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Promoting critical knowledge, skills and qualifications for Africa's sustainable development: How to design and implement an effective response through education and training systems

Synthesis Report

Critical knowledge, skills and qualifications for accelerated and sustainable development in Africa

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Working paper
in progress

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Table of contents

Table of contents 3
List of tables 7
List of figures 7
Acronyms and abbreviations 8
ABSTRACT 10
SUMMARY 11
FOREWORD 24
INTRODUCTION: WILL AFRICA BE THE CONTINENT OF THE 21ST CENTURY? 25
1. VISIONS OF THE FUTURE AND SUSTAINABLE DEVELOPMENT ISSUES FOR AFRICA 28
1.1. Visions of Africa's future 28
1.1.1. The African Union assesses the prospects for Africa's future prosperity 28
1.1.2. Contrasting scenarios for Africa's future 29
1.2. On the road to sustainable development 31
1.2.1. Re-examine all dimensions of the past in order to take greater control over future choices 31
1.2.2. Analyzing the success and disillusions of the post-independence period in order to better build the future on the basis of indigenous forces 32
1.2.3. Building the future on the current repositioning of the continent in the global economy 33
1.2.4. Overcoming the obstacles and barriers to sustainable development 34
1.2.5. Remedying the shortfalls and lack of progress in education that jeopardize economic growth and social development 35
1.2.6. Moving the African economy away from being a subsistence economy and out of the spiral of poverty 36
1.2.7. Managing the demographic and climate-related constraints that endanger sustainable development 37
1.2.8. Promoting peace and stability as foundations for development 37
1.2.9. How to walk while others are running 38
2. IDENTIFICATION AND PROMOTION OF CRITICAL SKILLS FOR THE ACCELERATED AND SUSTAINABLE DEVELOPMENT OF AFRICA 39
2.1. It's the skills that makes the difference 39
2.2. Common core skills for responsible and active African citizenship regarding sustainable development 40
2.2.1. A systemic curricular approach to promote basic skills 40

2.2.2. The outline of a set of common core skills for responsible and active African citizenship regarding sustainable development 41
2.3. Vocational and technical skills for high value-added growth and effective integration into the world of work 42
2.3.1. The need to raise the skills levels of young people and adults in the informal sector 43
2.3.2. The simultaneous need to develop high-level skills 43
2.3.3. The need to develop a strategic approach to partnership and cooperation between countries 44
2.3.4. The urgent need for investment, to ensure that today's generation is not a sacrificed generation 45
2.4. Scientific and technological skills to build economies and societies in Africa based on knowledge and innovation 45
2.4.1. Africa must catch up 45
2.4.2. Choosing priorities in the development of scientific skills 46
2.4.3. Achieving the major changes in direction 47
3. THE PARADIGM CHANGES NEEDED FOR THE REBUILDING OF EDUCATION AND TRAINING TO SECURE SUSTAINABLE DEVELOPMENT 49
3.1. Moving education and training policies and systems away from supply-led approaches towards demand-led approaches 49
3.2. Curriculum reform: from the mastery of “decontextualized knowledge” to the acquisition of skills 50
3.3. Educational reform: learning and skills development for sustainable growth 52
3.4. Integration of key sustainable development education and training issues into curricula 54
3.4.1. Adopting a systemic approach 54
3.4.2. . Focus on one or more promising future disciplines 55
3.4.3. Exploring extra-curricular integration 55
3. 5. National frameworks for the recognition and validation of prior learning 56
3.5.1. Recognition and validation of prior learning across the world 56
3.5.2. The current African process for recognizing and validating prior learning 57
3.5.3. Future prospects for the development of national and sub-regional certification frameworks 58
3.6. The necessary integration of ICTs into education and training systems 59
3.6.1. Africa is now entering the digital age at full speed 59
3.6.2. ICT literacy has become an essential component of sustainable development 60
3.6.3. The gradual introduction of ICT into national policies 61
3.6.4. The difficulty of integrating ICTs into teaching 61

3.6.5. In conclusion: create an effective African "strike force" in the field of ICT 62
3.7. The coordination of systemic changes and reforms specific to different levels and professions 63
3.7.1. First challenge: to design and develop an education and training system tailored to economic, social and civic needs 63
3.7.2. Second challenge: realign the conceptual and institutional relationship between education and training 64
3.7.3. Third challenge: smooth the transition from the strategic dimension of reforms to the operational dimension 65
3.7.4. In conclusion: the Triennale should help identify the real drivers of change and put them into operation 66
3.8. The development of education and training policies, systems and strategies focused on lifelong learning 67
3.8.1. A limited understanding of lifelong learning and related issues 67
3.8.2. Africa is faced with weakness in the holistic approach to lifelong learning 68
3.8.3. Potential opportunities to facilitate the shift towards lifelong societies and communities 68
4. ISSUES CONCERNING IMPLEMENTATION OF THE REFORMS 70
4.1. Create an environment conducive to the development of critical skills with a view to sustainable development 71
4.1.1. Promote an environment of well-being for an inclusive education 71
4.1.2. For an environment that fosters a high quality of learning 72
4.1.3. A local community environment that reinforces the relevance of learning 74
4.2. Ensure appropriate institutional and technical capacities 75
4.2.1. The success of a reform presupposes concerted action on the part of all public education and training stakeholders 75
4.2.2. The success of a reform requires a partnership pact to foster multi-level cooperation between public, private and civil society stakeholders 76
4.2.3. The success of a reform requires organizational and technical measures and capabilities adapted to the desired outcome 76
4.2.4. The success of a reform imperatively requires capacity building for all those involved in the partnership pact 77
4.3. Towards innovative financing and sustainable cost-efficiency 78
4.3.1. The limitations and shortcomings of public funding in the face of the demands of sustainable development 78
4.3.2. Avenues to be explored to increase quality, equity and cost-efficiency in expenditure on education and training 79
4.4. Ensure continuity of the reforms: a prerequisite for success 81

4.5. Encourage mutual learning and the pooling of resources to reinforce skills development through regional and continental cooperation 83
4.6. Increase the effectiveness of North-South and South-South cooperation 87
4.7. Multinational businesses as driving forces for sustainable development 88
4.7.1. Involve multinational businesses in efforts to promote dynamic local economies 88
4.7.2. Involve multinational businesses in the identification and production of critical skills 89
4.7.3. Make multinational businesses accountable as fully-fledged members of public/private partnerships 89
5. FUTURE PERSPECTIVES: THE WAY FORWARD 91
5.1. Develop strategic education and training policies 91
5.2. Promote a national and continental strategic framework for skills development 94
5. 3. Governance through partnership and participation 96
5.4. Mobilize other key sustainable development stakeholders and sectors 97
5.4.1. Education and training, a necessary pre-requisite for sustainable development 98
5.4.2. Towards a continental pact to promote sustainable development 98
Bibliography 101

List of tables

Table 1 The OECD's framework of key competencies

Table 2 Comparison between science through education and education through science

List of figures

Figure 1 TVSD priorities

Figure 2 Source UNESCO, EFA Global Monitoring Report 2010

Figure 3 The positioning of NQFs within education and training systems

Figure 4 The process of successful reform of education and training systems

Figure 5 A national and continental strategic framework for skills development

Acronyms and abbreviations

ACE	Africa Coast to Europe
ADEA	Association for the Development of Education in Africa
AFD	French Development Agency (Agence française de développement)
AU	African Union
BEAP	Basic Education in Africa Programme
CNCP	National Vocational Certification Commission (France)
CONFEMEN	Conference of Education Ministers of French-speaking Countries
DRC	Democratic Republic of Congo
EAC	East African Community
ECF	European Certification Framework
ECOWAS	Economic Community of West African States
EFA	Education for All
ERNWACA	Education Research Network for West and Central Africa
EU	European Union
FDI	foreign direct investment
GIZ	German cooperation agency (Deutsche Gesellschaft für internationale Zusammenarbeit)
IATT	Inter-Agency Task Team
ICQN/TVSD	Inter-Country Quality Node on Technical and Vocational Skills Development
ICT	information and communication technology
ICTE	information and communication technology for education
ITU	International Telecommunications Union
JICA	Japan International Cooperation Agency
MDG	Millennium Development Goals
MQA	Mauritius Qualification Authority
NBCC	New Brunswick Community Colleges
NCF	national certification framework
NEPAD	New Partnership for Africa's Development
NQF	National Qualifications Framework (South Africa)
PASEC	CONFEMEN Program on the Analysis of Education Systems
PIA	Private Investors for Africa
RCF	regional certification framework
RESEN	Government Report on the National Education System (Ivory Coast)
RNCP	National Directory of Vocational Certifications (France)
SACMEQ	Southern and Eastern Africa Consortium for Monitoring Educational Quality
SADC	Southern African Development Community
SAQA	South African Qualifications Authority
STI	science, technology, innovation

ST	sub-theme
TEVT	technical and vocational education and training
TVSD	technical and vocational skills development
UIL	UNESCO Institute for Lifelong Learning
UIS	UNESCO Institute for Statistics
UNCTAD	United Nations Conference on Trade and Development
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNESCO – BREDA	UNESCO Regional Bureau for Education in Africa
WAEMU	West African Economic and Monetary Union
WGBLM	Working Group on Books and Learning Materials
WSIS	World Summit on the Information Society

ABSTRACT

The major challenge of the 2012 ADEA Triennale will be to help African countries design and develop suitable and effective education and training systems that can help move the continent away from the struggle for subsistence and the spiral of poverty towards a process of sustainable transformation that reconciles economic growth with the pursuit of equity and the conservation of natural resources. In short, the aim is to enable Africa to "run while others walk", while avoiding causing the same damage others caused when they were running.

To achieve such a goal, the Synthesis Report recommends that a number of prerequisites should be met before the required reforms can be possible. They will succeed only if they look back at Africa's past identity in order to take greater control over future choices, if they are based on a common vision of the future determined with all concerned stakeholders, and if they make education, training and employment central to current and future policies.

The report then discusses the unprecedented efforts of public and private, African and international officials and stakeholders in order to formulate appropriate, concrete responses to the challenge of the Triennale, which is to "promote critical knowledge, skills and qualifications for Africa's sustainable development". These responses, categorized by sub-theme, may be summed up as follows.

Sub-theme 1: building a common core of skills for all

The education system should give people of all ages access to a common core of basic skills (cognitive, communication and learning-to-learn skills, personal and social development skills, etc.) to enable them to control their human, social and economic environment and develop responsible and active African citizenship.

Sub-theme 2: mass development of technical and vocational skills

Massive investment to raise training and qualification levels is urgently required in order to wage an effective war against unemployment and massive underemployment of youth and the low productivity of a largely informal economy. It is also necessary to invest in high-level qualifications in order to support and, if possible, anticipate changes and technological innovation and promote the badly-needed industrialization of the African economy.

Sub-theme 3: building knowledge and innovation-based economies and societies in Africa

R&D, knowledge and innovation have become the key drivers of output, economic competitiveness and development generally. Africa needs to catch up in this respect and, to this end, it must build its scientific development on indigenous African knowledge, use science and technology to strengthen education and exploit the current surge in information and communication technology as a driver of development.

All this will be possible only if all African countries work towards the adoption of **a continental pact for sustainable development.**

SUMMARY

The major challenge of the Triennale: to identify which critical skills can bring about accelerated and sustainable development in Africa

The issue at stake at the Triennale may be summed up in this key question**:**

Will the 21st century be the century of accelerated and sustainable development in Africa?

The development scenarios designed and implemented by African countries, sub-regional organizations and the African Union all seek to give a positive response to this question, but they run up against obstacles and constraints that are not easy to overcome. These may be summarized as follows:

- How can the African economy move away from the struggle for subsistence and the spiral of poverty towards productivity and competitiveness to meet the urgent needs of the present while building the capacity of future generations to live in a world that reconciles economic growth with the pursuit of equity and the conservation of natural resources?
- How can this effort be integrated into a process of sustainable transformation that produces added value not only in economic but also in social and cultural terms, and in particular helps to defuse the "time bomb" of massive youth unemployment?
- More generally, how can Africa be enabled to "run while others walk" while avoiding the same damage others caused when they were running?

To answer these questions, the Triennale has chosen to appeal to leaders and public and private stakeholders from all African countries, sub-regional and continental organizations, and the administrators and experts of bilateral and multilateral cooperation bodies and NGOs. It has encouraged them to invest massively in promoting critical knowledge, skills and qualifications at all levels of education and training systems and for the benefit of all people – whether they are in school, working or unemployed. For, in the words of the private sector and civil society stakeholders who met during the process of preparation for the Triennale, **"reform of education and training systems is the driver of sustainable development".**

1. How can future promise be transformed into sustainable development?

The Triennale preparation process has called on all stakeholders involved in efforts to transform African education and training systems: countries, inter-country cooperation bodies, the private sector, civil society, young people, international cooperation agencies, and partner countries in other continents. Pooling all of this wealth of analysis, experience and convictions has shown that Africa is at a historical crossroads and, if it is to transform this opportunity into future promise, it must take three steps to bring about sustainable development.

Step 1: Take a look back at the past in order to take greater control over future choices

This requirement is included in the Charter for African Cultural Renaissance, which speaks of "the need for reconstruction of the historical memory and conscience of Africa" because they point to present and future challenges. This was a central issue in the discussions at the Youth Forum: "We need to know where we come from in order to know where we are going" and "we ask that African culture, history and languages be placed at the heart of the development of education and training … so that skills are acquired in connection with our specific heritage."

The Triennale must therefore identify ways and means of enabling each individual, as well as all communities, to actively draw support from an examination of the past so as to take greater control of their future and participate successfully in the context of globalization. To accomplish this, it will have to promote the development of critical knowledge, skills and qualifications, emphasizing and valuing the things that constitute Africa's uniqueness and strength: a young population, unparalleled natural and cultural resources, and a resilient enthusiasm to find ways of developing new forms of economic development, social and occupational inclusion, and cultural values that can benefit all the other continents.

Step 2: Define a common vision of Africa's future with all the stakeholders concerned

Representatives of the private sector and civil society unanimously stated that the vital condition for the accelerated and sustainable development of Africa was the concerted identification of a common ultimate goal for the medium and long terms for each country and for the continent as a whole. Young people declared that only a "joined-up, long-term vision of Africa's future" would make it possible for them to know "where they come from, where they are today and where they are going," thus enabling them to play their role to the full.

To jointly determine such a vision of the future, ministers and public and private officials from the 19 countries of the Inter-Country Quality Node on Technical and Vocational Skills Development (ICQN/TVSD) and the 9 countries of the Inter-Country Quality Node on Peace Education met in Abidjan and Kinshasa, respectively. The former "jointly identified the best possible responses to the need for skills in an ever-changing world of work" in order to mount a collective plan for inter-country cooperation, the sole means of initiating the virtuous circle of sustainable development. The latter declared that they wished to "work together with governments, cooperation agencies and civil society to promote peace in and by education" and thus to realize the African Union's vision of "an Africa integrated, prosperous and peaceful; an Africa driven by its own citizens, a dynamic force in the global arena" (African Union).

Step 3: Make education, training and employment central to current and future policies

The demographic, economic and cultural wealth of Africa is an undeniable asset for the future, but this will only be tapped "if education and training become the principal drivers of change". This assertion is more than the expression of a conviction. It is the result of the

analyses conducted in ADEA's preparations for the Triennale. The private sector and civil society think that "human resource management is the core of development". Young people think that it is important for government to place education, training and employment "at the center of all social, cultural and economic policies". All the contributors think that capacity building for both young people and adults should be the focus of policy. Capacity building is the necessary condition for Africa to transform the opportunities offered by its natural wealth, the youth of its population and its cultural heritage into effective levers of sustainable development. Massive investment in education and training is the sole means of enabling Africa to accelerate its development and thus to "run while others walk".

2. How can we design and build effective education and training systems in each country and on the whole of the continent?

The Triennale preparation process elicited an unprecedented response from leaders and public and private stakeholders, both in Africa and internationally, and they have participated in devising useful, concrete responses to this question. This was done in accordance with the three sub-themes that had been defined within the overall theme.

Sub-theme 1: Common core skills for responsible and active African citizenship regarding sustainable development

The title of the sub-theme itself highlights the paradigm shift that must be brought about in the field of education. This paradigm shift is described by the different contributors as follows.

Include basic learning as part of efforts to control the human, social and economic environment

The education system must dramatically increase the quality and effectiveness of its results, which are not at present enabling many young school leavers to acquire a lasting grasp of basic knowledge. But in doing so, it cannot just aim to improve reading, writing and numeracy. It must also enable both young people and adults to acquire the learning tools and basic know-how they need to be able to survive, live and work in dignity, improve the quality of their lives, make informed decisions and continue learning (Jomtien Declaration). It follows that the necessary reforms should incorporate cognitive learning within the context of a rapidly changing world, develop an interdisciplinary approach that reflects the problems of society at large and adopt active lifelong learning approaches.

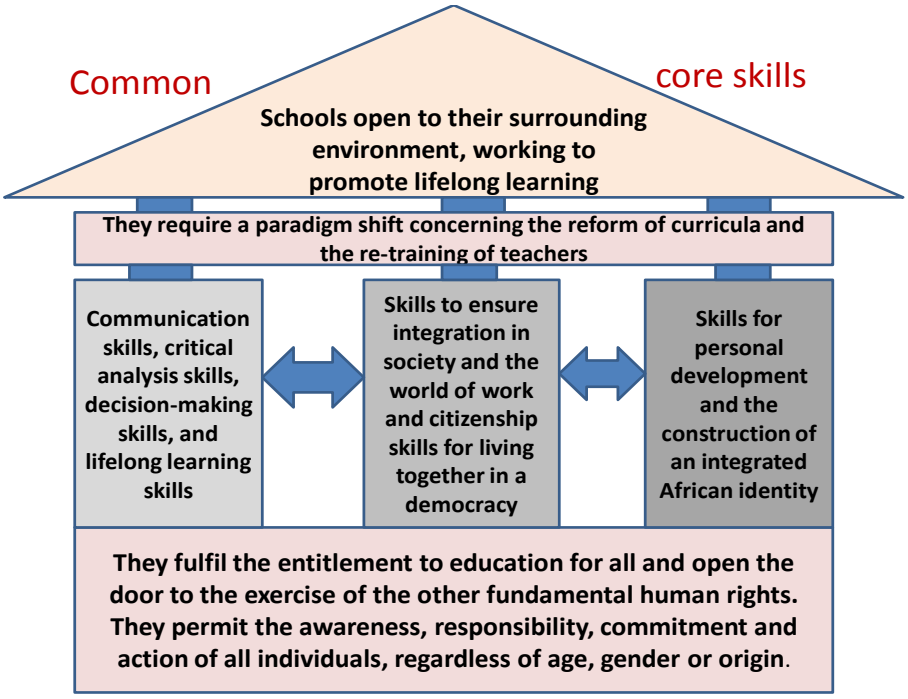
Promote the acquisition of skills for responsible and active African citizenship

This sort of citizenship constitutes the basis for sustainable development. For it to emerge, the beneficiaries of the education system need to acquire three types of basic skills:

- *Communication and lifelong learning skills.* These concern language skills, reading and counting, observation and analytical skills, critical thinking, problem solving and decision making;
- *Skills to ensure integration into society and the world of work.* It is necessary to develop social and civic skills to enable people to live together in a democracy by

overcoming discrimination and conflict and promoting a spirit of cooperation and peace. It is also necessary to acquire generic skills to enable people to adopt a positive approach to economic and social development, entailing a sense of initiative and creativity and a positive view of the world of work.

- *Skills for personal development and the construction of an African identity.* These must enable everyone to meet the vital challenges of health, nutrition, social protection and to combat the poverty spiral. They should also take into account the continent's historical and cultural diversity in order to promote the values of solidarity and peace and thus contribute to the process of African integration and renewal.



Ensuring access to common core skills for people of all ages

The preparatory contributions to the Triennale highlight the importance of making every effort to ensure that the common core of skills becomes a common benefit for people of all ages.

- This common core must be developed at an early age because the first six years of life are the most critical period for the development of the child's intelligence and its successful present and future socialization.
- It is vital for young people of school age to acquire basic cognitive skills, more so than has been the case until now. However, it is equally vital to enable them to control their personal lives and acquire generic skills to prepare them for successful integration into social and working life.
- Adults, too many of whom are illiterate or very poorly educated, should be entitled to the recognition and improvement of their level of skills, which have most often been acquired non-formally or informally. The same applies to every individual's

entitlement to be an active citizen within the knowledge society. Ensuring that adults, and working adults in particular, can access the minimum set of core skills will also certainly help boost economic and social development.

The introduction of the common core of skills in all its dimensions requires a fairly radical paradigm shift in the education system. This change is as much about changing patterns of teaching and learning as the overhaul of curricula, the retraining of teachers and trainers, the redefinition of models of governance and leadership and, ultimately, the restructuring of the relationship between school and its surrounding environment. Schools are destined to become "places that are open to the outside", a space serving all citizens.

Sub-theme 2: Vocational and technical skills for high value-added growth and effective integration into the world of work

The 2008 Maputo Biennale strongly emphasized the lack of importance given to skills development in the African continent and the urgent need to invest heavily in raising levels of training and qualifications in order to wage an effective battle against the widescale unemployment and underemployment of young people and the lack of productivity in a largely informal economy. The analysis undertaken to prepare for the Triennale shows that the exclusion of young Africans from the world of work and the under-qualification of the active work force is still a major phenomenon that both affects the capacity to create wealth on the continent and contributes to the increasingly explosive social situation in different countries. In particular, it emphasizes three main priorities.

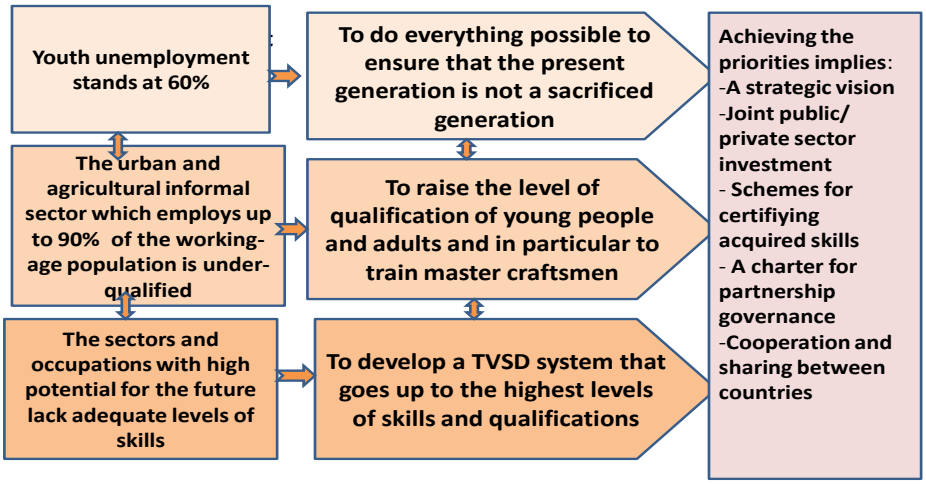
The need to raise the skills levels of young people and adults in the informal sector

The analyses undertaken by various countries and stakeholders stress the need to provide effective responses to the frequently-identified skills shortages and to prioritize efforts to help young people into work. They suggest it is necessary to move away from just "training people first and then getting them into work" to "professional development and integration on the job" and, to support the process, to draw on efforts aimed at reforming and modernizing traditional apprenticeship. They also emphasize the need to raise the skills level of master craftsmen in the informal sector, who train 90% of young people entering the world of work. Finally, they emphasize the need to invest extensively in the agricultural and rural sector, both to improve and transform existing practices and to train the farming community to bring about a "green revolution without which there can be no sustainable development". These actions need to be accompanied by the establishment of national qualifications systems to validate increased skills levels, however they have been acquired.

The simultaneous need to develop high-level skills

The sub-theme report highlights the emerging need for high-level skills in the economic field. It concludes that it is necessary to train senior technicians with the right skillset to monitor and, if possible, anticipate changes and technological innovations in order to support the transformation of national production systems and promote the essential industrialization of the African economy. The Inter-Country Quality Node on Technical and Vocational Skills Development (ICQN/TVSD) which was set up with the Triennale in mind, has strongly emphasized this point and stressed the importance of developing a TVSD system up to the highest levels of education and training, particularly in key future sectors and occupations.

