



Science and Technology for Development: The Institutional Landscape in Africa and Europe (WP2 deliverable 2.1)

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What is CAAST-Net?

- Platform for enhancing cooperation in science and technology (S&T) between Europe and sub-Saharan Africa
- Work package 2 (WP2) addresses S&T under Framework Programmes and the application of research findings for broader development towards poverty reduction and food security



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Work Package 2: S&T-Development Nexus

- Promote greater take-up of development-orientated FP research for innovation
- Promote better synergies between EDF development goals and FP7 S&T cooperation with Africa
- Develop mechanisms to strengthen regional indicative programmes
- Identify regional S&T bodies in Africa to undertake further actions for enhanced African participation in FP7



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STRUCTURE OF REPORT

- **Broad canvas of frameworks and policies**
 - **Science and technology**
 - **Development**
- **Linkages lacking between S&T and development**
- **Contextual information for diverse readerships**



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SECTIONS OF REPORT

- Interface between S&T and development
- EU Framework Programmes (FPs)
- Cotonou Partnership Agreement
- European Consensus on Development
- S&T landscape in Africa
- African participation in FPs
- Bridging the gap between S&T and development
- Country and regional case studies



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S&T-DEVELOPMENT NEXUS

- **Contribution of S&T to economic growth and development is well established**
- **Highly developed states have spent and continue to spend large proportions of GDP on R&D**
- **Africa lagging sadly behind**

