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Science Governance in Africa: Challenges and opportunities

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The African Observatory of Science, Technology and Innovation (AOSTI)

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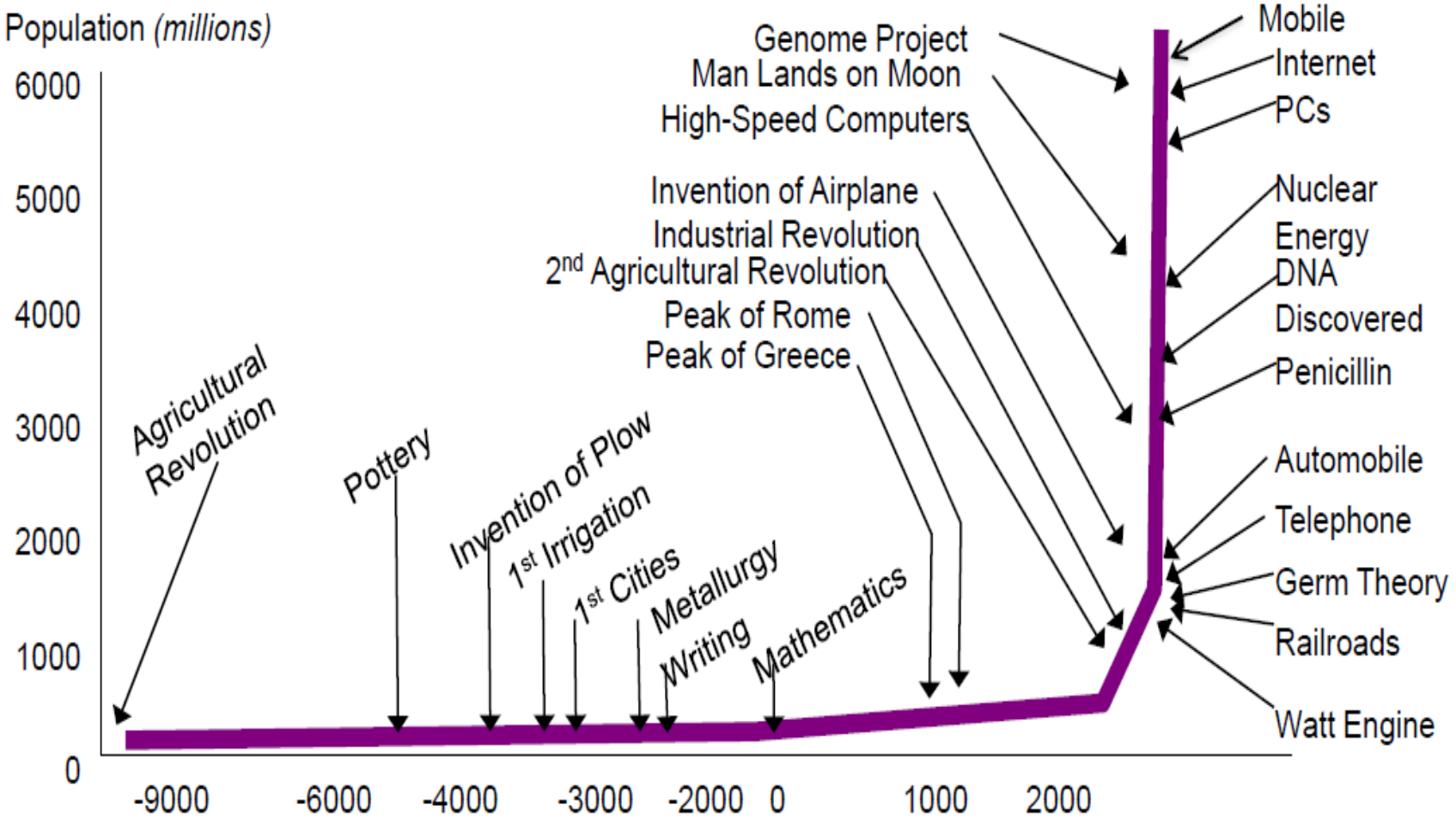
Growth of World Population and the History of Technology