Priorities for developing technical and vocational skills



The need to develop a strategic approach to partnership and cooperation between countries

The report lastly points out that the design and delivery of an effective and appropriate response to the critical skills needs identified for Africa's sustainable development, assumes the following paradigm shifts:

- Each country needs to adopt and implement a strategic, workable skills development plan in order to support growth that creates jobs and added value and leads to a revitalization of the various sectors of the economy.
- The pursuit of a strategy and operational plan for TVSD can only succeed within the framework of discussions between all public, private and civil society partners. This entails the adoption of a governance charter establishing an effective and transparent partnership between all the stakeholders.
- The analysis of change dynamics currently at work in the field of TVSD highlights the need to move away from purely national cooperation towards the inter-country and sub-regional levels. This sort of cooperation, which was initiated by the ICQN/TVSD, is the only thing that can lead to an integrated regional policy that is thus a driver of sustainable development.

These different priorities require strategic decisions and policies which will have an impact in the medium and long term. However, the Youth Forum wanted to inform the Triennale of the urgency of the measures required and thus "invite all public and private players to invest in formal, non-formal and informal education and training schemes and pathways to the greatest extent possible so that the generation of today facing a great difficulty of insertion does not become a sacrificed generation."

Sub-theme 3: Scientific and technological skills to build economies and societies in Africa based on knowledge and innovation

R&D, knowledge and innovation have become the main factors of production, economic competitiveness and, more generally, development. They are essential for Africa's successful entry into the process of globalization, which has created close interdependence between countries and continents.

Africa must catch up

Faced with urgent and vital imperatives such as the management of natural resources and biodiversity, food security, the fight against poverty and pandemic disease and epidemics, and increased economic competitiveness, Africa must develop its skills in science, technology and innovation in order to enhance its assets and engage in a process of accelerated and sustainable development. Failing this, Africa will be condemned to a continued role as a supplier of raw materials and to continue pursuing strategies designed to ensure subsistence or at best to enable it to imitate and catch-up, which will just make it lag further behind and get poorer.

To do so, the continent must considerably increase the number of its research centers, of which there are 50 times fewer than in Europe, and the number of students, of whom there are 10 times fewer than those going on to higher education in developed countries.

It is urgent to invest in science, technology and innovation (STI)

The research shows that the education system as a whole fails to train young people in scientific and technical culture, from the earliest levels of education up to university. One reason for this is that few countries are developing a strategic framework to build an infrastructure capable of producing knowledge, technology transfer and innovation. A sectoral approach is needed, to ensure that promising activities become the drivers of national and, more broadly, continental development.

The Consolidated Science and Technology Plan of Action (AU / NEPAD, 2005) has always insisted on the key role of strengthening and using science and technology as key factors in socio-economic change and sustainable development. Research on the continent shows that such efforts should be targeted primarily at the agricultural sector to help with food security, the fight against poverty and, more generally, the achievement of the Millennium Development Goals, followed by the fight against pandemics and epidemics (HIV-AIDS, malaria, etc.), the preservation of the environment, the fight against drought and desertification, natural resource management and biodiversity, and increased economic competitiveness in Africa and internationally.

STI development requires some major changes in direction

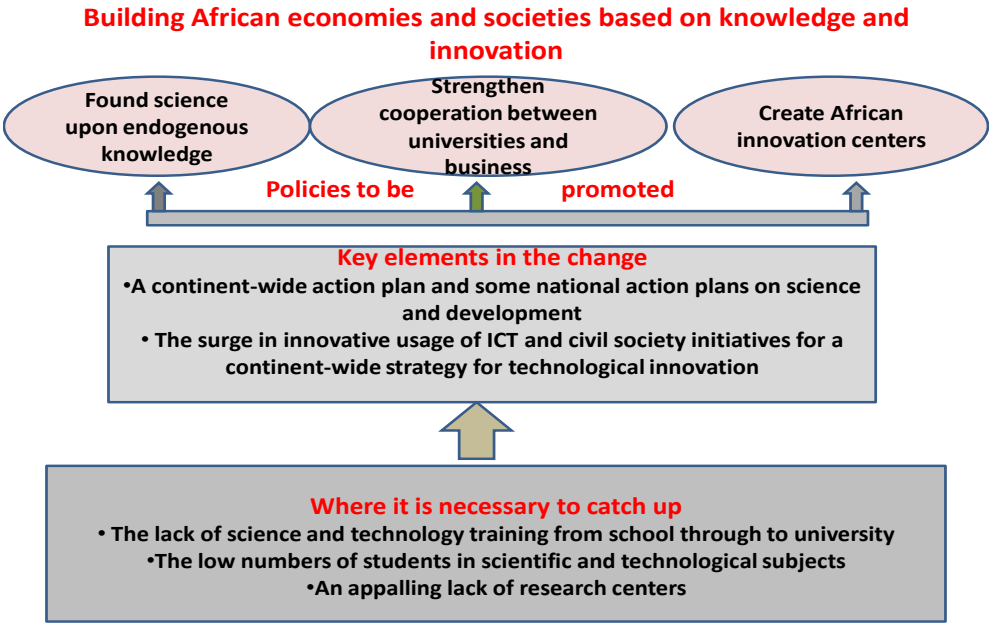
- *First major change in direction: found scientific development upon indigenous African knowledge*

  The recognition of indigenous heritage can help people take ownership of sustainable development. Targeting research on this heritage will make it easier to know, understand and take into consideration the needs of local communities and their approach to development problems. This will facilitate the emergence of more relevant and effective scientific approaches within the African context and the

emergence of open and vibrant African cultures that are capable of taking modern science and technology on board and disseminating them widely in society.

- *Second major change in direction: strengthen education in science and technology*
  It is necessary to both considerably develop science and technology teaching and promote scientific literacy, which means understanding and encouraging the interaction of science with other fields of social, economic, political and cultural life. Such a culture will shed light on ideas and decision-making, especially regarding the need for sustainable development. Education through science must thus begin at an early age through formal, non-formal and informal channels and take root in the social culture.
- *Third major change in direction: use information and communication technology as factors in development*

  The recent surge in the use of ICT on the African continent (innovative uses of mobile phone and internet) shows that these technologies can function as catalysts for change. This is demonstrated in the policies implemented by many countries to promote widespread use of ICT and, through them, to stimulate economic and social change. Also in evidence are the initiatives taken by civil society (Africa 2.0 and Coders4Africa), which bring together economic and social actors and opinion leaders to create a common development strategy based on technological innovation.



It will only be possible to succeed in building African economies and societies based on knowledge and innovation by creating close partnerships of cooperation between the worlds of research and business. The process is underway, but it needs to be strengthened and clarified both at country level and at sub-regional and continental level. Criteria defining what the AU called centers of excellence should be developed in particular. They must become both models of public/private cooperation and fundamental and applied research to ensure Africa becomes a specialized center for the production of scientific knowledge and innovation in a world that has become a global village.

3. Criteria for an overhaul of education and training systems for sustainable development

The analyses and guidelines set out in the framework of the three sub-themes identify a number of criteria for assessing the overhaul of education and training systems, which is in fact already underway.

Criterion 1: Draw up an "African guide" to schooling

To promote policies and systems that are capable of providing critical skills for Africa's sustainable development, it will first be necessary to rebuild them in order to drop the "colonial guide" to schooling and align them with African culture and identity.

Criterion 2: Make every effort to tailor education and training to demand

The replacement of supply-led education and training policies and systems with a demand-led approach is the only way to avoid the paradox of a system that produces thousands of graduates every year while there is an acute shortage of the skills actually required by the labor market.

Criterion 3: Learn to take action

The shift away from a teacher-led approach towards a learning-based one will ensure that both youngsters and adults become the actors and agents of change in their lives, their environment and the social and economic circumstances of their country.

Criterion 4: learning to learn, from oneself and from others

Learning to learn, to motivate oneself to learn and to develop tools and approaches for self-directed learning and learning from others really does ensure that those who do so benefit from the process and momentum of lifelong learning.

Criterion 5: Building knowledge and skills outside the institution

Contextualizing knowledge and skills means going outside the walls of the institution and building an appropriate, effective approach to solving economic, social, scientific and technical problems in coordination with, and with the support of the people concerned.

Criterion 6: Assess learners' ability to act and cope

True educational reform shifts the focus of the educational act on to learners, who must be evaluated not in terms of their knowledge, but on their ability to use effectively and creatively what they have learned in order to cope successfully in a difficult context.

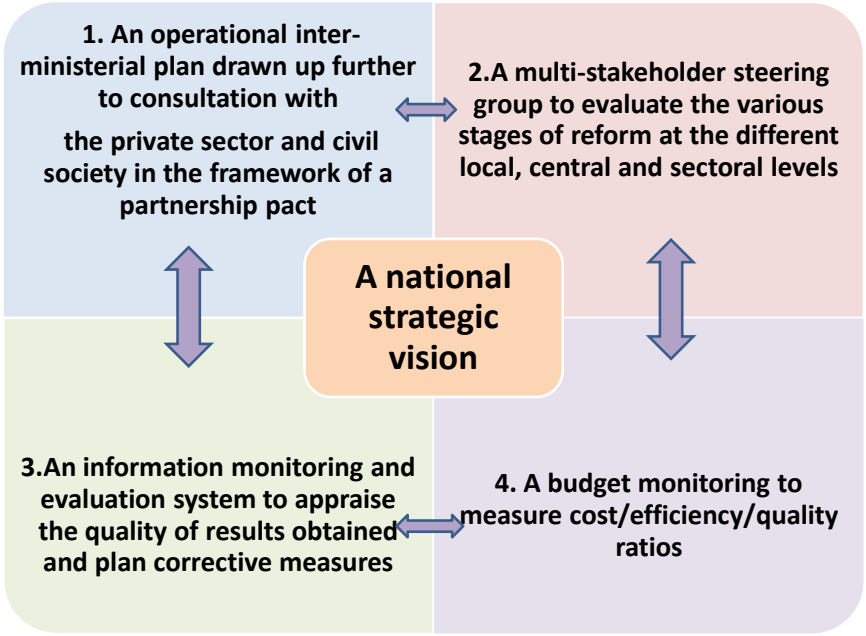
Criterion 7: Re-train teachers to rebuild the system

The overhaul can only be achieved through a change of culture and the professional development of teachers, who are the pre-requisites for successful reforms.

4. The pre-requisites for successful reforms

The success of the reforms to be implemented requires the fulfillment of several pre-requisites, which can be summarized as follows.

- ***First pre-requisite: create a suitable environment for the development of critical skills.*** This sort of environment requires a parallel effort to alleviate poverty and misery, which are the largest causes of exclusion after physical and mental disability;
- ***Second pre-requisite: create an environment that is conducive to quality learning***. This concerns the quality of leadership in institutions, the skill and motivation of teachers and trainers, the availability and adequacy of infrastructure, equipment and other teaching/learning/training aids;
- ***Third pre-requisite: foster a community environment that reinforces the relevance of learning.*** This entails promoting comparisons between indigenous knowledge and practices on the one hand, and learning at school on the other hand, to ensure that learning takes account of local sustainable development issues and to assess how the skills thus developed help in solving problems facing the local community.
- ***Fourth pre-requisite: develop research capabilities to help establish the foundations of a knowledge and skills-based society.*** Only major investment in research can provide the information and data that public and private decision-makers need in order to design and develop effective and relevant systems.
- ***Fifth and final pre-requisite: develop institutional capabilities and technical resources.*** These capabilities and their functional relationships are summarized in the diagram below.



5. The crucial contribution of intra-African and international cooperation

The Triennale preparation process highlighted how existing experiences of working and consultation at both intra-African and international cooperation level were vital pre-requisites for the success of reforms.

Strengthen regional cooperation and integration processes

These processes entail the exchange of experiences and knowledge sharing through inter-country quality nodes, or ICQNs (on Technical and Vocational Skills Development - or TVSD - and Peace Education, for example), the evaluation of learning programs (PASEC and SACMEQ) and the initiatives of regional organizations (SADC, ECOWAS, WAEMU) and/or the regional offices of international organizations (UNESCO-BREDA, ILO). They all initiate the sharing of experiences and gradually progress towards integration practices and the sharing of strategic visions, concepts, tools and resources.

Such practices are essential for the design and development of effective education and training systems and schemes because they can build on countries' best achievements in order to accelerate reforms and above all make them as responsive as possible with respect to economic and social demand.

Reposition North-South and South-South cooperation

Traditional cooperation with bilateral agencies from the North and international organizations has been enhanced with higher levels of investment from emerging economies, especially China, India and Brazil. Faced with the challenges of policies, scope and funding of necessary reforms, a question arises regarding the way external assistance is placed in order to draw the utmost benefit.

It is important to learn the lessons of the past and strategically reposition external assistance with regard to the new challenges posed by the reforms. Such assistance should primarily encourage national expertise to directly meet the challenges and build local skills through action. To the same end, it should also support learning between countries facing similar challenges, as demonstrated by ADEA's ICQN's, for example.

Encourage multinational enterprises to be a driving force for sustainable development

An increasing number of multinational companies are present on the continent. Some 800 of them set up in Africa in 2007 and invested $ 12 billion. These companies can be drivers of sustainable development if they go beyond the exploitation and export of natural resources and contribute to the creation of locally-added value, technological innovations and skilled jobs, including in growth occupations and sectors at sub-regional, national and local levels. Such a change of role means agreeing to relocate production units and investing in order to transform them into competitiveness clusters that can help Africa integrate global production processes. The work done in preparation for the Trienniale shows that new investors are willing to take on three functions:

- to be a stakeholder in ongoing education and training reforms;
- to help identify critical skills shortages;
- to help produce critical skills.

In conclusion: some steps to move forward

The prospects opened by the theme of the Trienniale point to three possible areas of work that can be summarized as follows:

First area: place education and training at the heart of policy and development strategies

Education and training are not for the benefit of themselves but must be used as drivers of sustainable development to accelerate growth and ensure sustainability.

The key points of the reforms required to make this happen may be summarized as follows.

Sub-theme 1

- Redevelop and mobilize all formal, non-formal and informal education and training schemes and measures to enable them to give access to everyone, young people and adults, to the common core of skills.
- Redefine, with all public, private and civil society partners, the goals of education by detailing them in skills profiles, curricular programs and courses for re-training teachers.
- Include African culture, history and languages within these goals, so that young people acquire skills related to their particular heritage.
- Promote the new learning culture necessitated by opting for lifelong skills and learning: learning to learn, business skills, innovation skills and project management, for example, and, ultimately, to go on lifelong learning.

Sub-theme 2

- Place the employment issue at the center of all economic, educational, social and cultural policies and involve all public and private partners in developing these policies to put an end to the explosive unemployment situation among young people and promote the acquisition of skills to do a job or occupation.
- Raise the skills levels of young people and adults and, in particular, master craftsmen in the rural and urban informal sector who train the vast majority of young people entering the world of work.
- Design and develop, in growth occupations and sectors, high-level skills development measures to train the technicians, senior technicians and executives whose innovative companies need it most.

Sub-theme 3

- Break with formal academic approaches by focusing, in training and research, on the development issues faced by local communities, regions, countries, the economy, the world of work and the continent in a globalized world.
- Establish strategic partnerships with the private sector and local authorities and communities to be attentive to their requests, interact with them and have them participate in the development, implementation and evaluation of programs, including through joint projects.
- Consider the requests from local communities and their indigenous approach to development problems in order to facilitate the emergence of open and vibrant African cultures that are capable of taking on board modern science and technology and disseminating them widely in society.
- Translate the results of research into innovative technologies and practices, that are useful and usable in the development of the economy's businesses, the rational use of natural resources, environmental protection and well-being of society.

Second area: promote a strategic national and continental skills development framework

The Triennale preparation process as a whole has strongly highlighted the importance of developing, at national level and for the entire continent, a strategic skills development framework. This framework must:

- be prepared with all of a given country's stakeholders, including the private sector, civil society and youth representatives;
- lead, wherever possible, to the sharing of experiences, if not a dialogue with other countries in the sub-region or region;
- lead to the adoption of a charter of contractual values establishing its legitimacy and effectiveness, and be put in a national, sub-regional and/or continental policy document that determines the priority sectors in need of critical skills;
- forge a process of inter-country cooperation and lead to the pooling of methodologies and design, implementation, monitoring and evaluation tools.

Third and final area: adopt a continental pact to promote sustainable development

Each country faces its own sustainable development issues, but interdependence due to global sharing of wealth and the interconnection of decisions in an increasingly globalized system of governance means that no African country can decide to pursue economic development successfully on its own in a way that is both ecologically and socially sound, and effective in fighting poverty.

The goal set at the Triennale, which is to integrate and share more and more policies and means of education and training to promote sustainable development, thus requires that each country and more widely the continent as a whole agree on common regulatory instruments that can ensure effectiveness and relevance.

Education and training systems will only achieve their objectives if their reforms are integral to a future continental pact that will offer, for years to come, a sustainable development model that transcends selfish national approaches and ensures the successful integration of Africa into a global vision of the general interest.

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FOREWORD

This Synthesis Report sets out the main body of thought emerging from the preparatory discussions on the theme of the 2012 Triennale, "Promoting critical knowledge, skills and qualifications for Africa's sustainable development: How to design and implement an effective response through education and training systems." It represents the conclusion of a process marked by the following successive stages:

a) Selection of the theme of the 2012 Triennale;
b) Drafting of the general and thematic concept/methodological notes to provide guidance for the preparatory work;
c) The call for contributions in the form of studies on promising, effective and successful policies related to the theme;
d) The production, by African ministries of education and training, bilateral and international agencies and civil society organizations, of cross-cutting studies on the general theme or targeted thematic studies on one or other of the selected sub-themes: i) "Common core skills for lifelong learning and sustainable development in Africa," ii) "Lifelong technical and vocational skills development for sustainable economic growth in Africa and iii) "Lifelong acquisition of scientific and technological knowledge and skills for Africa's sustainable development in a globalized world";
e) The organization of consultations to directly involve the range of education and training stakeholders and beneficiaries in the thematic debate, including young people, civil society and the private sector;
f) Preparation of synthesis papers for each sub-theme, which are appended to this document, by the thematic coordinators: Wim Hoppers and Amina Yekhlef for sub-theme 1, Georges Afeti and Ayélé Léa Adubra for sub-theme 2, and Kabiru Kijanju and Khadija Khoudari for sub-theme 3.

The Synthesis Report, prepared by the general coordinators Mamadou Ndoye and Richard Walther drawing on different contributions, seeks to provide material for the debate on effective policies and practices relating to the theme of the Triennale. To this end, it introduces the following items to the debate: i) insights into the major issues raised by the theme, ii) the approaches adopted to deal with these issues in schemes in African countries or elsewhere, iii) the main lessons we can learn from these experiences and iv) the prospects for progress.

This discussion paper differs from those produced for previous Biennales in that it reflects at least two developments: i) like ADEA, it is not just about sub-Saharan Africa, but concerns the entire continent, despite the lack of data and contributions from North Africa and ii), as mentioned above, the synthesis of the preparatory discussions does not just draw on studies, but has been also been enriched by the strong views expressed by education and training stakeholders during the consultations organized for this purpose.

INTRODUCTION: WILL AFRICA BE THE CONTINENT OF THE 21ST CENTURY?

1) The decisive issue at the heart of the Trienniale can be resumed in this fundamental question: Will the 21st century be Africa's century in terms of accelerated and sustainable development?

A number of scenarios have been devised as a response to this question. The most pessimistic of these forecast the widening of the scientific, technological and digital divides separating Africa from the rest of the world, leading to greater disconnection and poverty. In contrast, optimistic scenarios predict that the revival and progress seen over the last decade in terms of economic growth and education will give Africa a tenfold increase in GDP and thus eliminate extreme poverty.

2) The Trienniale does not perceive development as a continuous process of accumulation on which forecasts can be built on the basis of constants. Predictions made on this basis fifty years ago were contradicted by subsequent events, as happened in the emerging economies of some Asian countries.

3) Development is a transformation process entailing major changes with structural adjustments and qualitative leaps (or falls). Furthermore, Africa has to deal simultaneously with challenges relating to stages of development that have been successively passed through elsewhere.

How, for example, will it be possible to accelerate development successfully and consequently boost productivity and competitiveness while also preserving natural resources and meeting other sustainability requirements?

In other words, how can Africa be enabled to run while others walk, without causing the same damage others caused when they were running.

4) The answer to these questions, as well as the major changes required by social transformation, above all suggest the need to foster innovative capabilities in African societies, based mainly on the mastery and the internalization of science and technology. However, the "intelligence revolution" (Attali, 2006) suggested here as a prerequisite and factor of Africa's accelerated and sustainable development in the 21st century does not end there. It also has social, cultural and ethical dimensions which draw on the indigenous foundations of development.

5) This is the central concept of the Triennale, and it comes down to critical skills. It is central because it is defined as a combination of knowledge, know-how and behavioral skills. It is also central because qualifications are just the certification of a given skills level. Skills are critical in that they allow societies (and companies in terms of competitiveness) to

survive by adapting to change and meet the challenges of today and tomorrow in order to ensure they become better off.

6) Therefore, aside from the issues of access, equity and quality of education and training that have preoccupied past Biennales – which are still relevant – the 2012 Triennale focuses on the meaning, utility, use and impact of learning in relation to the human, economic, political, social and cultural objectives of sustainable development.

In other words, the Triennale ponders how to ensure relevance and external efficiency in education and training, and the component factors of this, in order to meet the need for accelerated and sustainable development in Africa.

7) The report thus organizes the debate into five main stages:

   a. First, it raises the need to develop a realistic vision of the future based on lessons learned from African history and a careful consideration of the challenges, opportunities and drivers of accelerated and sustainable development, and to transform this vision into specific choices, priorities and strategies;
   b. It then accordingly identifies and assesses the critical skills that need to be developed in the planning of this vision, in particular to address the critical challenges, develop the strengths and comparative advantages, and exploit opportunities and drivers of growth. Obviously the rapid and profound changes that are transforming the world also make it necessary to change at the same pace, otherwise the skills acquired become obsolete. This is why the acquisition of critical skills for sustainable development entails lifelong learning;
   c. It next explores the direction and formulation of strategic education and strategic policies. They are strategic precisely because they closely match the needs identified and assessed in development planning, but remain flexible and open to change and local contexts. Such policies necessitate and help to shape paradigm shifts and reforms that focus mainly on curricula in given areas;
   d. It also examines the crucial issue of the implementation of these reforms, which is a challenge shared by most if not all African countries;
   e. Finally, drawing on the lessons learned from this whole exercise, it sets out the steps that should be taken in order to move forward and ensure Africa enters the virtuous circle of education-training and accelerated and sustainable development.

8) Before setting out the main content of the Synthesis, as a caveat, it should be noted that just because this discussion focuses on Africa, that does not mean the continent is a single, uniform area. On the contrary, the specificity of national natural and cultural contexts and the differences in African countries' political, economic and social levels means each one should be considered a unique case, despite the similarities that can occasionally be seen.

9) That said, on this theme there are still a number of major challenges that are the same across the continent and which are common to most if not all countries. However, the extent and degree of these challenges differ from one country to another. Moreover, the Triennale exercise has amply demonstrated the usefulness of inter-African learning, not to mechanically replicate the lessons learned from one African country to another, but to develop and re-create, in their specific context, the conditions and factors for the success of educational policies and practices that have proven to be effective.

1. VISIONS OF THE FUTURE AND SUSTAINABLE DEVELOPMENT ISSUES FOR AFRICA

10) The process of consultation involving the private sector, civil society and the youth consultations organized as part of Triennale preparation process clearly underlined the importance for the different countries, as well as for the continent as a whole, to "formulate and articulate a long-term vision […] in order to allow Africans to know where they come from, where they are, where they will go and from these benchmarks, how to fully play their role." (Youth Forum, 2011).

1.1. Visions of Africa's future

11) To achieve sustainable development, it is imperative to construct a vision of the future. Laying the foundations for and stating the long-term objectives of development makes it possible to: i) shed light on the overall guidelines to be followed, ii) commit efforts and resources in a way that is consistent, efficient and takes a sufficiently long-term view to enable this future vision to be achieved, and iii) avoid the short-term approach and the accompanying hesitations and trial-and-error approaches, which in the history of Africa's development have until now represented real impediments.

1.1.1. The African Union assesses the prospects for Africa's future prosperity

12) The African Union's vision of the future highlights "an integrated, prosperous and peaceful Africa, driven by its own citizens and representing a dynamic force in the global arena." This long-term perspective sets out the fundamental issues: i) integration, as a means of overcoming the handicaps linked to the fragmentation of the continent into States with limited viability, inherited from a colonial past, ii) the establishment of peace, to put an end to the conflicts and civil wars that bring devastation and ruin to the countries of this continent, ii) accelerated economic development, to eliminate dependency and achieve active integration in the globalized economy.

