agricultural research. Figure 2.1 shows however that there is large variation among African countries. Whereas Sudan received hardly any donor funding in 2000, Eritrea funded more than 80 percent of agricultural research through donor grants and loans (Beintema and Stads, 2006). From the mid-1990s until 2000, many countries saw a sharp drop in donor funding. Especially Malawi, Niger and Sudan were highly affected by the closure of World Bank, USAID and FAO projects in support of agricultural research. They saw a decrease in the share of

donor funds from 50 to 10 percent. Tanzania and Burundi on the other hand in the same period both witnessed an increase in donor funds of more than 20 percent<sup>3</sup> (Beintema and Stads, 2006).



Note: Figures in parentheses indicate the number of countries in each total. Funding sources are for the main agricultural research agencies only. Combined, these agencies accounted for 76 percent of total spending for the 23-country sample in 2000. Data for West Africa are for 2001. The total for 1995/96 excludes Benin, Côte d'Ivoire, and Gabon.

Source: Beintema and Stads, 2006 (p.17).

**Figure 2.1. Sources of funding for agricultural research by country (1995/96 & 2000)**

International recognition for the importance of agricultural research for sustainable development, and therefore the need for more funding of this sector, re-emerged in the early 2000s. In June 2002, during a special session of the FAO Regional Conference for Africa in Rome, the African Ministers of Agriculture endorsed the **Comprehensive Africa Agriculture Development Programme (CAADP)** of the New Partnership for Africa's Development (NEPAD). The Second Ordinary Session of the African Union Assembly of Heads of State and Government, in Maputo in July 2003 adopted this programme (during the Maputo Summit). In the resulting Maputo declaration, the African leaders resolved to revitalize the agricultural sector and agreed to *“adopt sound policies for agricultural and rural development, and commit ourselves to allocating at least 10% of national budgetary resources for their implementation within five years”* (FAO, 2003).

The CAADP focuses on investment in three areas that can have prompt effect on Africa's agriculture<sup>4</sup> and a fourth area that concentrates on long-term results through investments in agricultural research, technology dissemination and adoption. This long-term effort aims at **achieving accelerated gains in productivity** (FAO, 2002). The aim is that by 2015 the level of research funding is to be doubled compared to 2002. This would require a total investment of US\$4.6 billion between 2002 and 2015, reflecting a rise of 7.2 percent in annual commitment from US\$0.2 billion in 2002 to US\$0.5 billion in 2015. Total required investments in African agriculture (including the three short-term goals) are estimated at US\$251 billion between 2002 and 2015, of which research and technology adoption comprises 1.8 percent (FAO, 2002). It is believed that an important part of funding can come from investments by the beneficiaries themselves and from domestic resource mobilisation.

For many countries however, additional development assistance and private investments will be required (FAO, 2002).

World Bank also regained its commitment to African agriculture after a sharp reduction - with African agricultural research receiving US\$120 million in 1991 dwindling to only US\$8 million (1993 prices) in

<sup>3</sup> Tanzania had the second Tanzania Agricultural Research Project from 1998 – 2002 and Burundi saw a renewed increase in donor funds after it was non-existent during Burundi's civil war in the mid-1990s.

<sup>4</sup> The three short-term efforts are: to extend the area under sustainable land management and reliable water control systems, to improve rural infrastructure and trade-related capacities for market access, and increase food supply and reducing hunger, which among others calls for more attention to rapid humanitarian interventions followed by rehabilitation in case of natural disasters (FAO, 2002).

2002 (Beintema and Stads, 2006). Recently, in accordance with the World Development Report 2008 (World Bank, 2008a) **World Bank has planned to scale-up investments in agriculture and rural development** in Sub-Sahara Africa in 2009 and 2010. Lending in the sector is planned to be increased from \$368 million in 2008, representing about 6% of total lending in Africa in 2008, to \$650 million in 2009 and \$800 million in 2010. This amount is intended for many other activities besides agricultural research, however World Bank aims for a more coordinated and multifaceted approach to agriculture development in Africa, recognizing the synergies between activities such as research, extension, credit, seed provision, and policy reform. This creates important opportunities for the sector, as the World Bank is the single largest donor to African agriculture (World Bank, 2008b).

The international agricultural research centres of the **Consultative Group for International Agricultural Research** (CGIAR) carry out a large share of international research in Africa. In 2003, they spent **45 percent** of their total budget of US\$ 393 million on activities **specifically related to Africa**, equivalent to about 10 percent of total spending by the African national agricultural research agencies in 2003 (Beintema and Stads, 2006).

**Other international and regional organisations** also conduct agricultural research in Africa. For example, the French Agricultural Research Centre for International Development (CIRAD) and Institute of Research for Development (IRD) together spent almost the same amount on research in Africa, US\$173 million in 2004, as the CGIAR centres together although IRD also includes topics such as health in addition to agriculture and environment. Other international research organisations include the World Vegetable Center (AVRDC), the Permanent Interstate Committee for Drought Control in the Sahel (CILSS) at the Sahel Institute (INSAH), and the International Fertilizer Development Center (IFDC) (Beintema and Stads, 2006).

**Spending per scientist** in African agricultural R&D **declined considerably** between the 1970s and 2000, in some countries by more than 50 percent. Only Ghana and Kenya had higher resources per scientist in 2000, compared to 1981. Overall, spending per scientist in non-profit agencies is almost twice the amount spent in higher education agencies and government institutions (Beintema and Stads, 2006).

The allocation of resources among the different focus areas in agricultural research shows the relative importance given to each of these areas. Overall, **almost half of total fte researchers** in a sample of 26 countries **was working on crops and 20 percent on livestock** in 2000. About **9 percent** was working on **natural resources** and around **5 to 6 percent worked in each of the areas forestry, socioeconomics, fisheries and postharvest** research. Major crops include fruits, vegetables, maize and rice with a different focus in each of the regions. For example while vegetables are most important in East Africa, with 11 percent of the 1,287 fte researchers working in this area, Southern Africa has a major focus on fruits with 21 percent of 791 fte researchers and in West Africa rice is found to be most important with 13 percent of 1,492 fte researchers (Beintema and Stads, 2006).

Several regional coordination and networking efforts have been set-up in the past while others have discontinued. Some of these regional initiatives will be highlighted in Chapter 3.

## **2.6 Staffing of universities and agricultural research organisations**

This section presents some available data about numbers and trends in staff composition in different types of research institutions. Although addressing the gender issue is not a specific objective of this study, the topic deserves some attention as it is believed that women are lagging both in terms of enrolment in agricultural education and in career development in agricultural research (World Bank, 2007).

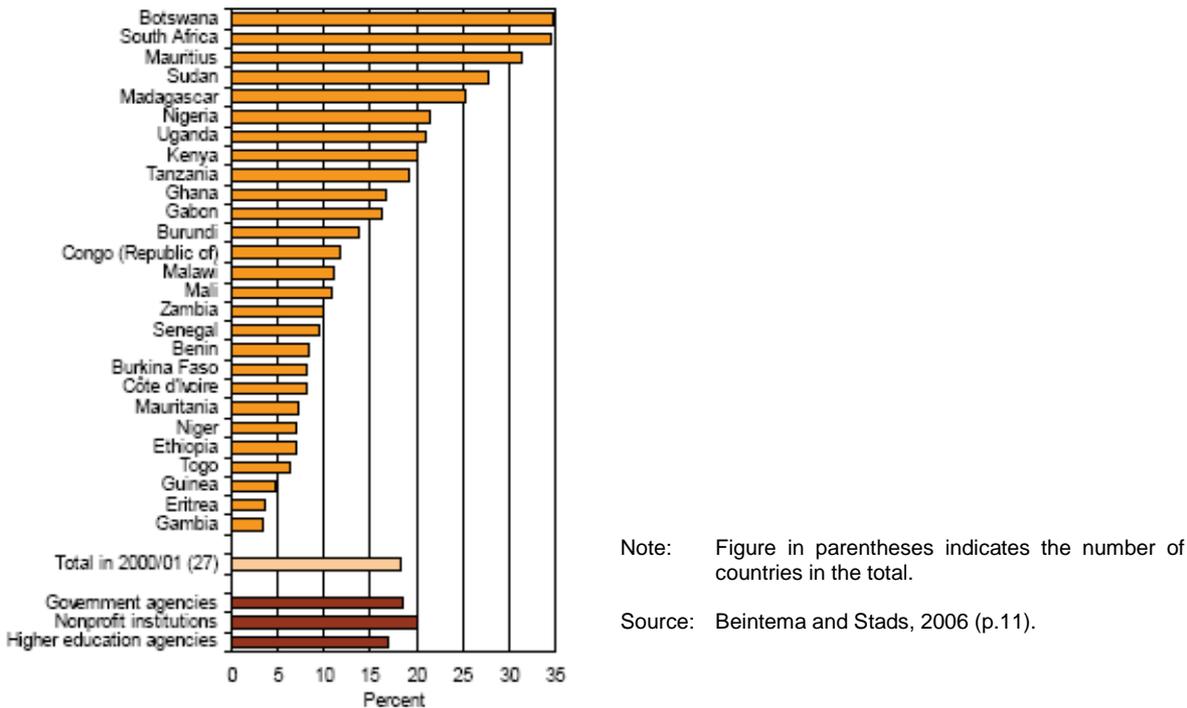
The National Agricultural Research Systems (or NARS) in Africa have substantially grown from the 1960s. Between 1961 and 1991 the number of full-time equivalent (fte) researchers working in Sub-Sahara Africa, had increased from 2,000 to 9,000 (Pardey et al, 1995) and continued this growth to 12,000 fte in 2000. However, the number of support staff per scientist decreased drastically bringing the total number of staff to 72,000 in 2000, a **decline of 25 percent** since 1991 (when it was estimated at 96,000) (Beintema and Stads, 2006). The **composition also drastically changed** with expatriates representing 90 percent of researchers working in national agencies in Sub-Sahara Africa (excluding South Africa) in the early 1960s, 30 percent in the early 1980s, 11 percent in the early 1990s and just 2 percent in 2000 (Beintema and Stads, 2006). The level of training of this staff has also improved with the number of staff having a post-graduate degree increasing from 45 percent in the early 1980s to 65 percent in the early 1990s (Pardey et al., 1995) and 75 percent in 2000, of which about one-third held doctorate degrees. The share of researchers with a post-graduate degree was

highest in West Africa (Beintema and Stads, 2006). The education level of researchers depends on the type of agency they work for; almost half of researchers working for higher education agencies has a doctorate degree, while this is a little over 20 percent in government agencies and non-profit institutions (Beintema and Stads, 2006).

There is a **high level of variation among the countries**. “In 2000, just 5 of the 48 countries in the region employed about 40 percent of all fte research staff in agriculture. Nigeria (in West Africa) and South Africa (in southern Africa) reported the largest capacities, at 1,352 and 1,029 fte researchers, respectively, while Kenya, Sudan, and Ethiopia (in East Africa) employed 740, 780, and 822 fte researchers, respectively” (Beintema and Stads, 2006).

Also in terms of **age distribution** in the African agricultural research and education institutions, there is a high level of differentiation among countries. Recent data, collected by the ASTI project of IFPRI, on about 125 government research and higher education agencies for 15 Sub-Sahara African countries shows that in the **francophone countries** (Togo, Senegal, Burkina Faso, en Niger) about **20 percent or less of the professional staff is 40 years old or younger**. Furthermore, 25 percent of staff in Togo and Niger, 35 percent in Burkina Faso, and as much as 56 percent in Senegal is older than 50 years of age. In Ghana and Kenya, 35 percent of staff is older than 50 years of age, while in Nigeria this is 30 percent, and in South Africa 26 percent. On the other hand, in the **seven remaining countries** in the survey (Ethiopia, Botswana, Malawi, Uganda, Zambia, Mozambique, Burundi) less than 20 percent of staff is older than 50 years of age and **more than half of the professional staff is younger than 40**. These latter countries therefore do not show the supposed trend of aging within the African agricultural research and education institutions (Beintema, 2009).

Staff composition in terms of gender is unbalanced. Historical data from 14 countries reveals that the **share of female staff grew slightly** from 17 percent in 1991 to 21 percent in 2000. The sample of 27 countries shows an overall average share of women of 18 percent in 2000 (Figure 2.2).



**Figure 2.2. Share of female research staff by country (2000; )**

Brain drain is seriously affecting research staff in most African countries. Many qualified staff leaves the public sector for better employment conditions, research infrastructure, and career opportunities in the private sector and abroad (Beintema and Stads, 2006). It has been estimated that 23,000 qualified academic professionals including many from the agricultural sector migrate from Africa each year (Chakeredze et al., 2008). **Brain drain and the prevalence of HIV/AIDS** have resulted in an **inability to fill all available positions** in agricultural research, for example only 72 percent of professional positions were filled at the Department of Agricultural Research in Botswana and only 57 percent of

positions at Malawi’s Department of Agricultural Research Services in 2003 (Beintema and Stads, 2006).

Wageningen University and Research Centre (Wageningen UR) is the framework of cooperation between Wageningen University, the DLO Foundation (comprising the national agricultural research institutes) and Van Hall Larenstein University of Applied Sciences. Wageningen UR is the main agricultural knowledge institute in the Netherlands and is involved in research and education in the domains of food and food production, living environment and health, and lifestyle and livelihood. In 2007, Wageningen University employed 2,239 fte, Van Hall 407 fte and DLO 2,781 fte (WUR, 2008). A total number of 6,318 staff members were employed on 31<sup>st</sup> December 2008, representing 5,447 fte. Temporary staff represented almost 23 percent of total staff, an increase of 3.5 percent since 2005. Especially Wageningen University has a high percentage of temporary contracts, possibly due to the fact that it also includes the contracts of PhD candidates. A problem of aging has been identified within Wageningen UR. The age composition of employees can be found in Table 2.2. The share of the group of employees older than 55 is increasing (WUR, 2008).