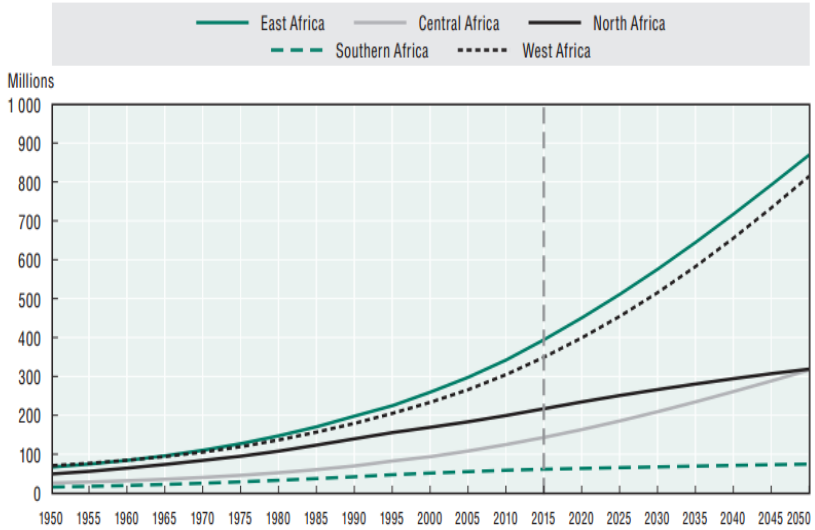


Source: Milken Institute, Robert Fogel/University of Chicago

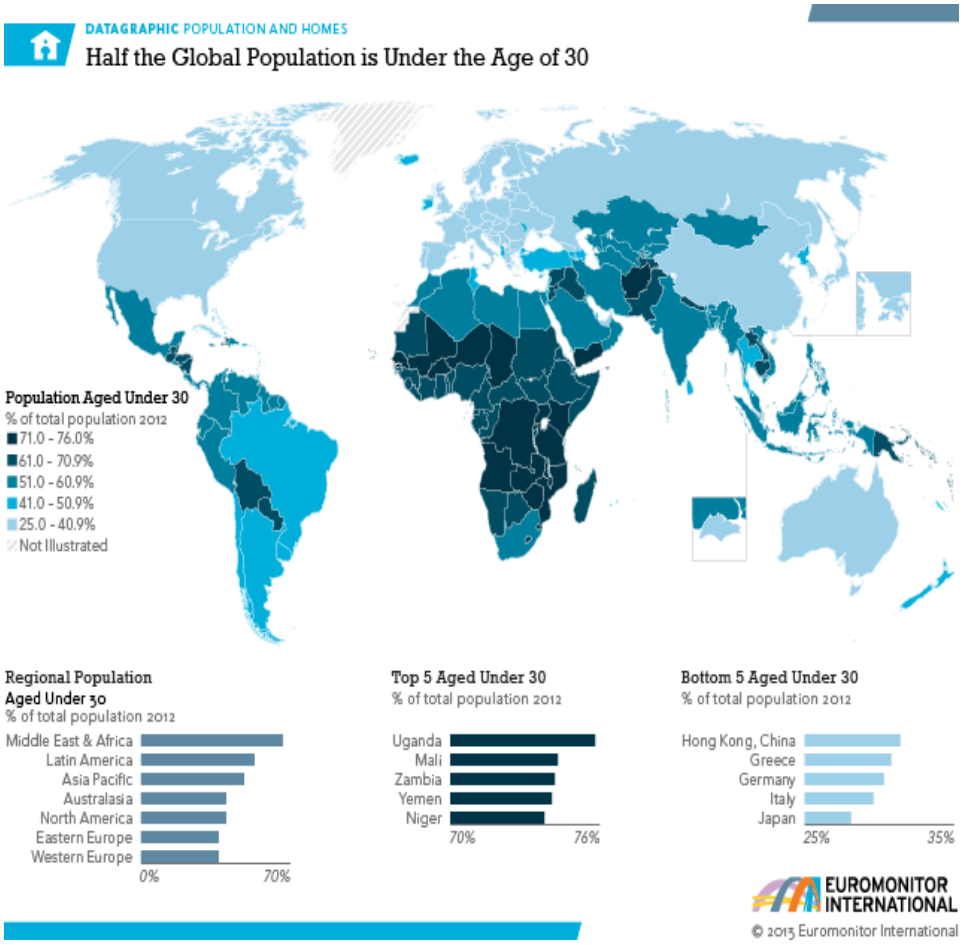
Africa's population growth: the demographic dividend an opportunity for the socio-economic and sustainable development ??

By end of the century, almost half of the world's children may be African

Figure 6. Population growth in Africa, 1950-2050



Note: Medium fertility scenario.
Source: UNDESA (2012).



Africa's economic growth opportunity

World's ten fastest-growing economies*
Annual average GDP growth, %

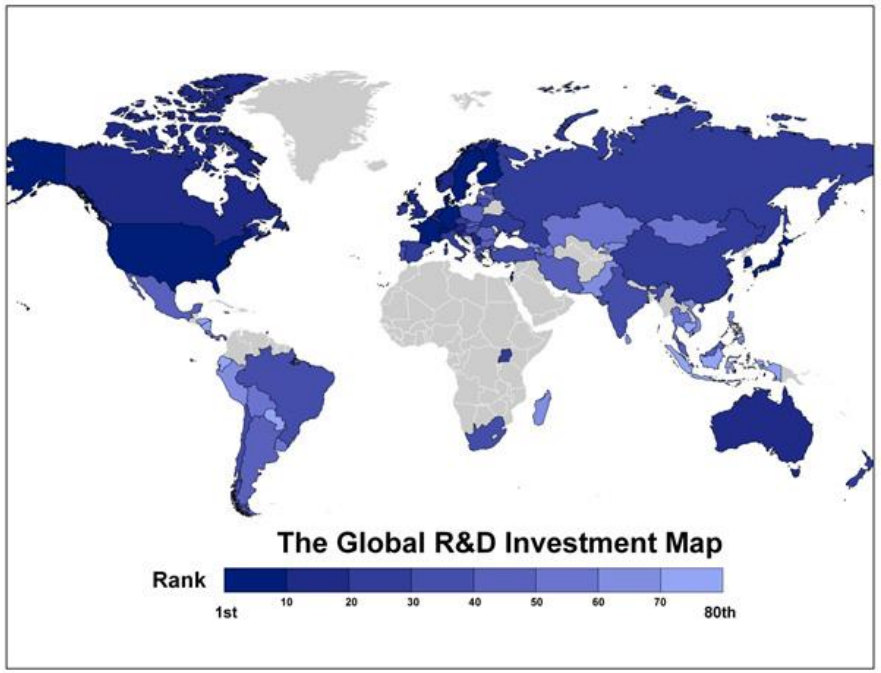
2001-2010†		2011-2015‡	
Angola	**11.1**	China	9.5
China	10.5	India	8.2
Myanmar	10.3	**Ethiopia**	**8.1**
Nigeria	**8.9**	**Mozambique**	**7.7**
Ethiopia	**8.4**	**Tanzania**	**7.2**
Kazakhstan	8.2	Vietnam	7.2
Chad	**7.9**	**Congo**	**7.0**
Mozambique	**7.9**	**Ghana**	**7.0**
Cambodia	7.7	**Zambia**	**6.9**
Rwanda	**7.6**	**Nigeria**	**6.8**