The scale of the challenges that remain to be faced in relation to these three issues means this will be a long-term endeavor. To tackle these challenges and to attain the strategic objectives which revolve around prosperity, the African Union focuses essentially on two pillars: the African cultural renaissance movement and the New Partnership for Africa's Development (NEPAD).

Promoting African cultural renaissance

13) In the Charter for African Cultural Renaissance, the "States commit themselves to work for African Renaissance. They agree on the need for reconstruction of the historical memory and conscience of Africa and the African Diaspora" (UA, 2006). Here the past is a vector of the missions of the present and the future, since "the unity of Africa is

founded first and foremost on its history" (UA 2006), in the common trajectory followed by the history and fate of the peoples of this continent.

14) The African cultural renaissance movement thus has the task of promoting, notably through education, a sense of African identity and regained pride, a conscious and civic commitment by women and men to the African cause and to the ideals of a revived pan-Africanism. It is the prime condition and most vibrant factor in attaining integration, peace and the mobilization of peoples towards development in Africa.

Achieving NEPAD

15) As far as NEPAD is concerned, it sees itself as a philosophy of action resolutely committing Africa to three goals: accelerated growth and sustainable development, the eradication of poverty, and the successful integration of the continent in the globalized economy. It has set itself six sector-based priorities: 1) to bridge the infrastructure gap, 2) to train human resources, 3) to develop a strong and sustainable agriculture, 4) to safeguard and protect the environment, 5) to spread and promote culture 6) to develop science and technology.

Through the Science and Technology Consolidated Plan of Action, the development strategy aims essentially at harnessing the potential of science, technology and innovation to develop human and natural resources with a view to achieving the vision of the future.

1.1.2. Contrasting scenarios for Africa's future

16) Beyond expressions of intent of political will, ambitions and projects, a number of scenarios can be built to project Africa's future.

- **From pessimistic scenarios based on a lack of scientific progress and the absence of a creative class in Africa …**

17) Some scenarios predict that, as the global scientific revolution becomes permanent and the pace of technological innovations accelerates, the cognitive, scientific and digital divide that is already marginalizing Africa will widen even further (Hugon, P., 2000). This is because at the same time the threshold effects that place a limit on public and private investment in science and technology (0.3% of GDP for most African countries) will exacerbate the continent's disconnection, particularly since they will be combined with other aggravating factors: the domination of the economy by a low-technology, low-value-creating informal sector; the fragility of the rule of law and democratic governance, the consequences of which include political instability, devastating struggles for the control of resources (mineral resources, arms and drug trafficking); conflicts and civil wars; devastating malaria and AIDS epidemics and pandemics, not to mention the absence of a large middle class and creative milieu: financiers, artists, entrepreneurs, inventors, and those with innovative ideas in the fields of technology, institution-building and design. (Attali, 2006)

18) Ultimately, Africa will be confined to the role of exporter of raw materials (which currently represent 90% of its exportations) in a globalized economy in which knowledge and innovation have and will increasingly become the principal factors of production and value creation. Furthermore, the downward trend in commodity values, with the exception of oil, will intensify, increasing the inequality of trade and, as a result, reinforcing the continent's impoverishment. Thus, "In 2025, the continent will still have a per capita income below a quarter of the world average" (Attali, 2006).

- **…to optimistic scenarios based on Africa's comparative advantages and recent performance**

19) Other scenarios argue that accelerated development today provides Africa with considerable opportunities, comparative advantages and assets and a potentially more prosperous future. They cite as evidence the exceptional progress made by the continent since the mid-1990s, with school enrolment ratios rising by around 5% each year, and the economy showing a similar rate of growth. This entry of Africa into the virtuous circle of education/development is to be linked with the continent's enormous available potential: 20% of the earth's landmass, including 20% of forest and an immense reserve of biodiversity, enormous potential in terms of clean energy (especially hydro-electric and solar power), 30% of the world's mining resources with more than 60 types of minerals and ores, an overwhelmingly young population, in contrast to other continents where the population is aging or already old, enormous potential for development among women, and indigenous culture and heritage, etc. Moreover, and according to UNIDO, rates of return on investment are higher in Africa than in any other world region.

20) It is for all these reasons that the "new promised land of investment" is attracting investment today, in particular from the emerging economies of China, India and Brazil, not to mention South Africa. Africa's economic growth is considered to have a sound basis, and has remained steady during the recent period despite the shocks linked to the successive banking and debt crises, which elsewhere have resulted in more than considerable setbacks.

21) Among the positive scenarios built on this basis, that of the African Development Bank (AfDB, 2011) estimates that Africa's GDP could increase from US$1.7 trillion in 2010 to US$ 15 trillion in 2060, and that income per capita could grow from US$1,600 to more than US$5,600 over the same period. In 2060, most African countries would have attained middle-income status and the extreme forms of poverty would have been eliminated.

Between these pessimistic and optimistic scenarios, where does Africa's future really lie?

- **The challenge is to construct a realistic vision of the future**

22) The answer to this question is not to be found in any kind of fatalistic perspective, but rather in the construction of a realistic vision of the continent's future, in which the lessons of history are carefully taken into account in order to draw up a strategic

framework and development scenarios based on decisive factors that can reverse negative trends and harness the potential of critical resources and assets to bring about desired social and economic transformation.

1.2. On the road to sustainable development

23) It is not possible for the continent of Africa to choose which road it will take to sustainable development without making a lucid and courageous analysis of the historic, economic and social constraints that risk slowing down its progress.

1.2.1. Re-examine all dimensions of the past in order to take greater control over future choices

24) The sustainable development of Africa cannot be promoted unless all Africans gradually take ownership of their history and read it in a way that enables them to build, with confidence and pride, a future that is commensurate with both the splendor and the suffering of previous centuries.

25) The first aspect of this effort to take ownership that must be addressed concerns the continent's remarkable past and its contribution to humanity, which have for centuries been glossed over by the West (Konaté, 2010). The history of Africa is comprised of more than just the colonial and post-colonial periods. It is above all the history of a continent which can pride itself on being the cradle of humanity.

This history of pride is cannot be separated from the role played by Ancient Egypt, whose symbolic, scientific and artistic legacy is claimed by non-Africans and Africans alike as one of the priceless treasures of our world heritage.

26) For centuries, Africa was not a colonized land. The vast majority of African regions remained independent of Europe, including during the period of the transatlantic slave trade, until the end of the nineteenth century.

27) The fact is that the slave trade, which began well before the transatlantic slave trade, and then colonization by European countries which, apart from a few rare exceptions, had an impact on the whole continent at the end of the nineteenth century, have created such strong and structuring references for the continent as a whole that the wealth of its long and diversified history has been relegated to the sidelines.

The slave trade and colonization are obvious traumatic experiences which the various countries will have to gradually overcome if they are to integrate the global context in a positive manner. These experiences threw the political, economic, social and cultural structures built up throughout history by the different peoples into such disarray that the fifty years of post-independence have only just sufficed to make the continent aware of the immensity of the task ahead, that of pursuing a sustainable development commensurate with own wealth and capacities.

28) Promoting, as the theme of the Triennale proposes, critical skills for Africa today, means designing and implementing education and training systems that enable each individual and all communities need to re-examine the past and draw positive inspiration from this in order to take control of their own future, and to integrate the global context with what comprises Africa's uniqueness and strength: a young population, incomparable natural and human resources, and a resilience just waiting to be transformed into a capacity to invent new pathways of economic development, social and professional inclusion, and cultural values that will be of benefit to all the other continents.

1.2.2. Analyzing the success and disillusions of the post-independence period in order to better build the future on the basis of indigenous forces

29) Most African countries have recently celebrated fifty years of independence. It is therefore several decades since the continent entered the post-colonial era, i.e. the era in which each country took responsibility for its own future.

30) The first years of this new era were more than positive for the continent. Between 1960 and 1973 the economy grew, thanks to exports, at an annual average rate of 4.6% (a rate much higher than that of demographic growth). An improvement in social indicators (life expectancy and school enrolment ratios) followed as a result, and Africa was seen, during this period, as a rapidly-developing continent - in contrast to Asia, which the World Bank deemed in 1969 to be the continent most "fraught with dangers" (Sévérino and Ray, 2010).

31) In the 1970s, however, several factors conspired to bring this growth dynamic to an end. These included the priority given to cash crops over food crops, the young sub-Saharan industry's lack of competitiveness, due to its low productivity, the omnipresence of an administration that was supposed to direct and control a national economy with a large public sector, as well as the launching, with an influx of external aid, of large-scale construction projects that were oversized in relation to the African context.

32) The result of all this was an explosion of Africa's external debt, which rose by 20% per year from 1972 onwards, reaching 25% of Africa's GDP in 1982 (Sévérino and Ray, 2010). This debt crisis, made worse by falling commodity prices and rising interest rates over the same period, led to the intervention of the Bretton Woods institutions and a structural adjustment the main consequences of which were the dismantling of the few manufacturing industries that had come into being after independence, widespread privatization and the placing under external supervision of public administrations. This was followed by the economic bankruptcy and then symbolic failure of the States concerned. The consequences were an even greater informalization of productive activity, the increasing impoverishment of the population and a widening of inequalities between those who profited from the prevailing instability and those who were its principal victims.

1.2.3. Building the future on the current repositioning of the continent in the global economy

33) The present period is, surprisingly, characterized by the publication of large numbers of studies and reports, indicating that the vision of Africa's future is rapidly evolving. In the French-speaking world, there is talk of "time for Africa", of "*Africa's doing well*" (*L'Afrique va bien*, Léridon, 2010) and of "*The Emergence of Africa*" (*L'émergence de l'Afrique*, Malard, Klein-Bourdon, 2010). The English-speaking world has produced works such as *Africa: Continent of Economic Opportunity,* (Fick, 2007), *Africa Progress Report 2010*, (Annan et al, 2010 ») and *Lions on the move: the progress and potential of African economies*, (McKinsey, 2010). These studies publish data clearly indicating that Africa is in the process of repositioning itself, not only in demographic terms, but also in the economic, technological, social and cultural fields. These analyses are all based on two key observations.

- **First observation: tomorrow's Africa will be young, urban and active**

34) The demographic changes calculated by the United Nations estimate, in their median variant projection, that the population of sub-Saharan Africa will increase tenfold in the space of a century, from 180 million in 1950 to 1.8 billion in 2050. This massive transformation will have several impacts. Firstly, it will be accompanied by a rapidly-increasing rate of urbanization of the continent, which will rise from 35%, in 2010 to more than 50% from 2030, and secondly, the percentage of under-25-year olds in Africa will be unequalled in any other continent. Data from the same source show that Africa will have a population of under-25s of 800 million in 2050 compared to less than 200 million in Europe. The continent will also see a rapid expansion of its working-age population, which will total, according to McKinsey, 1.1 billion in 2040. At that time, according to a very recent study (Société Générale, 2010), the developing economies will be better equipped than the others to tackle the challenges of population ageing faced by the developed and the emerging countries, and thus achieve significant productivity gains. Lastly, this transformation will increase the number of middle-class African households (120 million in 2020 according to McKinsey) and the resulting rise in domestic consumption will lift African growth.

35) An Africa full of promise that is increasingly urbanized, as elsewhere in the world, and that has the world's youngest population poses an immediate challenge to the continent's education and training systems in terms of their ability to provide all these young people with a human, professional and social capital that will enable them to cope with the radical transformations they will have to face and to seize the opportunities that will be offered to them in the light of the new geopolitical positioning of their continent.

- **Second observation: Africa will be increasingly integrated into economic globalization**

36) This observation is based firstly on the fact that there has been an acceleration in African growth. In 27 of the 30 largest African economies, growth accelerated in the years following 2000 (McKinsey, 2010). All sectors of activity (finance, retail trade, agriculture,

transport, and telecommunications) contributed, underlining the potential sustainability of this growth. Over the same period, natural resources represented 24% of GDP growth between 2000 and 2008. When we consider that today Africa's share in the value added of the products it exports is only one-twentieth (Hugon, 2010), it is easy to imagine the margin in the development potential in the medium and long term.

37) The observation is based secondly on the capacity of the continent to step up its own development process. A study by the London School of Economics (Young, 2009), based on a statistical analysis of the purchase of capital goods by Africans themselves, gives an account of this process, which is partially overlooked by the traditional approaches which focus solely on GDP indicators. The differences between current data and forecasts for 2020 and 2030 confirm that this process is well under way (McKinsey 2010).

38) Lastly, this observation is based on the capacity of the continent to develop partnership links with countries in other continents. The rest of the world has a pressing need to use Africa's wealth of natural resources to satisfy domestic demand for consumer goods. The increase in this demand has led to an increase in foreign direct investment in Africa, which rose from 15 billion dollars in 2000 to a peak of 87 billion dollars in 2007. However, analysts also point to the indispensable role that Africa will play in the future world economy. A recent debate at the *Collège de France* on this subject highlighted the key role that will be played by the African continent in the future world economy, especially in the agricultural and the services sectors.

39) It is clear that the current trends will only lead to a sustainable development if they are underpinned by clear policy choices that foster regional integration, which will be a key factor in the success of the African economies in tackling the challenges of globalization. (AfDB, 2011). This can only be achieved if the transformations underway are, at the same time, anticipated and addressed by efficient and adapted education and training policies. These policies must enable young people, indeed the whole of the working-age population, to acquire the knowledge and skills required by the jobs and professional activities that are constantly developing, and, in particular, by the emerging professions which will contribute to growth and added value.

1.2.4. Overcoming the obstacles and barriers to sustainable development

40) The future economic trends and the visions they allow us to project on the future of the African continent will only be really efficient if they are based on policy choices and achievements that make it possible to overcome the difficulties and obstacles that jeopardize Africa's progress on the road to sustainable development. These difficulties and obstacles relate in particular to the capacity of education and training systems to step up the pace of transformation of the current situation, and to enable the region to play a significant role in global development. They also concern the capacity of the continent to move away from what is essentially a subsistence economy, to reconcile demographic growth and food security in the face of the risks of desertification and

climate migration, and, lastly, to move towards more diplomatic methods of conflict management.

1.2.5. Remedying the shortfalls and lack of progress in education that jeopardize economic growth and social development

41) The rapid growth of Education for All (EFA) is the pre-requisite for the African continent to successfully meet the challenge of its future. The extraordinary performance achieved by South Korea which, from being a still undeveloped country in the 1980s (per capita income of US$1,645 as recently as 1986) has become the developed country it is today (per capita income of US$20,045 in 2007) can be explained to a very large extent by the universalization of primary education which took place in the 1970s. However, the most recent reports published on EFA (UNESCO, 2011) show that the continent is still far from attaining the Millennium Development Goals (MDGs).

42) Although sub-Saharan Africa tops the list in terms of recent primary school enrolment, with a gain of 18% between 1999 and 2009, it remains the case that 48% of the world's out-of-school children live in sub-Saharan Africa. There are still 47 million illiterate children. These findings need to be looked at in connection with the mediocre quality of education. For many children the opportunity to go to primary school has not led to an education that gives them the basic skills they need. Some 10 million children in sub-Saharan Africa drop out of primary school every year. These high drop-out rates "are denying children meaningful learning opportunities and depriving countries of a vital source of economic growth and stability" (UNESCO, 2011).

43) The development of EFA has not kept pace with the targets set by the MDGs, and the same is true for the other levels of the education system. The trend in enrolment ratios in sub-Saharan Africa since 1999 highlights the significant efforts that have been made to increase enrolment in secondary education (increase of 40% between 1999 and 2008). These efforts have failed, however, to provide the 66% of children who are not following any kind of formal learning path at the end of the primary education cycle with the necessary basic skills or technical and vocation skills. This trend also shows that the gross enrolment ratio in tertiary education is 6% in sub-Saharan Africa, compared with 70% in North America and Western Europe. It is therefore difficult, in the light of these data, to imagine how Africa can invest sufficiently in the education and training of these children and young people to be able to catch up with the developed countries and close the education, economic and social gap.

44) The same observation holds for adults of working age. The analysis of literacy rates for this population show that progress towards the target of halving adult illiteracy rates by 2015 has been at best disappointing and at worst sporadic. In sub-Saharan Africa the adult literacy rate has risen by 17% since 1994. This slow pace is essentially due to the apparent lack of interest in the creation of a truly literate environment.

45) It is important, lastly, to repeat that access to education for all is one of the best means of reducing child mortality and the spread of diseases such as AIDS, malaria or tuberculosis. The level of maternal education is a key factor in determining whether children survive to the age of five, just as it is a decisive element in decreasing rates of infection by the AIDS virus (UNESCO, 2011).

46) Eliminating illiteracy and equipping young people for entry into employment are therefore investment priorities and urgent tasks if Africa is determined to lay the foundations for its sustainable development.

1.2.6. Moving the African economy away from being a subsistence economy and out of the spiral of poverty

47) The analysis of the economic situation of Africa points to an omnipresent informal sector in most of the countries. This sector can be defined using various different criteria based either on a statistical approach (a production and service unit with no bookkeeping or accounting), or on a fiscal approach (few or no taxes paid), or using the notion of decent work (insecurity of employment, with no guarantee and no social protection). This sector has a dominant role in that it represents up to 90% of professional activity in many sub-Saharan African countries, and between 40% and 50% of jobs in the countries of North Africa. It consists essentially of self-employed workers, owners of micro-enterprises and unpaid family workers.

48) The omnipresence of the informal sector can be explained by the absence or near-absence of a structured economic and industrial fabric with the potential to produce wealth competitively for national, sub-regional or international markets. More fundamentally, it is the sign of an economy that responds to local demand and whose reason for existence is to enable those who work in it to earn enough to live on and to support their families. In this sense it is one of the principle means of combating poverty and, as such, it works towards attaining the targets of the MDGs (eradication of extreme poverty and hunger). The latest MDG report forecasts that the poverty rate, while remaining very high, should fall below 40% in 2015.

49) The challenge posed by sustainable development cannot be overcome by ignoring the contribution made by the informal sector both in terms of employment and in terms of growth for the countries (it represents 60% of GDP for some of them). But taking up this challenge presupposes transforming the informal sector from a subsistence economy to an economy based on growth and added value. Such a transformation will only be possible if political decision-makers follow the recommendations of the World Bank and the French Development Agency (*Agence française du développement - AFD*), and invest heavily in enhancing the level of skills of adults and young people working in the sector, and by this means give it the opportunity to become a wealth- and added-value-producing economy in its own right.

1.2.7. Managing the demographic and climate-related constraints that endanger sustainable development

50) Population projections over the next forty years show that Africa will have to invent a type of development that is able to absorb an annual population increase of around 2.5%. This rate is twice as high as that of Asia or Latin America (World Bank). Over the same period, the development to be pursued will have to tackle ecological transformations such as a widespread rise in temperatures, variability of rainfall especially in the Sahel area, rising sea levels in certain particularly endangered coastal areas (Guinea, Egypt, etc.) and, of course, desertification. According to the African Union, the latter affects 70% of economic activity, 43% of land and 40% of the population, with the risk of the loss of two-thirds of arable land by 2025 (*Afrique en ligne*, November 2011).

51) One consequence of all these phenomena will be internal migrations within the continent, and decision-makers will have to find ways to manage, efficiently and peacefully, the mobility of populations both within each country and between countries. These same decision-makers will also have to introduce and implement methods of managing natural resources (forests, water, mining resources, etc.) that promote sustainable development, that is to say, according to the initial definition of this concept, a development which "meets the needs of the present without compromising the ability of future generations to meet their own needs" (Brundtland Report).

52) The critical skills that the education and training systems are called on to promote will have to integrate all the dimensions of a type of development that responds to the continent's specific demographic and ecological features. They will have to help conceive of an economic growth and a labor market that are able to take into account the changing living conditions of the populations concerned, especially the most exposed populations. They will have to respond to their combined needs for economic, professional and social integration in the framework of production methods that guarantee both a decent income and a maximum level of conservation of the ecosystems of which they are both the heirs and the custodians.

1.2.8. Promoting peace and stability as foundations for development

53) The governments that adopted the Dakar Framework for Action in 2000 stated then that conflicts were "a major barrier towards attaining Education for All" (UNESCO, 2000). If we consider that 21 out of 54 countries in Africa have been or are in a situation of conflict in recent years, it is clear that one of the main factors making it impossible for Africa to attain the MDGs is the armed conflicts that have plagued much of the continent. The studies carried out by UNESCO in 2011 clearly show that countries affected by violent conflict are lagging behind in the field of education. This observation is valid as much for the rates of attainment of EFA as for secondary school attendance and literacy rates. It is generally translated as years of schooling lost (for example 3.4 years in Burundi or 5.3 years in Mozambique according to UIS data). This educational

decline is the expression of a whole range of traumatizing factors, the effects of which seriously handicap the very foundations of development. First of all, there is the fact that armed conflicts are increasingly directed against civilians, including children. They represent, for whole communities, an ordeal of suffering and insecurity which challenge these communities' ability to ensure a viable economic, professional and social future. Then there is the harsh reality of the different forms of violence perpetrated against civilians, which have devastating consequences on their physical, psychological and moral integrity, the most common expressions of which, in terms of education and training, are stunted growth or serious impairment of learning ability. Lastly there is the damage to the fabric of economic activities, which has an immediate impact on growth and, of course, on employment as well as on the integration of young people, in particular ex-combatants.

1.2.9. How to walk while others are running

54) These are not insurmountable handicaps. There is, as mentioned above, Africa's rich historical heritage which will have to be placed at the heart of any education and training strategies and projects in order to foster young people's knowledge and skills in a close relationship with their cultures, their languages and the continent's history. There are the immense natural resources to be tapped, made up not only of the extensive arable lands available but also the mining, water, forestry and energy resources. These will have to be exploited and managed in pursuit of a growth that respects the right of future generations to inherit a habitable, welcoming and environmentally-rich planet. There is, lastly, the key capital which is the population of Africa with its immense reserves in human capital: a population that is already and that will be the youngest population on the planet; working women whose increased access to education and training will underline their indispensable role in disease prevention and health care, but also in encouraging school attendance and social inclusion; the numerous illiterate adults who thanks to access to a minimum set of core skills will be able to progress from being actors in a subsistence economy to being actors in an economy of growth and development.

55) Sustainable development will only become a reality in Africa if all the countries that make up the continent invest significantly and efficiently in the acquisition by all of the critical skills needed for a growth comprised of wealth, value added, but also shared work and a common effort to forge a society that is cemented around the values of equity and peace. As one expert in African development (Mkandawire, 2009) has put it, it is not enough for Africa to advance. It must run in order to gradually catch up with the other continents which are continuing to walk on the path to development. But this race cannot be run without a maximum investment, more than is being invested today, in education and training policies that are effective, sustainable and widely accessible.

2. IDENTIFICATION AND PROMOTION OF CRITICAL SKILLS FOR THE ACCELERATED AND SUSTAINABLE DEVELOPMENT OF AFRICA

> *"L'avenir ne s'écrit par dans les richesses des sous-sols «mais dans les têtes"* (The future does not lie in resources underground but in people's creativity) (J. Attali, 2006)

56) Considerable reflection and research has been carried out on the question of the type of relationship that exists between education/training and development. Although a causal relationship has not been scientifically established, numerous studies have demonstrated the positive correlation and link between education and training and various aspects of development (economic growth, health, food security, living standards, etc.) or development in general.

But what type of education and training are we talking about?

2.1. It's the skills that makes the difference

57) All the analyses concur that high quality education does indeed have the greatest impact on development. However, this expression encompasses several meanings including that of excellence (elitism) and that of the success of learning by all (the democratic culture of quality). From the point of view of skill, quality is no longer simply "the mastery of a set of theoretical or applied knowledge in the absolute", but rather "the capacity to transform specific knowledge into activities that can generate solutions with regard to a problem" (ADEA, ST3a, 2011). This is why the concept of skill also relates to that of innovation. It is not the acquisition of knowledge that is most important, but the development of the ability to use this knowledge creatively and productively in order to respond to personal or collective development needs in a specific environment.

In this sense, the stock and quality of generic and transferable skills is what makes the difference between countries (Thurow, 1994): labor productivity, ability to attract investment, economic competitiveness, social development, etc.

Which critical skills should be prioritized to tackle the challenges of sustainable development in Africa?

58) Once again, the choice of which skills to prioritize is determined by the analysis of each country's specific context and its development goals and plans. However, in the light of the sustainable development challenges to be tackled at the scale of the continent, of the different countries' commitment to the Millennium Development Goals, of the fact that Africa's economy is lagging behind, and given the context of globalization, three categories of skills have been targeted:

- Common core basic skills;
- Technical and vocational skills;
- Science and technology skills.