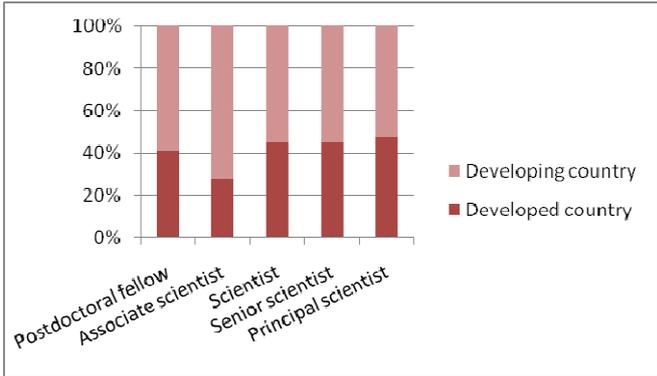
**Table 2.2. Age composition of employees at Wageningen UR (2005-2007)**

Age	2005	2006	2007
< 35 years	22.3%	20.8%	21.7%
35-55 years	62.6%	61.9%	59.2%
> 55 years	15.1%	17.3%	19.1%

Source: Wageningen UR, 2008 (p.157).

The share of women is about 40 percent, but they are much better represented in the lower salary scales (50%) and mid-salary scales (about 30%) than the highest scales (about 10%) and the latter share has been falling between 2005 and 2007 (WUR, 2008).

The last staff composition survey of the Consultative Group for International Agricultural Research (CGIAR) dates from 2003 (Jayasinghe and Moore, 2003) and reports a total of 7,651 staff members, divided into 11 staff groups<sup>5</sup>, of which about 35 percent is scientific staff. Of total staff **91 percent originate from developing countries** (i.e. countries defined as recipients of grants and loans), and 85 percent is nationally recruited. There is a particularly high proportion of staff from developing countries in the lower grades of the scientific staff group, according to the report “*reflecting the CGIAR’s role not only in carrying out science programs, but also in developing the careers of scientists from developing countries*” (Jayasinghe and Moore, 2003). In the scientist staff group the division between nationals of developed and developing countries is as shown in Figure 2.3. While staff from developing countries take more positions at the lower grades (especially associate scientist), the division is more even at the middle and higher levels (Jayasinghe and Moore, 2003).



Source: Jayasinghe and Moore, 2003 (p.30).

**Figure 2.3. Division by origin of scientist staff in the CGIAR (2003)**

The division of junior and senior positions in the CGIAR is as follows. **21 percent** of CGIAR’s internationally recruited staff (**IRS**), is in a **junior level position**, i.e. associate scientists (12%) and postdoctoral fellows (9%), while 20 percent is in a mid-level position as scientist or support

<sup>5</sup> The staff groups are: Center Management, Scientist, Science Support Professional, Science Support Technician, Corporate Service Manager, Administrator, Secretary, Information Specialist, ICT Services, General Services, and Other.

professional. Finally 55% of IRS is employed at a senior level (senior scientist, principal scientist, research programme or administration heads, and DDGs and directors) and of 4% the position level is unknown. For **regionally recruited staff (RRS) the shares of staff at junior, mid-level and senior level are 10, 24 and 56 percent** respectively (10% unknown). For nationally recruited staff (NRS) the categorization is slightly different because here the staff categories also include field labour (10%) and administrative staff (27%). **Scientific staff makes up about 26 percent of the NRS**, of which 19 percent is considered a senior researcher (with an MSc or above) and 81 percent are other researchers and technicians. The remaining 6 percent is manager or supervisor (and 12% is unknown).

In the CGIAR **8 percent** of the scientist staff, excluding the postdoctoral fellows, **is 25 to 34 years of age**. An additional 33 percent has an age between 35 and 44, 39 percent is between age 45 and 54, 16 percent is over 54, and of 4 percent the age is unknown. The reports states: *“the relatively low proportion of scientists in the 25-34 age group is probably a consequence of the length of time that is required for completion of a Ph.D., the typical entry qualification to the Scientist staff group. The sharp reduction at age 54 reflects typical retirement patterns”* (Jayasinghe and Moore, 2003).

Table 2.3 shows IRS numbers in the different levels for 1995, 2001 and 2003. This reveals the trends in staffing composition. The number of postdoctoral fellows has increased sharply between 1995 and 2001 and slightly between 2001 and 2003. Positions at the associate level have seen a decreasing trend between 1995 and 2001, which accelerated in the two years after that. Overall, the **number of these junior level positions has increased by 34 percent** over the entire period 1995 until 2003, but has decreased between 2001 and 2003 by 5 percent. This could indicate a recent trend of reduction of opportunities for young professionals to have employment at the Future Harvest Centres.

**Table 2.3. Number of staff in the CGIAR IRS group (1995-2003)**

Staff grade	Year			Change '95-'01	Change '01-'03
	1995	2001	2003		
Post-doctoral fellow	14	89	93	+536%	+4%
Associate scientist / support professional	151	144	128	-5%	-11%
Scientist / support professional	193	246	204	+27%	-17%
Senior scientist / support professional	292	213	272	-27%	+28%
Principal scientist	181	120	152	-34%	+27%
Research programme / admin heads	176	135	93	-23%	-31%
DDGs and directors	82	75	53	-9%	-29%
Unknown	0	0	38		
Total IRS staff	1089	1022	1033	-6%	+1%

Source: Jayasinghe and Moore, 2003 (p.19)

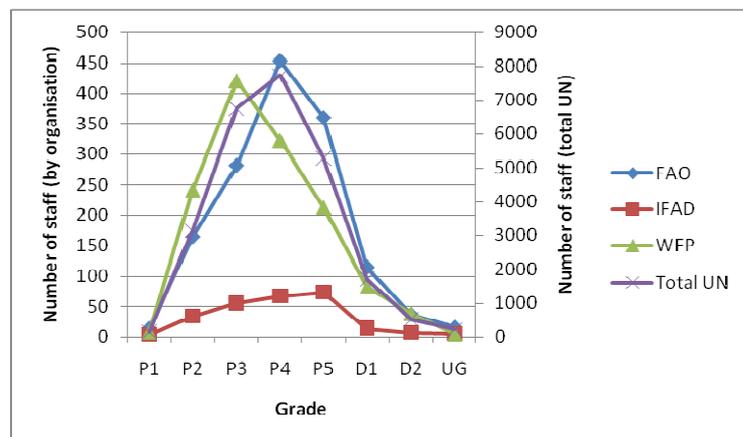
The **trends in numbers of scientist, senior scientist and principal scientist positions are inconclusive**, going in opposite directions in the two periods 1995-2001 and 2001-2003. Obviously, there is an interrelation between the trends in the different staff grades as staff-members are promoted to higher levels over the years. Overall, between 1995 and 2003 there has been a reduction of 5 percent in IRS (Jayasinghe and Moore, 2003). An interview with a human resources director of one of the CGIAR centres indicates that the limitation for hiring young professionals for scientific positions is that many available positions are as project coordinator. These positions require more experience than most young professionals have to offer, which means that there are limited career opportunities for this group.

**Women make up 27 percent of the staff** of Future Harvest Centers. They are well represented in administrative positions (50%) and secretarial positions (82%) and reasonably in positions as information specialists (40%), corporate service managers (35%), information and communication technologies staff (34%), and science support professionals (33%). However, there are few women in the principal staff groups, with women filling 20 percent of the scientist positions and 9 percent of the Centre management positions (Jayasinghe and Moore, 2003).

The United Nations System consists of a large number of commissions, programmes, funds, organisations and other entities. Although many of these bodies will have activities related to the agricultural sector, three deserve special attention in this context, the earlier mentioned Rome-based UN agencies FAO, IFAD and WFP. The Food and Agriculture Organization had 3,713 staff-members at the end of 2006. This number is a drastic reduction of 40% since 1990 (FAO, 2007). As a result,

FAO has increased the number of short-term assignments, which in 2006 stood for the equivalent of 1,906 person-years (9,180 separate contracts) (FAO, 2007).

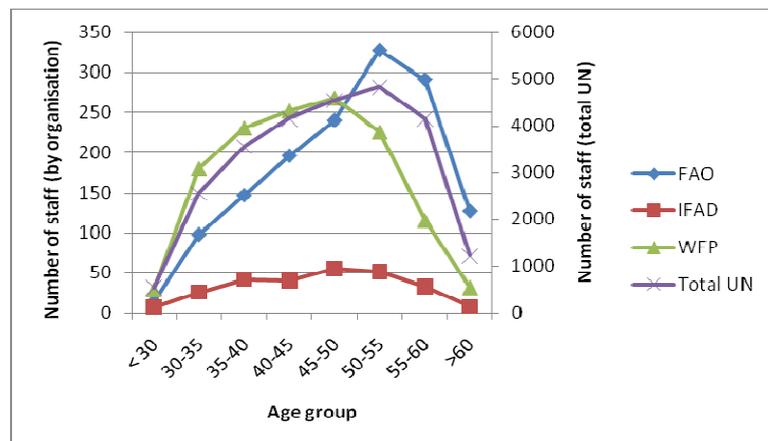
According to data of staffing of the entire UN system, FAO had 1,441 professional staff<sup>6</sup> at headquarters, other established offices and on projects in 2007, IFAD had 262 and WFP had 1,333. The entire UN system had 25,207 professional staff in 2007. Figure 2.4 shows the distribution by grade of staffing. Noteworthy is the slight skewedness of the curve for FAO as compared to the other organisations. **At FAO, relatively more staff has a higher grade level** than at the other organisations. This is also the case for IFAD, although there the differences in numbers of staff of the separate grades are less (UN, 2008).



Source: UN, 2008 (p.5&8). Note: UG or Ungraded staff is all those above grade D2.

**Figure 2.4. Grade levels of professional staff at headquarters, other offices & projects (2007)**

The age distribution of the staff of those same organisations also shows an interesting picture (Figure 2.5). The skewedness of the grade distribution seems to come from an even stronger skewedness in age distribution. There are thus **relatively less opportunities for young professionals at FAO** than at other UN organisations. A consequence is also that in the next ten years a high number of employees will reach retirement age.



Source: UN, 2008 (p.25).

**Figure 2.5. Age distribution of professional staff headquarters, other offices & projects (2007)**

The **gender composition** of professional staff of the three organisations and the UN as a whole **differ markedly** (see Appendix 3). IFAD has an almost equal division of males and females in total staff, but females are much better represented at the lower grade levels, with 70 percent women at P2 and P3 level. This is also the case for FAO and the entire UN system, with 40 to 60 percent women at P2 and

<sup>6</sup> There are two categories 'professional staff' and 'general service staff'. The first includes all staff in the Professional category proper, as well as in the principal officer and director category and in higher level posts and project personnel. The second category includes all staff in the general service category as well as manual workers, staff in the security service category, language teachers and field service staff.

P3 level, while WFP has relatively more women in the highest grade (the Director General is a woman). Of these three institutions, FAO has the lowest share of females in total staff (less than 30%), closely followed by WFP (a little over 30%). Share of women in total staff of the entire UN system is about 40 percent (UN, 2008).

The World Bank annual report of 2008 reveals that of approximately 8,600 staff about **41 percent** (3,500 people) **is employed at junior or middle level** as team assistant or information technician (1.1%), Program assistant or information assistant (11.6%), Analyst (9.9%), and Professional (18.0%) (World Bank, 2008b). The annual report further states that “*staff diversity is critical to the Bank’s organizational effectiveness. In 2007, the Bank Group adopted a five-year Diversity & Inclusion Strategy for staff, emphasizing four key themes—the role of leadership; more inclusive staffing processes; new learning to promote behavior change; and fresh metrics that focus on developing-country nationals, gender, and Sub-Sahara African and Caribbean nationals*” (World Bank, 2008b). It should be noted that the **agricultural sector represents only a small proportion of jobs** within the World Bank, even though this share may be rising with the planned increase in investment in the agricultural sector. Data on age profiles within the World Bank were unavailable, however Table 2.4 shows some other indicators of diversity within staffing at the World Bank. The latest figures on female representation remain slightly below the diversity targets that World Bank has set for itself.

**Table 2.4. Diversity indicators of World Bank staff**

Indicator	Reference Population	2002	2003	2004	2005	2006	Target
Developing country origin	Professional & managerial	48%	48%	49%	50%	50%	49%
Female	Professional level	40%	40%	40%	41%	41%	45%
	Managerial level	24%	24%	25%	27%	27%	30%

Source: Worldbank <http://go.worldbank.org/MZSGDP9HB0>.

The French Agricultural Research Centre for International Development (CIRAD) employed a total staff of 1,063 in 2007, which was an increase of 7.4 percent from 990 staff members in 2001. Scientific staff had increased slightly faster from 818 in 2001 to 896 in 2007, an increase of 9.5 percent. The share of female staff in total staff also increased from 21.8 percent in 2001 to 28.2 percent in 2007, but there is no differentiation made for staff levels. Of scientific staff in 2007, about half had a doctorate degree, which had seen a slight rise since 2001 (CIRAD, 2008). There is no information available on the age composition of CIRAD staff.

Overall, the African National Agricultural Research Systems, the CGIAR centres and other large international research organisations, the main UN agricultural agencies and World Bank employ almost 100,000 staff, although this also includes staff outside Africa for the international agencies. Still, this shows the large employment potential of the sector, especially when considering the high level of retirees in the next five to ten years. While there seems to be a reasonable balance between staff of developed and developing country origin, gender balance could still be improved, especially at the higher level positions. Many of the (international) organisations have included the aim of diversification in their human resources policy.



### 3. Current initiatives

#### 3.1 Description of existing initiatives

Many large and small scale activities exist related to youth engagement, education, capacity building, research and agriculture. A broad list of initiatives<sup>7</sup> with short descriptions and a list of their websites can be found in Appendices 4 and 5. This non-exhaustive long list shows that many initiatives exist that attempt to tackle some of the barriers identified for better engagement of youth in agricultural research. Multi-million dollar projects funded by individual governments (such as UK, Norway and US), international and multilateral agencies (such as World Bank, UNESCO and CGIAR centres) and private foundations (such as Ford foundation, Rockefeller foundation, and Carnegie Corporation of New York) are taking place.

Based on the information available on the websites of these initiatives they were scored in terms of the problem area they address, the approaches they use, the target population of the activities and their specificity for agriculture and Africa and whether they are youth-led or not. The matrix used for this scoring exercise can be found in Appendix 6.