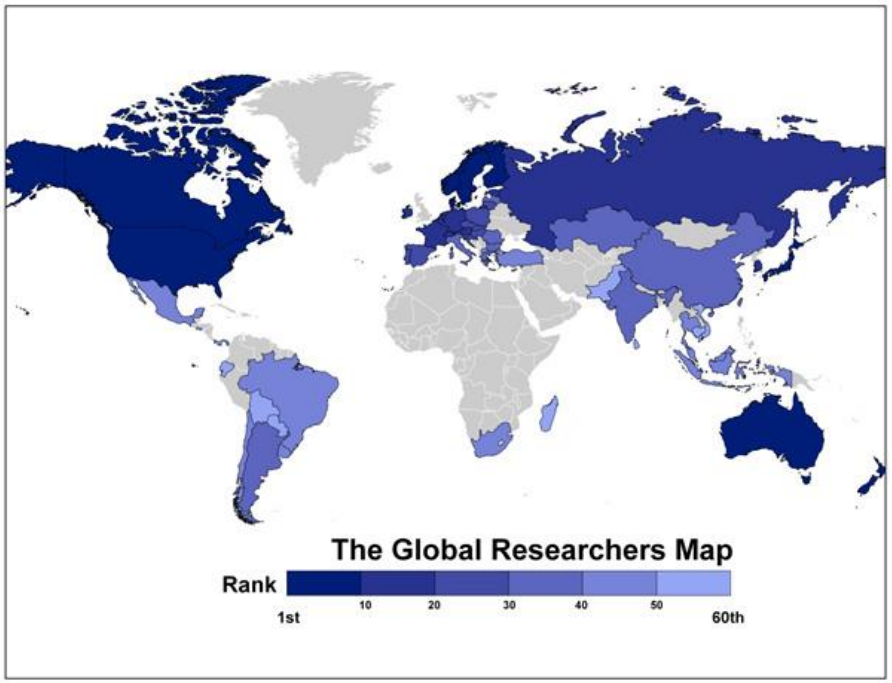
*Excluding countries with less than 10m population and Iraq and Afghanistan †2010 estimate ‡Forecast

Sources: *The Economist*; IMF

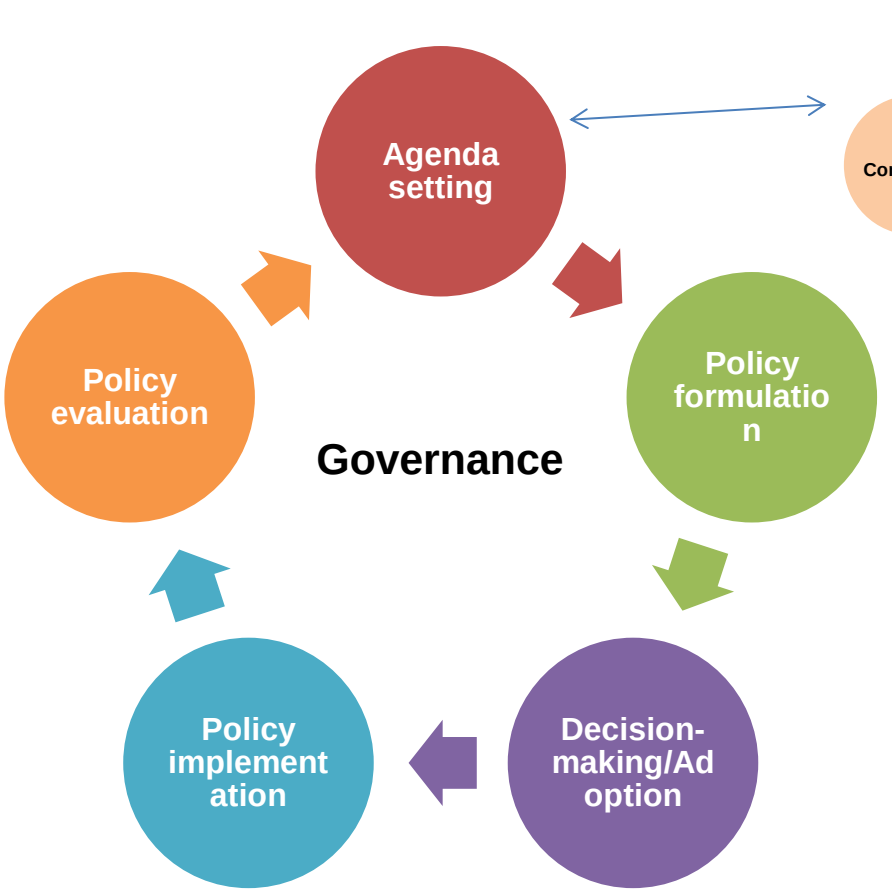
While China's economy continues to rapidly grow, during the first decade of the 2000s, most of the world's fastest-growing economies were in sub-Saharan Africa and the IMF projects that this trend will continue over the next five years (http://rs.resalliance.org/2011/01/12/africas-economic-growth/)

Low level of investment on R&D





STI policy making in Africa (1)



- STI policy processes cycle not well-established
- Time from agenda setting to policy adoption too long
- Lack/low public ownership
- STI activities not fully integrated in the development agenda
- Uncertainty during the Implementation phase
- No Monitoring and evaluation frameworks/plan
- …

--- understood as decisions and actions that are taken by governments/policy-makers to support/promote, regulate and use scientific advances, technological development, and Innovation….for a purpose…[regional integration, economic development overall poverty reduction, social wellbeing, etc..]" ….