2.2. Common core skills for responsible and active African citizenship regarding sustainable development

59) Common core skills fulfill the entitlement to education for all and open the door to the exercise of the other fundamental human rights. They also cultivate human capital as a factor in and prerequisite for development. In the context of sustainable development, the cultivation of human capital goes hand in hand with the cultivation of human beings, who are both its foundation and its purpose. And this cannot be done without cultivating citizenship. In other words, the awareness, responsibility, commitment and action of all individuals, regardless of their age, gender or origin, is a prerequisite for sustainable development in order to bring individual and collective attitudes into line with the environmental, social, economic and cultural requirements for sustainable development.

2.2.1. A systemic curricular approach to promote basic skills

60) With regard to the current policies and experiences underway in African countries, the common core skills approach calls for the elaboration of a profile of basic skills around which the whole curriculum can be built and which:

- Integrates, within a systemic and consistent curricular approach to basic education, the political, economic, social and cultural strands of the crucial challenges and major assets to be exploited in Africa and in the different national contexts (BEAP – UNESCO – BREDA);
- Targets mastery of the tools for learning and for basic knowledge that are needed by every human being "to be able to survive, to develop their full capacities, to live and work in dignity, to participate fully in development, to improve the quality of their lives, to make informed decisions, and to continue learning" (Jomtien Declaration, 1990);
- Integrates the need for continuous adaptation to a rapidly and radically changing world, and thus lifelong learning as well as the different opportunities for formal, non-formal and informal learning (UIL, 2011);
- Breaks down the barriers between disciplines in an approach that links learning to the problems of the surrounding society (CONFEMEN, 2011) ;
- Adequately plans and specifies learning in relation to the needs and possibilities of each age group, paying particular attention to stimulating the learning and socialization potential of pre-school age children in order to help them succeed educationally, socially and economically (Working Group on Early Childhood Development);

- Subscribes to teaching/learning methods based on active learning and interactions between training and the problems of the surrounding society (pedagogy of the text, etc.).

The three major thrusts of the Basic Education in Africa Program (BEAP, UNESCO/BREDA)

- Extension of quality basic (primary) education to a minimum of 9-10 years duration, thus including lower secondary education;
- Viewing this cycle in a holistic perspective, ensuring that it is inclusive, coherent and seamless;
- Development of a skills- and competency-based integrated curriculum framework relevant to the expectations and needs of all children and youth in Africa as a basis for integration into the labor market through an introduction to entrepreneurship and for lifelong learning.

2.2.2. The outline of a set of common core skills for responsible and active African citizenship regarding sustainable development

61) These analyses and reflections have brought to light the outline of a set of common core skills for sustainable development in Africa which focuses on three basic capacities:

- The capacity to communicate and to learn to learn, made up of two types of skills:
    a) Communication skills: language proficiency in bi- or multi-lingual contexts, literacy and numeracy skills;
    b) Cognitive skills: mastery of the different mental skills (ability to observe, process knowledge, analyze, conceptualize, summarize, make assessments and take rational decisions) and approaches involving problem-solving, critical thinking, scientific literacy and innovation, with a view to learning to learn as a basis for lifelong learning.
- The capacity to effectively integrate the community and the world of work:
    a) Social and citizenship skills: learning to live together without discrimination, to cooperate with others, manage conflicts, respect differences, come to terms with change, promote democratic processes and peace, fulfill one's rights and obligations, and work towards a better future for society as a whole;
    b) Work-related skills, including generic skills relating to economic and social development (knowledge of the world of work and its demands and opportunities, exploration of one's own potential to benefit from vocational guidance, development of a spirit of initiative for self-employment, creativity and employability) and/or specific skills developed in line with labor market opportunities.
- The capacity to ensure one's personal development and to contribute to the development of pan-Africanism:

a) Life skills and personal development skills enabling people to deal with specific challenges in their environments (health: HIV-AIDS, malaria; environment in the context of drought, desertification, water shortages; nutrition in the context of food crises and food quality; social protection as synonymous with the fight against poverty and deprivation, security in the context of armed conflict and devastation, etc.) and to be able to make life choices successfully (making personal decisions, positive thinking, motivation, autonomy, initiative, etc.);
b) Pan-Africanist skills, the purpose of which is to build an African identity through knowledge and understanding of the unity in the historical and cultural diversity of the continent (languages, culture and history), to contribute to shared knowledge, mutual respect and solidarity between different cultural groups with a view to promoting peace and African integration, and to play a part in the African renaissance movement.

This outline does not comprehensively cover all the teaching/learning, organization, assessment and trainer-training dimensions that are part of the overall curriculum and which are dealt with in the section on reforms. The key question raised for debate is whether Africa, like the European Union, can, on the basis of this outline, set in motion a process which will result in the drafting of a set of common core skills for an African citizenship that is responsible and active with regard to sustainable development.

Competency category 1: Using Tools Interactively	
Competency 1a	*The ability to use language, symbols and text interactive*
Competency 1b	*The ability to use knowledge and information interactively*
Competency 1c	*The ability to use technology interactively*
Competency category 2: The ability to relate to others	
Competency 2a	*The ability to relate well to others*
Competency 2b	*The ability to cooperate*
Competency 2c	*The ability to manage and resolve conflicts*
Competency category 3: Acting Autonomously	
Competency 3a	*The ability to act within the big picture*
Competency 3b	*The ability to form and conduct life plans and personal projects*
Competency 3c	*The ability to assert rights, interests, limits and needs*

Table 3 The OECD's framework of key competencies

2.3. Vocational and technical skills for high value-added growth and effective integration into the world of work

62) The 2008 Maputo Biennale strongly emphasized the contradiction that existed between the lack of importance given to technical and vocational education and training (TVET) in the African continent and the urgent need to invest heavily in raising levels of training and qualifications in order to wage an effective battle against the widescale unemployment and underemployment of young people. In response to this situation, it recommended massive investment in all kinds of formal, non-formal and informal

training, in order to make technical and vocational skills development (TVSD) an important factor in economic growth and integration into the world of work. In this way, it initiated the transition from the concept of TVET to that of TVSD, which is central to the theme of the Triennale.

2.3.1. The need to raise the skills levels of young people and adults in the informal sector

63) The research carried out in preparing for the Triennale shows that the observations made in Maputo are still, if not even more, relevant today. The exclusion of young Africans from employment or professional activity is still a major phenomenon that both affects the capacity to create wealth on the continent and contributes to the increasingly explosive social situation in different countries. The urban informal sector, made up essentially of small and micro-businesses, continues to grow, while remaining acutely under-qualified. The agricultural and rural sector, which provides work and the means of subsistence for large numbers of people, is still awaiting significant investment to raise skills and literacy levels in order to increase the productivity of its activities and the quality of its production.

64) Faced with this situation, it is necessary to provide effective responses to the frequently-identified skills shortages and to prioritize efforts to help young people into work. It will be necessary to move away from just "training people first and then getting them into work" to "professional development and integration on the job"; to draw on efforts aimed at reforming traditional apprenticeship and to support all forms of modernization that will help on-the-job training programs to better respond to the changing needs of the world of work and those brought about by technological transformations.

65) It is therefore proposed that priority be given to raising the skills levels of master craftsmen in the informal sector, who train 90% of young people entering the world of work. Training, re-training and enhancing the versatility of the adult working population as a whole is also recommended. The Triennale will, lastly have to respond to the urgent needs for investment in the agricultural sector in Africa, which represents 60% of the world's uncultivated arable land. The sector needs massive investment in the acquisition of skills relating to irrigation practices, the mechanization of production methods, soil fertilization, livestock farming and food processing, not to mention the qualifications required to bring about a "green revolution" without which there can be no sustainable development.

2.3.2. The simultaneous need to develop high-level skills

66) The report on TVSD next underlines the emergence of new economic and social priorities. It highlights the emerging need for high-level skills in the economic field and the necessity to train senior technicians with the right skillset to monitor and, if possible, anticipate changes and technological innovations, support the transformation of national production systems and promote the essential industrialization of the African economy. The Inter-Country Quality Node on Technical and Vocational Skills

Development (ICQN/TVSD, which was set up with the Triennale in mind, has strongly emphasized this point and stressed the importance of developing a TVSD system up to the highest levels of education and training, particularly in key future sectors and occupations.

Priorities for developing technical and vocational skills

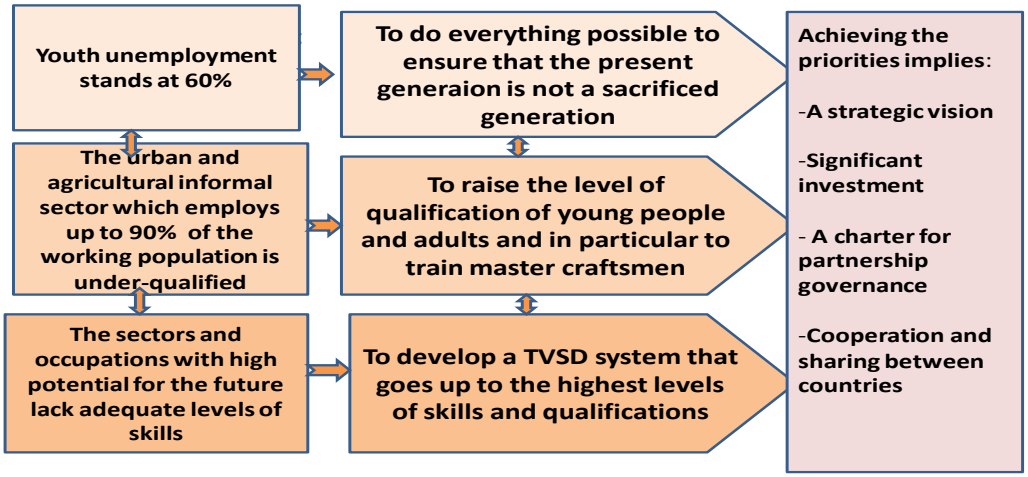

Figure 6 TVSD priorities

2.3.3. The need to develop a strategic approach to partnership and cooperation between countries

67) The TVSD report lastly points out that the design and delivery of an effective and appropriate response to the critical skills needs identified for Africa's sustainable development assumes the following paradigm shifts:

- As the private sector and civil society consultation emphasized, each country needs to adopt and implement a strategic, workable skills development plan in order to support growth that creates jobs and added value and leads to a revitalization of the various sectors of the economy.
- The pursuit of a strategy and operational plan for TVSD can only succeed within the framework of discussions between all public, private and civil society partners. This entails a profound transformation of TVSD policies, systems and programs, and, on a more tangible level, the adoption of a governance charter establishing an effective and transparent partnership between all the stakeholders.
- The analysis of change dynamics currently at work in the field of TVSD highlights the need to move away from purely national cooperation towards the inter-country and sub-regional levels. This means exchanging experience, designing TVSD programs in collaboration, and more broadly, pooling tools and methods such as information systems on labor markets, design of training programs, curricula or national and sub-regional certification systems. Only this sort of cooperation can successfully drive sustainable development.
- The national and inter-country contributions prepared for the Triennale lastly point out the difficulties related to the transition from the TVET paradigm to TVSD. To

successfully achieve this transition, there is a need for analyses, studies and research to identify the impact of skills development on wealth creation, on the enhancement of the quality and added value of products and services, and on the creation of jobs.

2.3.4. The urgent need for investment, to ensure that today's generation is not a sacrificed generation

68) The Triennale will have to identify opportunities for realistic and effective work and action to tackle the social and economic challenges facing Africa. To this end, it will have to respond to the pressing demand expressed by the Youth Forum by proposing short-term action and by inviting "all public and private players to invest in formal, non-formal and informal education and training schemes and pathways to the greatest extent possible so that the generation of today facing a great difficulty of insertion does not become a sacrificed generation". It will at the same time have to help formulate the medium- and long-term visions and actions. Here it will be a matter of encouraging all Africans involved to cooperate at all levels to implement TVSD systems and pathways that will be able to foster integration into the world of work and economic growth today, while also investing in those areas that will create employment and wealth tomorrow. This is the requirement of sustainable development, which can only be fulfilled by the equitable training of the greatest number throughout active life in order to control and, if possible, support and anticipate the social, economic and technological changes that will enable Africa to successfully meet the challenges of globalization.

2.4. Scientific and technological skills to build economies and societies in Africa based on knowledge and innovation

69) The current globalization process is characterized by the permanence of the scientific, technological and media revolutions, combined with the transnationalization of production and trade relations, and the reduction in distances, all of which is summed up in the "global village" concept. Research and development, knowledge and innovation have, within this process, become the principle factors of production, of economic competitiveness, and more generally of development.

2.4.1. Africa must catch up

Africa has enormous progress to make here. In 2011, only 6% of the relevant age cohort has access to tertiary education compared with 60% in the developed areas of the world (UNESCO, 2011). In 2006, whereas Africa had 35 research centers, North America had 861, Europe 1,576, and Asia 655.

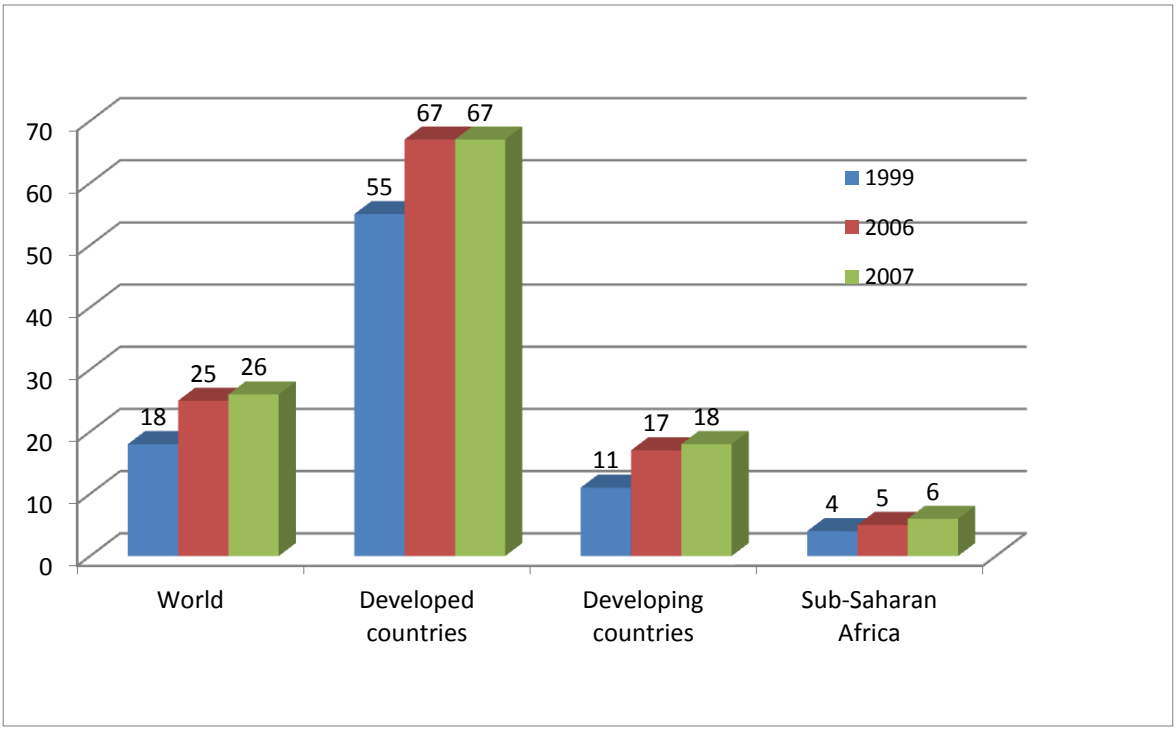

Figure 7 Source UNESCO, EFA Global Monitoring Report 2010

70) Faced with urgent and vital imperatives such as the management of natural resources and biodiversity, food security, the fight against poverty and pandemic disease and epidemics, and increased economic competitiveness, Africa must develop its skills in science, technology and innovation in order to enhance its assets and engage in a process of accelerated and sustainable development. Failing this, Africa will be condemned to a continued role as a supplier of raw materials and to continue pursuing strategies designed to ensure subsistence or at best to enable it to imitate and catch up, which will just make it lag further behind and get poorer.

71) On this subject, the diversity of the different countries must also be taken into account. As an example, the situation of tertiary education in Malawi, (39 students per 100,000 inhabitants) is far removed from that of South Africa (1,500 students per 100,000 inhabitants).

2.4.2. Choosing priorities in the development of scientific skills

72) Each country must as a result choose its own priorities for training a highly-qualified workforce and R&D capacities in those areas in which it has comparative advantages and where urgent or major needs exist. Some countries such as South Africa, Mozambique, Morocco and Tunisia are developing a strategic framework for building an infrastructure capable of producing knowledge, technology transfer and innovation. Other countries are adopting a sector-based approach in which programs and investment are linked to the relevant driving forces for development: agriculture, biotechnology, energy, ores and minerals, etc.

73) At the continental and regional levels (AU, NEPAD and the RECs), Africa, from the Lagos Plan (1980-2000) to the current Consolidated Science and Technology Plan of Action (AU/NEPAD, 2005), has always insisted on the key role of strengthening and using science and technology as key factors in socio-economic change and sustainable development.

74) At the level of the continent, the Consolidated Action Plan develops on the basis of three pillars (capacity-building, the production of knowledge and technological innovation) a series of flagship programs on biotechnology, biodiversity, indigenous knowledge base, water, energy, ICT, the use of basic technologies, mathematical and materials sciences, etc.

75) In most continental and regional reflections, agriculture is assumed to be the first stage in development and a priority area for scientific and technological investment to help with food security, the fight against poverty and, more generally, the achievement of the Millennium Development Goals, followed by the fight against pandemics and epidemics (HIV-AIDS, malaria, etc.), the preservation of the environment, the fight against drought and desertification, natural resource management and biodiversity, and increased economic competitiveness in Africa and internationally.

2.4.3. Achieving the major changes in direction

76) It is worth emphasizing three major changes in direction and structural changes in the development of STI skills in Africa: the integration of African indigenous heritage, education through science, and the use of ICTs. These all concern the education and training system as a whole and the development of scientific and technological skills also play a key role here.

77) The African indigenous heritage is made up of knowledge, practices and skills developed by local communities to respond to the vital needs thrown up by their particular environment. It is used as a basis for decisions, actions and the search for solutions pertaining to "food security, human and animal health, education, natural resource management and other vital activities" (Gorjestani, 2000). Increasingly, this indigenous heritage is being recognized as a factor in the effort to take ownership of sustainable development (World Bank, 2004). The relegitimization of the mission of the training and research institutes in Africa, as well as the relevance of what they produce, call for this indigenous heritage to be integrated in order to better know, understand, and take into consideration the needs of local communities and their approach to development problems. The interaction between this heritage and the sciences can enable a twofold change in direction: i) the emergence of scientific approaches that are more relevant and effective within the African context with, in addition, the production of specific knowledge that can contribute to international scientific development, and ii) the emergence of open and vibrant African cultures that are capable of taking modern science and technology on board and disseminating them widely in society.

78) Obviously, bi- or multi-lingual education strategies must serve to support these processes both in order to make learning easier and to affirm the African cultural identity.

79) As for education through science, this focuses – over and above science teaching – on the promotion of a culture of scientific literacy, which means understanding and encouraging the interaction of science with other fields of social, economic, political and cultural life in order to shed light on ideas and decision making, especially regarding the need for sustainable development. To establish this culture, education through science must begin at an early age through formal, non-formal and informal channels and take root in the social culture. The goal is to develop scientific skills related to the preoccupations of everyday life and to the development of innovation. The table below summarizes the differences between science through education and education through science (Holbrook and Rannikmae, 2009).

Science through education	**Education through science**
Learn fundamental science knowledge, concepts, theories and laws.	Learn the science knowledge and concepts important for understanding and handling socio-scientific issues within society.
Undertake the processes of science through inquiry learning as part of the development of learning to be a scientist.	Undertake investigatory scientific problem solving to better understand the science background related to socio-scientific issues within society.
Gain an appreciation of the nature of science from a scientist's point of view.	Gain an appreciation of the nature of science from a societal point of view.
Undertake practical work and appreciate the work of scientists.	Develop personal skills related to creativity, initiative, safe working, etc.
Develop positive attitudes towards science and scientists.	Develop positive attitudes towards science as a major factor in the development of society and scientific endeavors.
Acquire communicative skills related to oral, written and symbolic/tabular/graphical formats as part of systematic science learning.	Acquire communicative skills related to oral, written and symbolic/tabular/graphical formats to better express scientific ideas in a social context.
	Undertake socio-scientific decision making related to issues arising from the society.
Apply the uses of science to society and appreciate ethical issues faced by scientists.	Develop social values related to becoming a responsible citizen and undertaking science-related careers.

Table 4 Comparison between science through education and education through science

3. THE PARADIGM CHANGES NEEDED FOR THE REBUILDING OF EDUCATION AND TRAINING TO SECURE SUSTAINABLE DEVELOPMENT

If education is to "fulfill its potential as an agent of change towards a more sustainable society, sufficient attention must be given to education as the subject of change itself" (Sterling, quoted in ADEA, ST1, 2011)

80) Existing formal education and training systems in Africa are not generally the product of the internal development of African societies. They were imposed by colonization. Their outward orientation and inward-looking nature with regard to their surrounding environment generally persist despite the attempts at reform made since independence. The "colonial grammar" based on scholastic notions, abstract formalism, elitism and the exclusion of African heritage (languages and cultures) from schooling is still, consciously or not, the reference for the leadership which has emerged paradoxically from the illiterate masses which it marginalizes.

81) To promote policies and systems capable of providing critical skills for Africa's sustainable development therefore requires an epistemological and ideological break with the past and a substantial overhaul.

This calls for a systemically rethink of curricula:

- The goals and objectives underlying the philosophy of education and training policies and systems;
- Programs promoting the learning and training objectives and content;
- The teaching methods and learning environments that determine the quality and outcomes of the teaching-learning-training process;
- Evaluations designed to bring about the renewal of quality criteria and standards with regard to achievement;
- Professional development and perfection of teacher trainers;
- Leadership and governance systems with the necessary interaction between all education and training stakeholders.

3.1. Moving education and training policies and systems away from supply-led approaches towards demand-led approaches

82) The task of education and training derives its legitimacy not by meeting requirements, needs and objectives that are specific to the systems, but by serving society and its constituent communities. Children, young people and adults entering the education and training systems are expected to leave it with knowledge, skills and attitudes that effectively meet economic, social, political and cultural needs of their communities. This is why learning goals and objectives of education and training programs must be defined

after first analyzing and considering communities' needs in relation to the challenges of sustainable development.

83) Consideration of the economic dimension of these needs requires knowledge of the labor market potential and opportunities. With regard to the cases looked at, some countries are developing information systems, and others are setting up observatories to do surveys, research and studies for this purpose. From a broader perspective, the strategic shift towards the productive sector involves analyzing the needs of agriculture, industry and crafts and listening to formal and informal employers' views on current and future employability issues when it comes to increasing labor productivity and the competitiveness of businesses and the economy.

84) This approach is also social and cultural in nature. It requires the management of needs in the field of health, nutrition, water, sanitation, the fight against poverty, reference values, social cohesion, solidarity and identity. Interaction with communities having problems with these issues is vital in order to understand and deal with them when determining education and training policies and activities. This interaction also extends learning opportunities to different sectors of society, promotes a link between educational attainment and indigenous knowledge and practices and thus strengthens the relevance and effectiveness of actions aimed at securing sustainable development.

3.2. Curriculum reform: from the mastery of "decontextualized knowledge" to the acquisition of skills

85) The shift away from supply-led approaches to responsiveness to the demand of the economy and communities was strongly requested by the private sector and civil society during the consultation process. It means learning must focus on the acquisition of the skills identified above. The concept of skill, as a combinatory form of knowledge that makes use of theoretical, procedural and environmental knowledge, or learning, know-how and life skills, to solve problems, make decisions, carry out plans, etc.", requires at least three major changes in the way curricula are designed and developed. The first concerns the fragmentation, compartmentalization and analytical and accumulative acquisition of knowledge traditionally transmitted in school learning, in line with disciplines, subjects and timetables. Such approaches make school learning removed from the issues and problems of everyday life and specific contexts.