Derived from this matrix and the descriptions of the activities, the existing initiatives are grouped into six broad types, although some have activities related to more than one type. These six typologies are:

1. Creation of interest in and / or commitment to agriculture and development
2. Capacity building and skills development
3. Direct career development
4. Improvement of the educational system
5. Strengthening of research
6. Stimulation of innovation

The following paragraphs will describe these six types of initiatives and give some examples. The descriptions are based on general information available from the initiatives' websites and therefore do not give an assessment of how well the initiatives are conducting their activities or how much progress they have made towards reaching their goals.

##### 3.1.1 Creating interest in and / or commitment to agriculture and development

The first type of initiatives includes those that directly or indirectly aim for a creation of interest for agriculture and development or creation of more commitment to these topics. Type 1 activities are most often directed at youth in general including, or sometimes especially, high school students and involve information exchange, dialogue or networking activities and in some cases immersion in development or agriculture through direct implementation of projects. This also includes some initiatives that aim at getting youth involved through different tools such as online communities, multimedia and art. Those initiatives that are related to creating commitment involve more active participation such as fund raising (Canadian Youth Challenge International) and actual development projects (Develop Africa Foundation).

**Table 3.1. Examples of type 1 initiatives**

Initiative	Description	Direct aim	Indirect outcome	Main tools
Canadian Youth Challenge International	Young people 18-30 go on short-term national and international volunteer assignments. Volunteers have to raise funds before going on an assignment for airfare and to contribute to the project	Build capacity of youth to create 'change'	Create interest and commitment of youth	<ul style="list-style-type: none"> <li>• partnerships</li> <li>• hands-on experience</li> <li>• development projects</li> </ul>
Develop Africa Foundation (DAFO)	African alumni of Wageningen University and ISS returned home conduct development projects together with a network of other African and European practitioners	Reduce poverty	Link African experts and retain them in Africa	<ul style="list-style-type: none"> <li>• networking</li> <li>• development projects</li> <li>• resource mobilization</li> </ul>

<sup>7</sup> The list of initiatives is based on internet search and two documents (YPARD, 2008b and Lamers, 2009).

Initiative	Description	Direct aim	Indirect outcome	Main tools
TakingITGlobal	Online community of youth, interested in global issues and creating positive change. Has managed to connect thousands of youth	Exchange of information	Create interest and awareness using 'modern' tools	<ul style="list-style-type: none"> <li>networking</li> <li>youth-led</li> <li>information exchange</li> </ul>
SPEAK AFRICA	Pan-African communication strategy and platform designed to work in partnership with young people to improve opportunities for their expression, exchange and meaningful participation in advocacy, decision-making and development using multi-media tools channels as well as visual and performing arts and culture	Improve youth participation and exchange about development	Create interest in development issues using 'creative' tools	<ul style="list-style-type: none"> <li>information sharing</li> <li>networking</li> <li>training of youth</li> </ul>
World Food Prize of the Global Youth Institute	Yearly three-day event of 100 selected high school students to discuss pressing issues such as food security and agriculture with Nobel and World Food Prize Laureates and other international experts and global leaders	Creating interest in global issues	Skills development	<ul style="list-style-type: none"> <li>incentives</li> <li>dialogue</li> </ul>

Source: Author's assessment of information on initiatives

### 3.1.2 Capacity building and skills development

The second type of initiatives relates to capacity building and skills development. They are mostly directed at young professionals, including (post)graduate students, active in agricultural research and / or development. The activities often involve trainings, information sharing and networking opportunities.

**Table 3.2. Examples of type 2 initiatives**

Initiative	Description	Direct aim	Indirect outcome	Main tools
African Youth Forum on Science and Technology	Youth-led forum that aims to build the capacity of African youth through training, information sharing, networking and dialogue	Capacity building and enhancing of youth participation in policy making	Career development	<ul style="list-style-type: none"> <li>website</li> <li>info sharing</li> <li>discussion forum</li> <li>youth-led</li> </ul>
Association for International Agricultural and Extension Education (student representatives)	Professional organization dedicated to studying, applying, and promoting teaching and learning in agriculture. Serves as advocate for improvement of teaching and learning in agriculture and provides a forum to address issues in agricultural education. Youth is part of larger professional community, but have designated student representatives and activities	Improve quality of education and capacity building	Better job opportunities for graduates	<ul style="list-style-type: none"> <li>networking</li> <li>training of teachers &amp; YPs</li> <li>info sharing</li> <li>curricula development</li> <li>research</li> </ul>
Young Professionals' Platform for Agricultural Research for Development	Global platform through which young professionals can express their ideas and realise their full potential towards a dynamic agricultural research for development. Objectives: facilitating exchange of information and knowledge among young professionals, broadening opportunities for young professionals to contribute to strategic ARD policy debates, promoting agriculture among young people, and facilitating access to resources and capacity building opportunities.	Capacity building and improved access to resources and information	Career development	<ul style="list-style-type: none"> <li>website</li> <li>info sharing</li> <li>networking</li> <li>advocacy &amp; lobby</li> <li>youth-led</li> </ul>

Initiative	Description	Direct aim	Indirect outcome	Main tools
CGIAR course "Thinking scientifically"	International research centres of the CGIAR observed that African MSc /PhD students that conduct part of their thesis work with a CGIAR centre often lack basic research skills required by the centres. They developed a course "Thinking Scientifically" which provides an overview of research methods and other issues.	Improve skills of MSc and PhD candidates conducting thesis work with CGIAR centres	Career development	<ul style="list-style-type: none"> <li>• training</li> <li>• info sharing</li> </ul>

Source: Author's assessment of information on initiatives

### 3.1.3 Direct career development

The third type of initiatives are also related to capacity building but are more directly linked to individual career development. Similar to type 2 initiatives they are directed at young professionals, including (post)graduate students. The activities often involve trainings and specific hands-on experience, often with (substantial) financial support from governments or private sector. While capacity building for type 2 initiatives are often short-term, the type 3 activities last much longer and are broader.

**Table 3.3. Examples of type 3 initiatives**

Initiative	Description	Direct aim	Indirect outcome	Main tools
Australian Youth Ambassadors for Development	Programme organised by the Australian government. Skilled volunteers aged 18-30 are mobilized for development through specific assignments with development organisations in the Asia-Pacific region.	Strengthen understanding between Australia and Asia-Pacific countries and bring positive contribution to development	Develop skills. Experience importance of development / agriculture	<ul style="list-style-type: none"> <li>• networking</li> <li>• capacity building</li> <li>• hands-on experience</li> <li>• development projects</li> </ul>
Netherlands Associate Expert Programme of the Ministry of Foreign Affairs	Program of Dutch Ministry of Foreign Affairs to promote career development of Dutch and developing country nationals in UN and international research organisations	Capacity building	Career development	<ul style="list-style-type: none"> <li>• training of YPs</li> <li>• hands-on experience</li> </ul>
AIESEC International	Global, independent, not-for-profit organization, run by students and recent graduates of institutions of higher education. Platform for young people to discover and develop their potential to have a positive impact on society.	Capacity building	Career development	<ul style="list-style-type: none"> <li>• exchange program</li> <li>• trainings</li> <li>• networking</li> <li>• internships</li> <li>• hands-on experience</li> <li>• youth-led</li> </ul>
CIDIN: advanced master Policy and Practice in International Development	CIDIN wants to educate young academics by linking their first work experience in the field of development cooperation with personal, professional and academic training and reflection. The programme takes one year in which the trainees are employed by one of the participating development organizations in the Netherlands for four days a week. One day a week the trainees are trained at the university.	Capacity building, specific link of employers and university to have a curricula that matches with demand of these organisations.	Career development	<ul style="list-style-type: none"> <li>• trainings</li> <li>• networking</li> <li>• hands-on experience</li> </ul>

Source: Author's assessment of information on initiatives

### 3.1.4 Improvement of the educational system and creating critical mass

The fourth type of initiatives is those directly aimed at improving agricultural education. This happens either through improving the quality of education by training teachers and improving curricula or by increasing the critical mass of scientists by providing scholarships for higher education in their home countries or abroad. Some initiatives aim to do both. The target group is thus most commonly graduate students and teachers or faculties. There is especially a great deal of initiatives that target

the improvement of the general higher education systems, many of them specifically for (certain regions of) Africa.

**Table 3.4. Examples of type 4 initiatives**

Initiative	Description	Direct aim	Indirect outcome	Main tools
Netherlands Initiative for strengthening Capacity in Higher Education	Initiative of the Dutch government administered by NUFFIC in 22 partner countries according to principal: "countries lead, donors support" and flexible interventions attuned to specific needs.	Strengthening of higher-education institutions in developing countries	Capacity development in bilateral sectors and higher-education sector	<ul style="list-style-type: none"> <li>• advisory services</li> <li>• training</li> <li>• scholarships</li> <li>• investment in infrastructure</li> </ul>
EDULINK	Cooperation programme of ACP and EU. that provides funds for projects that strengthen the capacity of higher education institutions in the area of management, academics and research and promote integration in higher education in the ACP countries	Improve quality of education and promote higher education as means of reducing poverty	Foster capacity building	<ul style="list-style-type: none"> <li>• donor of project funds</li> </ul>
FARA - Building African Scientific and Institutional Capacity	FARA is an umbrella organization bringing together and forming coalitions of major stakeholders in agricultural research and development in Africa. BASIC is one of the programmes of FARA and aims to form partnerships with non-African universities to improve African education.	Improve quality of education	Build capacity to achieve improvements in agricultural sector	<ul style="list-style-type: none"> <li>• partnerships</li> <li>• curricula development</li> <li>• training of teachers</li> </ul>
Regional Universities Forum for capacity Building in Agriculture	Consortium of 25 universities in Africa to develop and strengthen research. Runs grants program to strengthen and support training of graduate students in agriculture. Projects conduct research on improving rural welfare and include work-plans for at least 2 graduate students to complete their training	Increase quantity of graduates	Build critical mass to strengthen research	<ul style="list-style-type: none"> <li>• provide funds for research programs that include scholarships</li> </ul>
Wageningen UR sandwich programme	Developing country PhD students take a year of postgraduate courses at their home university and then go to Wageningen for 12-18 months for further course work. They then return home for thesis research. This is more cost-effective than full-time study in a developed country	Increase quantity of graduates and improve quality of their education	Limit brain drain	<ul style="list-style-type: none"> <li>• scholarships</li> <li>• partnerships</li> </ul>

Source: Author's assessment of information on initiatives

### 3.1.5 Strengthening of research

The fifth group of initiatives aims at directly improving the quality of research through the creation of partnerships with regional or global universities and research centres, and through direct funding of relevant research projects. These initiatives are usually directed at the entire group of agricultural researchers, although some are specifically for recent graduates. Some also directly aim to improve infrastructure for research.

**Table 3.5. Examples of type 5 initiatives**

Initiative	Description	Direct aim	Indirect outcome	Main tools
African Ministerial Council for Science and Technology (AMCOST)	High-level policy and political forum for ministers of science and technology from all member states of the African Union, under the auspices of NEPAD. Aims to build a strong political constituency and leadership to promote Africa's scientific and technological development and cooperation among African countries. Has developed and adopted 'Africa's Science and Technology Consolidated Plan of Action'.	Improving infrastructure, capacity and collaboration to improve quality, intensity and application of S&T for development.	Capacity building, knowledge production, and technological innovation	<ul style="list-style-type: none"> <li>networking</li> <li>partnership</li> <li>information sharing</li> <li>infrastructure creation</li> <li>policy debate</li> </ul>
FARA - Strengthening Capacity for Agricultural Research and Development in Africa	FARA is an umbrella organization bringing together and forming coalitions of major stakeholders in agricultural research and development in Africa. SCARDA is a programme of FARA funded by DfID. Partnering and resource mobilization to strengthen management and career development in African research	Strengthen research and career development in research	Build capacity to achieve improvements in agricultural sector	<ul style="list-style-type: none"> <li>partnerships</li> <li>training of teachers</li> </ul>
Knowledge networks	Knowledge networks partner individuals / organisations around a topic to encourage exchange and interaction	Strengthen research	Interdisciplinarity	<ul style="list-style-type: none"> <li>partnerships</li> <li>networking</li> <li>info exchange</li> </ul>
Rothamsted International African Fellows Programme	Funds research projects of African researchers that aim to support sustainable agriculture in sub-Saharan Africa and specific problems in agriculture with a researchable constraint. African scientists carry out research projects at a partner European research institute, or university	Strengthen research	Scientist career development and improve science and agricultural development	<ul style="list-style-type: none"> <li>provide funds for research</li> </ul>

Source: Author's assessment of information on initiatives

### 3.1.6 Stimulation of innovation

The sixth and final type of initiatives is those that aim to achieve innovation. This usually happens through networking and dialogues between people from different backgrounds and disciplines to bring out new ideas that are "out of the box". Innovation in agricultural research not only matters for better and more sustainable development outputs, but will also help to eliminate the 'dusty' image of agriculture as a career choice.

**Table 3.6. Examples of type 6 initiatives**

Initiative	Description	Direct aim	Indirect outcome	Main tools
Business in Development Network	Engages entrepreneurs, experts and investors from all over the world to stimulate entrepreneurship and economic growth in emerging markets. The BiD challenge is an online business plan competition that challenges entrepreneurs to develop and execute innovative business plans with growth potential	Entrepreneurship and innovation for development	Create interest in development through business approach	<ul style="list-style-type: none"> <li>networking</li> <li>mentoring</li> <li>business / research plan</li> </ul>
Netherlands National ThinkTank	The ThinkTank selects a multi-disciplinary team of promising graduate students and recent graduates to work on innovative solutions for a specific societal problem	Innovation through youth and interdisciplinarity	Capacity building	<ul style="list-style-type: none"> <li>training of YPs</li> <li>hands-on experience</li> <li>networking</li> </ul>
Netherlands Third Chamber Parliamentary Initiative	Shadow parliament to develop innovative ideas to improve development cooperation and inform the Dutch public	Innovation for development	Creation of interest in / commitment for development	<ul style="list-style-type: none"> <li>networking</li> <li>hands-on experience</li> <li>dialogue</li> </ul>

Source: Author's assessment of information on initiatives

### 3.2 Gaps, problems and opportunities of existing initiatives

In this section we highlight a few areas that are relatively underrepresented in the long list of initiatives compiled for this study in terms of target groups they address, approaches and tools they use, and specific problems they address.