STI policy making in Africa (2)

- **Main player: public sector (governments and academia); private sector not active stakeholder**
- **Focus more on S&T policies than innovation policy**
- **Weak linkages within the system**
- **little attention to the commercialisation of knowledge**
- **Discontinuity in the policy process (political uncertainty)**
- **Existing knowledge about STI for development is scarce**
- **Basic statistics on human resources and financial needs are lacking**
- **STI policy instruments are scarce and scattered**
- **Large informal sector**
- **Extremely low access to higher education**
- **Large service sector, ICT service sector**
- **High Technology gap**
- **…….**

Situation Analysis of STI in Africa (Ref. STISA-2024)

1. Increased recognition by African leadership and the public of the critical role STI plays in economic growth and human development;
2. Insufficient funding of STI policy activities
3. Organisational capacity by entities responsible for STI policy making
4. Infrastructure to support innovation
5. Inadequate expertise on STI policy development
6. Emergence of African civil society organisations and Think Tanks dedicated to raise awareness of STI
7. Bilateral and multilateral cooperation
8. Scientific output

Africa's Post-2015 Development Agenda

AU Agenda 2063: Six Pillars

1. Structural economic transformation and inclusive growth
2. Science, Technology and Innovation
3. People-centered development
4. Environment sustainability natural resources management, and disaster risk management
5. Peace and security
6. Finance and partnership

AU FRAMEWORKS

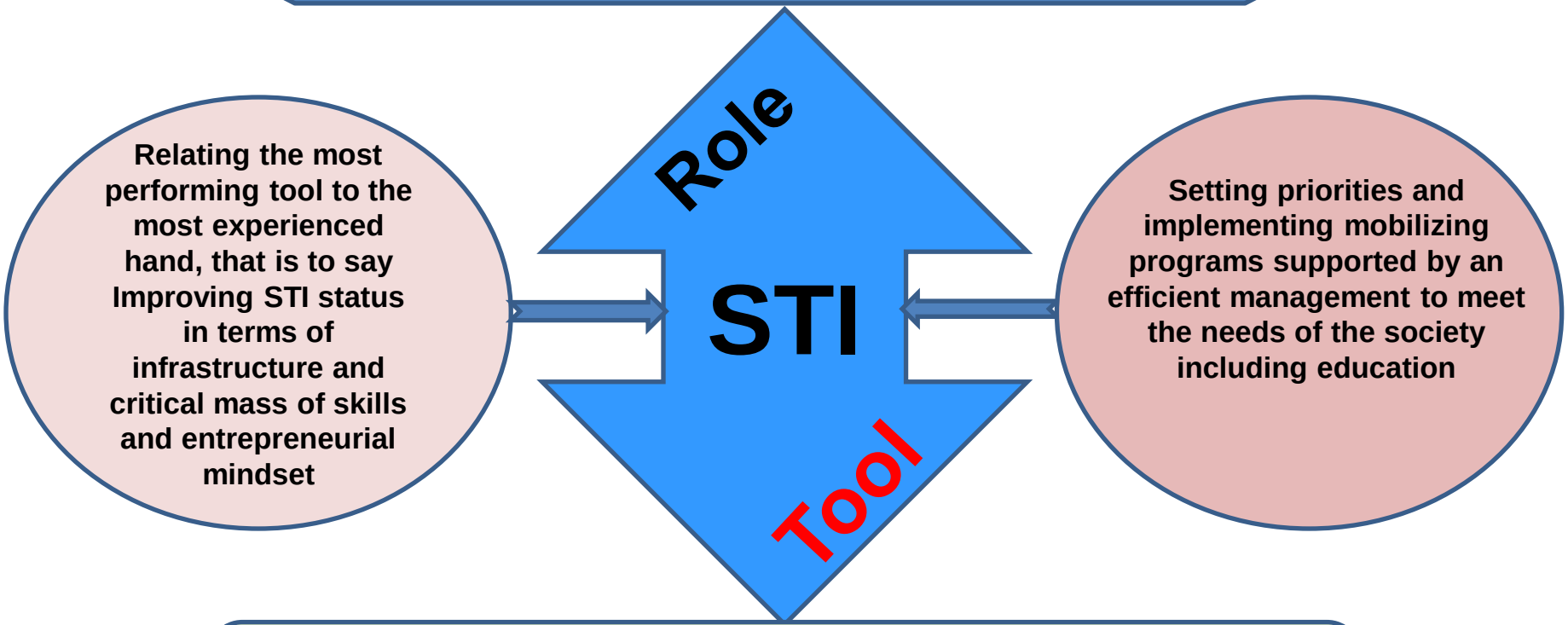
- STISA-24 advocates an innovation-led and knowledge-based economy for Africa socio-economic development
- PIDA
- CAADAP
- Others

STISA-2024: New AU STI Strategy for Africa 2024 (STISA-2024)