86) Regarding this point, skill is paradoxically part of the multi- or cross-disciplinary integration process insofar as it is a combinatorial form of knowledge. The second major change concerns the purpose of learning, which is not just about mastering facts. It is more a matter of learners' ability to use this combinatory form of knowledge, and their interest in doing so, in order to meet the specific and significant challenges of their environment to secure individual and social benefits. With regard to the third major change, skills acquisition is not just about the transmission of knowledge through

teaching, but the construction of knowledge by learners when, during training, they confront the challenges of their environment.

87) Analysis of the African experience of skills-based curricular reform shows that these changes do not always happen on the ground. With regard to French-speaking countries, CONFEMEN highlights, among other lessons learnt about the challenges to be overcome, those relating to:

- the implementation and coordination strategies, which have suffered from hasty or excessively slow planning;
- the underestimation of actors' resistance to change;
- the lack of training of teachers and their management regarding the approach adopted;
- a lack of arrangements for monitoring and evaluation of the reform for adjustment purposes;
- the inadequacy of the educational, physical and financial resources deployed.

88) The educational traditions outlined above (including the fragmentation of learning and division of timetables and examinations into small units) pose major obstacles that cannot be overcome unless there is a cultural and structural change, which extracurricular and non-formal education and training environments seem to promote better than inflexible formal systems. The required changes necessitate flexibility and openness of the curriculum to adjustments in the pace and structure of learning (timetables and subjects) as well as interaction between education and the surrounding environment. This frees up some space and time for necessary initiatives concerning the development of multi- and cross-disciplinary activities, in connection with sustainable development issues to ensure holistic and inclusive education.

89) The evolution of TVET into TVSD indeed stresses the holistic and inclusive nature of TVSD, which is more flexible and more responsive to labor market demand. In this perspective, the skills-based approach is also integral to the transition from training to the world of work and it ensures interaction between the two processes.

Success here also depends on the degree of involvement of community and business representatives in the design and development of curricula.

90) The example of the New Brunswick Community Colleges (NBCC) illustrates the extensive involvement of business, employers and communities in designing and developing courses and programs. This is accompanied by the provision of a wider range of courses (more than 90 courses each year), applied research by teaching staff, and college involvement in local development and international cooperation. All these factors help enhance the employability of graduates. Some 90% of NBCC graduates find employment within six months of graduation (Assignon and Roy, 2011). It is noteworthy that 25% of 2006 graduates have set up their own business.

91) The development of scientific and technological skills is at work in the process of differentiating and coordinating higher education with major curricular reforms. The objective is to ensure the intra- and inter-institutional mobility and complementarity of courses in order to develop a specific response to different sustainable development issues.

The cases looked at show that, in addition to the obstacles already mentioned, these curricular reforms come up against an inward-looking notion of education and training rooted in academic and encyclopedic expertise.

The changes announced in the reforms, particularly regarding the development of relevant, holistic and inclusive education, cannot take root without challenging teaching/learning practices and processes, in other words, what is really taking place in the classroom or at the place of learning.

3.3. Educational reform: learning and skills development for sustainable growth

92) The training of those involved in sustainable development firstly means empowering them and getting them involved in efforts to tackle relevant issues and in finding solutions. This is indeed the objective of the "Copernican revolution" in learning, in other words the shift in focus from the teacher and teaching to the learner and learning, including in the science field. This has been demonstrated by the Japan International Cooperation Agency (JICA).

> "Regarding the 'implemented curriculum', namely, lesson delivery, in School Science, teachers pay special attention to bringing out learners' ideas and opinions. In order to do so, it is critically important for teachers to provide learners with a problem that is interesting enough to motivate learners to think and discuss. By bringing out learners' ideas and opinions, teachers can understand learners' pre-instructional conceptions and how they have been formed. According to the nature of pre-conceptions that learners have, a teacher makes decisions on how to deal with the pre-conceptions to modify them to scientific conceptions. One of the important roles of teachers is not to give a correct solution, but to let the learners find or construct a solution (a scientific concept), for example, by posing questions, clarifying issues for learners to think, and sorting out similarities and differences in opinions raised by learners" (JICA, 2011).

93) Learning to learn, motivate oneself and develop tools and approaches for learning from one's own and others' actions (group work and peer learning) are part and parcel of the lifelong learning process. Whether motivation is of a personal or professional nature, this is really a training process that can enhance personal development, active citizenship and employability (ERNWACA, 2011)

94) Research (Pedagogy of the Text, JICA, 2011, Acker and Hardeman, 2001) emphasizes the need to change the educational foundations, that is to say, to move from an almost exclusive focus on formal knowledge and its transmission to the development of learners' ability to mobilize, integrate and use things they have acquired, including indigenous knowledge and practices, to address a problem. In other words, this means

the possibility for learners to build real skills related to challenges that are characteristic of their local, regional, national, continental and global environment (BEAP, Curriculum 2005 in South Africa, Pedagogy of the Text, 2011). The fact that technical and professional skills developed through training do not match those required by the market confirms the need to make this connection.

95) This implies the need for learning outside the confines of the institution. To develop scientific and technological skills, some schemes thus involve students in surveys and research projects focused on the issues faced by local communities. The aim is to examine these issues with the people concerned, to learn what they do and know and to compare this with scientific knowledge and approaches in order to forge a useful and effective approach to problem solving. In doing so, students develop skills they can use in order to provide effective responses to community needs.

96) Changes in learning needs and approaches may be limited or even fail to have an impact if we do not change what is assessed and how this is done. In other words, traditional knowledge tests and examinations are obstacles to curricular and educational paradigm shifts. Because the results of assessment determine what teachers teach and learn. It is therefore no longer just necessary to assess the learner's mastery of facts, but rather their ability to use effectively and creatively what they have learned in order to cope successfully in a difficult environment. This transforms the criteria and indicators of successful learning and the nature and substance of the assessment tests. Some approaches go further by linking the assessment of learning achievements (in terms of graduate numbers) to the evaluation of their impact in terms of external efficiency, i.e. graduates' effective ability to find a job and get on in the world (CNNB, 2011).

> The introduction of any new program at the college is always the result of a collective effort of relevant stakeholders including experts in the proposed area of professional activity, teachers, curriculum developers, and the various academic boards. Normally the demand to mount a new program must come from the local community or industry or be based on a scan of the job market environment. Assessment of learner achievement is carried out on a continuous basis, is outcome-based and involves teachers as well as personnel from industry (Assignon and Roy, 2011).

Teacher/trainer impact is central to these changes. This requires both a cultural change and the professional development of teachers, who are pre-requisites for the conditions of success of the reforms, just as leadership is.

97) Governance based on partnership and participation is supposed to provide an environment conducive to community and systemic reforms with a view to promoting critical skills for sustainable development in Africa. This is dealt with in the challenges regarding the environment and prospects for moving forward.

3.4. Integration of key sustainable development education and training issues into curricula

98) It is worth remembering that these vital issues with regard to Africa's sustainable development relate to four aspects of the conceptual framework of the Triennale: i) protection of the environment and preservation of natural resources, and particularly the risks of drought and desertification threatening the continent due to global warming, ii) the promotion of a model of economic growth that is both accelerated and sustainable, because it is based on the rational and efficient use of resources iii) the construction of inclusive societies founded upon the need to work hard to eradicate poverty and all sources of discrimination and marginalization and iv) the strengthening of mutual cultural and spiritual knowledge and understanding in order to eliminate conflicts and civil wars and promote solidarity among peoples, peace and continental integration.

The question is, how can these different dimensions of development be integrated into education and training curricula?

3.4.1. Adopting a systemic approach

99) In the cases studied, some countries have opted for a systemic approach which consists in reviewing the curriculum for basic education or for the entire system. This exercise may be accomplished using a key environmental, economic, social or cultural factor to align the whole curriculum with the associated goals. For example this is the case for Ghana, which has chosen a key socio-economic factor to identify which skills need to be developed to help young people find their way into their labor market. Reform then entails an alignment of curricula to the requirements of the labor market (ERNWACA, 2011).

100) Bearing in mind the interdependence between human well-being and a healthy environment, Kenya's integration strategy involves the entire formal, non-formal and informal system, from pre-school to higher education and adult education in "learning about environmental action". It has five strands: i) the environmental development project, Eco-Code, mobilizing schools and surrounding communities, ii) the development of local curricula adapted to specific contexts; iii) local school-community cooperation to develop environmental projects and iv) programs for networking and exchanges between schools using websites and various media.

101) In Mauritius, the key factor also entails an environmental approach, but one that is based on a critical learning approach which considers learners not as beneficiaries but actors in environmental education. This education promotes environmental literacy giving participants a tool for critical reflection to analyze and evaluate the importance of harmonious interaction between all living things and between different living things and the environment, while recognizing the challenges to be overcome and efforts required

in order to achieve this. This “environmental literacy” is part of a comprehensive, inclusive and lifelong process of transformation.

102) These systemic approaches seem to converge towards the guidance given within the framework of the UN Decade of Education for Sustainable Development, which is to ”integrate the values inherent in sustainable development into all aspects of learning to encourage changes in behavior that allow for a more sustainable and just society for all” (UNESCO, 2006)

3.4.2. . Focus on one or more promising future disciplines

103) However, some experiences prescribe other integration models, such as those that identify and exploit promising future disciplines such as civic education, geography or life and earth sciences, not to mention other disciplines such as languages, mathematics, etc. The approach entails integrating sustainable development issues into the contents and goals of these disciplines, in accordance with their own content and objectives, which are: to include environmental responsibility as an element of civic responsibility in civic education, to incorporate educational texts on sustainable development in language learning, to suggest calculating poverty levels based on the unequal distribution of GDP between a given number of inhabitants in a given country, and so on. Efforts to integrate environmental education in one or more promising disciplines like this may be occasional, systematic, additive (entailing additions to the content and objectives of the discipline) or transformational (redirecting and restructuring of the discipline).

3.4.3. Exploring extra-curricular integration

104) Moreover, there are various examples of extra-curricular sustainable development education within the systems. In DRC and Ivory Coast, peace education is organized in peace clubs, at theaters or at sporting activities held in educational and training institutions.

Following the Latin American model, some African countries are also experimenting with education for democracy and citizenship by organizing and operating schools and classrooms run by governments of schoolchildren elected by their peers.

In sum, different aspects of sustainable development can be integrated in various ways, but this does not require the introduction of new disciplines on top of existing ones. Rather, it requires the redirecting and restructuring of these, or better, the entire curriculum to make it consistent with the sustainable development objectives.

3. 5. National frameworks for the recognition and validation of prior learning

105) The decision taken at the Maputo Biennale to fully integrate the formal, non-formal and informal routes of acquiring knowledge and skills within a holistic approach to education and training placed the recognition, validation and accreditation of prior learning at the center of ADEA debates. This issue is vital for the promotion of critical skills for sustainable development to the extent that such skills are not necessarily produced a formal manner and must be identified and valued regardless of how and where they are developed. It is important to give visibility and social recognition to all the efforts the different countries have made to ensure their people are up to the task of meeting the challenges of their economic and social development.

3.5.1. Recognition and validation of prior learning across the world

106) The emergence of strong demand for education and training among both young people and adults, as well as the development of types of non-formal and informal education that can help meet this demand, have given rise to a wide range of experiments, schemes and/or structures for recognizing and validating the knowledge and skills acquired. A UNESCO report (UIL, 2011) highlights a number of decisions taken at country level, at the level of communities of countries, and at the institutional level to validate and recognize the outcomes of non-formal and informal learning.

107) In 1990, Japan in 1990 adopted its law for the promotion of lifelong learning, which complemented a range of legislative measures passed between 1969 and 1987 promoting human resources, which encouraged employers to develop the skills, abilities and experiences of workers to respond to social, industrial and technological change and the internationalization of economic activities. In 1999, Thailand enacted a law on the promotion of lifelong learning and, in 2002, its basic law of education, which decreed that education and training must be accessible to all and organized in three ways – formal, non-formal and informal – while ensuring, as appropriate, the specificity and equivalence of the various routes thus developed.

108) In 2002, France published its "social modernization" law, which stipulates that any diploma or qualification may be obtained by both the academic route and through the validation of acquired experience. The law's adoption was accompanied by the establishment of the French National Committee for Professional Certification (CNCP), which gives a joint certification authority to the public authorities and social partners. The CNCP is also responsible for producing a national directory of vocational qualifications (NCPR), the purpose of which is to publish all known qualifications in order to facilitate people's lifelong career paths.

109) Also in 2002, the European Council adopted a resolution on lifelong learning, which states that validation and recognition of prior learning is applicable for both formal and non-formal/informal education and training. In 2004, the European Council adopted a set of common principles, valid for all countries, on the identification and validation of various education and training routes. With this in mind, in 2007 Norway and Denmark both adopted national strategies and measures establishing the entitlement to recognition of skills acquired non-formally or informally, thus creating real lifelong education and training opportunities.

110) In 2008, the European institutions adopted a European Qualifications Framework (EQF) which aims to establish links between different countries' certification systems for eight reference levels, describing the knowledge, capabilities and skills to be acquired by learners at each level. It promotes lifelong education and training by promoting the validation of non-formal and informal learning. The Education and Training 2010 Programme adopted by the EU aims to strengthen strategies and practices for validating non-formal and informal lifelong learning routes and create positive synergies between countries that have made different degrees of progress in this area.

3.5.2. The current African process for recognizing and validating prior learning

111) Africa has begun the process of recognition and validation of prior learning, in the same way as Europe and other continents.

In the early 1990s, South Africa established a national qualifications framework (NQF) after consulting the social partners. The aim was to reduce the very wide inequalities developed under apartheid between the various different education and training routes, to recognize the skills acquired by the black labor force outside the established system and, more broadly, to promote lifelong learning. The NQF has been developed by the South African Qualification Authority (SAQA), which was set up in 1995. It recently adopted a qualification classification system comprising ten levels, facilitated the inclusion of vocational bodies and vocational qualifications, and worked to achieve acknowledgment and esteem for all forms of skills, especially those acquired in working situations (ADEA, NQF, 2011)

112) Mauritius established the Mauritius Qualifications Authority (MQA) in 2002. It has set up a NQF that has promoted the recognition of prior learning in order to develop the skills and qualifications in economically-promising sectors (2009). Through these measures, it promotes the social and professional mobility of the skilled workforce, thus strengthening the economic performance of priority sectors. The MQA has also decided to promote adult literacy (2010) to combat poverty, and to enable those who are literate to embark upon a career development process.

113) Other countries such as Senegal, Uganda, Malawi, Botswana and Namibia have entered into active phases of validation of non-formal and informal modes of skills acquisition. However, according to the work conducted in September 2011 in Abidjan by the Inter-

Country Quality Node on Technical and Vocational Skills Development (ICQN/TVSD), inter-country consultations have started to get underway, focusing on validation and, more broadly, the creation of national or regional qualification frameworks. For example, under the aegis of ECOWAS, UNESCO organized a workshop on the establishment of a regional accreditation framework. The WAEMU ministers for employment and training meeting in Bissau in July 2011 also considered the creation of a qualifications framework common to all the countries represented. The countries of East Africa and Central Africa (DRC, Burundi, Rwanda, etc.) met in 2010 in Kigali to consider the harmonized development of a system for acquiring and validating skills. Since 2010, all Portuguese-speaking countries have been working together in the PIRPALOP project to harmonize legal frameworks for vocational training. The SADC, finally, has been working since 1997 on the possibility of establishing a regional qualification framework (RQF).

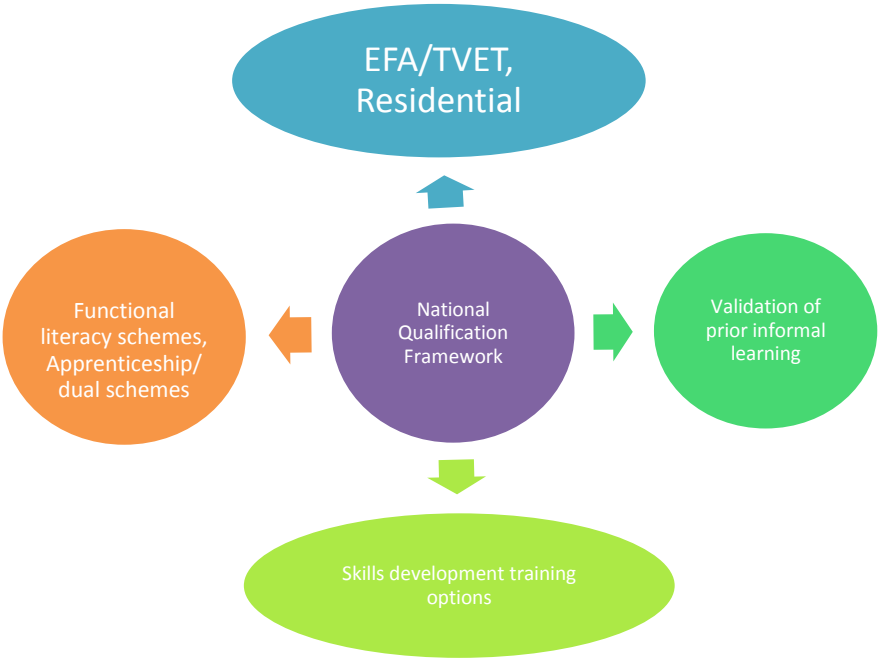

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Figure 3 The positioning of NQFs within education and training systems

3.5.3. Future prospects for the development of national and sub-regional certification frameworks

114) The conclusions of the ICQN/TVSD meeting and the comparative study by the German cooperation agency GIZ on existing and emerging NQFs in sub-Saharan Africa (ADEA/GIZ, 2011) give a number of guidelines regarding the strategic importance of the recognition and validation of prior learning and the design and implementation of a national qualifications framework. These may be resumed as follows:

- The recognition of all forms of acquired skills gives consistency to the concept of an education and training system that covers non-formal and informal forms of acquisition of knowledge and skills and which thus recognizes the achievements of people with no recognized diploma or qualification;

- The need to avoid designing and developing over-elaborate and over-expensive NQFs when seeking to recognize and validate achievements. Given the current state of education and training in Africa, it is better to prioritize the beneficiaries and emphasize those who do not have access to existing forms of recognition and validation, including young people and adults in work.
- The joint involvement of various partners, above all the social partners, professional organizations and chambers of commerce in the process of validation and certification is becoming essential.
- Inter-country and sub-regional cooperation saves time and increases quality when it comes to the development of NQF tools and methodologies tailored to the real needs of countries. It also promotes economic synergies and mobility of workers between countries, depending on the identified needs of the labor market.

115) The 2011 meeting of the 19 member countries of the ICQN/TVSD in Abidjan led to the proposal to establish, as part of the ICQN, a cross-country working group and a regional platform to exchange experiences and information in the field of validation of prior learning and the setting up of national and sub-regional qualification frameworks. Such a proposal can only encourage the promotion and recognition of the critical skills that Africa needs in order to promote its sustainable development.

3.6. The necessary integration of ICTs into education and training systems

116) New information and communication technologies (ICTs) are playing an increasingly central role in all areas of life, for individuals and societies (WSIS, 2005). They are at the heart of what we call knowledge economies and as such their speed of integration in all sectors of these economies, particularly in the areas of education and training, is a factor that determines whether the growth of a country, sub-region or entire continent accelerates or slows down.

117) At the 14th Summit of the African Union (AU), held from January 31 to February 2 2010 in Addis Ababa, the Heads of State of African countries expressed their determination to harness the potential of ICTs in order to stimulate the process of integration and development of the continent, in particular through the implementation of the African Regional Action Plan for the Knowledge Economy adopted by the ministers of information technology and communication. As Kofi Annan said in Tunis (WSIS, 2005), these technologies are certainly likely to give a fresh impetus to the development of poor countries' economies and societies and improve the living conditions of poor. ICTs therefore offer an essential means of securing sustainable development.

3.6.1. Africa is now entering the digital age at full speed

118) There is still a digital divide between Africa and other continents. However, the development of ICTs over the last decade shows that this divide is narrowing. According to data from the International Union of Telecommunications (IUT) on ICT penetration

rates[1] on the African continent, there was a dramatic increase in all technologies from 1998 to 2008. Thus, between 2003 and 2008, annual growth rates for internet and mobile telephony in Africa were almost two times higher than those recorded in the rest of the world. As well as this, the ACE (Africa Coast to Europe) submarine cable will be launched, serving 23 African countries and providing bandwidth 1500 times higher than SAT-3, which will continue to operate in parallel (Humanitarian Techno Pole, 2010/2011).

119) This progress with regard to infrastructure would not be totally effective if it were not accompanied by a mobilization of African expertise to support the pursuit of the new opportunities offered by it. However, several recent initiatives, which were presented at the Youth Forum held in October 2011 in Rabat by ADEA as part of the Triennale preparation process, show that this mobilization is underway and offering the continent the extensive expertise acquired by the new African generation. Thus a first initiative called Africa 2.0, which is based on the advent of Web 2.0 and allows interactivity between internet users, brings together young leaders from all African countries and the diaspora to promote a common vision of the continent's future and devise various ways and means of giving substance to this reality. A recent meeting in Mombasa, Kenya, brought together 250 young business leaders, social entrepreneurs and opinion leaders from 40 countries to develop a common strategy for ICT development that would enable the continent to make significant progress in this area and thus greatly accelerate its development. A second initiative entitled Coders4Africa provides free access to high quality training for programmers and developers of African descent in the software industry. The immediate objective is to train 1000 programmers and software developers in Africa by 2016 and thereby “contribute practically and effectively to the development of human capital in Africa through the means of technology … [which] is indispensable in reducing poverty and developing any type of economy.” The objective in the medium and long term is to “create a community of African programmers that share and transfer knowledge among themselves and to future generation of programmers.” (from the organization’s website).

All of these significant advances by Africa in the digital domain offer a good chance to improve the integration of ICT into education and training systems, schemes and sectors.

3.6.2. ICT literacy has become an essential component of sustainable development

120) The paradigm shift advocated by the theme of the Trienniale assumes it is possible to move away from the teaching of decontextualized formal knowledge towards the

[1] The concept of ICTs currently includes mobile phone subscriptions, subscriptions to fixed telephone lines, internet usage, subscriptions to fixed broadband and mobile broadband subscriptions..

acquisition of knowledge and skills to better understand different personal, professional and socioeconomic situations and to act accordingly in order to live better and work and participate more effectively in the development of the whole society. Technology expertise is part of the knowledge and critical skills to be acquired. It is an integral part of new learning methods, which are increasingly necessary for the current generation of learners. These methods increasingly include the ability to use different types of media, to identify and analyze the quality and relevance of information available on the internet, which is growing at an extremely fast rate, to know how to engage in network cooperation relationships and activities, and to know how to build one's own individual learning path.

121) It would be superficial to consider ICT literacy as simply the ability to improve one's use of technical tools. The rapid development of new technologies is changing the relationship between individuals and society. It entails the construction of knowledge and competence that emphasizes personal ownership while making it increasingly interconnected with all other actors in the same field. In this sense, it is not just a tool for improving education and training, but is also a factor that is changing cognitive processes and therefore transforming existing systems.

3.6.3. The gradual introduction of ICT into national policies

122) It is not easy to establish an overview of how ICT is implemented in different countries. Research conducted as part of the Panafrican Research Agenda on the Pedagogical Integration of ICTs by ERNWACA and the University of Montreal in conjunction with other institutions (the UNESCO Institute for Statistics) and networks (SchoolNetAfrica, the African Virtual University, Gesci, eLearning Africa, Apreli @, etc.) give an initial idea of how countries are building ICTs into their national policy. An analysis of 27 countries (Newsletters PanAf, 2009) shows that "all the countries look at ICTs as a means of resolving certain developmental problems and have thus generated visions and goals that implicate ICT in social and economic development. The policies account for ICTs being involved in poverty eradication, health, better education and good governance for example."

123) However, the development of ICTs faces a number of major challenges including inadequate infrastructure, lack of staff and poor access among the groups of people concerned. To overcome these difficulties, it is not enough for each country to devise its own specific solutions. The study proposes an inter-country partnership to work with local and international investors and cooperation with major international organizations. It will be important to achieve economies of scale and pool design efforts and resources, otherwise it will be difficult to create an environment conducive to effective implementation of ICT.

3.6.4. The difficulty of integrating ICTs into teaching

124) A study in the same research program (PanaFEdu, 2011) on how more than 100 African institutions (from primary school to university, in both urban and rural areas) organized

the integration of ICTs and thus increased ICTE (information technology and communication for education), has drawn some instructive conclusions as to how African education systems and training will have to take ownership of ICTE. A comparative analysis of schools' practices highlights several major hurdles that must be passed in order to ensure the successful integration of ICTs into teaching.