#### 3.2.1 Target group

While there are many initiatives that focus on **youth in general**, few target **high school students** in particular. This group, especially those in the last three years of their high school education are those that are conscious about choosing their tertiary education and their future careers. While there are no clear figures on declining enrolment in agricultural education it is clear that the general perception of agriculture as a dusty, dirty, poorly-paid profession exists. Both recent and older studies confirm this and agriculture has thus suffered from this image since decennia. Exposing career-choosers early on to the 'real' options in agricultural-based careers has the potential to create more interest in these career paths. However, providing information only is not sufficient to create real interest and more hands-on experience is necessary. An example is the Sound of Science Festival organised by the Netherlands Youth council that aims at interesting high school students for higher education in mathematics and the physical sciences such as physics, chemistry and astronomy. This, however, does not tackle the problem of low financial remuneration of careers in agriculture in Africa, which needs involvement of high-level policy makers.

Few programmes specifically aim at **undergraduate students**. To ensure the availability of well-trained research staff it is necessary that Bachelor students continue onto Master's degrees. This is especially important in Africa where we found an unbalanced division of the different levels of higher education (Chapter 2.4). More frequent and more specific attention to interest this group in further education would be necessary.

The perception of an education programme or career very much depends on the general perception of the **general public** of this career. Both parents and youth will base their opinions on available information and the opinions of their peers. A more broad-based understanding of the importance of agricultural research would enhance the general opinion. Very few initiatives now aim at the interest of the public. In our long list, we only found the Netherlands Third Chamber Parliamentary Initiative to specifically aim at developing innovative ideas to inform the Dutch public about development cooperation.

Only in a few cases, the **private sector** is specifically involved in the initiatives. The private sector could become much more involved in an advisory role to ensure that education and research are more relevant to the private sector or to bring more interdisciplinarity and innovation into agricultural research. Entrepreneurship is also another way to involve more young people in agricultural

development. Examples include the Business in Development Network and the Netherlands ThinkTank.

There are some initiatives that aim to do lobby and advocacy to increase the awareness of the importance of engagement of youth, or improvement of education and in this manner involve policy makers. There are however few initiatives that collaborate with **policy makers** in different countries or from different sectors.

### 3.2.2 Approach

It is clear that many initiatives in some way try to tackle some of the barriers to youth engagement in agricultural research. However, only one-third of our long-list has a **specific focus on agriculture**. Those that do address agriculture as a specific sector are for the major part type 2 (7 out of 10), type 4 (5 out of 18), and type 5 (4 out of 8). That means that especially in the area of creating interest in and / or commitment to agriculture and development, direct career development, and stimulation of innovation there is a lack of specific agricultural initiatives.

**Youth-led** initiatives have a very good understanding of the problems and interests of other young professionals. Many of these initiatives however face the problem of less-experienced management, which may lead to over-ambitious targets or a lack of strategic decision-making. In some cases, they also suffer from some senior professionals that are reluctant to work with them or allow them into high-level meetings and decision-making processes. Most youth-led organisation either are of the commitment or interest creating (type 1), or the skills development type (type 2). There are no specific youth-led initiatives for improvement of the higher education system although for example YPARD has made it part of their objectives to improve university curricula. In practice, it has been difficult for the platform to make much progress on this objective so far. There are some examples of students being involved in the improvement of educational programmes such as at Wageningen University.

Even though almost half of the initiatives has a **specific focus on Africa**, we found no specific initiatives for career development of African young professionals, although for example the Netherlands Associate Expert Programme also funds some positions for developing country nationals.

### 3.2.3 Tools / activities

The internet has become an important means to share information and for many initiatives, this is one of their main activities. However, more advanced use of **Information and Communication Technologies** (ICT) and multimedia is still relatively low. There are a few examples of initiatives that (aim to) implement a virtual community or specific e-forums (such as AYFST, Research-Africa.net TakingITGlobal, and YPARD), or online databases (such as grantfinder.nl of NUFFIC and the UNESCO database on education) but the use of these tools is still relatively underdeveloped. Partially, this can be explained by a persisting lack of penetration of computers and the internet in Africa, even in the education and research institutions. In 2006, Sub-Saharan Africa had on average 3.8 internet users and 76.2 computers per 100 people, compared with 59.3 and 56.7 respectively on average for the high-income countries and 89.0 and 85.4 respectively for the Netherlands (<http://go.worldbank.org/FDTYJVBR60>, accessed on 24 April 2009). SPEAK Africa makes use of multi-media tools to allow youth to participate in the development debate.

The ongoing debate on ICT for development shows many examples of innovative uses of ICT tools for poverty reduction and improvement of wellbeing such as through open source learning and using sms services in health care by providing and collecting information. A study of the Overseas Development Institute shows that ICT can be useful for agricultural development by improving agricultural extension systems and providing up to date information, online services, e-commerce, Q&A services, databases etc. In addition, the use of so-called **social software** has been increasing in general (Meera et al., 2004). This covers a range of software tools that allow users to interact and share data with other users, primarily via the web, including tools that facilitate discussion such as blogs and wikis; websites for photograph, bookmark and video sharing such as Facebook, Flickr, YouTube and Delicious; social or professional networking sites and services such as Twitter, MySpace, Hyves, LinkedIn and Devex; and 3-D virtual world communities such as Second Life. Some higher education institutions are already using these tools in their educational programmes. An example of this is a virtual hospital used by Imperial College London to train third year medical students<sup>8</sup>. Social networks are also already being used to draw attention to a more 'green' and 'sustainable' lifestyle such as in the game Treemagotchi, where you have a virtual tree which can be made to grow and flower by completing small assignments that relate to green and sustainable food, energy, banking, clothing and living.

<sup>8</sup> <http://www.cnn.com/2009/TECH/03/30/doctors.second.life/index.html>, accessed 24 April 2009.

Those participants that complete the most assignments can also win actual prizes that themselves relate to fairtrade (<http://www.treemagotchi.nl/>). LinkedIn has recently launched a specific networking site for college and graduate students, which provides guides to improve their careers by using LinkedIn (<http://grads.linkedin.com>). Devex offers recruiting and business services for international development with among others member profile and job vacancy databases. Devex has indicated interest to partner with a youth organisation such as YPARD to access their pool of young professionals (<http://www.devex.com>).

The above underlines the **vast and unexplored potential of ICT** for any area of development, including agricultural education and research. In Chapter 2.1, we found that aptitude for and willingness to adopt ICT and other technologies is much higher among youth. Not only are young people often more able to adapt and spread the use of these technologies better than their seniors, more frequent and better use of new technologies may also attract the attention of youth to a specific field.

Some initiatives use **awards or other incentives** to attract youth or to recognize their achievements. This can be in the form of an actual (financial) prize, by giving them specific attention and using them as an example for others, or by giving them the feeling that they have been selected as “one of the lucky few”. This can also serve as an encouragement for other young professionals. In Chapter 2.2, we discussed the lack of recognition that young professionals face in some environments. Being recognized with an award or some other form of incentive may assist in improving the recognition of young professionals’ achievements in other environments. The International Award Association is an example of how incentives are created without actual financial remuneration. Similar programs could be developed for agriculture specifically.

Very few initiatives specifically mention **mentoring** programs. Young professionals often lack experience and certain specific skills which they can easily learn from their seniors, but who often lack the time to teach them. To train the leaders of the future, organisations should create opportunities and time for more junior-senior interactions. An interesting example of mentoring in entrepreneurship is the Business in Development Network where entrepreneurs with innovative business plans with growth potential are linked to experts that give them mentoring in how to improve and achieve the plans they have developed. A similar network could also be developed for research. In the private sector, mentoring and training programmes to develop and shape young high-potential employees are much more common than in agricultural research and development.

Information collection for this study has made clear that a great deal of activities and initiatives are already taking place that in some way contribute to the strengthening of agricultural research and the improvement of integration of youth in this sector. However, there is a lack of coherence between these activities. A more **broad-based approach** that tackles several problem areas at the same time could be more effective. Some initiatives have already started to gather and share information on activities or important underlying data, such as AET Africa, a portal of information on agricultural education in Africa (<http://www.aet-africa.org/>). However, data on this website is not easily converted into general trends in enrolment. There is also an international network for higher education in Africa, which monitors the developments in higher education, however this is not specific for the agricultural sector ([http://www.bc.edu/bc\\_org/avp/soe/cihe/inhea/](http://www.bc.edu/bc_org/avp/soe/cihe/inhea/)).

#### *3.2.4 Specific problems of young professionals*

The **career development** options of young professionals are sometimes limited. Especially finding the first job, which will lead to a larger network and more experience, is often difficult. Giving young professionals more hands-on experience may improve their chances in the labour market. The Dutch example of the advanced Master policy and practice of the Centre for International Development Issues of Radboud University Nijmegen shows how recent graduates can obtain working experience and additional training that matches the demands of Dutch development organisations. The Canadian Youth Challenge International gives another example of how youth is asked to raise part of the funds for a project that they will then implement as volunteers. This is an innovative way of raising funds, increasing the young person’s commitment and making more development projects possible.

A great deal of personal initiative is also required from young professionals. Many young professionals who are unable to find paid jobs in the desired sector start out by doing **volunteer work** in their home country or abroad. Through this hands-on experience they acquire skills desired by their potential employers. This type of volunteer work could be promoted more. An example of a Dutch organisation that relies heavily on volunteers is the NGO FairFood (<http://www.fairfood.org>). Their volunteers are

treated as full-fledged employees and expectations and responsibilities are accordingly. For that reason, volunteers can gain valuable experience for their future careers.

An important issue that none of the initiatives addresses at present is the fact that young professionals are often on **temporary contracts**, which may hinder their full engagement in projects. This may be hard to address due to a desire to retain flexibility in an organisation and labour laws. The reasons and impacts of temporary contracts on the careers of young professionals needs further examination.

**Financial constraints limit the options** for young professionals and students **to attend seminars, workshops, conferences and courses**. Although there usually is a reduced fee for students this does not apply for graduates. In addition, travel and lodging costs may be prohibitively high, although in some cases there are grants available for speakers from developing countries. These events are an excellent opportunity for young professionals to build up a network, stay up-to-date about recent developments and learn new skills and theories. Some initiatives such as YPARD have already started negotiating with international organisations to create space and give financial support to young professionals. However, the outreach is presently very low and a more structural approach is necessary.

The same is the case for participation in **policy and strategy debate**. The potential contribution of young professionals is not often recognised and young professionals are therefore not often invited to attend these types of meetings. Some organisations such as CTA in its Science and Technology Advisory Committee have gradually been giving seats to young professionals. This started by giving a few young people the opportunity to observe the meeting, which developed into asking them to chair some meetings and actively participate. By slowly introducing them in this manner, this has overcome possible resistance of seniors to allow them in.



## **4. Conclusions and suggestions for courses of action**

### **4.1 Conclusions**

Young professionals are assets to the organisations that they work for by bringing fresh perspectives and other skills. Four key issues have been identified that influence the engagement of youth, especially in Sub-Saharan Africa, in agricultural research. These are: (1) career development of young professionals; (2) interest of youth in agriculture as a career choice; (3) quality of educational curricula, infrastructure and teaching methods; and (4) investment in agricultural research.

Young professionals face many challenges in their career development. They often have a lack of work and life experience and their seniors have a lack of time to mentor them. Young professionals are often on short-term contracts, which may hinder their full involvement in a project, and the prevalence of these short-term contracts has increased in recent years. When young professionals have to deal with senior level people, their contributions may not be recognized or appreciated. Young professionals also usually have a lack of access to decision-making levels and lack of funds to attend seminars and other networking and learning opportunities. Associate Expert and Young Professional programmes in the United Nations system, within the CGIAR system, at the World Bank, Asian Development Bank, African Development Bank and Inter-American Development Bank show that both governments (that provide funding for Associate Experts) and the institutes involved are committed to creating the next generation of agricultural scientists and professionals. However, the scale at which this is happening may not be sufficient to ensure that qualified people can replace the group of staff that is reaching retirement age in the next five to ten years in these institutes.

Although there is a perception of declining interest in agriculture as a topic of study, the available data have shown that in most Sub-Saharan countries the absolute number of enrolment in tertiary education in the broad field of agriculture is increasing. However, there is a slight declining trend in the share of the studies of agriculture in total enrolment in tertiary education. Data from 23 countries show that, on average, one out of twenty students in tertiary education chooses the broad field of agriculture. The share of women enrolled in agriculture ranges from 6.5 to 60.7, but overall a little over one out of four students enrolled in agricultural education at the tertiary level is female. In Sub-Saharan Africa enrolment in the various levels of tertiary education is unbalanced, with African countries having a much larger proportion of technical education enrolments in the lower levels of the technical education pyramid (technical / vocational training) than do highly competitive countries, and thus a smaller proportion that goes on to post-graduate levels (Master's and Doctorate degrees).

Investments in the African tertiary educational system in recent years have been limited. As a result, it is marred by a lack of linkage with other national and international institutes and the private sector, outdated, inflexible and irrelevant curricula, shortages of qualified staff in agricultural education, and inadequate teaching methods and facilities

Public spending on agricultural research in Sub-Saharan Africa has declined in the last decade. Especially funds from international donors have reduced. However, due to renewed attention for agriculture and its role for development, World Bank and other donors are planning to spend more on the African agricultural sector as a whole.

A vast number of initiatives exist, that attempt to tackle one or more of these problems through approaches such as networking and partnerships, training, information generation and sharing, scholarships and research fellowships, giving hands-on experience, curricula development and many other activities. Many of these initiatives aim at forging partnerships among research and educational institutions within Africa, and between African institutions and those in other continents. Several youth-led initiatives have also come up, showing that youths themselves observe that there is a lack of engagement in agricultural research and discrepancies are present between the skills they have to offer and those that are desired by potential employers.