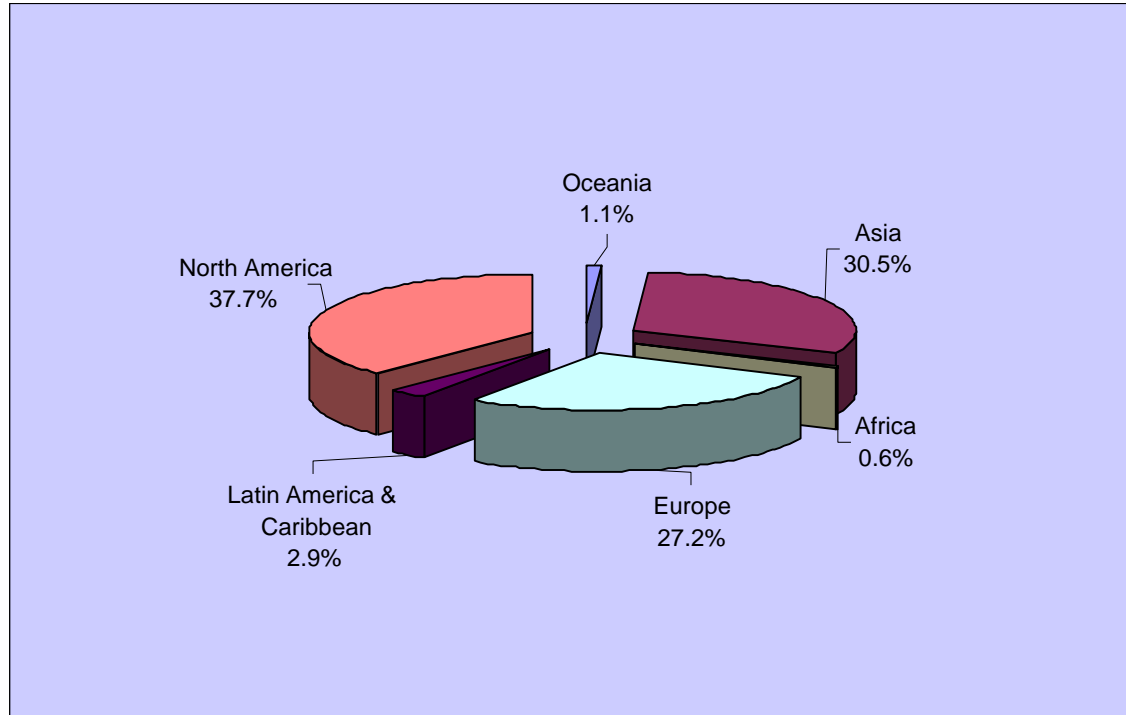


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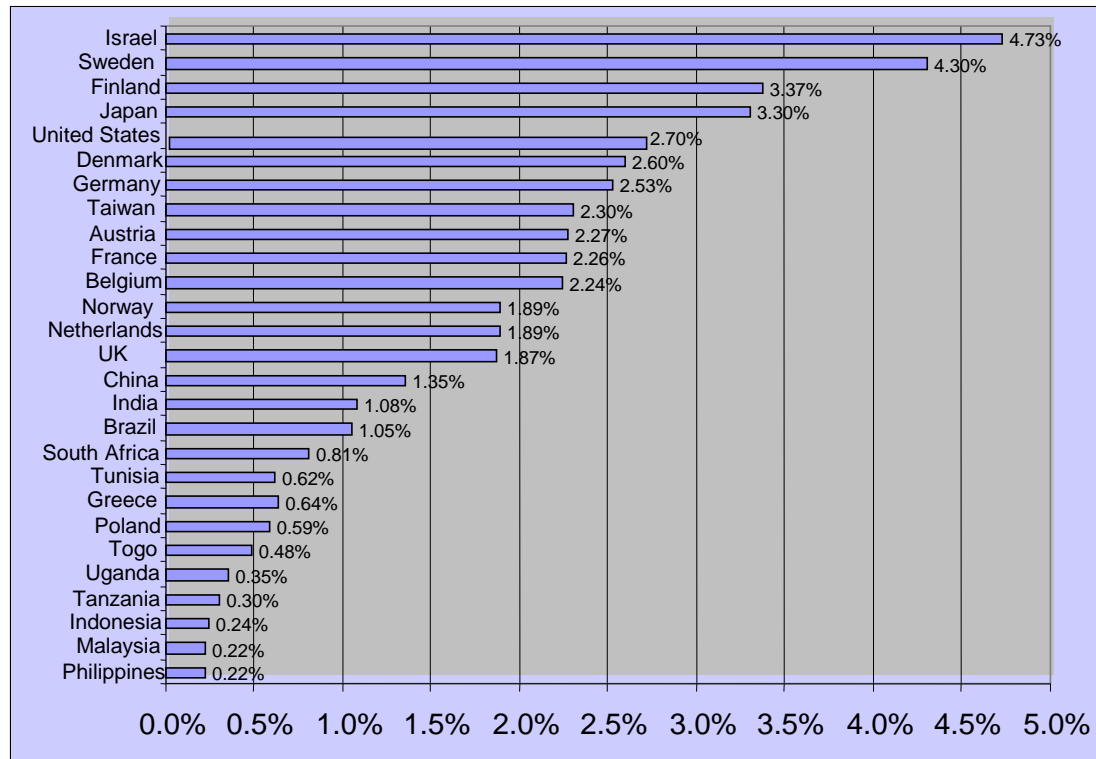
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Share of World Gross Expenditure on R&D (2000)



Government budget allocated to R&D as a % of GDP (2004/2005)



AFRICAN RESEARCH CAPABILITIES

- **Technology and innovation receive little attention as driving forces of growth processes.**
- **Technology conspicuously absent in poverty reduction strategies**
- **Technology not included in ToR for APRM**
- **UNCTAD – two stark future scenarios:**
 1. **Africa trapped at low level of development**
 2. **Accelerated growth through enhanced productive capabilities with critical S&T inputs. Higher knowledge intensity needed**



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KNOWLEDGE SYSTEMS IN AFRICA

- Domestic knowledge systems in Africa very weak
- Technological capabilities of domestic enterprises very low
- A gross tertiary enrolment rate 5% compared to 70% for North America and Europe, and world average 24%.
- Teaching practice not orientated towards acquisition of problem-solving skills or exposure to real life situations
- Inadequate basic and applied research undertaken