http://www.agenda2063.au.int

VISION of African Union

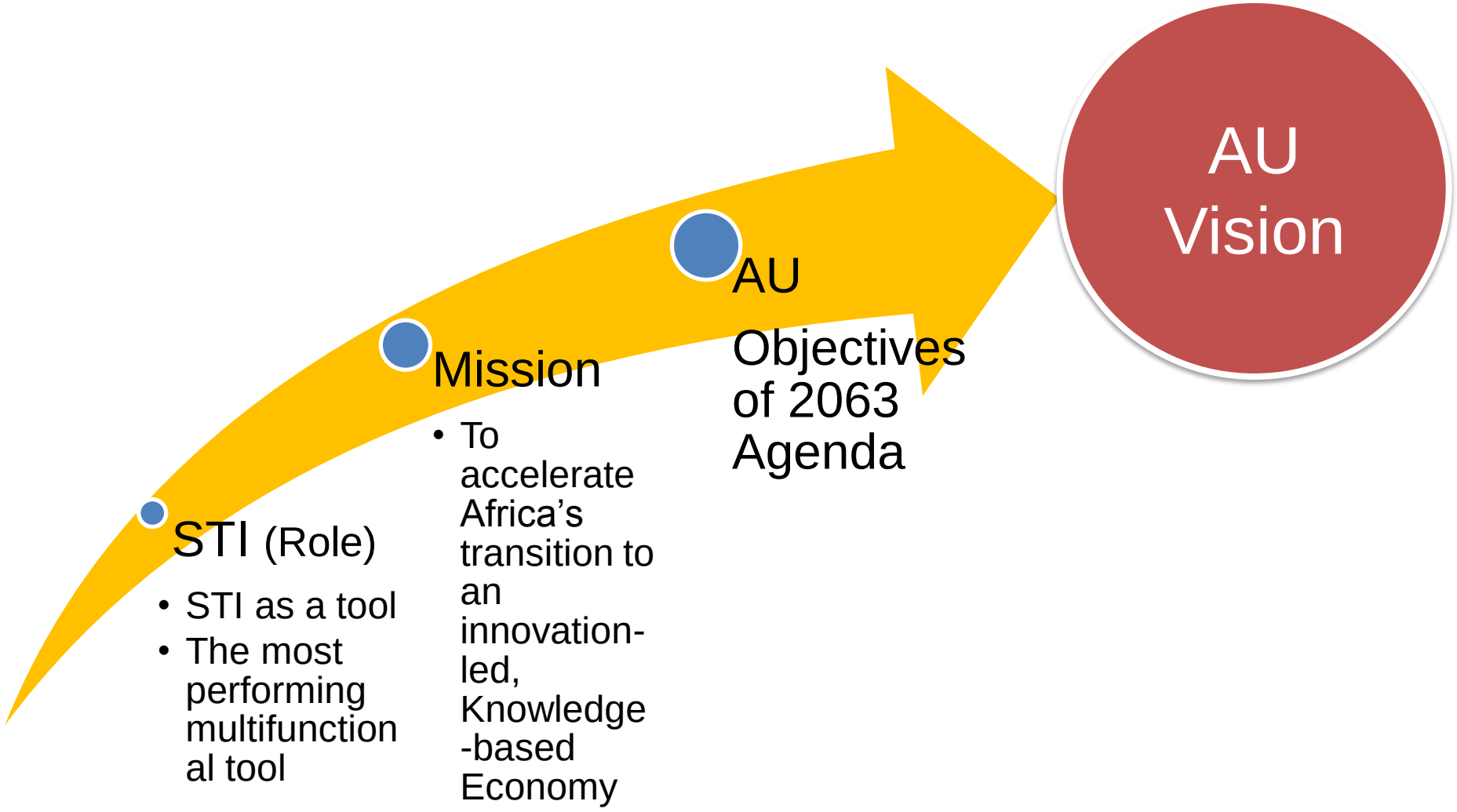
"An integrated, prosperous and peaceful Africa driven and managed by its own citizens and representing a dynamic force in the international arena"



MISSION of STISA-2024

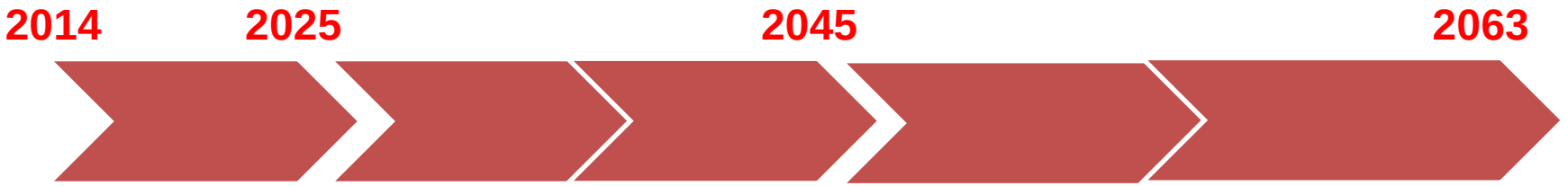
To accelerate Africa's transition to an innovation-led, Knowledge-based Economy