Gaps in the coverage of these initiatives exist such as limited attention for specific target groups (e.g. high school students, undergraduate students, the general public, the private sector, and policy makers). More specific focus on agriculture and Africa could also still be achieved as many initiatives target for example higher education as a whole or take place at the global level. This is especially important as the situation in different countries is dissimilar and approaches therefore have to be country specific. The use of ICTs such as social software has a great potential to be expanded. Activities such as mentoring and networking could still be much more included as the interaction

among juniors and between the juniors and seniors in the field is very important. New initiatives therefore have a potential added value if they concentrate on filling these gaps and address the specific problems of young professionals such as career development, temporary contracts, and options to attend seminars and policy debates.

## 4.2 Suggestions for course of action

In their common policy document of May 2008 entitled “Agriculture, Rural economic development and Food security”, the Netherlands Ministry of Foreign Affairs and the Ministry of Agriculture, Nature and Food Quality have formulated their commitment to agricultural development and improvement of rural activities in developing countries along five specific priority tracks (BuZa/LNV, 2008).. One of these tracks is “Research and innovation to increase productivity in the context of climate change”<sup>9</sup>. Among the main tools to achieve this are the strengthening of international research of the CGIAR centres and FARA, and increased investments in an innovative knowledge agenda by supporting regional capacity through existing initiatives such as the Comprehensive African Agriculture Development Programme (CAADP) developed in the context of the New Partnership for Africa’s Development (NEPAD)<sup>10</sup>

Section 3.1 of the present study outlines several other existing initiatives that aim to improve research and innovation, especially among the Type 5 and 6 initiatives described, that could provide a point of entry for the activities of the two Dutch Ministries involved. However, this review also shows that other problem areas such as education and career development need to be addresses as well in order to achieve sufficient local human resources and capacity and a favourable environment for agricultural research and development. Education is not part of the specific policy document of the two Ministries, but the Netherlands Initiative for strengthening Capacity in Higher Education (NICHE), highlighted as a Type 4 initiative in section 3.1, shows an example of how the Dutch government has tackled education (in all subjects) separately. Before the initiation of NICHE the Dutch government had the NUFFIC-NPT programme, in which the agricultural sector formed the major part of the activities undertaken. As already indicated more specific focus on agricultural education could improve the effectiveness of the effort as well as have more impact on agricultural research and innovation in the long term.

Wageningen International was set up by Wageningen University and Research Centre to facilitate easy access to all their international services and products. Wageningen UR already works with international agencies, non-government organisations, businesses, knowledge institutes and foreign and Dutch ministries engaged with international development in the agriculture, food, rural development and natural resource management sectors. The added value of collaboration of Wageningen UR with the relevant ministries to achieve enhanced research and innovation for productivity improvement is therefore evident.

Based on the gaps identified in existing initiatives, the broad focus of the Dutch policy document of the and the strengths of Wageningen UR, this report suggests possible pathways to reach the full potential of youth in agricultural research in order to increase innovation and secure the future of agricultural research in Africa. The pathways are derived from the problem areas identified and are not mutually exclusive. Table 4.1 below gives a complete overview of recommendations with examples of similar initiatives already taking place (some with a different focus) and ideas for new initiatives that could be developed.

1. **Stimulating career development of young professionals:** Although support for better development of young professionals has been growing among international organisations and the Netherlands Ministry of Foreign Affairs already facilitates the Associate Expert program, more attention is needed still for career development of young professionals in agricultural research. Therefore, (support for) better advocacy for young professionals among different types of national and international research organizations is necessary in order for them to recognize and capitalize on the assets of young professionals (enthusiasm, networking, ICT) and ‘mainstream’ youth within national and international research organisations:
  - Lobby for policies within national and international research organizations

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<sup>9</sup> The other four tracks are: Public service provision and institutions, Sustainable value chain development, Improving market access, and Food security and transfer mechanisms.

<sup>10</sup> Other tools to achieve track 1 are innovations in market chains to improve the sustainability of agriculture and productivity, the improvement of trade capacity in specific countries, support to agricultural development in fragile states, continuation of partnership with FAO, and the prevention and treatment of animal diseases (such as Avian Influenza).

- Support and lobby for the revision of the structure and operations of organizations to strengthen the participation of young professionals and make sure that there are well-defined roles for young professionals in new proposals
- Negotiate “young professional friendly” budgets and timelines with funders / organisations
- Ensure age balance in teams
- Design research projects that will be relevant to young people and future generations

Develop the capacity of young professionals to take part in agricultural research and policy debate by:

- Supporting and developing innovative mentoring and experience programs in agricultural research including internship, exchange programs and mentoring
- Being proactive in building the decision-making capacity of young professionals by gradually involving them in policy debate
- Giving more support to youth-led organisations both in terms of funding and mentoring
- Promoting pro-activeness among young professionals by giving more attention to what young professionals can do themselves to improve their engagement

There is also a need to make a more thorough assessment of the impact of short-term contracts on young professionals’ participation.

2. **Improving the quality of agricultural education:** This includes giving more specific attention to agricultural education and establishing partnership programs between African universities and their partners in the North for curricula development, improving linkages between undergraduate and post-graduate education in Africa, and involving the private sector in curricula development. These efforts can be supported by strengthening the information availability of trends in education enrolment by sector / topic. Advocacy among donors would also ensure that the new wave of interest in investing in African agriculture includes infrastructure for agricultural education.
3. **Increasing investments in agricultural research:** Apart from the increased investments for CGIAR and FARA already indicated in the Dutch policy document, this could also include the involvement of the private sector in research to stimulate investments and innovation.
4. An area that deserves mentioning but may be outside of the focus of the two Dutch Ministries and of Wageningen UR is the **creation of youth interest in agriculture**. This includes the creation of interest for agriculture among the general public in Africa, the creation of interest for agricultural careers among high school students and undergraduates through exposure and hands-on experience in Africa, more attention for employment and salaries in African agricultural sector, and improving the awareness of African policy makers for agricultural employment.

Regardless of the course of action chosen to improve agricultural research it remains crucial to give specific focus on Africa and agriculture. It is also important to make more frequent and more innovative use of ICT options.

**Table 4.1. Recommendations and examples**

Recommendation	Examples of existing initiatives	Comments / ideas
<b>General</b>		
Specific focus on agriculture and Africa	<p>Examples of initiatives that do both:</p> <ul style="list-style-type: none"> <li>- African Network for Agriculture, Agroforestry and Natural Resources Education (ANAPE)</li> <li>- African Youth Forum on Science and Technology (AYFST)</li> <li>- Alliance for a green revolution in Africa (AGRA)</li> <li>- Association for Strengthening Agricultural Research in Eastern and Central Africa (ASARECA)</li> <li>- Comprehensive Africa Agriculture Development Programme (CAADP)-pillar4</li> <li>- Programmes of the Forum for Agricultural Research in Africa (FARA): BASIC, PAEPARD, SCARDA</li> <li>- Rothamsted International African Fellows Programme</li> <li>- Regional Universities Forum for capacity building in agriculture (RUFORUM)</li> </ul>	
Make more frequent and more innovative use of ICT options	<p>Examples of tools:</p> <ul style="list-style-type: none"> <li>- grads-LinkedIn</li> <li>- Devex</li> <li>- Treemagotchi</li> <li>- Databases</li> </ul> <p>Initiatives that use ICT as a major tool:</p> <ul style="list-style-type: none"> <li>- AYFST</li> <li>- Research-Africa.net</li> <li>- TakingITGlobal</li> <li>- YPARD</li> </ul>	<ul style="list-style-type: none"> <li>- Use virtual social networks to create interest for agriculture among youth.</li> <li>- Support better profile and database development for young professional</li> <li>- CVs and jobs specific for young professionals</li> <li>- Involve (young) IT experts to come up with innovative uses of IT (e.g. YPARD has engaged private IT companies to donate time for website development)</li> </ul>
<b>Creating youth interest in agriculture</b>		
Create interest for agriculture among the public in Africa	<ul style="list-style-type: none"> <li>- World Food Prize of the Global Youth Institute</li> <li>- Youth Ambassadors for Rural Development (YARD)</li> <li>- Network of African Youths for Development (NAYD)</li> <li>- SPEAK AFRICA</li> <li>- Canadian Youth Challenge International (YCI)</li> <li>- Netherlands National Youth Council</li> <li>- Netherlands Third Chamber Parliamentary Initiative</li> <li>- Oxfam International Youth Parliament (OIYP)</li> <li>- TakingITGlobal</li> <li>- YouthActionNet</li> </ul>	<ul style="list-style-type: none"> <li>- Use more innovative media and ICT tools to reach the public such as through media and art (e.g. SPEAK AFRICA)</li> <li>- Involve the public more in policy and promoting it in their community (e.g. Netherlands Third Chamber)</li> </ul>
Create interest for agricultural careers among high school students and undergraduates through exposure and hands-on experience in Africa	<ul style="list-style-type: none"> <li>- Wageningen UR high-school days when high-school students can experience a day at university</li> </ul>	<ul style="list-style-type: none"> <li>- Partner with African universities to achieve better promotion and hands-on experience for high-school students about to choose their higher education</li> </ul>
Give more attention to employment and salaries in African agricultural sector and improve awareness of African policy makers for agricultural employment		<ul style="list-style-type: none"> <li>- Lobby with policy makers in Africa</li> </ul>

Recommendation	Examples of existing initiatives	Comments / ideas
<b>Improving the quality of agricultural education</b>		
Give more specific attention to agricultural education	<ul style="list-style-type: none"> <li>– Alliance for a green revolution in Africa (AGRA)</li> <li>– Association for Strengthening Agricultural Research in Eastern and Central Africa (ASARECA)</li> <li>– Forum for Agricultural Research in Africa (FARA) - BASIC</li> <li>– Regional Universities Forum for capacity Building in Agriculture (RUFORUM)</li> </ul>	
Establish partnership programs between African and developed country universities and private sector for curricula development and education	<ul style="list-style-type: none"> <li>– African Network for Agriculture, Agroforestry and Natural Resources Education (ANAFE)</li> <li>– AgrowKnowledge (AK)</li> <li>– Development Partnerships in Higher Education Programme (DelPHE)</li> <li>– Forum for Agricultural Research in Africa (FARA) - BASIC</li> <li>– Wageningen UR sandwich program</li> </ul>	
Improve linkage between undergraduate and post-graduate education in Africa		
Ensure that new wave of interest in investing in African agriculture also includes infrastructure for agricultural education		
Strengthen information availability of trends in education enrolment by sector / topic	<ul style="list-style-type: none"> <li>– AET Africa portal on agricultural education in Africa <a href="http://www.aet-africa.org/">http://www.aet-africa.org/</a></li> <li>– International network for higher education in Africa</li> </ul>	<ul style="list-style-type: none"> <li>– Help to strengthen existing information gathering initiatives</li> </ul>
<b>Increasing investments in agricultural research</b>		
Involve the private sector in research to stimulate investments and innovation	<ul style="list-style-type: none"> <li>– Netherlands ThinkTank</li> <li>– Business in Development Network</li> </ul>	<ul style="list-style-type: none"> <li>– Develop innovative model in which Dutch private sector can support innovative research in Africa</li> </ul>
Increase investments in agricultural research of international donors	<ul style="list-style-type: none"> <li>– ‘New’ donors are coming up: Bill &amp; Melinda Gates foundation, Ford foundation, Carnegie etc.</li> <li>– Renewed attention for agriculture: WorldBank stepping up investments</li> </ul>	<ul style="list-style-type: none"> <li>– With present economic crisis private sector donors may withdraw</li> </ul>
<b>Stimulating career development of young professionals</b>		
Recognize and capitalize on the assets of young professionals (innovation, enthusiasm, networking, ICT)	<ul style="list-style-type: none"> <li>– Netherlands ThinkTank (capitalize on innovation of youth)</li> <li>– Young Professionals’ Platform for Agricultural Research for Development (YPARD) (lobby &amp; advocacy)</li> </ul>	<p>‘Mainstream’ youth:</p> <ul style="list-style-type: none"> <li>– Lobby for policies within national and international research organizations</li> <li>– Revise the structure and operations of organizations to strengthen the participation of young professionals and make sure that there are well-defined roles for young professionals in new proposals</li> <li>– Negotiate “young professional friendly” budgets and timelines with funders</li> <li>– Ensure balance in teams</li> <li>– Design research projects that will be relevant to young people and future generations</li> </ul>

Recommendation	Examples of existing initiatives	Comments / ideas
Support and develop more innovative mentoring and experience programs in agricultural research including internship, exchange programs and mentoring	<ul style="list-style-type: none"> <li>– Netherlands Associate Expert Program</li> <li>– Young Professional programmes at the World Bank, Asian Development Bank, African Development Bank and Inter-American Development Bank</li> <li>– Australian Youth Ambassadors for Development (AYAD)</li> <li>– CIDIN advanced Master programme</li> </ul>	<ul style="list-style-type: none"> <li>– Develop such programmes within other national and international research organizations</li> </ul>
Be proactive in building the decision-making capacity of young professionals	<ul style="list-style-type: none"> <li>– CTA S&amp;T advisory committee (YP involvement)</li> </ul>	<ul style="list-style-type: none"> <li>– Ensure this takes place within national and international research organizations</li> <li>– Slowly involve young professionals in policy debate</li> </ul>
Promote pro-activeness among young professionals. Give more attention to what young professionals can do themselves to improve their engagement	<ul style="list-style-type: none"> <li>– FairFood volunteers</li> <li>– CIDIN advanced Master programme</li> </ul>	<ul style="list-style-type: none"> <li>– Volunteer work, experience programs, internships, stimulate pro-active attitude</li> </ul>
Give more support to youth-led organisations both in terms of funding and mentoring	<ul style="list-style-type: none"> <li>– YPARD (senior advisory committee)</li> <li>– AIESEC International</li> </ul>	<ul style="list-style-type: none"> <li>– Ensure good mentoring and guidance of youth-led organisations without taking over</li> </ul>
Make a more thorough assessment of the impact of short term contracts of young professionals		<ul style="list-style-type: none"> <li>– Within national and international research organizations. Starting point could be Wageningen UR</li> </ul>

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## **Appendices**

### **I. Terms of reference of study**

#### **YOUTH ENGAGEMENT IN AGRICULTURAL RESEARCH FOR DEVELOPMENT Terms of Reference for an Assessment Consultancy Wageningen International**

##### **Introduction**

It has been observed that participation in national and international events (conferences, workshops, projects) related to agricultural research for development is to a large extent coloured by the grey hairs of establishment. Young professionals in agricultural research -and agriculture in the wider sense- are under-represented in such fora. Largely, this reflects the staff situation in the various institutes involved. The problem is observed particularly in Africa where key positions in knowledge institutes (agricultural research institutes as well as universities) are generally being held by senior staff members.

