

TOWARDS AN EFFECTIVE TECHNOLOGY ASSESSMENT SYSTEM IN KENYA

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NCST

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However, during the Consultative Forum that was held early 2010 in Nairobi, it was unanimously agreed that development of a sector-based agenda should be the initial stage in utilisation of TA for national gain.

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Executive Summary

There is consensus that Technology Assessment (TA) assumes a global perspective and is future-oriented rather than backward-looking. TA provides the necessary information on the effectiveness, and relative value of competing technologies. This would in turn lead to a better understanding of technology for quality decision and policy making process both at institutional and national levels.

From a policy perspective for each and every technology introduced and applied within a particular jurisdiction it is important to have the following:

1. Establish technology evaluation criteria in line with the national social and economic goals;
2. Involve different stakeholders on technology preferences and synthesize their opinions about the specific technology;
3. Summarize and report the results of assessment; and
4. If positive, advise on the setting up of follow-up activities that may include design, execution and action plan dependent on the assessment report.

In order to industrialise, there is need to integrate technology planning into development planning through appropriate economic policy. Technology Assessment is therefore the tool of choice to help Kenya select competitive technologies that can generate more economic value in our economy.

However, it should be noted that achievement of an effective TA system will be dependent on rationalization of other factors within the National System of Innovation. These factors include infrastructure, macroeconomic stability and appropriate fiscal regime.

once introduced. Other factors that may influence the choice of technologies may include:

1. Significant changes in old technology at local or international level
2. Safety concerns
3. Ethical concerns
4. Economic concerns

4.0 Recommendations

Factors that are considered important in technology assessment are broadly divided into technical, economic, legal, social and environmental. The standard TA method is a multidisciplinary team that will be both systematic and comprehensive in its undertaking of the above activities. For each sector, it is recommended that the committee be composed of people from academia, research institutes, industry and civil society and hosted by the relevant arm of the sector.

Various activities of and related to technology assessment may be undertaken in an identified sectors in order to improve productivity and competitiveness. These may include:

1. Identify institutions and personnel that are currently involved in technology assessment activities.
2. To undertake a baseline survey of existing, new and emerging technologies (both local and foreign) that require technology assessment
3. Develop a framework for undertaking technology assessment in the country
4. Identify possible areas of social conflict created by specific technology applications and
5. Provide policy options on technology assessment and application of specific technologies.

productivity and value of agricultural production will rely heavily on use of improved technologies and adoption of new technologies. The need to assess these technologies is key to the success of the strategy.

Information Communication and Technology Sector:

The Government recognises the value of ICT and related technologies in social and economic development and has therefore initiated major steps to promote its use. One of the strategies in the medium term plan is to improve ICT infrastructure in order to bridge the digital divide and lower the cost of communications. The Government is also leveling the ground through development and implementation of policy and regulations aimed at attracting investment within the sector. Technology Assessment of both new and existing technologies in the sector would enable government achieve this noble objective.

Energy Sector: Energy is one of the foundations of Kenya Vision 2030. Development projects recommended under the Vision will increase demand on Kenya's energy supply. Energy planning aims at ensuring that decisions on energy demand and supply infrastructures involve all stakeholders, consider all possible energy supply and demand side options, and are consistent with overall goals of sustainable national development. New sources of affordable energy have to be found and exploited to assure realization of Vision 2030. To achieve these, there is need to undertake energy technologies assessment to provide the necessary information for decision and policy making in the sector.

3.0 Target Technologies for Assessment

Generally, the initial focus on technologies for assessment will depend on the government policies governing the sector. However, new and emerging technologies should be assessed because of the uncertainties that they pose

1.0 Introduction

The Government of Kenya developed the Kenya Vision 2030 as the country's new development blueprint covering the period up to 2030. The vision aims to transform Kenya into a newly industrialized, middle-income country providing a high quality life to all its citizens by the year 2030. In order to achieve this, it will be necessary that the nation is globally competitive. Competitiveness has been defined as the set of institutions, policies, and factors that determine the level of productivity of a country. The level of productivity, in turn, sets the sustainable level of prosperity that can be earned by an economy

Science and technology capabilities are fundamental for social and economic advancement in developing countries. The Social Strategy of the Blueprint aims at transformation of seven key social sectors: Education and Training; Health; Water and sanitation; the environment; Housing and urbanization; Gender, Youth, Sports and Culture; Equity and Poverty Eradication. These policies (and those in the economic pillar) are to be supported by adoption of science, technology and innovation as an implementation tool.

Technology Assessment (TA) is basically the study and evaluation of possible consequences of application of technologies. The role of TA is to assist the general public, civil society, private sector and government better understand how technology affects society. TA investigates the possible impacts of application of a particular technology or technological system. Technology Assessment is one of the major steps in Technology Transfer. Others being adoption and utilization. TA may thus be viewed as the identification of technology options,

efficiency limits, technical barriers, social conflicts and potential solutions.