Importance of the Strategy

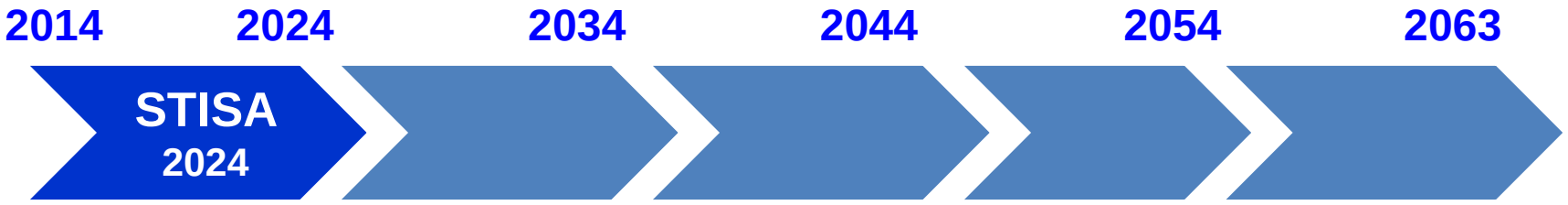


Timing of the strategy

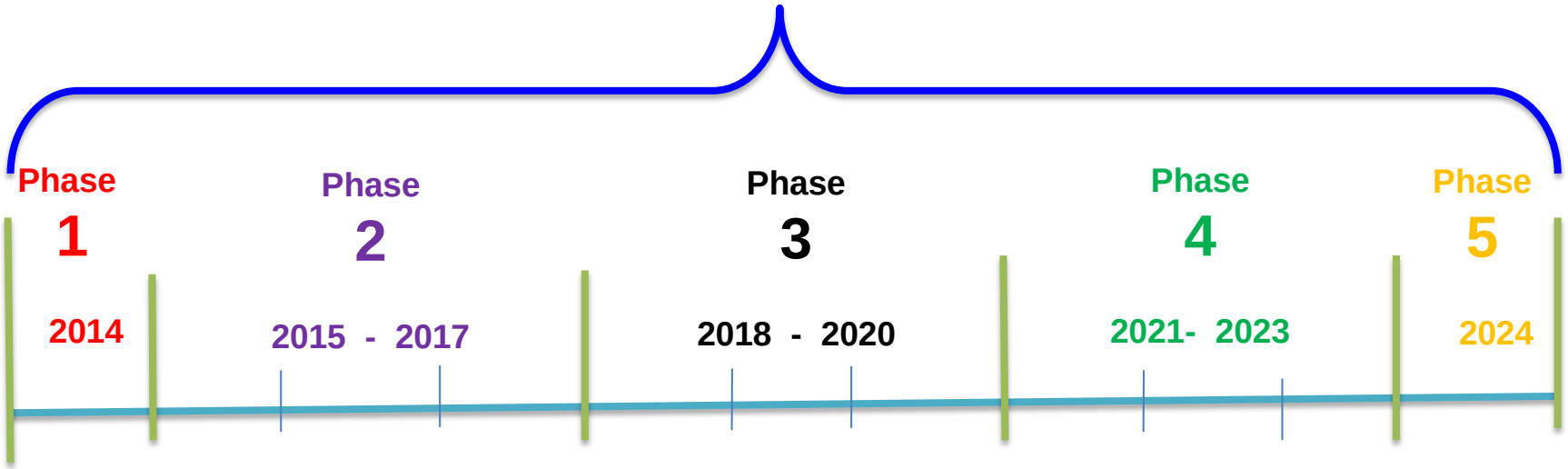
Agenda - 2063 of the African Union



STISA - 2024



Detailed Timing of STISA-2024



1- 2014 : **Strategy kickoff and institutional setting**

2- 2015-2017 : **Implementation of first series of mobilizing programmes**

3- 2018-2020 : **Implementation of second series of mobilizing programmes**

4- 2021-2023 : **Implementation of third series of mobilizing programmes**

5- 2024 : **Final evaluation of STISA-2024 and definition of the next 10-year strategy**

P R I O R I T I E S

P R I O R I T I E S		Research and/or innovation areas	Key Domain	
1	Eradicate Hunger and Ensure Food & Nutrition Security	-Agriculture / Agronomy in terms of cultivation technique, seeds, soil and climate -Industrial chain in terms of conservation and/or transformation and distribution infrastructure and techniques		Water Availability
2	Prevent and Contro Diseases and ensure well-being	**-Better understanding of endemic diseases . HIV/AIDS, Malaria, Hemoglobinopathie** **-Maternal and Child health** **-Traditional Medicine**		Water Quality
3	Communication	- Physical communications in terms of land, air, river and maritime routes equipment and infrastructure. - Promoting local material - Intellectual communications in terms of ICT		Water River Regimes
4	Protect our space	- Environmental Protection including climate change studies - Biodiversity and Atmospheric Physics - Spatial, maritime and sub-maritime exploration - Knowledge of the water cycle and river systems as well as River basin management.	Space	Water Water cycle
5	Live together – build the community	- Citizenship, History and Shared values - Pan Africanism and Regional Integration - Governance and Democracy, City Management, Mobility - Urban Hydrology and Hydraulics		Water Availability
6	Create Wealth	- Human resource development - Exploitation and management of Mineral resources, Forests, Aquatics, marines etc. - Management of water resources		Water Water resources

RESEARCH PROGRAMMES

	P R I O R I T IES	Key Domain per priority	
1	Eradicate Hunger and Ensure Food Security		WATER Availability
2	Prevent and Control Diseases and ensure wellbeing		WATER Quality
3	Communication		WATER River regimes
4	Protect our space	Space	WATER Water cycle
5	Live together – build the community		WATER Availability
6	Create Wealth		WATER Water resources

Researcher teams and networks

With program leaders

Mobilizing Programmes

Research Programmes

Political responsibility

Scientists, Economic Operators, Private Sector, Civil Society, Funding agencies

RECs and Countries Public and private research structures

Strategic Objectives

1. Enhance effectiveness of science, technology and innovation (STI) in addressing/implementing priority areas.
2. Improve technical competencies and institutional capacity for STI development
3. Promote economic competitiveness through fostering Innovation, Value Addition and Industrial Development /Entrepreneurship
4. Protect knowledge production (inventions, and indigenous knowledge, etc) by strengthening Intellectual Property (IP) and regulatory regimes at all levels
5. Facilitate STI policy reforms, harmonization, science diplomacy and Resources Mobilisation