The situation is aggravated by the fact that young peoples' interest in pursuing careers in agriculture and agricultural sciences is dwindling. Amongst other things, this is a result of the low economic performance of the agricultural sector in many countries in the south, the low remuneration levels which local knowledge institutes offer, and the related low expectations amongst young people with regards to career development in the agricultural sciences.

On the other hand, at least in the Netherlands, interest in (higher) education in the agricultural sciences is growing. For four consecutive years Wageningen University has seen growing numbers of students. Upon completion of their studies, Wageningen graduates do not face serious lack in employment opportunities.

Along with the renewed international attention for agriculture as a driver for economic development in countries in the south, as prioritized in a number of policy documents by international development organizations (the World Bank, NEPAD/CAADP, DFID, OECD and the Netherlands' Ministries of Foreign Affairs and Agriculture), new attention is also required for engaging young people in the future of agriculture. In fact, a number of youth initiatives has already emerged over the past four to five years.

Wageningen University and Research Centre aims at developing an international youth initiative that addresses the situation sketched above and that facilitates relevant actions. As a start an assessment will be made of the actual situation and current relevant youth initiatives. Specific activities under this assessment are listed below.

##### **Activities proposed**

1. An assessment of the actual age-distribution within agricultural knowledge institutes in developing countries to substantiate/quantify the above statements. Information sources include the ISNAR/IFPRI/ASTI database of agricultural science and technology indicators, CTA's Science and Technology Programme and, possibly, World Bank and FAO statistics.
2. An inventory and evaluation of literature highlighting the (weak) linkages between youths and agriculture and, more in particular, agricultural research. This assessment will include an initial listing of the solutions proposed in the reports concerned, to address/counter the situation.
3. An inventory of current activities aiming at better involvement of young people/professionals in agricultural research for development.
4. Identification of problem areas
5. Identification of pathways to improvement

##### **Output targeted**

Output of the project will be in the form of a report that sets out the results of activities 1 through 5 as listed above, including recommendations for further follow-up, both toward Wageningen UR as well as to the Netherlands Ministry of Foreign Affairs/DGIS and the Ministry of Agriculture, Nature and Food Quality.

## Overview of on-going initiatives (not exhaustive)

- YPARD (Young Professionals Platform for Agricultural Research for Development)
- National Youth Thinktank (“Nederlandse Nationale Jeugd Denktank”)
- CTA Pan-african Science & Technology Youth Initiative (check correct name)
- CGIAR Capacity Building Initiative
- Kennis netwerken
- Netherlands’ National Youth Council (Nederlandse Nationale Jeugdraad)
- Junior Professional Officers Program (Neth. Ministry Foreign Affairs/DGIS)
- GFAR Youth Initiative
- FARA (BASIC)
- Third Chamber Parliamentary Initiative (Nederlandse Derde Kamer Initiatief)
- BiD challenge
- DAFO (website)
- Universities Alumni networks, including WU en VHL
- AGRA Foundation
- RUFORUM
- World Food Prize Youth Institute
- Youth-to-Youth Community (World Bank)
- Etc.

## Planning and deadline

Activity	Number of days
Literature / Internet search	5
Preparation of interviews	1
Interviews	3
Analysis	3
Development of options	3
Reporting	5
<b>Total</b>	<b>20</b>

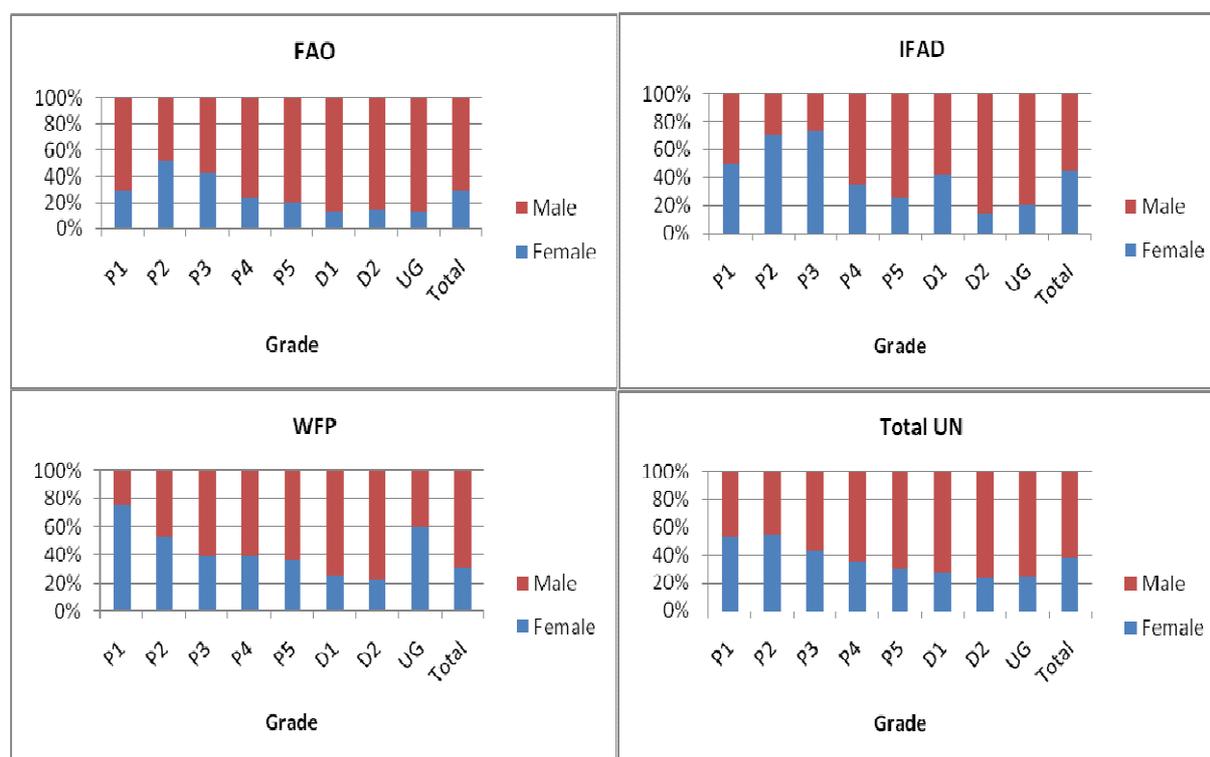
Deadline for report completion: May 15, 2009.

Approximate volume of report: 15-20 pp, excluding annexes

## II. Individuals contacted

Family name	Name	Organisation	Comments
Finocchio	Francesco	Bioversity International	HR director
Francis	Judith	CTA	Coordinator of S&T advisory committee, contact person for YPARD and AYFST
Jongenelen	Rosemarie	CIDIN	Present student of advanced Master
Linde, van der	Frank	FairFood	Director
Manning	Nadia	IWMI	Young professional in CGIAR, YPARD steering committee
Ramani	Balasubramanian	YPARD	YPARD coordinator

### III Share of females in total staff at FAO, IFAD, WFP and the entire UN system by level (2007)



Source: UN, 2008.

### IV List of websites of initiatives related to youth and / or agriculture (in alphabetical order)

- African Ministerial Council for Science and Technology (AMCOST): <http://www.nepadst.org/>
- African Network for Agriculture, Agroforestry and Natural Resources Education (ANAFE): <http://www.anafeafrica.org/>
- African Youth Forum on Science and Technology (AYFST): <http://www.ayfst.org>
- AgrowKnowledge (AK): <http://www.agrowknow.org/>
- AIESEC International: <http://www.aiesec.org/AI>
- Alliance for a green revolution in Africa (AGRA): [www.agra-alliance.org](http://www.agra-alliance.org)
- Association of African Universities: <http://www.aau.org/>
- Association of Commonwealth Universities: <http://www.acu.ac.uk/>
- Association for the Development of Education in Africa (ADEA): <http://www.adeanet.org/adeaPortal/>
- Association for International Agricultural and Extension Education (AIAEE): <http://www.aiaee.org>
- Association for Strengthening Agricultural Research in Eastern and Central Africa (ASARECA): <http://www.asareca.org/>
- Australian Youth Ambassadors for Development (AYAD): <http://www.ayad.com.au>
- Business in Development (BiD) Network: [www.bidnetwork.org](http://www.bidnetwork.org)
- Global Vision Junior Team Canada: <http://www.globalvision.ca/>
- Canadian Youth Challenge International (YCI): <http://www.yci.org>

- Comprehensive Africa Agriculture Development Programme (CAADP): <http://www.caadp.net/index.php>
- Develop Africa Foundation (DAFO): <http://www.dafo-africa.eu/>
- Development Partnership International (DPI): <http://www.developmentpartnership.org/dpi/>
- Development Partnership Higher Education Programme (DelPHE): <http://www.britishcouncil.org/delphe.htm>
- EDULINK: <http://www.acp-edulink.eu/>
- European Association for International Education-Educational cooperation with developing countries (EAIE-EDC): <http://www.eaie.org/EDC/news.asp>
- FARA – BASIC; FARA – SCARDA; FARA – PAEPARD: <http://www.fara-africa.org/networking-support-projects/>
- German Academic Exchange Service (DAAD): <http://www.daad.de/en/index.html>
- Higher Education for Development (HED): <http://www.hedprogram.org/>
- International Award Association (IAA): <http://www.intaward.org/about-us/>
- International Foundation for Science (IFS): <http://www.ifs.se>
- International Education Association of South Africa (IEASA): <http://www.ukzn.ac.za/ieasa/>
- Inter-University Council for East Africa (IUCEA): <http://www.iucea.org/>
- International Young Professionals Foundation (IYPF): <http://www.iypf.org/>
- National Future Farmers of America (NFFA): <http://www.ffa.org/>
- New Partnership for Africa's Development (NEPAD): <http://www.nepad.org/>
- Netherlands Associate Expert Programme of the Ministry of Foreign Affairs: <http://www.minbuza.nl/en/developmentcooperation/ExpertProgramme>
- Netherlands Initiative for strengthening Capacity in Higher Education (NICHE): <http://www.nuffic.nl/international-organizations/services/capacity-building/niche>
- Netherlands National ThinkTank: <http://www.nationale-denktank.nl/>
- Netherlands National Youth Council: [www.jeugdgraad.nl](http://www.jeugdgraad.nl)
- Netherlands Organization for International Cooperation in Higher Education (NUFFIC): <http://www.nuffic.nl/>
- Netherlands Third Chamber Parliamentary Initiative: [www.dederdekamer.org](http://www.dederdekamer.org)
- Network of African Youths for Development (NAYD): <http://www.nayd.org/>
- Norwegian Centre for International Cooperation in Higher Education (SIU): <http://www.siu.no/en>
- Oxfam International Youth Parliament (OIYP): <http://www.iyp.oxfam.org/>
- Partnerships Central: <http://partnershipscentral.org/>
- Partnership for Higher Education in Africa (PHEA): <http://www.foundation-partnership.org>
- Research-Africa.net: <http://www.research-africa.net/>
- Rothamsted International African Fellows Programme: <http://www.rothamsted-international.org/afp/index.shtml>
- Regional Universities Forum for capacity Building in Agriculture (RUFORUM): [www.ruforum.org](http://www.ruforum.org)
- SPEAK AFRICA: <http://www.speakafrica.org/>
- TakingITGlobal: <http://www.tigweb.org/>
- World Food Prize of the Global Youth Institute: <http://www.worldfoodprize.org/youth/new/about.htm>
- Young Professionals' Platform for Agricultural Research for Development (YPARD): [www.ypard.org](http://www.ypard.org)
- Youth Ambassadors for Rural Development (YARD): <http://www.donorplatform.org/yard>
- YouthActionNet: <http://www.youthactionnet.org/>
- Youth-to-youth community (Y2Y): <http://go.worldbank.org/OH7X8LM1Q0>

## V Descriptions of initiatives

ID	Type	Initiative	Description	Direct aim	Indirect outcome	Main tools
1	V	African Ministerial Council for Science and Technology (AMCOST)	High-level policy and political forum for ministers of science and technology from all member states of the African Union, under the auspices of NEPAD. Aims to build a strong political constituency and leadership to promote Africa's scientific and technological development and cooperation among African countries. Has developed and adopted 'Africa's Science and Technology Consolidated Plan of Action'.	Improving infrastructure, capacity and collaboration to improve quality, intensity and application of S&T for development. Create political and institutional framework for more collaboration in Africa	Capacity building, knowledge production, and technological innovation	<ul style="list-style-type: none"> <li>• networking</li> <li>• partnership</li> <li>• information sharing</li> <li>• infrastructure creation</li> <li>• policy debate</li> </ul>
2	II	African Network for Agriculture, Agroforestry and Natural Resources Education (ANAFE)	Network of 117 educational institutions in Africa that aims to strengthen the teaching of multi-disciplinary approaches to land management and to improve in a sustainable manner the contribution of agricultural education to social and economic development of the African peoples. It is hosted by ICRAF (CGIAR).	Strengthen content and delivery of tertiary education in agriculture and natural resources and build network	Improve contribution of education to development	<ul style="list-style-type: none"> <li>• networking</li> <li>• information sharing</li> <li>• training / symposia</li> <li>• curricula development</li> </ul>
3	II	African Youth Forum on Science and Technology (AYFST)	Youth-led forum that aims to build the capacity of African youth through training, information sharing, networking and dialogue.	Capacity building and enhancing of youth participation in policy making	Career development	<ul style="list-style-type: none"> <li>• website</li> <li>• information sharing</li> <li>• discussion forum</li> <li>• youth-led</li> </ul>
4	IV	AgrowKnowledge (AK)	Partnership of community colleges for curriculum development, capacity building and faculty development to reach "workforce ready graduates". Build partnerships among business and industry and multi-levels of education to provide students with the necessary knowledge and skills in technology, mathematics, and science	Improve quality of education	Better job opportunities for graduates	<ul style="list-style-type: none"> <li>• partnerships</li> <li>• networking</li> <li>• training of teachers</li> <li>• curricula development</li> </ul>
5	III	AIIESEC International	Global, non-political, independent, not-for-profit organization run by students and recent graduates of institutions of higher education. International platform for young people to discover and develop their potential to have a positive impact on society.	Capacity building	Career development	<ul style="list-style-type: none"> <li>• exchange program</li> <li>• trainings</li> <li>• networking</li> <li>• internships</li> <li>• hands-on experience</li> <li>• youth-led</li> </ul>
6	IV	Alliance for a green revolution in Africa (AGRA)	Support for 170 M.Sc. and 80 Ph.D. plant scientists and 200 MSc. Soil science, agronomy and environmental economics within five years	Increase quantity of graduates	Build critical mass	<ul style="list-style-type: none"> <li>• scholarships</li> </ul>