- **First hurdle: ICT usage must be fundamentally transformed**

125) The survey revealed that in over 80% of cases, ICT education focuses on how technological tools work. New technologies are used in only 13% of cases to facilitate the teaching of school subjects. They are only used for enabling schoolchildren and students to acquire knowledge on their own in 5% of cases. Schoolchildren and students therefore have virtually no chance of learning how to use ICTs in the various areas of their personal, social and professional life.

- **Second obstacle: the lack and poor quality of equipment must urgently be dealt with**

126) The student/computer ratio is usually too high to allow reasonable use of the computer for each individual. An analysis of this ratio in higher education institutions in six countries (Cameroon, Ivory Coast, Ghana, Kenya, Senegal and South Africa) shows that this ratio ranges from 8 to 295 students per terminal. In certain cases learning takes place in absurd situations, thus preventing any real learning. This makes it difficult if not impossible to learn how to use computers. There is also the difficulty of access to the internet, given the slow connection speeds.

- **The third hurdle: teachers must be helped to take ICTs on board**

127) The study refers to teacher training colleges which include ICT learning for future teachers, but the lecturers themselves are unable to use the technologies and methodologies they are supposed to be teaching. This raises the important problem of capacity building within education and training itself. It is necessary first to strengthen teachers' technological culture, and second to train them in an educational context where users learn to take ownership of ICTs and thus acquire information and social skills as well as the skills they will need for work.

3.6.5. In conclusion: create an effective African "strike force" in the field of ICT

128) Much remains to be done to ensure that ICTs are fully integrated in education and training in Africa. This means investing in guidance on the use of ICT in national education and training, the purchase and maintenance of equipment, the provision of good internet connections and the design and development of curricula that introduce new technologies as a means of learning and acquiring knowledge and critical skills, both at a personal and at a professional and technical level.

129) The current situation shows that the most active initiatives in the field of ICT are perhaps first and foremost being developed by the young leaders of Africa 2.0 and Coders4Africa in innovative experiments, such as those undertaken by the African Virtual University (AVU), launched by the African Development Bank, or e-twinning

arrangements promoted by various stakeholders including ADEA, CONFEMEN and UNESCO. The combination of all these actors working together will ensure that ICTs become part of effective, accessible and sustainable education and training systems, thus becoming ICTE. However, nothing will happen at all unless the countries, the sub-regional economic organizations and the AU give priority to infrastructure, equipment and intangible investment by creating an African "strike force" in the field of ICTs. The people who can bring this about are there, but they must be given the means to fulfill their capacity for initiative, innovation and mobilization, which are the critical skills Africa needs in order to participate successfully in the technological dimension of globalization.

To mobilize people even more, ADEA has decided to create a Task Force for the integration of ICTs in education and training in Africa. It is expected to propose areas of analysis, reflection and action to strengthen the role of ICTs in national education and training policies and to highlight their specific contribution to sustainable development.

3.7. The coordination of systemic changes and reforms specific to different levels and professions

130) The Maputo Biennale strongly emphasized that education and training systems should be coordinated in a systemic manner based on a new vision of the mutual links between them. It stressed the need to restructure the relationship between education and training to create pathways from one system to the other, of course ensuring that the vocational training system does not become a dead end for those entering it. On the other hand, the Biennale included formal, non-formal and informal education and training routes and resources in a single, integrated and coherent system and called for knowledge and skills to be recognized equally, however they are acquired.

131) The Ouagadougou Triennale further underscores this holistic approach by steering the whole range of different education and training paths and options towards the achievement of common goals: to give everyone access to critical knowledge, skills and qualifications to build the foundations for Africa's sustainable development and achieve environmentally-friendly growth while developing the social values of inclusion, participation and solidarity; to create, at the same time, the optimal conditions for lifelong learning, which is the only way to encourage the various different categories of young people and adults to pursue sustainable development objectives.

3.7.1. First challenge: to design and develop an education and training system tailored to economic, social and civic needs

132) The Triennale preparation process has identified a number of obstacles that prevent or hold back the necessary changes and reforms.

The first obstacle concerns the need to promote equivalence of the formal, non-formal and informal acquisition of knowledge and skills, as declared in Maputo. The purpose of

this was to acknowledge the means of acquiring knowledge and skills used by both professional and economic actors and civil society. However, the outlook is still very uncertain. Methodologies and tools for recognizing and validating non-formal and informal learning are still mostly in the planning or design phase. Work is underway at international level (UIL, 2011) and within certain countries to overcome the dominant "diploma" culture and develop alternative certification (SAQA, 2011; ICQN, 2011; GIZ 2011). However, this work needs to be exploited much further and stepped up. Otherwise the realization of an integrated and coherent African education and training system mobilizing all forces in society will remain a promise with little chance of being carried through.

133) The second obstacle concerns the problem of moving education and training systems away from being mainly supply-based, so that they taking into account economic and social needs, including those necessitated by sustainable development. The consultations with the private sector and civil society in preparation for the Trienniale strongly emphasized the need for a paradigm shift (Consultation Forum for the Private Sector/Civil Society in 2011). They stressed that such a change requires each country to develop a national strategic plan or policy developed in close partnership with economic, professional and voluntary sector partners. It also proposed that priority areas of skills should be identified in order to set in hand arrangements for developing them in the most effective way possible. The consultation also stressed that the lack of lifelong learning, especially for the adult working population (craftworkers, farmers, unemployed young people and leaders of professional and civic organizations), was limiting the successful pursuit of sustainable development.

134 The third obstacle concerns the difficult process of bringing about a transition from centralized governance dominated by the state to decentralized governance and partnerships. This difficulty was much emphasized by the Consultation Forum for the Private Sector/Civil Society, which brought together representatives of 19 countries in Abidjan, under the aegis of the Inter-Country Quality Node on Technical and Vocational Skills Development (ICQN/TVSD). With regard to basic education, decentralization facilitates the involvement of local leaders and parents, which is a key factor in ensuring its success for the benefit of as many individuals as possible (Burkina Study, 2011 and Duflo, 2010). It also ensures that TVSD takes account of local needs, thus ensuring a better response to businesses' skills requirements and helping young people to enter the world of work. (Consultation Forum for the Private Sector/Civil Society).

3.7.2. Second challenge: realign the conceptual and institutional relationship between education and training

135) The tailoring of the education and training system to economic and social requirements in order to promote sustainable development is significantly changing the principles and the practice of this system.

These changes are symbolized by the "common core skills" concept. By placing this concept at the heart of educational strategy, the theme of the Trienniale is encouraging current systems to adopt significant changes. This common core is indeed both for young schoolchildren and for young people outside school or working adults. It refers to a knowledge and skills base that is of a professional, social and individual nature, which every citizen has the right to access throughout their life and whose acquisition, in the context of lifelong learning, can help ensure sustainable development. However, the fulfillment of this entitlement can only be effective if future reforms relativize the established distinctions between education and/or initial and continuing training and create, within the existing systems, institutional structures or open multiservice platforms accessible at all times by any type of group (young or old, rural or urban, male or female, educated or illiterate). In other words, the acquisition of common core skills assumes a profound change in the existing divisions between the various education and training systems, routes and beneficiaries (ST 1, 10.10)

136) The conceptual and institutional change also concerns the relationship between general primary, secondary or tertiary education and what is known as technical and vocational education and training (TVET). The current rationale underpinning the relationship between education and training is based firstly on the principle of diversion due to failure and secondly on the principle of second chances. General education is still the preferred road to academic and social success. Vocational options almost exclusively concern those who fail to go up through the various levels of general education and are diverted to the margins of the system. Vocational training thus becomes an option offering a possibility to catch up or have a second chance and is, in most cases, basically regarded as young people's adaptation to the needs in the work of work. However, the concept of technical and vocational skills development (TVSD), as used in the ICQN/TVSD and as defined by the NORRAG network (Policy Brief No. 38) assumes that beneficiaries acquire "strong thinking and interpersonal skills", and that they follow a path that is different but also cultivates as much knowledge and life skills as general education. It is therefore more urgent than ever to place TVSD at the center of the overall knowledge and skills acquisition process and ensure it becomes a path to success that is very much as valued and rewarded as general education. This implies the creation of pathways in both directions between the two sub-systems and the equivalence, on the same level, of qualifications and certifications.

3.7.3. Third challenge: smooth the transition from the strategic dimension of reforms to the operational dimension

137) There is no doubt that most if not all African countries share the conviction that the promotion of critical knowledge, skills and qualifications is the best way to bring about the sustainable development of the whole continent. However, this almost unanimous conviction is not enough to design and build an effective education and training system.

138) The big problem in Africa, in the opinion of a group of African experts in education and training supported by the French Development Agency (GEFOP, 2010), is to move on from a strategic vision, when there is one, to the practical modalities of its implementation. GEFOP believes it is urgent to identify the various obstacles that are preventing the realization and implementation of reforms deemed appropriate and to design methodological tools on the ways and means of moving from concepts to practice and from successful experiments to full deployment and roll-out.

139) A first obstacle to the transition to deployment, both in the implementation of the skills-based approach and curricular reform, concerns teachers' resistance to these reforms (WGBLM, 2011). Some believe this is due to a lack of methodological support to help teachers understand and apply new approaches in practice (ERNWACA, 2011). Others say they are due to lack of teacher motivation (DUFLO, 2009), with one reason being their lack of financial reward and social recognition. The fact that both South Korea and Finland, for example, hold their teachers and trainers in high social esteem and occupy the top places in the PISA ranking suggests this explanation is plausible.

140) A second obstacle to implementation is of a sociological nature. It concerns the fact that academic success is mainly due to the social situation of privileged families (UNESCO, 2011), while failure is mainly due to situations of economic hardship, poor health and job insecurity (SADC, 2011). Thus the necessary changes need to be perceived in relative terms because, whatever the efforts made, successful changes almost always comes up against the iron law of social inequality. This shows that educational reforms are only effective if they are part of a broader strategy of economic and social transformation.

141) A final obstacle to the practical implementation of reform is of a budgetary nature. Cost analysis of training and employability (AFD, 2010) shows that the budgets allocated, both by central government and educational establishments, are primarily for functional purposes and include little or no intangible investment, which can promote educational innovation and the ongoing adaptation of systems and measures to current changes. Reforms are thus devised without those directly concerned being able to operate on a level playing field with sufficient financial resources to train and help them become effective actors in the process of change.

3.7.4. In conclusion: the Triennale should help identify the real drivers of change and put them into operation

142) Available data suggests that there are three drivers:

- an accurate understanding of the critical skills needed for sustainable development developed further to documented analysis of economic and social requirements;

- the repositioning of specific education and training routes within an overall system encouraging both the diversity of learning styles and their equivalence in terms of recognition and certification;
- the mobilization of all stakeholders around the need to develop effective and sustainable measures based on strategic visions adopted at national, sub-regional and continental levels.

The pursuit of these three drivers is the only way to enable Africans to "run" and have a chance of catching up with those who are continuing to progress in achieving sustainable development, where the acquisition of critical knowledge, skills and qualifications is becoming increasingly competitive (Mkandawire, 2009) .

3.8. The development of education and training policies, systems and strategies focused on lifelong learning

In Africa, lifelong learning is not taking root easily because of a number of obstacles that education and training policy makers and practitioners have yet to overcome.

3.8.1. A limited understanding of lifelong learning and related issues

143) According to the experiences studied (UIL, ERNWACA), the understanding of lifelong learning is still limited among policy makers, and even among education and training practitioners in Africa. There is a tendency to equate lifelong learning with adult education. Among the challenges facing the development of lifelong learning in Africa is the systemic paradigm that assumes the construction of learning systems that are more complex and diverse than existing ones in order to understand today's world. This does not appear to be the case in Africa.

144) Neither has it been established that lifelong learning is an essential dimension of sustainable development, in that it determines the ability of individuals and societies to adapt to the rapid and profound changes affecting the world. For individuals, it fosters openness, motivation and commitment to self-learning and continuous learning from others, while promoting the development of generic skills such as rationality, team spirit, problem-solving, critical thinking, innovation, adaptation to new situations. In collective terms, lifelong learning is a real driver of social transformation.

145) For the development of technical and vocational skills, lifelong learning requires flexibility to promote the transition from training to employment, employability and re-training by raising, adjusting and diversifying peoples' capabilities in response to a changing labor market. When the process feeds into interactions between research, training and production, lifelong learning generally contributes to the overall qualitative change in working and organization systems and methods for increased efficiency.

146) Concerning the development of scientific and technological skills, lifelong learning establishes links with R&D, innovation and changing needs, particularly when the skills

development approach is not limited to mastering the latest technology, but rather the ability to adjust to technological innovation.

147) Scientific and technical research can drive this dual trend if it takes account of changing market needs and if research results are translated at a technical level into technically innovative practices. So the challenge for lifelong learning is to encourage openness and willingness to change among all those involved in the production chain.

3.8.2. Africa is faced with weakness in the holistic approach to lifelong learning

148) Analysis of African experiences here emphasizes the weakness of the holistic approach to lifelong learning and the lack of concrete strategies. Lifelong learning raises the issue of learning in different places (family, communities, workplaces and leisure, etc.), at all ages (from cradle to grave) and in all fields ("universal learning": culture, social, political, economic, professional, scientific, philosophical, spiritual, etc.), "learning to know, do, live together and be" as prescribed by the Delors Report. This implies the fulfillment of certain conditions: i) the availability of continuous learning opportunities tailored to the needs and circumstances of each individual, ii) the mobilization and integration of the state's and society's full potential for education, training and learning, be it formal, non-formal and informal, face-to-face learning, distance learning, open learning etc., iii) self-motivation and personal commitment to universal lifelong learning. The holistic national approach to lifelong learning assumes the establishment of a strategic framework to guide policy and structure education, training and learning reforms in order to open, develop and integrate them and make them flexible with a view to building learning societies. This requires coordination and complementarity between different levels, sub-sectors and types of education, training and learning, including the traditional varieties, but also between them and the economic, social, cultural, political productive sector, and so on.

3.8.3. Potential opportunities to facilitate the shift towards lifelong societies and communities

149) This coordination and complementarity will help to build networks and learning communities in all urban and rural areas, so that everyone not only has access to knowledge, but also perceives learning as a requirement and a need in order to share and develop knowledge in the innovative sense to meet the challenge of change.

Two opportunities dealt with in other sections may be seized to achieve this.

150) Taking account of the lessons learned, the adoption of the skills-based approach establishes learning as a way to address a specific local, regional, national, continental or global issue or context. It therefore promotes the strengthening of the capacity to identify solutions with regard to new situations, while building self-reliance, self-motivation and personal commitment to learning, all of which are conducive to building the foundations of lifelong learning.

151) Secondly, lifelong learning today can use ICTs as a considerable opportunity for expansion: the development and use of free and open software, distance learning and other forms of training, distance learning, online libraries, discussion forum, and so on.

> In 2009, the first electronic newsletter on e-learning was launched in Tunisia with the name e-Taalim. It is an electronic magazine on training and ICT "dedicated to executives and professionals in Africa and the Arab countries managers, professionals and students in Africa and the Arab World" (http://www.e-taalim.com)"
> "E-Taalim is a free and independent weblog providing insightful information about the use of e-learning and blended learning and more generally on education and training. It also provides information about e-learning institutions whether they are academic or professional, online educational resources and related technology solutions The weblog, which is currently available in three languages (French, Arabic and English) is intended primarily for schoolchildren, students, managers, trainers, managers and decision makers in the education of African and Arab countries." Since February 2010, the founder of this weblog has been developing Africa's first distance education platform, with audio and other links to research libraries in developed countries, with a views to developing e-learning in Africa. Teachers have been contacted and encouraged to put their courses online and students will be able to download them after paying using their mobile telephone (further to an agreement with a telephone operator).
> .

152) The challenges of lifelong learning for Africa are enormous:

- to reduce duplication of efforts and ensure greater efficiency in securing faster increases in the education levels of the population, to ensure responsible citizenship and thus guarantee democracy, social justice and sustainable development;
- to develop a critical mass of expertise that can really be mobilized in order to achieve accelerated economic development;
- to narrow the gap between African researchers and their counterparts in other parts of the world so that the continent can participate actively in globalization, which is having an uncertain impact on the scientific and technological revolution;
- to strengthen the innovation capacity of African societies and economies in order to found them upon knowledge, the main factor of development today, and even more so in the future.

4. ISSUES CONCERNING IMPLEMENTATION OF THE REFORMS

153) Most of the studies, in their analysis of the context, underline that, in spite of the reforms carried out since the different countries gained independence in the 1960s, most of the education and training systems have not undergone any major changes with regard to their structure and direction, which remains elitist, the subject-focused and encyclopedic nature of the curricula, and the directive nature of their teaching methods. It is not that there has been any lack of plans for reform on these subjects. The question that is raised relates to the capacity to implement the reforms effectively on the ground.

- **The weight of history makes it difficult to introduce planned reforms**

154) It has to be said that the options chosen with a view to forming critical skills for sustainable development and lifelong learning have not, in the current state of affairs, fallen on particularly fertile soil. These options relate to a holistic and inclusive education system, a curricular approach based to the construction of cross-cutting competencies and learner-focused teaching, together with new and consonant approaches to assessment. However traditions on the ground tend to remain rooted in an opposite approach.

155) Over and above the identification of the relevant reforms to be carried out, which has been dealt with in the section on paradigm shifts, the response to the above question lies in an examination of the conditions for and factors of success of these reforms.

- **Persistent challenges and new challenges**

156) The process of designing and implementing reforms, insofar as it is a process of formulating and introducing education and training policies, raises challenges at each of the stages involved. Knowledge, analytical and assessment capacities are necessary, as well as a relevant and reliable information system, to identify and understand the problem(s) the reform seeks to solve and the appropriate options.

The transposition of the general focus and guidelines of a reform into specific strategies and options, and the operational plans needed to implement them, require not only a professional experience and expertise that guarantee their feasibility and efficiency, but also a leadership that encourages dialogue and negotiations and draws on research to ensure their political and social acceptance. Africa has made considerable progress in the sense that it now has the capabilities to tackle the first type of challenges relating to the technical expertise needed in terms of information systems and planning, whereas the challenges concerning the political economy of the reforms persists.

157) However, in the light of the experiences studied, it is at the level of the implementation of the reforms that the greatest challenges are concentrated:

- Create a conducive environment, taking account of the main political, social, cultural and other factors that determine success or failure;
- Develop appropriate institutional capabilities and technical resources, in particular to rigorously prepare the stakeholders and partners who are responsible for implementing the reforms on the ground to change their conceptions and approaches;
- Mobilize the essential resources to supply the necessary inputs and ensure the functioning of the structures;
- Ensure the continuity of the reform over the time necessary to effectively achieve it.

4.1. Create an environment conducive to the development of critical skills with a view to sustainable development

158) The challenges here are numerous and complex. As far as those brought to light by the contributions are concerned, we focus in this section on three main challenges: a healthy and inclusive environment, an environment that fosters learning, and an environment that supports the relevance of education and training.

4.1.1. Promote an environment of well-being for an inclusive education

159) Building an inclusive society requires an inclusive education, which should aim to remove all discriminatory barriers to interaction in the society. The development of skills supposes a high-quality education, which itself implies success for all. The table below illustrates, in the case of the SADC countries, the essential conditions and factors which contribute to creating a healthy and inclusive environment by providing those involved in education and training, especially children, with social well-being, health care and protection against disease and violence.

This sort of environment requires a parallel effort to alleviate poverty and misery which are the largest causes of exclusion after physical and mental disability. This implies cross-cutting partnerships between schools, the community and civil society organizations working together to support the school by seeking solutions to problems relating to health, nutrition and the generally poor quality of life.

160) The examples of partnerships developed around the "*Alphabétisation Formation Intensive des Jeunes pour le Développement*" or AFI-D centers (Burkina Faso 2011) or the programs developed in the context of the Pedagogy of the Text demonstrate the usefulness and effectiveness of these partnerships, particularly when they are established throughout the whole process from design to delivery including the program planning stage.

161) The SADC countries have taken a major step forward in this direction by deciding to move away from a project-based approach towards a holistic and integrated approach in the context of a regional policy framework (SADC, 2011). The consistency and efficiency of initiatives to combat hunger, disease, violence, abuse and the poor quality of life from women suffer, developed through cross-sector collaboration, is largely thanks to the coordination carried out by the Ministry for Education and the focusing of activities on schools.

- *Psychosocial Support* that addresses the social, emotional, spiritual and psychological well-being of learners and teachers
- *Safety and Protection* from violence, abuse and bullying
- *Social Welfare Services* that address the care and protection needs of learners, teachers and caregivers
- *Nutrition* to ensure that all learners are provided with daily sufficient nutritious food
- *Teacher Development and Support* and *Curriculum Support,* which includes the provision of quality teaching of a curriculum that is responsive to, and inclusive of, a diversity of different learning needs
- *Infrastructure*, which involves providing and maintaining school structures that are designed to meet the needs of all learners
- *Health Promotion* addressing health risks and protective factors and promotes overall health and well-being
- Effective and committed *leadership* at all levels in the education sector
- *Material Support*, which refers to services that address material or financial barriers to education
- *Water and Sanitation, infrastructure* to meet the legal and health requirements for school communities. (SADC, 2011)

162) In such activities the issue of gender is frequently raised because the barriers of discrimination against girls are given particular attention, especially those resulting from the violence and abuse of which they are the principal victims (ADEA ST1, 2011).

163) In short, it is a matter of creating, in and through this healthy and inclusive environment, a climate in which everyone feels at home and is happy to be in a learning context.

4.1.2. For an environment that fosters a high quality of learning

164) The systemic environment provides the educational philosophy, the curricula and the standards which give direction to learning and the learning norms, as well as the inputs which determine the conditions conducive to a quality education. This environment effectively directs, motivates and supports activities that work towards quality in education. The recent progress made by a number of countries (Ghana, Rwanda, Senegal, Kenya, etc.) in introducing a consistent and integrated policy framework with certification and quality assurance systems has made it possible to support the development of technical and vocational skills more effectively. The example of Ghana illustrates this progress.

Current TVET Legal and Policy Framework in Ghana

Recognizing the need to reform TVET provision in Ghana, the Council for Technical and Vocational Education and Training (COTVET) was established by an Act of Parliament in 2006 to coordinate and oversee all aspects of TVET and also formulate national policies for skills development across all levels (pre-tertiary and tertiary) and sectors (formal, informal and non-formal). The Council's coordination activities extend to all 9 government ministries undertaking skills training of one kind or the other as well as private training providers. The Council is governed by a 15-member Board with an Industrialist as the Chairman and representation from the public and private sectors. In particular, the Council is empowered to:

- rationalize the assessment and certification system in technical and vocational education and training;
- take measures to ensure quality in delivery of and equity in access to technical and vocational education and training;
- maintain a national database on technical and vocational education and training;
- facilitate research and development in the technical and vocational education and training system;
- source funding to support technical and vocational education and training activities;
- facilitate collaboration between training providers and industry to promote demand driven curriculum development and placement, and national internship programs
- promote co-operation with international agencies and development partners;
- advise Government on all matters related to the management and improvement of the technical and vocational education and training system

In the few years of its existence, the Council has been credited with the following key achievements:

- the piloting of Competency Based Training in three different institutions at three different levels
- the generation of occupational standards, unit specifications and learning materials for some trade areas in the formal and informal sectors
- the establishment of a USD 70 million Skills Development Fund
- the organization of an annual National TVET Week to raise awareness and perception of TVET
- the implementation of a National Apprenticeship Program for early school leavers from the educational system.

Source: Baffour-Awuah and Thompson (2011)

165) The restructuring of tertiary education through different but linked strategic and operational frameworks also comes under this coordination which brings complementarity and efficiency to the development of scientific and technological skills.

166) The other dimension concerns the kind of environment that is conducive to learning which is determined by the quality of transformational leadership in the establishments, the competency and motivation of the teachers and trainers, the availability and suitability of the infrastructure, equipment and other teacher/ trainer/ learner material.

On this last point, the important role played by ICTs, both as a source of information (Internet) as a support for information-based activities, has been heavily emphasized.