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FROM RESEARCH TO INNOVATION

- Traditional view is still prevalent that role of universities is to develop knowledge through research, publication of research results and training of students, and stops short there
- Obverse side of technological coin is industry itself. African manufacturing is characterised by low level of processing of natural resources and production of simple consumer goods for local consumption
- Catch-up strategies needed for building a domestic knowledge base, and to facilitate transfer and absorption of foreign technologies



7th Framework Programme 2007-2013

- Total budget EUR 50 billion
- Main strategic objectives:
 - Strengthen scientific and technological base of European industry;
 - Enhance international competitiveness by supporting research that underpins EU policies
- Open to 'third countries' (e.g. African) in research consortia



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FP building blocks

- Cooperation programme (two-thirds of budget)
 - Special International Cooperation Actions (SICA)
- Ideas programme: cutting-edge research on basis of excellence only
- People programme: researcher mobility and career development
- Capacities programme: strengthen research capacities, e.g. infrastructure
- Nuclear research programme: energy; waste management; safety



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FP7 cooperation programme

- **Thematic areas of priority:**
 - Health
 - Food, agriculture, fisheries, biotechnology
 - Information and communication technology
 - Nanoscience, nanotechnology, materials and new technologies
 - Energy
 - Environment (including climate change)
 - Transport (including aeronautics)
 - Socio-economic sciences and humanities
 - Space
 - Security



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Other key aspects of FPs

- **Co-financing**
- **Reimbursement**
- **Constraints for African participants:**
 - **Cash flow**
 - **Volume of contribution**



COTONOU PARTNERSHIP

- 20 years duration (2000-2020)
- Political dimension
- More flexibility
- Three main dimensions:
 - Politics
 - Trade
 - Development



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COTONOU PARTNERSHIP PILLARS

- Pillar 1: Political dimension
- Pillar 2: Participatory approaches
- Pillar 3: Development strategies and poverty reduction
- Pillar 4: New framework for economic and trade cooperation
- Pillar 5: Reform of financial cooperation



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EUROPEAN DEVELOPMENT FUND (EDF)

- Principal instrument for development cooperation
- 10th EDF (2008-2013)
- Overall budget of EUR 22,682 million
- National indicative programmes
- Regional indicative programmes
- Intra-ACP programme
- S&T not optimally integrated



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EUROPEAN CONSENSUS ON DEVELOPMENT

- Cue from Paris Declaration 2005
 - Ownership
 - Alignment
 - Harmonisation
 - Managing for results
 - Mutual accountability
- Political dialogue
- Policy coherence



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EUROPEAN CONSENSUS ON DEVELOPMENT 2

- Improved programming for poverty reduction
- EuropeAid responsible for implementation
- Devolution to EU delegations
- Strengthening human resources
- Improved working methods
- Quality control and monitoring



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Africa's institutional S&T landscape

- New Partnership for Africa's Development (NEPAD) Consolidated Plan of Action (CPA)
- Modest progress to date
- Weak inter-institutional linkages
- Disjointed STI and overall development policies
- Weak policy implementation capacity
- Small allocations to R&D as proportion of GDP
- Limited capacity for translating research into industrial products and services
- Lack of political will and long-term commitment to STI



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Africa's institutional challenges

- **Policy framework:**
 - Councils or commissions for S&T established after independence
 - Few countries have developed comprehensive national S&T policies
- **Institutional and legal framework:**
 - Fragmentation
 - Line ministries, and numerous autonomous institutions
 - Plethora of science, engineering and technology institutes
 - Parallel and overlapping mandates



Africa's institutional challenges 2

- **Weak financial resource base:**
 - No sustainable provision for implementation of STI policies
 - Half of R&D funding from external sources
- **Institutional infrastructure and human resources:**
 - Difficult to acquire and maintain infrastructure for S&T
 - Brain drain