ID	Type	Initiative	Description	Direct aim	Indirect outcome	Main tools
7	II	Association for International Agricultural and Extension Education (AIAEE)	A professional organization dedicated to studying, applying, and promoting the teaching and learning processes in agriculture. Serves as an advocate for improvement of teaching and learning in agriculture and provides a forum to address issues in agricultural education. Youth is part of larger professional community, but there are designated student representatives and student activities	Improve quality of education and capacity building	Better job opportunities for graduates	<ul style="list-style-type: none"> <li>networking</li> <li>training of teachers &amp; YPs</li> <li>information sharing</li> <li>curricula development</li> <li>research</li> </ul>
8	V	Association for Strengthening Agricultural Research in Eastern and Central Africa (ASARECA)	Aims at increasing the efficiency of agricultural research in the Eastern and Central African region to facilitate economic growth, food security and export competitiveness through productive and sustainable agriculture. Advocacy for policy options that stimulate agricultural growth in the region.	Strengthening of research and advocacy and lobby	More conducive environment for agricultural research	<ul style="list-style-type: none"> <li>best practices database</li> </ul>
9	IV	Association for the Development of Education in Africa (ADEA)	A forum for policy dialogue on education in Africa, a network of policy-makers, practitioners and researchers, a partnership between ministries of education and development agencies.	Empower African ministries of education to reform education in Africa	Education reform in Africa	<ul style="list-style-type: none"> <li>networking</li> <li>partnerships</li> <li>forum</li> </ul>
10	IV	Association of African Universities (AAU)	Apex organization and forum for consultation, exchange of information and co-operation among institutions of higher education in Africa. It represents the voice of higher education in Africa on regional and international bodies and supports networking by institutions of higher education in teaching, research, information exchange and dissemination	Improving quality of education		<ul style="list-style-type: none"> <li>partnerships</li> <li>networking</li> <li>information sharing</li> <li>research</li> <li>advocacy</li> <li>promotion of best practices</li> </ul>
11	IV	Association of Commonwealth Universities (ACU)	Voluntary society and inter-university network with 500 universities that are members. Provides forums for universities in Australasia, Canada and the UK to benchmark their research contract/grant activity, and for those in Africa and South Asia to compare their extension work programmes.	Improving quality of education and research and fostering collaboration		<ul style="list-style-type: none"> <li>assist in training staff</li> <li>promote movement of staff</li> <li>information sharing</li> <li>management consultancy</li> <li>meetings</li> </ul>
12	III	Australian Youth Ambassadors for Development (AYAD)	Programme organised by the Australian government. Skilled volunteers aged 18-30 are mobilized for development through specific assignments with development organisations in the Asia-Pacific region.	Strengthen mutual understanding between Australia and Asia-Pacific countries and positive contribution to development	Develop skills further in developing countries. Experience importance of development / agriculture	<ul style="list-style-type: none"> <li>networking</li> <li>capacity building</li> <li>hands-on experience</li> <li>development projects</li> </ul>
13	VI	Business in Development (BiD)	Engages entrepreneurs, experts and investors from all	Entrepreneurship	Create interest in	<ul style="list-style-type: none"> <li>networking</li> </ul>

ID	Type	Initiative	Description	Direct aim	Indirect outcome	Main tools
		Network	over the world to stimulate entrepreneurship and economic growth in emerging markets. The BiD challenge is an annual online global business plan competition that challenges entrepreneurs to develop and execute innovative business plans with growth potential	and innovation for development	development through business approach	<ul style="list-style-type: none"> <li>mentoring</li> <li>business / research plan</li> </ul>
14	I	Canadian Youth Challenge International (YCI)	Young people 18-30 go on short term national and international volunteer assignments. Volunteers have to raise funds before going on an assignment for airfare and to contribute to the project	Build capacity of youth to create 'change'	Create interest and commitment of youth	<ul style="list-style-type: none"> <li>partnerships</li> <li>hands-on experience</li> <li>development projects</li> </ul>
15	II	CGIAR course "Thinking Scientifically"	International research centres of the CGIAR have observed that African MSc and PhD students that conduct part of their thesis work with a CGIAR centre often lack the basic research skills required by the centres. They have developed a course "Thinking Scientifically" which provides an overview of research methods and other issues.	Improve skills of MSc and PhD candidates conducting thesis work with CGIAR centres	Career development	<ul style="list-style-type: none"> <li>training</li> <li>information sharing</li> </ul>
16	III	CIDIN: advanced master Policy and Practice in International Development (Radboud University Nijmegen)	CIDIN wants to educate young academics by linking their first work experience in the field of development cooperation with personal, professional and academic training and reflection. The programme takes one year in which the trainees are employed by one of the participating development organizations in the Netherlands for four days a week. One day a week the trainees are trained at the university. Trainees are employed as junior staff and take up regular tasks in programme or policy departments under supervision of senior staff.	Capacity building, specific link of employers and university to have a curriculum that matches with demand of these organisations.	Career development	<ul style="list-style-type: none"> <li>trainings</li> <li>networking</li> <li>hands-on experience</li> </ul>
17	V	Comprehensive Africa Agriculture Development Programme (CAADP) – pillar 4	This programme is part of the New Partnership for Africa's Development. The 4 <sup>th</sup> pillar of the CAADP focuses on agricultural research. This pillar is led by FARA	Improving agricultural research and systems to disseminate appropriate new technologies		<ul style="list-style-type: none"> <li>partnerships</li> <li>joint programs</li> <li>pooled funding</li> <li>analyses</li> <li>sharing information</li> </ul>
18	V	Council for the Development of Social Science Research in Africa (CODESRIA)	An independent Pan-African research organization with a primary focus on the social sciences, broadly defined. It is recognised not only as the pioneer African social research organisation but also as the apex non-governmental centre of social knowledge production on the continent	Promote and facilitate research, promote academic freedom, support comparative African research, promote publication of African research, strengthen institutions, <b>promote</b>	Improve cohesion, wellbeing and development of African societies	<ul style="list-style-type: none"> <li>training</li> <li>grants</li> <li>fellowships</li> <li>multinational working groups</li> <li>networks</li> <li>conferences</li> <li>dialogue</li> </ul>

ID	Type	Initiative	Description	Direct aim	Indirect outcome	Main tools
				<b>intergenerational and intercontinental dialogue</b>		<ul style="list-style-type: none"> <li>• collaborative research</li> <li>• services</li> </ul>
19	I	Develop Africa Foundation (DAFO)	African alumni of Wageningen University and ISS returned home conduct development projects together with a network of other African and European practitioners	Reduce poverty	Link African experts and retain them in Africa	<ul style="list-style-type: none"> <li>• networking</li> <li>• development projects</li> <li>• resource mobilization</li> </ul>
20	II	Development Partnership International (DPI)	Youth-led non-profit organisation which seeks to empower young people involved in social change and development initiatives so that they have the skills required to make their initiatives more meaningful and beneficial to their communities, while connecting them with networks and opportunities that will help them retain respect, recognition and relevance at both the international and national levels.	Capacity building	Improve quality and relevance of development projects	<ul style="list-style-type: none"> <li>• trainings</li> <li>• conferences</li> <li>• networking</li> <li>• youth-led</li> </ul>
21	IV	Development Partnerships in Higher Education Programme (DePHE)	UK government's programme to provide funding to support partnerships between higher education institutions in selected countries in Africa and Asia.	Strengthen higher education	Higher education institutions act as catalysts for poverty reduction	<ul style="list-style-type: none"> <li>• joint research studies</li> <li>• curricula development</li> <li>• training of staff and management</li> <li>• networking</li> </ul>
22	IV	EDULINK	Cooperation programme of ACP and EU. Provides funds for projects that strengthen the capacity of higher education institutions in the area of management, academics and research and promote integration in higher education in the ACP countries	Improve quality of education and promote higher education as means of reducing poverty	Foster capacity building	<ul style="list-style-type: none"> <li>• donor of project funds</li> </ul>
23	IV	European Association for International Education-Educational cooperation with developing countries (EAIE-EDC)	EAIE is a non-profit organisation whose main aim is the stimulation and facilitation of the internationalisation of higher education in Europe and around the world, and to meet the professional needs of individuals active in international education. EDC is a one of EAIE's Professional Sections. Its members are involved in all aspects of educational cooperation with developing countries, ranging from policy development and information dissemination to liaison work, project development, implementation and management, and student advising. EDC's activities essentially depend upon member participation.	To bring together professionals in educational cooperation with professionals in low- and middle income countries to promote dialogue	Internationalisation of education	<ul style="list-style-type: none"> <li>• networking</li> <li>• dialogue</li> <li>• facilitate exchange (forum)</li> </ul>
24	IV	Forum for Agricultural Research in Africa (FARA) - Building African Scientific and Institutional Capacity (BASIC)	FARA is an umbrella organization bringing together and forming coalitions of major stakeholders in agricultural research and development in Africa. BASIC is one of the programmes of FARA and aims to form partnerships with non-African universities to improve African education	Improve quality of education	Build capacity to achieve improvements in agricultural sector	<ul style="list-style-type: none"> <li>• partnerships</li> <li>• curricula development</li> <li>• training of teachers</li> </ul>
25	V	Forum for Agricultural Research	PAEPARD is a platform of FARA. Partnering and resource	Strengthen research	Build capacity to	<ul style="list-style-type: none"> <li>• partnerships</li> </ul>

ID	Type	Initiative	Description	Direct aim	Indirect outcome	Main tools
		in Africa (FARA) - Platform for African-European Partnerships for Agricultural Research and Development (PAEPARD)	mobilization to conduct research projects, hold consultations, develop information and communication strategy, strengthen capacity of ARD stakeholders to participate in agricultural innovation.		achieve improvements in agricultural sector	<ul style="list-style-type: none"> <li>• conduct research</li> <li>• training of ARD stakeholders</li> </ul>
26	V	Forum for Agricultural Research in Africa (FARA) - Strengthening Capacity for Agricultural Research and Development in Africa (SCARDA)	SCARDA is a programme of FARA supported by DFID. It does partnering and resource mobilization to strengthen management and career development in African research	Strengthen research and career development in research	Build capacity to achieve improvements in agricultural sector	<ul style="list-style-type: none"> <li>• partnerships</li> <li>• training of teachers</li> </ul>
27	IV	German Academic Exchange Service	Supports and promotes all areas relating to science, research, language, teaching and more.	Promote young foreign elites to gain future leaders in education, science, research and culture; to promote internationality and appeal of German universities; and to promote academic and scientific advancement in developing countries	Support the economic and democratic reform process in developing countries	<ul style="list-style-type: none"> <li>• scholarships</li> <li>• partnerships</li> </ul>
28	III	Global Vision Junior Team Canada	Program aimed to give youth a head start on career opportunities in national and international jobs market by giving leadership training and international experience	Capacity building	Career development	<ul style="list-style-type: none"> <li>• capacity building</li> <li>• hands-on experience</li> </ul>
29	IV	Higher Education for Development (HED)	Works in partnership with the USAID and six US higher education associations to support the involvement of higher education in development issues worldwide. HED funds innovative partnerships that partner U.S. colleges or universities with institutions of higher learning in developing nations.	Diversify, expand, and deepen the engagement of higher education in international development activities	Better address development challenges	<ul style="list-style-type: none"> <li>• funds partnerships</li> <li>• information gathering and dissemination</li> <li>• publications</li> <li>• dialogue</li> </ul>
30	II	International Award Association (IAA)	This global self-development program challenges young people to develop skills and conduct work in their community	Develop skills and engage in community work	Youth experiences what they can do to help themselves and others	<ul style="list-style-type: none"> <li>• hands-on experience</li> <li>• recognition / incentive</li> </ul>
31	IV	International Education Association of South Africa (IEASA)	Non-profit organisation and professional forum in South Africa	Internationalisation of higher education in South Africa	South Africa to remain competitive	<ul style="list-style-type: none"> <li>• training of teachers</li> <li>• networking</li> <li>• publications</li> <li>• provide student</li> </ul>