Recommendations to governments from the Conference on Book Development in Africa, 3-5 October 2011, Nairobi

- Initiate, without delay, the formulation of consistent national book policies, where these do not already exist, including national languages, with a view to promoting a social, legal and economic environment that fosters the development of book publishing and reading.
- In countries where the basic texts of a national book policy have already been formulated and adopted, enact legislation on books.
- Initiate prior consultation with the different stakeholders in the book chain (teachers, publishers, parents, etc.) before reforming curricula in order to ensure a seamless transition between the former and new content of text books and other teaching material.
- Set up standing committees under the Ministries for Education tasked with organizing discussions and consultations with the other stakeholders (teachers, publishers, parents, etc.) when curricular reforms founded on a skills-based approach are introduced.
- Apply proactive linguistic policies to encourage the effective use of national languages as vectors of education and training and to help prevent these languages from dying out.
- Set a short-term goal of a ratio of one book per pupil in the basic subjects and at least one book for every two pupils in other subjects, including in rural areas, at primary school level.
- Ensure local libraries are involved in the distribution systems for textbooks, in order to strengthen this link, which is recognized as the weakest link in the book chain almost everywhere in Africa.
- Provide sizeable support for national associations (writers, publishers, libraries, printers) with a view to supporting their efforts to create and maintain dialogue with and lobbying of the institutions.
- Work in harmony with the private sector, publishers and other stakeholders to provide material support and set up think tanks on national language development.

4.1.3. A local community environment that reinforces the relevance of learning

167) The local community is an education and training environment in itself, as well as providing support to the learning that takes place in schools. Involvement of the local community fosters the interaction between the two environments in that it reinforces the local community's engagement in, as well as the relevance of, education and training. Experiences in Africa underline in particular here i) bringing together indigenous knowledge and practices, on the one hand, and school learning on the other hand; ii) the fact that local sustainable development issues can be taken into account in the learning iii) the impact of skills developed in this way on solving the problems experienced by the local community.

168) The interest in sustainable development is clear and concerns not only basic skills but also technical and vocational skills, as the example of the New Brunswick Community College shows.

169) Concerning science and technology skills, local development issues are taken into account in training and research through a partnership between higher education establishments, research laboratories and local communities/authorities. This creates a direct link between the skills promoted and sustainable development, raises the profile of science and scientists in society and in local decision-making, and takes account of local knowledge in the search for solutions. This process can also include the creation of cross-disciplinary and inter-institutional networks which can encourage bottom-up differentiation (ADEA 2011 ST 3a).

170) To sum up, the three dimensions of a conducive environment that have been analyzed – healthy and inclusive, fostering and motivating, and a source of relevance and internal efficiency – all require inter-sectoral, cross-cutting partnerships to be developed with the various stakeholders including local communities/authorities, civil society, the private sector, and other government ministries. They each contribute to helping to facilitate learning for all, while ensuring the conditions and factors of the quality, efficiency and relevance of this learning, thanks to interactive, direct and indirect links with sustainable development issues.

4.2. Ensure appropriate institutional and technical capacities

171) The implementation of reforms of the education systems represents a stumbling block for many countries. This is due, as mentioned above, to a number of reasons including the lack of support given to teachers and trainers in the transposition of the new approaches into practices on the ground, the difficult struggle against the effects of social inequalities on educational achievement, and the lack of resources to support the continuous adaptation of teaching and educational approaches to current developments. This calls for a far-reaching reflection on the measures needed to ensure that the transition from a reform strategy to its effective implementation can actually succeed.

4.2.1. The success of a reform presupposes concerted action on the part of all public education and training stakeholders

172) The analyses carried out in numerous countries arrive at the conclusion that the implementation of reforms comes up, in many cases, against the lack of coordination between the various stakeholders involved in the process. These analyses point first to the dispersion of responsibilities and practices among the different ministries involved in education and training. In some countries there are as many as seven or eight ministries with responsibility in this field, but there is rarely any inter-ministerial body capable of ensuring a minimum of cohesion and synergy between the actions of the

different ministries concerned. The decision taken by Burkina Faso to create a multi-sector inter-ministerial action plan in the field of vocation training, which was adopted by the Council of Ministers on 24 September 2010 (2011-2015 Action Plan), is exemplary in this sense. In the absence of such a plan there is a duplication of actions taken in different sectors of activity and results, more often than not, mutual ignorance on the ground of the specific actions carried out by the various ministries within their area of responsibility - craft, agriculture, trade, mining, transport, etc. A reform cannot succeed if the political authorities do not establish a minimum of synergy and cohesion between all the different actions implemented in the different sectors. This dispersion generates unnecessary expenditure and an overall lack of efficiency with regard to the transformations required and the skills to be acquired.

4.2.2. The success of a reform requires a partnership pact to foster multi-level cooperation between public, private and civil society stakeholders

173) The Consultation Forum for the private sector and civil society (Private Sector/ Civil Society Forum 2011) recommended the creation of a partnership pact between the public authorities and all education and training stakeholders in order to maximize the acquisition of critical knowledge, skills and qualifications required for sustainable development. The forum made the following points concerning the pact:

- It emphasized that governments should recognize the crucial role played by the various private sector and civil society stakeholders, by providing them with a suitable legal framework where this did not already exist;
- It asked that current or future reforms clearly define the roles to be played by the various stakeholders as well as their expectations with regard to their involvement at both central and local levels;
- It recommended that economic and professional organizations and NGOs set up a framework for working together so as to give greater credibility to their specific areas of intervention;
- It asked, lastly, that interventions by NGOs and socio-professional organizations could receive financial assistance thanks to the allocation of a certain percentage of the national budget or of financial transactions carried out in the different countries.

4.2.3. The success of a reform requires organizational and technical measures and capabilities adapted to the desired outcome

174) The failures recorded in the implementation of strategic plans are often due to the fact that the authorities have omitted or failed to set up a system of governance, for example program or project management, which can lay the foundations for and determine the functions that are necessary for the reform's success. These include:

- Setting up a steering group made up of the stakeholders identified in the partnership pact and whose mission is to assess the different stages in the implementation of the reform, at central, regional and local level, and to take the necessary decisions to efficiently transpose the strategic objectives into actions on the ground;

- Putting in place the monitoring and evaluation criteria and an information system that will provide the steering committee, or for example an ad hoc monitoring group, with all the available elements required to assess the quality of the results obtained as the action plan is implemented and to decide on any corrective measures that may need to be taken;
- Monitoring the implementation of the reform from a budgetary point of view using a cost-efficiency system and seeking, if necessary, additional funding to ensure the completion at local level of the transformations initiated by the reform.

175) The analysis of the international network of experts GEFOP (*Groupe des experts formation professionnelle*) clearly shows that the success of reforms suffers very often from a lack of the organizational and technical capacities necessary for a structured and efficient implementation.

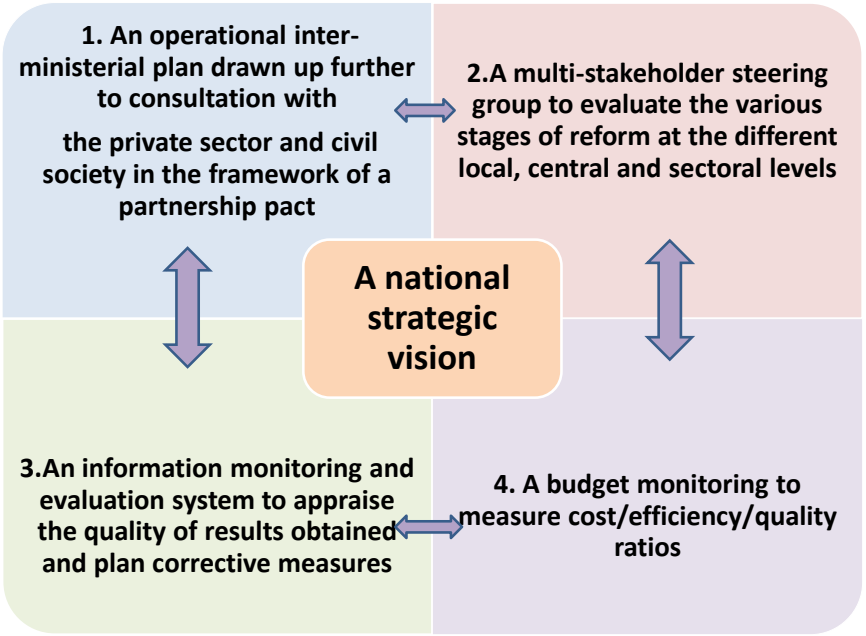

Figure 4 The process of successful reform of education and training systems

4.2.4. The success of a reform imperatively requires capacity building for all those involved in the partnership pact

176) The lack of support and methodological help given to teachers with a view to helping them translate the new approaches introduced by the implementation of the reforms into practice (ERNWACA 2010) is as much true for political decision-makers as for the private sector and civil society. The latter are increasingly considered as fully-fledged partners in education and training systems, since they take part in the preparation of national strategies and policies and play a role of service provider, especially in non-formal and informal schemes for the acquisition of knowledge and skills. All these stakeholders, and as a priority the private sector and civil society, therefore also need capacity-building in order to take the full measure of the transformations of which they are increasingly the initiators and operators. This capacity building was one of the major

demands of the Tunisian social partners in their involvement in the MANFORME program, launched in 1996. It is today more necessary than ever, in view of the fact that, as observed in the final declaration of ministers and their representatives at the ICQN/TVSD meeting in September 2011 in Abidjan, the economic partners and professional organizations are increasingly involved in the management of education and training schemes and establishments and are bringing about a transition in the type of management away from autonomy towards joint management and delegated management (ICQN/TVSD, 2011). However, such a change will only lead to effective results if all those concerned enhance their critical skills at all levels and stages of their action.

4.3. Towards innovative financing and sustainable cost-efficiency

177) The problem of the financing and the cost of education and training systems has been the subject of several recent studies dealing either with the education and training system as a whole (UNESCO-UIS, 2011), or more specifically with higher education in Africa (World Bank, 2011), higher education in the Middle East and North Africa (World Bank/AFD, 2011) and on the costs of vocational training and integration into the world of work (AFD, 2010). The challenge addressed by all three of these studies is similar to that addressed by the UIS study: "how to expand educational opportunities, improve quality and increase equity with limited and inadequate financial resources."

178) This question is at the heart of the Triennale. It is important to do everything possible to ensure that the maximum number of young people and adults acquire the critical knowledge, skills and qualifications that Africa needs in order to guarantee its sustainable development, while being aware that the investment effort required to do this comes up against the difficulty faced by countries in coping with an increase in expenditure on education and training. Is the goal of education and training for all, or if not all then at least for the greatest number, an illusion just because it cannot be financed? This question is at the heart of the issue of sustainable development, because only a significant stepping up in the quantitative and qualitative acquisition of critical knowledge, skills and qualification will enable Africa to "run while others walk" (Mlandawire, 2009) and consequently play a full role in the context of globalization.

4.3.1. The limitations and shortcomings of public funding in the face of the demands of sustainable development

179) Sub-Saharan Africa spends 5% of its GDP on state education, which is the second highest rate after North America and Europe (5.3%). A comparison with other continents shows that 2.2% of this expenditure is on primary education, compared with 0.5% in Asia and 1.8% in the Arab States, Latin America and the Caribbean. This focus on basic education is due to the importance of the demographic factor (2.4%) and the commitments made in the context of the MDGs (UNESCO, 2011). It can be justified also by the fact that this investment is the pre-requisite for the development of a country, as

the exemplary history of South Korea shows and which will be presented and debated during the Triennale. However, it has to be admitted that this concentration has not sufficed to reach the goals set by the MDGs for school attendance. UNESCO's 2011 report on EFA calls for countries to make additional financial efforts between now and 2015.

180) The priority investment in universal education has the effect of lessening the funding possibilities for other schemes and levels of education and training. The budgetary resources are therefore insufficient to promote, in line with demand, the post-primary levels (general and vocational) the importance of which for the economic and social inclusion of young Africans was at the heart of the work of the last Biennale (Maputo, 2009). They are also insufficient to train the technicians and senior technicians needed by African SMEs to develop high added value activities in those sectors and occupations that have particularly high potential for the future (ICQN, 2011).

4.3.2. Avenues to be explored to increase quality, equity and cost-efficiency in expenditure on education and training

181) The development of critical knowledge, skills and qualifications, which ADEA Triennale urges, requires finding innovative ways and means to overcome the limitations and shortcomings of public funding. New education and training opportunities that are in line with sustainable development with thus be encouraged.

- **First avenue: better management of available resources**

182) The budgetary analysis of the different countries' financial policies clearly highlights the absence, in many cases, of an efficient and rational management of expenditure on education and training. The *Pôle de Dakar* has shown that unit costs can vary from between 1 and 6, from one establishment to another, for training of a same level in the same country (RESEN Côte d'Ivoire, 2005). There exist therefore areas in which costs could be reduced, and these could be easily identified through the use of cost accounting systems.

The UNESCO study on financing indicates another avenue for optimizing expenditure, relating to the disbursement of official development aid (ODA). Between 2002 and 2008, "the discrepancy between committed and disbursed amounts averaged around 9% (or US$221 million)" each year. These amounts could have been invested in high- priority actions or projects.

- **Second avenue: introduce a cost-efficiency/sustainability ratio as a criterion in budget allocation**

183) It is patently obvious that most national budgets are drawn up and decided on in a situation in which those responsible for public finances do not have a clear idea of the unitary costs of education and training broken down by establishment or by type of scheme financed. As a result, the budget allocations are not adapted to actual funding needs.

184) This implies that a fairly radical change will be necessary in existing budgetary practices. Any allocation of funding must be preceded by an identification of the actual costs of the measures financed, as well as their internal, and above all external, efficiency. Thus an analysis of dual training and apprenticeship schemes in the field of technical and vocational education and training (TVET) shows that this type of training can divide the unitary costs of a training program in a training center by three, while strongly increasing the opportunities of acquiring skills related to the requirements of the economy. As a result, the opportunities for young people to be helped into the world of work are increased (AFD, 2010). Added to this is the fact that a training program which has an average unitary cost of € 500 per year is much more sustainable, that is to say adapted to the available resources, than a training program with an annual cost of about € 1,500 but for which no government could guarantee solvability in the long term.

- **Third avenue: call for efficient and equitable co-funding**

185) The data available on the financing of education and training give an account of an real and significant contribution by the private sector in expenditure on education and training. UNESCO's data are clear on this point. "Private sector contributions also vary by level of education. The proportion of household contributions increases from 29% at primary to 46% at the lower secondary level and to 41% at the upper secondary level. However, this proportion decreases to 22% in tertiary education, implying a very large government contribution to this level" (UNESCO, 2011). Added to this data is the fact that the private sector, in the economic sense of the term, makes a considerable contribution to the co-financing of all alternant- or apprenticeship-based vocational training paths and, moreover, is responsible for training, in the informal economy, a number of young people up to 100 times higher than the number trained through TVET schemes.

186) Increased involvement of the private sector, particularly in the case of vocational training, is inevitably the way forward to allow young people and adults to acquire the critical skills required to ensure sustainable development. As stated in the conclusions of the Consultation Forum for the private sector and civil society, organized by ADEA, "the educational and training needs are enormous and largely beyond the capacity of governments. The members of one employers' confederation contribute to training at the level of 6% of their total payroll … The majority of skills' acquisition through traditional apprenticeships or on the job is in fact paid for by the private sector and families."

187) Public/private co-financing is therefore one of the ways forward to increase available resources. Provided, as underlined by the authors of the study on financing, that the efforts demanded of private partners respect the rules of equity and do not weigh more heavily, as is currently the case, on the poorest families who have children in primary and secondary education, rather than on better-off families who have the means to put their children into higher education.

- **Fourth and final avenue: introduce efficiency measures in the medium and long term**

188) The current methods of managing available resources come up against a number of limitations. First of all there are those related to the absence, in most cases, of cost accounting systems. This makes an approach based on the unitary cost of the measures financed difficult, if not impossible. Then there is the problematic identification of methods of financing based on the threefold requirement of efficiency, equity and sustainability. Here there is a lack of studies on the social and economic returns on education and training, such as the one carried out on higher education in the Middle East and Africa (World Bank/AFD, 2011). There is, lastly the lack of evaluation of the medium- and long-term effects of innovative experiences in joint management with non-formal local community action groups on education (example of Burkina Faso) or where the management of training centers has been delegated to professional organizations (examples of Tunisia and Morocco).

189) Making progress in all these areas would have the advantage of enabling all the private and public stakeholders involved to model strategic planning and management methods in order to target and actually attain, in the medium and long term, the results aimed for in the current and anticipated reforms.

190) In almost all the countries where data is available in this area, there exists a financing practice which develops a quantitative vision of the education and training system (how much money is needed to cater for how many students in how many establishments?) and prioritizes, in the framework of budgets implemented, operating expenditure or current expenditure which can reach and sometimes goes beyond 90% of the total allocated budget (UNESCO, 2011). This means that precious little is left over for investment in equipment, and hardly anything for immaterial investment, such as teacher training, design or updating of curricula, and pedagogical innovation. As a result, budgetary policies tend to focus more on maintaining or strengthening what already exists, rather than on medium- or long-term updating and transformation.

4.4. Ensure continuity of the reforms: a prerequisite for success

191) It takes time to carry out education and training reforms, especially when it is necessary to overhaul a whole system. From this long-term point of view, continuity of reforms over a long period of time is a prerequisite for success. This is shown by the experience of other areas of the world.

The countries that have had the greatest success in terms of innovation are those which have ensured cohesion between their policies and their actions, and are often those which have managed to guarantee continuity over the long term. Korea, Finland and Japan are striking examples here: in these three countries, technological progress has been a national imperative for half a century, and innovation policies are a constant priority in government action. National experts have emphasized that this continuity has

been ensured irrespective of changes in government, which have not called these policy areas into question. There is no doubt that this point is one of the weak links in STI in Africa.

How can this continuity be ensured?

192) To answer this question, we first need to identify the obstacles to the continuity of reforms. In addition to the different forms of political instability, a variety of social, economic and financial, cultural and ideological obstacles have been analyzed: opposition by groups which feel threatened by the reform, passive or active resistance, macro-economic constraints, lack of financial resources, conflicting values, historical factors leading to inertia, etc.

193) Understanding the causes of most of these obstacles leads us to the crucial role played by dialogue, consultation, negotiation, and communication in the process of building as wide a national consensus as possible concerning the reforms. The studies underline:

- The need for a shared vision which fosters collective reflections based on research and forward-looking approaches;
- The need to involve all stakeholders - especially education and training actors and partners - right from the start of the process and in all the following stages;
- The usefulness of various types of communication relating to the targets and specific objectives: i) "social" communication, to "sell" the reform to public opinion and gain public support, ii) institutional communication for public relations and partnerships to be created, and iii) educational communication to foster discussion and the development of knowledge about the process by which reforms will be introduced, monitored, assessed, and adjusted.

194) This suggests that even if there is consensus at the start, this is not sufficient to guarantee the continuity of a reform. Dialogue must continue throughout the whole reform process and there must be transparency and frankness in talking about the challenges and successes of the implementation process and the outlook for maintaining stakeholders' confidence, moral contract and commitment. It is on this condition that the reform process will be able to overcome opposition and resistance, to survive and develop regardless of ministerial changes, instability of the demographic cycle, and changes in the political party holding power.

195) Among the other decisive factors in ensuring continuity of reforms, the following must be noted:

- A political leadership that ensures monitoring, decision-making, favorable arbitration and the adequate mobilization of resources;
- An expertise in analysis and research in the sector which produces data relevant to the different stages in order to enlighten decision-making, set up the appropriate

mechanisms and scoreboards for monitoring the reform, and provide a long-term vision through simulations and projections, etc.

In fact, a reform does not really have either a beginning or an end, because the world continues to change and education and training must change with it. What is more, the evaluation of a reform always introduces a new cycle of reform, because either adjustment or remedial action is needed, and this produces a spiral of continuous change.

4.5. Encourage mutual learning and the pooling of resources to reinforce skills development through regional and continental cooperation

196) Most of the contributions on regional and continental cooperation concern exchanges of experience and knowledge-sharing through inter-country quality nodes or ICQN (technical and vocational skills development or TVSD, peace education), learning evaluation programs (PASEC and SACMEQ) and the initiatives of regional organizations (SADC, ECOWAS, UEMOA) and/or regional offices of international organizations (UNESCO-BREDA, BIT).

197) With regard to the two inter-country quality nodes, the areas of cooperation covered are directly related to the challenges of sustainable development. The exchanges between the countries facilitate mutual strengthening of policies and practices.

198) The first ICQN on technical and vocational skills development explores the critical fields of mutual learning and capacity-building: governance of systems, efficient delivery of training, and innovative partnerships for sustainable financing. Particular attention is given to types of apprenticeship that alternate theoretical training and on-the-job practice in the skills-based approach, directed in particular towards the modernization of what is a predominantly informal sector in the countries concerned. The discussion platform also addresses inclusive training, which aims in TVSD, to eliminate discriminatory barriers linked to gender, area of residence, social origin or disability.

Extracts from the Declaration signed by the Ministers on 21 September 2011 at the close of the ICQN/TVSD meeting

Measures are to be taken in respect of:

- the establishment of effective systems to facilitate the transition to work and employment outcomes for youth in response to the phenomenon of youth exclusion from labor markets,
- the establishment and further development, at all levels, of pathways for dual training and apprenticeship, including both traditional and modern apprenticeship, to facilitate acquisition of skills required on the labor market,
- the development of training and apprenticeship systems for the rural and agricultural sector enabling producers (peasants, laborers, farmers etc.) to acquire the skills that become the building-blocks for the future,
- the training for all involved in the provision of vocational training, including those overseeing apprenticeship,
- the design and implementation of training schemes to respond to skills needs in new

and emerging areas of professional activity,
- the elaboration of a comprehensive vocational training system consonant with the requirements of economic competitiveness and social progress,
- the provision of skill development programs for high level technical cadres as required by high value-added and innovative lines of economic activity including small and medium enterprises,
- the continued and enhanced involvement of economic partners in the formulation, elaboration, implementation, management and assessment of skills development courses and systems,
- the management through partnership of training centers, involving delegated management or joint management,
- the establishment of flexible frameworks that allow for recognition and certification of prior learning, whether originating in formal or informal settings,
- the provision of regular access to skills development to the whole population so as to establish systems and pathway for lifelong learning and training,
- the availability of levels of public and private funding corresponding to needs of African countries confronting the twin challenges of economic competitiveness and social development.

199) The second ICQN on Peace Education emphasizes the important role that education can play in protecting children and youth during periods of conflict and reconstruction, where there is a real need for this. Education can keep hope alive and prevent youth violence and its harmful effects. In this area, exchanges of experiences between the ICQN countries, inter-agency initiatives and civil society organizations (INEE) are particularly useful, especially for fragile states. They show that education can strengthen social cohesion and stability by developing individual skills and social action for peace and by strengthening good governance and transparency to counter corruption. Ultimately, it strengthens the rule of law and democracy as the essential conditions of peace (ICQN 2011).

The potential of peace education is even greater in the context of the skills-based approach and lifelong learning for sustainable development. The skills-based approach promotes learning focusing on the problematic context that breeds conflict and therefore permits the development of skills to avoid or cope with it. Lifelong learning permits both the renewal and embedding of the references and values of peace in relation to social change and facilitates their creative and positive adaptation to new situations.

ICQN Working Guidelines on Peace Education

- Establish and strengthen collaboration between education ministers and other important stakeholders in post-conflict countries and fragile states in Africa
- Extend the involvement of peace education in teacher training and parent education
- Affirm and strengthen the cultural and spiritual values that can counteract violence and conflict at individual, collective and institutional level
- Facilitate joint work between governments, aid agencies and civil society to promote

peace and education

200) The ICQN on Literacy was launched by Burkina Faso for countries of the Sahel (Mali, Niger, Senegal, etc.), which have the highest illiteracy rates in the world. Its priority areas of intervention concern the integration of young people into the world of work, management of statistics on literacy and non-formal education and the promotion of national languages. Analytical work and the mobilization of institutional and strategic partners are ongoing at sub-regional level with support from the ADEA Working Group on Non-Formal Education (WGNFE).

201) PASEC for francophone African countries and SACMEQ for countries in Southern and Eastern Africa are undertaking comparative analysis of education systems through the regional evaluation of learning. The feedback given to countries in the region allows them to measure progress made and see what still needs to be done to improve results.

202) On average educational attainment has proved to be poor (about 50% of students master basic language and mathematics skills) but there are variations, as some countries do less well than others.

203) These evaluations offer an area for regional dialogue on policies and practices aimed at improving the quality of education, particularly through CONFEMEN, SADC and EAC. Analysis of factors determining learning outcomes and their costs is particularly useful and leads to collective debates between policy makers and education professionals on the most productive policy options and investments for achieving the best educational achievements at the most advantageous cost.