African systemic S&T challenges

- Prevailing STI labour situation in Africa cannot support expansion of industry and other productive sectors
- Loss of human capital continuing at alarming rate
- Financial resources accruing to STI systems grossly inadequate due to competing demands on national revenue base
- Time lag from research output to product development
- STI requires different funding arrangement that entails sustained long-term commitment



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GLOBAL CHALLENGES

- Globalisation: integrated economy driven by information, technology and knowledge
- Digital and economic divides between developed and developing economies
- Excluding Africa from participating and benefiting from cutting-edge technological advances
- Africa net importer of and market for technology-intensive and high value products from developed economies, and predominantly an exporter of raw materials and unprocessed agricultural produce
- Budding local scientific innovation and product development variously affected by unfavourable global terms of trade and intellectual property policies



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Africa's development efforts

- Planning instruments: PRSPs or home-grown poverty reduction strategies
- CPA strategic clusters:
 - Biodiversity
 - Biotechnology and indigenous
 - Energy, water and desertification
 - Material sciences, manufacturing, laser and post-harvest technologies
 - Information and communication technologies
 - Space science and technologies
 - Mathematical sciences



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CPA policies and institutions

- African Science, Technology and Innovation Indicators Initiative (ASTII)
- Formation of African framework for cooperation in science and technology
- Creation of technology parks
- African Ministerial Council on Science and Technology (AMCOST)
- CPA implementation a monumental task:
 - Concerted efforts at all levels
 - Commitment
 - Harmonisation of policy frameworks
 - Public-private partnerships
 - Institutional and human resource capacities
 - Integration of CPA into poverty reduction strategies



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African participation in FPs

- Africa's participation in EU Framework Programmes is very limited
- Main reasons:
 - Nature of FP instruments and procedures
 - Fragmented economic structures and disjointed S&T and development environment
 - Gaps between technology policy and practice
 - Limited African participation in global policy decision-making fora



Bridging S&T-development gap

- Cape Town Consensus 2002
- Joint Africa-EU Strategy 2007
 - Africa-Europe relationship to new strategic level
 - Peace and security
 - Governance and human rights
 - Trade and regional integration
 - Key development issues (knowledge-based society recognising S&T as engines of development)
 - 8th Partnership on Science, Information Society and Space



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Lighthouse projects

1. EU-AU African Research Grants;
2. Popularisation of Science and Technology and Promotion of Public Participation;
3. Development of a Common African Union Science and Technology Policy Framework;
4. Pan-African Intellectual Property Organisation (PAIPO);
5. African STI Incubators Network;
6. Securing and Using Africa's Indigenous Knowledge Base;
7. Building Africa's Scientific and Institutional Capacity in Agriculture and Natural Resource Management;
8. Harnessing Biotechnology for the Advancement of African Agriculture;
9. Desertification and Forestry;
10. Water Management for Food Security in Africa in View of Climate and Demographic Changes;
11. African STI Observatory and Institution for Science and Technology Policy;
12. The African Institute on Climate Change (AICC)



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Country case: Tanzania

- Comparatively successful in tapping into FP funds
- Access to FP grants by Tanzanian researchers a result of personal initiatives and contacts with EU-based professional peers
- Tanzania Commission for Science and Technology (COSTECH) inadequately financed to coordinate responses to international research funding opportunities
- Initiative to prepare and submit research proposals invariably taken at European end
- Tanzanian researchers involved only at a late stage in conceptualisation and design
- Elaborate FP application procedures an impediment to Tanzania's further success in accessing FP grants



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Regional case: EAC

- Regional Economic Community (REC)
- Regional Strategy Paper (RSP) and Regional Indicative Programme (RIP) for 2008–2013 under 10th EDF
- Overall objective: poverty reduction and MDGs
- Two focal areas:
 - Regional economic integration
 - Political integration
 - Non-focal programmes
 - Higher education and S&T under non-focal programmes
- Inter-University Council for East Africa
- East African Commission for Science and Technology



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