ID	Type	Initiative	Description	Direct aim	Indirect outcome	Main tools
						opportunities for exchange • information dissemination
32	V	International Foundation for Science (IFS)	International research council that gives research grants to young developing country scientists with at least a Master degree for research projects in natural and applied sciences	Strengthen research	Scientist career development and improve science and development	• provide funds for research
33	I	International Young Professionals Foundation (IYPF)	The IYPF forms a global network of YPs with a focus on the MDGs	Encourage and improve capacity of YPs for MDGs	Create interest in and knowledge about MDGs	• networking • youth-led • information provision • advocacy
34	IV	Inter-University Council for East Africa (IUCEA)	Regional inter-governmental organization with aim of facilitating contact between the universities of East Africa, providing a forum for discussion on a wide range of academic and other matters relating to higher education, and helping maintain high and comparable academic standards	Facilitate, coordinate and promote sustainable and competitive development of universities in the region	Universities are better able to meet development needs	• networking • collaboration in research • exchange of staff and students • teacher training • management training • information gathering and dissemination
35	V	Knowledge networks	Knowledge networks partner individuals / organisations around a topic to encourage exchange and interaction	Strengthen research	Interdisciplinarity	• partnerships • networking • information exchange
36	II	National Future Farmers of America (NFFA)	Organisation committed to the individual student, providing a path to achievement in premier leadership, personal growth and career success through agricultural education. FFA uses agricultural education to create real-world success. Agriculture teachers become advisors to local FFA chapters, which students join.	Capacity building through agricultural education	Career development / interest creation in food, fibre and natural resources industry	• training of teachers • training of students • online community • contests
37	III	Netherlands Associate Expert Programme of the Ministry of Foreign Affairs	Program of Dutch Ministry of Foreign Affairs to promote career development of Dutch and developing country nationals in UN and international research organisations	Capacity building	Career development	• training of YPs • hands-on experience
38	IV	Netherlands Initiative for strengthening Capacity in Higher Education (NICHE)	Initiative of the Dutch government administered by NUFFIC in 22 partner countries according to principal: "countries lead, donors support" and flexible interventions attuned to specific needs.	Strengthening of higher-education institutions in developing countries	Capacity development in bilateral sectors and higher-education sector	• Advisory services • Training • Scholarships • Investment in infrastructure
39	VI	Netherlands National ThinkTank	The ThinkTank selects a multi-disciplinary team of promising graduate students and recent graduates to work on innovative solutions for a specific societal problem	Innovation through youth and interdisciplinarity	Capacity building	• training of YPs • hands-on experience

ID	Type	Initiative	Description	Direct aim	Indirect outcome	Main tools
						<ul style="list-style-type: none"> <li>networking</li> </ul>
40	I	Netherlands National Youth Council	Engagement of young people in all sorts of activities and issues	Allow youth to engage and participate	Create interest and commitment and build capacity	<ul style="list-style-type: none"> <li>networking</li> <li>youth-led</li> <li>organise activities</li> <li>promote science</li> </ul>
41	IV	Netherlands Organization for International Cooperation in Higher Education (NUFFIC)	Non-profit organization that supports internationalization in higher education, research and professional education in the Netherlands and abroad, and helps improve access to higher education worldwide.	Strengthen teaching and research infrastructure, internationalization of higher education, international credential evaluation, marketing of Dutch higher education	Making education accessible all over the world	<ul style="list-style-type: none"> <li>gather and disseminate information</li> <li>provide funds for trainings</li> <li>database of scholarships (Grantfinder.nl)</li> </ul>
42	VI	Netherlands Third Chamber Parliamentary Initiative	Shadow parliament to develop innovative ideas to improve development cooperation and inform the Dutch public	Innovation for development	Creation of interest in / commitment for development	<ul style="list-style-type: none"> <li>networking</li> <li>hands-on experience</li> <li>dialogue</li> </ul>
43	I	Network of African Youths for Development (NAYD)	Network of African youths for development. Youth-led projects for development in Africa.	Facilitation of exchange and capacity building of youth	Increase interest in development	<ul style="list-style-type: none"> <li>networking</li> <li>youth-led</li> <li>training of YPs</li> </ul>
44	IV	Norwegian Centre for International Cooperation in Higher Education (SIU)	<p>Administrative agency under the Norwegian Ministry of Education and Research that runs several programmes:</p> <ul style="list-style-type: none"> <li>Tanzania agreement: support to three Tanzanian universities for development and running of academic programmes, staff development, infrastructure and administration.</li> <li>Norwegian Programme for Development, Research and Education (NUFU): supports independent academic cooperation based on initiatives from researchers and institutions in the South and their partners in Norway. Goal is to support the development of sustainable capacity and competence for research and research-based higher education in developing countries</li> <li>Norad's programme for master Studies (NOMA): provides financial support to develop and run Master Degree Programmes in the South through collaboration between local and Norwegian Higher Education Institutions. Development of master programmes, stimulate international cooperation, enhance gender</li> </ul>	Strengthening of higher education		<ul style="list-style-type: none"> <li>staff training</li> <li>infrastructure</li> <li>funds</li> <li>scholarships</li> </ul>

ID	Type	Initiative	Description	Direct aim	Indirect outcome	Main tools
			equality. <ul style="list-style-type: none"> <li>Quota scheme: The goal of the Quota Scheme is to give students from developing countries in the South, Central- and East-Europe and Central-Asia, relevant education that would also benefit their home countries when they return after graduation.</li> </ul>			
45	II	Oxfam International Youth Parliament (OIYP)	Oxfam youth partnership program that aims to build capacity of youth active in community development, especially in developing countries	Capacity building	More effective development projects	<ul style="list-style-type: none"> <li>networking</li> <li>dialogue</li> <li>training of YPs</li> </ul>
48	IV	Partnership for Higher Education in Africa (PHEA)	Partnership launched by private foundations that work to strengthen universities in selected countries in Africa. Aims for institutional revitalization	Human and organizational capacity building and development of universities' infrastructure	Ensure better contribution of education to development	<ul style="list-style-type: none"> <li>fellowships</li> <li>research grants for educational projects</li> <li>project funds</li> <li>advocacy</li> <li>partnerships</li> <li>facilitate information sharing</li> </ul>
46	IV	Regional Universities Forum for capacity Building in Agriculture (RUFORUM)	Consortium of 25 universities in Africa to develop and strengthen research. Runs grants program to strengthen and support training of graduate students in agriculture. Qualifying projects conduct research on improving rural welfare and include realistic work-plans for at least 2 graduate students to complete their training	Increase quantity of graduates	Build critical mass to strengthen research	<ul style="list-style-type: none"> <li>provide funds for research programs that include scholarships</li> </ul>
47	V	Research-Africa.net	Research Africa is for African government and institutional policy makers, researchers and research managers.	Strengthen the African science and technology policy-making, and research community, and connect them with the world scientific community		<ul style="list-style-type: none"> <li>online network</li> <li>information dissemination</li> <li>helpdesk to assist in responding to funding calls</li> </ul>
49	V	Rothamsted International African Fellows Programme	Funds research projects of African researchers that aim to support sustainable agriculture in sub-Saharan Africa and specific problems in agriculture with a researchable constraint. African scientists carry out research projects at a partner European research institute, or university	Strengthen research	Scientist career development and improve science and agricultural development	<ul style="list-style-type: none"> <li>provide funds for research</li> </ul>
50	I	SPEAK AFRICA	Pan-African communication strategy and platform designed to work in partnership with young people to improve opportunities for their expression, exchange and meaningful participation in advocacy, decision-making and development using multi-media tools channels as well as	Improve youth participation and exchange about development	Create interest in development issues using 'creative' tools	<ul style="list-style-type: none"> <li>information sharing</li> <li>networking</li> <li>training of youth</li> </ul>

ID	Type	Initiative	Description	Direct aim	Indirect outcome	Main tools
			visual and performing arts and culture			
51	I	TakingITGlobal	Online community of youth interested in global issues and creating positive change. Has managed to connect thousands of youth	Exchange of information	Create interest and awareness using 'modern' tools	<ul style="list-style-type: none"> <li>• networking</li> <li>• youth-led</li> <li>• information exchange</li> </ul>
52	IV	Wageningen UR sandwich programme	Developing country PhD students take a year of postgraduate course preparation at their home university and then go to Wageningen for 12-18 months for further course work. They then return home for thesis research.	Increase quantity of graduates and improve quality of their education	Limit brain drain	<ul style="list-style-type: none"> <li>• scholarships</li> <li>• partnerships</li> </ul>
53	I	World Food Prize of the Global Youth Institute	Yearly three-day event of 100 selected high school students to discuss pressing issues such as food security and agriculture with Nobel and World Food Prize Laureates and other international experts and global leaders	Creating interest in global issues	Skills development	<ul style="list-style-type: none"> <li>• incentives</li> <li>• dialogue</li> </ul>
54	II	Young Professionals' Platform for Agricultural Research for Development (YPARD)	Aims to serve as a global platform through which young professionals can express their ideas and realise their full potential towards a dynamic agricultural research for development. Aims to do this by facilitating exchange of information and knowledge among young professionals, broadening opportunities for young professionals to contribute to strategic ARD policy debates, promoting agriculture among young people, and facilitating access to resources and capacity building opportunities.	Capacity building and improved access to resources and information	Career development	<ul style="list-style-type: none"> <li>• website</li> <li>• information sharing</li> <li>• networking</li> <li>• advocacy &amp; lobby</li> <li>• youth-led</li> </ul>
55	II	Youth Ambassadors for Rural Development (YARD)	YARDs are a selected group of young women and men between 20 and 30 years old who come from a rural background and have an original, direct perspective of the situation in rural areas. The aim is to build networks, motivate young people and promote rural development	Promotion of rural development	Career development of selected YPs	<ul style="list-style-type: none"> <li>• networking</li> <li>• hands-on experience</li> </ul>
56	III	YouthActionNet	Strengthens, supports and celebrates the role of YPs for development. Gives fellowships to youth that is already engaged to further develop their careers	Career development	Give visibility to existing youth initiatives	<ul style="list-style-type: none"> <li>• training of YPs</li> <li>• networking</li> <li>• website</li> </ul>
57	I	Youth-to-youth community (Y2Y)	World Bank staff and other youth joined together in an online network to exchange ideas about development	Exchange of ideas	Create interest of youth in development	<ul style="list-style-type: none"> <li>• networking</li> <li>• youth-led</li> <li>• information exchange</li> </ul>



## VI Matrix of initiatives

ID	Initiative	Problem area						Activities										Target population							Approach									
		Interest / commitment	Educational system	Skills / capacity	Career development	Research strengthening	Entrepreneurship	High level participation	Information	Immersion / hands-on experience	Resources / grants / funds	Capacity building (Yps)	Capacity building (teachers / staff)	Capacity building (anyone)	Advocacy & lobby	Networking / partnership	Dialogue	Research	Curricula development	Development projects	Incentives / awards	High school students	Youth in general	Undergraduates	graduates/ post-graduates	Young professionals	Private sector	Teachers / universities	General public	Policy makers	General professionals (ARD)	Specific for agriculture	Youth-led	Focus on Africa
1	African Ministerial Council for Science and Technology (AMCOST)					X		X		X			X		X	X				X										X			X	
2	African Network for Agriculture, Agroforestry and Natural Resources Education (ANAFE)	X						X				X			X			X									X			X		X		
3	African Youth Forum on Science and Technology (AYFST)				X			X							X									X						X	X	X		
4	AgrowKnowledge (AK)	X									X				X			X						X		X			X					
5	AIESEC International			X	X					X	X				X								X	X						X				
6	Alliance for a green revolution in Africa (AGRA)	X								X													X						X		X			
7	Association for International Agricultural and Extension Education (AIAEE)				X			X	X		X	X			X	X	X			X			X	X					X	X				
8	Association for Strengthening Agricultural Research in Eastern and Central Africa (ASARECA)	X				X		X				X	X	X			X												X	X		X		
9	Association for the Development of Education in Africa (ADEA)	X													X												X	X				X		
10	Association of African Universities (AAU)	X				X		X						X	X		X									X						X		
11	Association of Commonwealth Universities (ACU)	X				X						X		X												X								
12	Australian Youth Ambassadors for Development (AYAD)			X					X			X		X						X				X										
13	Business in Development (BiD) Network	X				X				X		X								X					X									
14	Canadian Youth Challenge International (YCI)	X						X											X			X												
15	CGIAR course "Thinking Scientifically"			X		X		X			X				X									X						X				
16	CIDIN: advanced master Policy and Practice in International Development				X				X		X												X											
17	Comprehensive Africa Agriculture Development Programme (CAADP) – pillar 4					X		X						X			X												X	X		X		
18	Council for the Development of Social Science Research in Africa (CODESRIA)					X		X						X	X	X													X				X	



ID	Initiative	Problem area						Activities										Target population							Approach									
		Interest / commitment	Educational system	Skills / capacity	Career development	Research strengthening	Entrepreneurship	High level participation	Information	Immersion / hands-on experience	Resources / grants / funds	Capacity building (Yps)	Capacity building (teachers / staff)	Capacity building (anyone)	Advocacy & lobby	Networking / partnership	Dialogue	Research	Curricula development	Development projects	Incentives / awards	High school students	Youth in general	Undergraduates	graduates/ post-graduates	Young professionals	Private sector	Teachers / universities	General public	Policy makers	General professionals (ARD)	Specific for agriculture	Youth-led	Focus on Africa
40	Netherlands National Youth Council	X						X	X													X												
41	Netherlands Organization for International Cooperation in Higher Education (NUFFIC)		X			X		X		X			X				X						X	X	X									
42	Netherlands Third Chamber Parliamentary Initiative	X					X		X						X	X											X							
43	Network of African Youths for Development (NAYD)	X									X				X				X			X									X	X		
44	Norwegian Centre for International Cooperation in Higher Education (SIU)		X							X	X												X	X			X							
45	Oxfam International Youth Parliament (OIYP)	X	X							X	X				X	X			X			X												
46	Partnership for Higher Education in Africa (PHEA)		X					X	X					X	X	X			X							X							X	
47	Research-Africa.net				X			X							X														X			X		
48	Rothamsted International African Fellows Programme				X					X																		X	X	X				
49	Regional Universities Forum for capacity Building in Agriculture (RUFORUM)		X							X	X												X						X		X			
50	SPEAK AFRICA	X	X					X			X				X							X											X	
51	TakingITGlobal	X						X							X	X						X										X		
52	Wageningen UR sandwich program		X							X	X												X							X				
53	World Food Prize of the Global Youth Institute	X						X			X				X				X	X										X				
54	Young Professionals' Platform for Agricultural Research for Development (YPARD)		X	X			X	X	X	X			X	X			X						X	X					X	X				
55	Youth Ambassadors for Rural Development (YARD)	X					X	X		X					X	X			X			X		X						X				
56	YouthActionNet	X		X							X								X				X											
57	Youth-to-youth community (Y2Y)	X						X							X	X						X		X							X			

Source: Author's assessment of website information of initiatives.