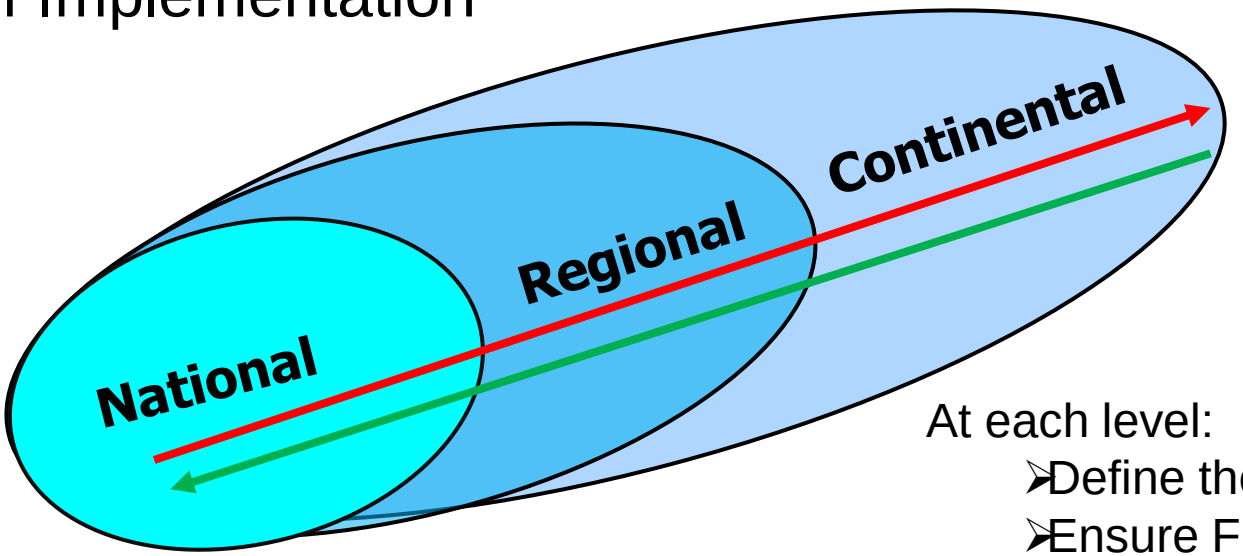
Pillars for building a robust foundation for STI

1) Revamp STI infrastructure in African countries
2) Enhance technical and professional competencies
- **Achieve the necessary critical mass (through education and training)**

3) Encourage collaboration within and between States in the area of Innovation and Entrepreneurship development
4) Provide Enabling environment for STI
- **Build a strong science culture**
- **Strengthen IP and regulatory systems**

Implementation of the Strategy

Levels of Implementation



At each level:

- Define the Programs
- Ensure Funding
- Implement (R&D)
- Communicate
- Evaluate the Programs

Institutional arrangements

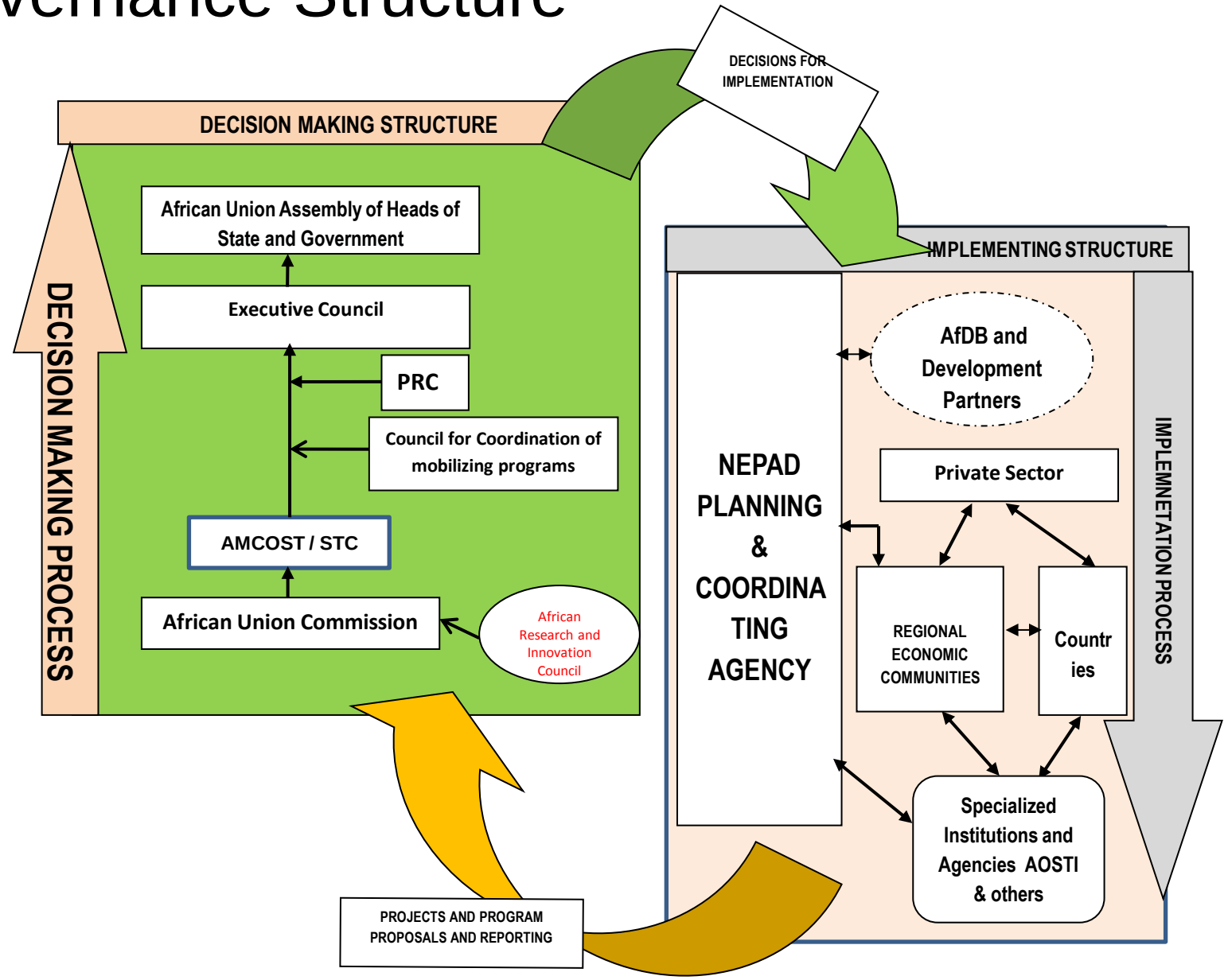
Decisions

Decision making and approval of priorities and Mobilizing programmes

Implementations

Elaboration of programs, Funding, R&D and production of reports and Evaluation

Governance Structure



Monitoring and evaluation

Mechanism:

NEPAD Agency, AOSTI and ASRIC

- identify a minimum set of agreed objectives and globally accepted performance indicators
- Put in place a standardised monitoring and evaluation system in all AU member States which should identify a national focal point

Reporting

Collective and Individual Responsibility of Countries, Regions and Researchers

Risk Management

- Awareness creation
- Lessons learnt, good practices and unintended impacts will be systematically documented
- multi-stakeholder dialogues established

Success Factors

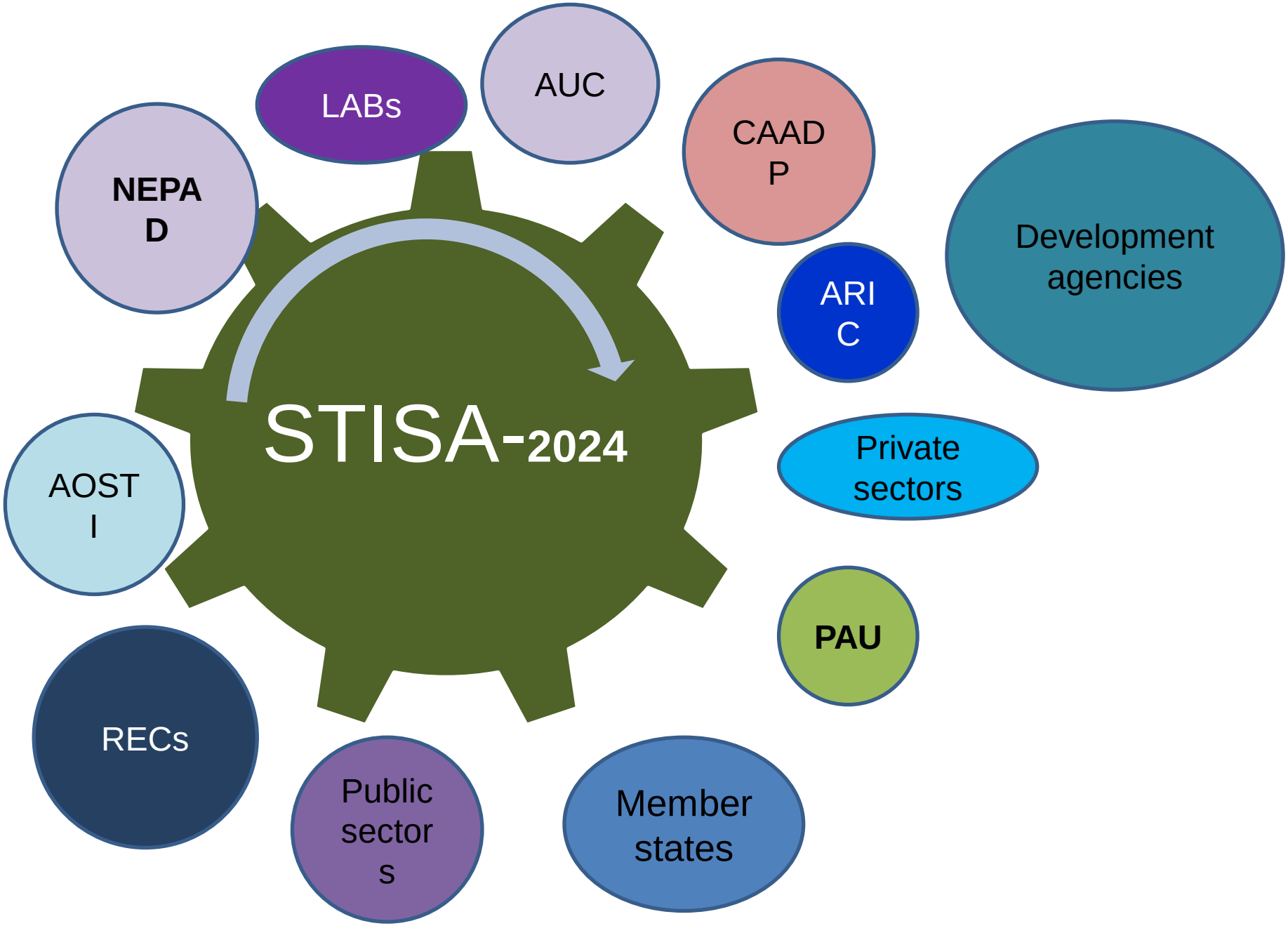
Funding Mechanism

- **Cost of STISA**
  - Define national and Regional Budget and subsequence
  - Prerequisite actions for implementation
  - Management and Programmes

Statistics on countries GDP for the year 2012

Country	GDP (billion USD)/2012	1% GDP/2012 for STI
Africa (All)	2,018,000,000,000	20,180,000,000
Algeria	197,600,000,000	1,976,000,000
Angola	113,200,000,000	1,132,000,000
Egypt	255,500,000,000	2,555,000,000
Nigeria	273,800,000,000	2,738,000,000
South Africa	367,400,000,000	3,674,000,000
Total		12,075,000,000
%		60%

- **National and Regional Funding**
  - National budget on the base of 1% GDP for R&D
  - National Sectorial Fund
  - National participation in the regional STI budget
  - Funding to support Entrepreneurs and Innovation Spaces
  - African Institutional support in STI
  - African STI Program support
  - Africa Start-up support
- **African Science, Technology and Innovation Fund (ASTIF)**
- **Private Sector**


LABs
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NEPAD
CAADP
Development agencies
ARIC
STISA-2024
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Private sectors
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RECs
Public sectors
Member states

STISA-2024

Africa on the Wings of Innovation

Malabo, Equatorial Guinea

The African Observatory of Science, Technology and Innovation (AOSTI)

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Thank you