204) In terms of impact on attainment, the following are important: initial and continuing training of teachers, books and teaching materials, school location, socio-economic background and so on. In particular:

- the level of resources allocated to education does not always determine the level of learning because the countries that spend the most do not have the best results and vice versa;
- in initial and continuing training, the status and salaries of teachers do not always make a difference on the educational achievements of their pupils and students;
- educational attainment seems to be determined primarily by support from the surrounding community/family (books and ability to speak the language of instruction at home (PASEC) or by repetition rates, socio-economic background, age and gender (SACMEQ).

205) The studies refer to regional initiatives concerning basic education curricula (BEAP-BREDA), efforts to boost the development of technical and professional skills (IATT), tailoring of training opportunities to community development plans (platform services

supported by WAEMU) and the development of a strategy for regional harmonization of technical and vocational skills development (SADC-UNESCO program and WAEMU).

206) All of these types of regional initiatives are innovative in that they are seeking to go beyond discussions on the shape of reform and focus on the sharing of lessons learnt about the specific strategies and modalities for ensuring the success of reforms.

207) The idea that all scientific and technological skills cannot just be developed by one country makes it necessary to adopt a strategy of regional cooperation in higher education and research. With the possible exception of countries like South Africa, it is difficult to imagine that the skillset required by sustainable development can be promoted within the framework of national resources and institutions only. Therefore, for the development of the skills targeted, it will be necessary to:

- pool educational resources through regional and continental cooperation;
- increase the effectiveness of South-South and North-South cooperation;
- negotiate more support from multinational enterprises and international NGOs operating in Africa;
- mobilize the African Diaspora to contribute to capacity building.

208) Through the Consolidated Science and Technology Plan of Action (AU-NEPAD), African countries are engaged in the gradual development of centers of excellence in the short, medium and long term in order to: i) define the standards, criteria and indicators for the selection of centers of excellence, ii) enhance the quality and relevance of programs, increase the number of trained staff and improve infrastructure at the selected centers of excellence and iii) establish networks of centers of excellence at regional and continental levels, strengthen joint research programs, establish links with institutions outside Africa and develop distance learning systems to strengthen higher education at the regional level, particularly for small states.

209) In addition to the centers of excellence, the plan targets a second pillar focused on infrastructure development in science and technology: availability and usability of ICT, construction and rehabilitation of establishments, gradual expansion of facilities and improvement of equipment.

210) The third pillar entails collaborative links with the productive sector as a condition for the development of innovation systems: mapping countries' economic needs and priorities in relation to the availability of required expertise, strategic alliances with productive sector partners to integrate training in business and higher education institutions.

211) While aligning skills development to African countries' development priorities, this strategic approach also entails at least two major challenges, relating to the need to bring African training and research up to international standards, and to develop high-

tech and/or highly specialized sectors that are not viable at the scale of a single African country.

4.6. Increase the effectiveness of North-South and South-South cooperation

212) External assistance, in particular the partnership between development agencies and the ADEA African ministers of education and training, plays a special role in the development of skills for building the future.

Since 2000, African countries have made significant progress in the development and implementation of policies based on analysis and research. This does not always seem to be the case for external assistance, which continues to say its action is targeted at poverty reduction, although the facts do not confirm it. For example, the allocation of resources to education is not directly targeted at the most marginalized groups. Despite the very obvious inequalities, it does not focus specifically and women's literacy, skills development of the rural and informal sector, which accounts for the majority of the workforce or, and even less so, efforts to give children excluded from primary education a second chance education.

It is vital that external assistance should reverse this trend, particularly because the current economic crisis may worsen the situation of disadvantaged groups. Already, in 2010, less than half of the aid promised to sub-Saharan Africa at the 2005 G8 Summit in Gleneagles was released (UNESCO, 2011), and several agencies are trying to reduce the number of beneficiaries of their aid, thus massively reducing the funding of global partnerships such as ADEA.

213) Furthermore, the traditional cooperation with bilateral agencies from the North and international organizations has been enhanced with increased investment from emerging economies, especially China, India and Brazil. This is a promising development, provided that dialogue and coordination are strengthened to ensure more effective foreign aid. In respect to the critical skills development theme of the Trienniale, support to ensure the success of reforms is essential. Indeed, to meet the challenges of the policies, capacities and funding of the necessary reforms, attention should be given to the issue of how external assistance is organized in order to derive maximum benefit. Capacity building seems to be a priority in the agency practices and schemes studied. However, the evaluation of results obtained in this area has not demonstrated the effectiveness of capacity building in aid arrangements where it is provided. Quite the reverse, alternative practices and training abroad tends to both increase dependence and encourage the emigration of trained experts.

In addition, the challenges posed by African countries' ability to reform have evolved and now tend to concern the political economy of reforms (consensus building, praxis research and governance based on participation and participation), the alignment of

training systems with development issues and the conditions and pre-requisites for successful implementation of reforms.

214) The lessons learned and new challenges for reforms should make it possible to strategically reposition external assistance. As with skills development through the learning process, aid for capacity building will be more effective if it helps national experts to overcome the challenges directly and build their own skills by taking action. It must also support the same goal of learning between countries facing similar challenges, as ADEA ICQNs demonstrate. Self-learning and peer learning reinforce the autonomy and responsibility of students while helping them find solutions and innovate in problematic contexts. Funding and technical support accompanying such steps should increase the effectiveness of external assistance for capacity building (Fredriksen, B., 2011).

4.7. Multinational businesses as driving forces for sustainable development

215) Africa has long been and still is an exporter of primary products with little or no processing. As such, it is a continent that is coveted for its wealth of natural resources. The aforementioned increase in foreign direct investment (FDI) in Africa confirms this analysis to the extent that three-quarters of FDI flows over the past 20 years have gone to the oil-producing countries or those that have other mineral resources. However, this increase was also used to support regional development initiatives, especially in the field of infrastructure and the expansion of existing markets (UNCTAD). It is therefore possible to imagine that investment by foreign economic actors can in the medium term become a factor of Africa's sustainable development, as long as regional and national leaders invite these players to significantly change the way they work on the continent.

4.7.1. Involve multinational businesses in efforts to promote dynamic local economies

216) The number of multinational enterprises on the continent is increasing. 800 such enterprises established themselves in Africa in 2007, investing US$ 12 billion (Hugon, 2010). Such companies can be driving forces for sustainable development if they go beyond the exploitation and export of natural resources and contribute to the creation of locally added value, technological innovations and skilled jobs, including in promising occupations and sectors at sub-regional, national and local levels. Such a change of role means they must be willing to relocate production units and invest to transform them into clusters that can help Africa integrate into global production processes. "To promote a knock-on effect and avoid becoming too closed in on themselves, recruitment must be coordinated with the local economy." (Hugon, 2010). This is the aim of the "Private Investors for Africa" (PIA) network, which involves nine major global companies and has decided to invest in Africa and be part of a dynamic process to develop local businesses (161,400 direct and indirect jobs created in 2010), preferably

capable of exporting. The aim is to develop industrial and service activities fostering public/private partnership, regional integration and intra-regional trade.

4.7.2. Involve multinational businesses in the identification and production of critical skills

217). The integration of multinationals into the regional, national and local economies can only succeed if it draws on skills and qualifications that are adapted to the globalized market and, consequently, if it is based on pro-active development of basic vocational and technical skills of their employees. Local management must also take responsibility for on-site actions and projects.

218) A survey conducted by PIA in 2011 among partner companies present in Africa sheds light on the challenges that multinational companies face in order to have the critical skills they need for their successful integration into an increasingly competitive regional and local economy. It also gives a model of the positive tasks multinationals must take on if they want to switch from being a hoarder of wealth to being a producer of technology transfer, wealth and added value for the benefit of the African continent.

- **First task: be part of education and training reforms.** Multinational enterprises should be involved in countries' dialogue on educational reforms and contribute to curriculum design, the implementation of training and its financing;
- **Second task: help identify gaps in critical skills.** Companies need to help analyze sectors in which such skills particularly need to be developed. The PIA survey thus identifies areas particularly lacking in the required qualifications: management and engineering, handicrafts and agriculture, and finance and construction;
- **Third task: help produce critical skills.** Companies need to directly participate in the skilling of young people and the workforce by offering training placements in the workplace, by developing an active partnership with the education system and by involving the local economy in all these initiatives.

4.7.3. Make multinational businesses accountable as fully-fledged members of public/private partnerships

219The results of the survey go well beyond the PIA circle of business partners. They raise the question of how best to create positive synergies between national governments and economic partners, including foreign investors, to foster the skills required by economic and social development. The creation of such synergies has been at the heart of the preparatory process for the Triennale.

220) The 2011 meeting of ICQN/TVSD, which brought together ministers and public and private officials from some 20 African countries, strongly emphasized the key importance of permanent dialogue between public/private and national/international stakeholders and the mobilization of all partners efforts' in the pursuit of economic and social development. Only this can help develop a suitable, shared and effective vision of

the necessary policies and strategies for obtaining critical skills. It is therefore important that national and multinational enterprises become fully-fledged stakeholders in this consultation and demonstrate their willingness to become involved in both the identification of requirements and the development of training provision (ICQN/TVSD, 2011).

221) The Consultation Forum for the Private Sector/Civil Society also stressed the urgency, in the context of sustainable development, to "introduce changes in policy, institutional and financial systems and a partnership involving foreign investors and other stakeholders in education and training." The Forum stressed that this involvement of key economic partners is essential. Governments alone cannot bear the whole burden of education and training. Local and foreign investors must participate through a well-structured and well-organized partnership. "The partnership between government and the private sector, local authorities, private training providers and foreign investors should be based on dialogue and shared responsibility, thus helping to promote the development of skills."

222) In view of these findings, there is therefore no doubt that multinational enterprises should play an active role in bringing about of the paradigm shifts promoted by the Triennale. They must make a resolute effort to abandon their role as a predator of primary resources, by boosting the local economy and thus assuming effective responsibility for the development of the critical skills that Africa needs in order to successfully meet the challenges of globalization.

5. FUTURE PERSPECTIVES: THE WAY FORWARD

223) Bearing in mind the key lessons from the preparatory studies and discussions, which strategic options may be considered in order ensure education and training policies support accelerated and sustainable development in Africa?

The diversity of African situations and the wealth of experiences and work analyzed here suggest a host of possible answers. This means that some choices need to be made. To do so, let us build upon the vision of Africa's future, which entails long-term development perspectives and efforts to pursue sustainable development through a transformation necessitating major changes in direction and radical reforms generated by the development of critical skills.

224) This will lead to the essentially gradual development of knowledge and innovation-based African economies and societies, in Africa and elsewhere.

225) To start moving in this direction, four promising options stand out:

- develop strategic education and training policies;
- develop a strategic framework for the development of critical skills for lifelong learning and sustainable development;
- promote governance through partnership and participation;
- mobilize other key sustainable development stakeholders and sectors.

5.1. Develop strategic education and training policies

226) African education policies and systems must move away from their current mode of operation and adopt a development-oriented approach. The paradigm shift involved – from supply to demand – means that education and training will pursue not their own interests any longer, but the goal of sustainable development and its different dimensions, which ultimately determine ecological, economic, social, political and cultural aims and objectives.

227) In light of the specific challenges facing Africa, the emergence of strategic policies will thus firstly entail an alignment of education and training with the drivers of accelerated economic growth and with the different aspects of sustainability: the production of higher value-added wealth, increased labor productivity and economic competitiveness, the development of responsible and active citizenship, the building of inclusive societies and the promotion of stability and peace. To meet both aspects of this challenge requires ingenuity, efficiency and innovation.

228) This alignment will only really succeed if it is based on indigenous relevance and ownership and incorporates a strategic vision of the role that science, technology and innovation play in sustainable development.

229) The key priorities of the reform of the systems will be to:

- democratize educational systems and training in an inclusive manner that ensures access and success for all by eliminating all discriminatory barriers;
- align skills development holistically with the goal of sustainable development, the need for economic growth and labor market and communities' requirements;
- reinforce the legitimacy of the task of education by redefining the system's goals and setting out these goals in detail in skills profiles and curricular programs.
- include African culture, history and languages within these goals, so that young people acquire skills related to their particular heritage;
- promote the new learning culture necessitated by opting for lifelong skills and learning – learning to learn, business skills, innovation skills – and to use knowledge and innovation to solve problems, take enlightened decisions, manage projects and to go on learning throughout life;
- to place the employment issue at the center of all economic, educational, social and cultural policies and involve all public and private partners and civil society in developing these policies to put an end to the explosive unemployment situation among young people and promote the acquisition of skills required for development that generates jobs and added value;
- integrate the languages, cultures, knowledge and practices of African societies as an object of learning in order to ensure, both in the process and the objectives, the relevance and common ownership of local and national education and training.

230) The major challenge of all these reforms is to shift Africa towards sustainable development based on knowledge, innovation and lifelong learning. This first entails the promotion of scientific culture (see section on science education) as a basic approach to development at all levels, not just of education and training but also of society. It also entails the development and integration of ICTs both as a means of facilitating and expanding training and research and a fully-fledged sector of the knowledge economy. This requires the development of an education and training system that is open to young people and adults, offering them real opportunities of access to continuously upgrade their levels of skills and qualifications.

231) The restructuring of the resulting systems stresses the central role of higher education and research in leadership of the reforms and in influencing change at other levels for the advancement of science, technology and of innovation for the benefit of communities and the economy.

232) For higher education and research to play this key role in the emergence of educational policies and systems focused on building an African society based on knowledge and innovation, they must themselves undergo genuine changes, and:

- break with formal academic approaches by focusing, in training and research, on the development issues faced by local communities, regions, countries, the economy, the world of work and the continent in a globalized world;
- develop and plan a strategic and operational framework to differentiate and coordinate between different areas, that restructures the systems and sub-systems of higher education to ensure their convergence and complementarity in efforts to pursue sustainable development priorities;
- establish strategic partnerships with the private sector and local authorities and communities to be attentive to their requests, interact with them and have them participate in the development, implementation and evaluation of programs, including through joint projects;
- promote, together with all the partners and states, national innovation systems that do not just disseminate innovation culture, but above all translate the results of research into innovative technologies and practices that are useful and usable in the development of the economy's businesses, the rational use of natural resources, environmental protection and the well-being of society.

233) In sum, the policies to be implemented must be based on a long-term vision and work to achieve the priorities set out in development strategies, with regard to challenges, exploitable assets and problems to solve. Given the current and future place and role of science, technology and innovation in development, strategic policies are expected to focus firmly on efforts to build knowledge-based economies and societies. They must however do so in close cooperation with local structures that can host and take ownership of scientific and technological inputs, both to ensure their relevance and effectiveness in specific contexts and to open and boost the cultures that constitute this indigenous knowledge base.

Strategic Priorities

for the Reform of Education and Training Systems as seen by Young People.

Rabat Forum, October 2011

- Country leaders must formulate and articulate a vision for the future of Africa and a long-term education plan in order to allow young people to know where they come from, where they are now, where they are going, and to use these benchmarks to fully play their role ;
- African culture, history and languages must be placed at the center of strategies for developing education and training so that young people can acquire skills that are closely related to their particular heritage.
- Ethics, citizenship and human rights education must be an integral part of training programs, so as to deal with the real problems faced by African societies such as corruption and other sorts of behavior that need to be tackled or promoted.
- Employment must be placed at the center of all social, cultural and economic policies.
- Public authorities must encourage businesses to actively engage in the development of dual learning and apprenticeship schemes at all levels, which will combine training and work experience and therefore strengthen the employability of young people.
- Young people invite all public and private stakeholders to invest in formal, non-formal and informal education and training schemes and routes so that the young people of today, who find it very hard to find work, do not become a sacrificed generation.

5.2. Promote a national and continental strategic framework for skills development

234) The Triennale preparation process as a whole has strongly highlighted the importance of developing, at national level and for the entire continent, a strategic skills development framework. This framework must be prepared with all of a given country's stakeholders, including the private sector, civil society and youth representatives. It must lead, wherever possible, to the sharing of experiences, if not a dialogue with other countries in the sub-region or region. The example of the ICQN shows how beneficial it is for each country to pool its education and training policies and practices with others.

235) The strategic framework needs to define a long-term vision for economic and social development which sets out national development priorities and determines the role and place to be occupied by the education and training as the preferred means of supporting and accelerating growth and the fight against poverty.

236) The strategic framework should adopt a charter of contractual values, as emphasized during the preparatory process for the Triennale, which will determine its legitimacy and effectiveness, covering: an effective public/private partnership involving all stakeholders

in all the stages of design, implementation and evaluation; the decentralization of decisions, actions and means ranging from autonomy to co-management and delegated management of schemes and measures; a balance of policies and means between performance and equity; equivalence between modes of acquisition and recognition of knowledge, skills and qualifications.

237) The strategic framework must be set out a national, sub-regional or regional policy document on education and training and in an operational plan for the short and medium term. This is to ensure that skills development is the heart of steps taken by both public authorities and private actors and civil society to promote sustainable development.

238) The strategic framework must include a clear identification of priority sectors and occupations with growth potential and added value and lead to the design and development, in partnership with the business and professional world, of education and training options and schemes that meet the skills needs of these promising sectors and occupations.

239) The strategic framework must address the need for improved skills across the entire labor force and ensure that young jobseekers and working adults can participate in the process of lifelong learning.

240) To be effective, the strategic framework will require the development of methodologies and tools for support and monitoring: employment and vocational training observatories, tried and tested approaches for identifying and analyzing needs and demand, a structured and operational method for dealing with the skills-based approach, relevant criteria and structures established to evaluate and improve outcomes. Finally, the strategic framework must be based on a conceptual and operational framework, providing the opportunity for education systems and training to create the optimum conditions for sustainable development:

- the effective implementation of a set of common core skills based on the range of life, work, social and civic skills and the entitlement of every individual, including adults, to acquire these common core skills throughout their lives;
- the recognition of technical and professional skills development as being of equal value to other educational schemes, permitting access all levels of education, via means and pathways that need to be strengthened or created;
- the design and development by higher education of national and regional centers of innovation and competitiveness. To achieve this, universities and other tertiary institutions should consider and value indigenous knowledge and culture, thus starting a real scientific and technological revolution on the African continent.

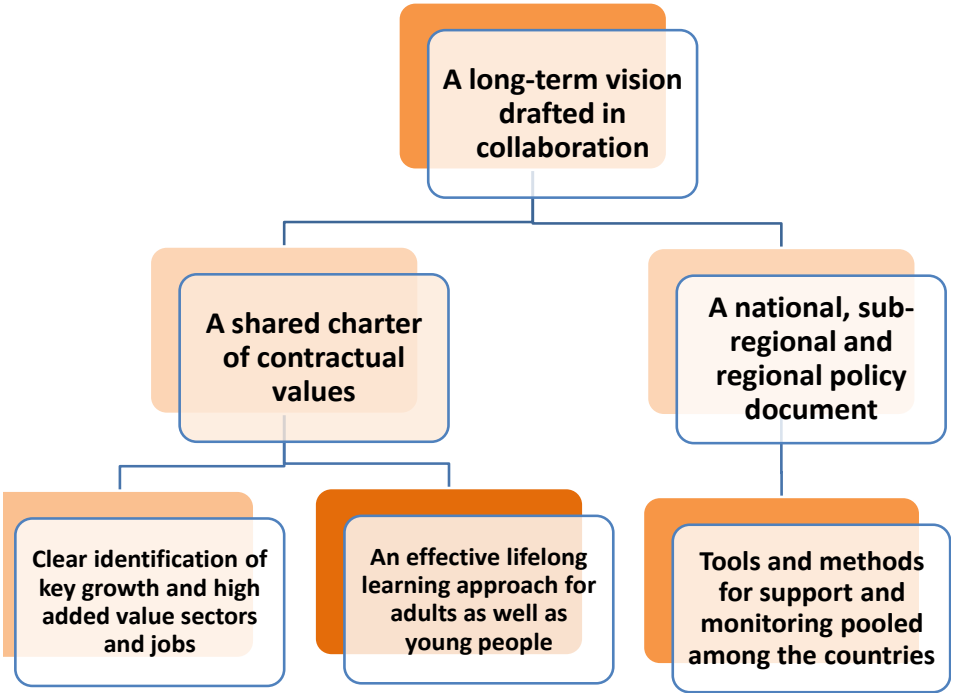

Figure 5 A national and continental strategic framework for skills development

5. 3. Governance through partnership and participation

241) There can be no real strategic policies without the involvement of communities, civil society, private sector and other stakeholders and partners in education and development. Partnership and participatory governance is specifically designed to integrate them into the design, piloting, implementation, management and evaluation of policies and practices to take into account their concerns, needs, views, knowledge and experience.

242) The critical importance of consensus-building to ensure the continuity of reforms has been emphasized. Governance through partnership furthermore makes it possible to mobilize hidden education and training resources in society and the economy, strengthen the relevance and external efficiency of learning and ensure that education and training become everyone's concern, and not just that of the government.

For the Triennale, representatives of civil society organizations and the private sector issued a message that African countries should establish governance through partnership in the form of a charter.

Key messages from private sector and civil society stakeholders

- The sustainable development of Africa requires above all a jointly formulated vision of the continent's future that is shared by all stakeholders.
- Each country must adopt a strategic framework for skills development and a charter of governance establishing an effective and transparent partnership between the public sector, the private sector and civil society.
- Everything should be done to encourage cooperation and exchange of experiences between relevant African education and training stakeholders because they share the same challenges, needs and expectations.
- Education and training system reform is a driver of change.
- To make up for the shortcomings of African training systems, it is vital to foster relationships between public and private partners, and adopt good governance based on the diligence, fairness and transparency among partners.

243) In addition to the principles set out, studies have identified examples of governance through partnership and participation at all levels of education and training:

- consensus building among technical and scientific skills development stakeholders and partners on coherent national policy frameworks;
- satisfactory and coordinated division of roles and responsibilities in the development, delivery and financing of programs in public-private partnerships;
- community management of training centers;
- information systems and observatories jointly set up to acquire a better understanding of the labor market and facilitate the transition from training to employment.

244) This is reflected in the call to promote, in each country, a charter for governance through partnership and participation, which must:

- establish the policy, objectives and principles of governance through partnership;
- define the scope of partnerships and properly distribute roles and responsibilities;
- establish the institutional framework, bodies and organizational rules making partnerships and participation effective;
- identify tools for carrying out periodic reviews and adjustments.

5.4. Mobilize other key sustainable development stakeholders and sectors

245) While the acquisition of knowledge, skills and critical skills is a necessary pre-condition for sustainable development, it is clear such development is dependent upon a number

of factors related to the multi-dimensional nature of the sustainable development concept, as well as the internationalization of policies in this field.

5.4.1. Education and training, a necessary pre-requisite for sustainable development

246) Education and training for the largest possible number of African citizens will guarantee that the continent has the best chance of controlling its own destiny and entering into the virtuous circle of development to generate wealth while guaranteeing future generations environmentally-friendly growth to forge a society based on the values of inclusion, solidarity and peace.

247) However, such a vision of the future must take into account the fact that the interdependence of economic, financial, social and climate policies places the reform of education and training systems within the broader strategic framework of a country's or continent's vision for the future development of its society. It is therefore important that these reforms be designed as an integral part of an overall action plan. Their implementation should involve the whole range of national and international officials working in the general field of development, including the various players responsible for implementing them on the ground.

248) Education and training are fully effective only when included as enablers of a process of economic, social and cultural transformation. However, they must also be at the heart of this transformation process and give it a purpose, namely the pursuit of development that can only be sustainable if it guarantees equitable access to knowledge, know-how, interpersonal skills and future prospects for all, as an essential structuring feature of the success of current and future policies.

5.4.2. Towards a continental pact to promote sustainable development

249) Each country faces its own sustainable development issues, but interdependence due to global sharing of wealth and the interconnection of decisions in an increasingly globalized system of governance means that no African country can decide to pursue economic development successfully on its own in a way that is both ecologically and socially sound, and effective in fighting poverty. The goal set at the Triennale, which is to integrate and share more and more policies and means of education and training to promote sustainable development, thus requires that each country and more widely the continent as a whole agree on common regulatory instruments that can ensure effectiveness and relevance.

250. Critical knowledge, skills and qualifications must be a part of a consistent set of decisions and practices that bind economic growth inseparably together with the preservation of natural resources, schemes to help people enter the world of work and participate in civic life, and the development of a caring and diversified society. Education and training systems will only achieve their objectives if their reforms are integral to a future continental pact that will offer, for years to come, a sustainable

development model that transcends selfish national approaches and ensures the successful integration of Africa into a global vision of the general interest (Brunel, 2010).

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