Most of the TA activities undertaken today are in the Health and information sectors. This may be attributed to the rapid expansion of these sectors both in terms of accessibility and population growth in both developing and developed countries. The sectors have also been backed by rapid technological leaps in the last two decades.

1.1 International Technology Assessment

Since early 1970's, TA has established itself as a new form of interdisciplinary technology research. A number of countries or regions have institutionalized Technology Assessment.

1.1.1 US office of Technology Assessment:

The US office of Technology Assessment (now defunct) had in-house expertise. The Office of Technology Assessment (OTA) was an office of the United States Congress from 1972 to 1995. OTA's purpose was to provide Congressional members and committees with objective and authoritative analysis of the complex scientific and technical issues of the late 20th century. It was a leader in practicing and encouraging delivery of public services in innovative and inexpensive ways, including distribution of government documents through electronic publishing. Its model was widely copied around the world.

1.1.2 European Technology Assessment Group:

Since 2005 a group of European scientific institutes known as European Technology Assessment Group (ETAG) has been providing scientific services for the European Parliament on social, environmental and economic aspects of new technological and scientific developments. The

their national health technological stock more efficiently, if the losses in technological investments are to be reduced.

Both studies were published in the East African medical journal that is published by the Kenya Medical Association.

Other technology assessments that have been done are in other areas that include agriculture, ICT and biotechnology. These assessments have been carried by institutions as part of their mandate.

In Kenya, most firms are heavily dependent on imported technology and they remain always dependent on imported skills for the maintenance and operation of plant. This is happening because the country has not prioritized technology assessment process. Adaptation to the local needs have received less priority at the time of acquisition of the imported technologies.

2.0 Priority Sectors

Health Sector: A healthy population is vital to Kenya's competitiveness and productivity. The Kenya Vision 2030 identifies health sector as a key component under the social pillar. It aims to improve the livelihoods of citizens through provision of an efficient and high quality health care system. Specific strategies include provision of robust health infrastructure network. To achieve this strategy there is need to undertake HTA both for existing facilities and new technologies.

Agriculture Sector: Agriculture contributes directly to over a quarter of the GDP and provides a source of livelihood to the majority of Kenyans. Increasing value in agriculture is one of the strategies that have been identified under the economic pillar of the Vision. Improvement of both

- Kenya Agricultural Research Institute
- Kenya Medical Research Institute
- Communication Commission of Kenya
- Kenya Industrial Research and Development Institute

Apart from CCK which undertakes TA as part of their legal mandate and international conventions; most other technology assessments are undertaken as part of research in a fragmented manner. It is highly unlikely that the results of these assessments have informed policy. This is due lack of a nationally recognized protocol for to undertake TAs and communication to decision and policy makers.

It is important to note that TAs that have been undertaken by universities have been undertaken as part of postgraduate studies and most likely remain in the libraries. Information on technology assessments and related activities that have been undertaken by the private sector and civil society remain scanty.

From a literature survey, most of the technology assessments that have been undertaken in the country are in the health sector, in which two investigations stand out:-

- 1) A study of health technology assessment in public hospitals in Kenya was done by Ogembo-Kachieng'a (1998) of University of Nairobi. The study recommended that a) The planning, deployment, management and assessment of technology should be fully integrated into health policy and planning and b) Policy guidelines should include the regulation, control and utilisation of health care technologies.
- 2) A more recent study by Ogembo-Kachieng'a and W. O. Ogara (2004) on 'Strategic Management of Technology in Public Health Sector ...' concluded that the country must develop human capital to manage

focus of ETAG's activities on behalf of the European Parliament have been on studies in the fields of Transport, ICT and Information Society, Nanoscale Science and Technology, Life Sciences and Human Well Being as well as Agriculture, Food and Biotechnology.

Apart from being leading institutions in the field of Technology Assessment in their home countries most members of ETAG have long-term experience in policy consulting for parliamentary bodies. The group includes the following organisations:

- the Institute of Technology Assessment and Systems Analysis, which operates the Office of Technology Assessment at the German Parliament.
- the Danish Board of Technology, which provides consultancy services for the national parliament
- Institute Society and Technology, Belgium – whose current TA projects include Biotechnology, mobility, energy, cyberbullying, nanotechnology
- the Rathenau Institute, the central TA institution in the Netherlands working for the Dutch parliament
- the Institute of Technology Assessment at the Austrian Academy of Sciences whose research fields include Information and communication technologies, Biotechnology, Environmental technologies and Medical Technologies/Health Technology Assessment.

1.1.3 Technology Assessment in Asia

In India, Technology Information, Forecasting and Assessment Council (TIFAC) is an autonomous organization set up in 1988 under the Department of Science and Technology to look ahead in technologies, assess the technology trajectories, and support technology innovation by network actions in select technology areas of

national importance. In 1993, TIFAC embarked upon the major task of formulating a Technology Vision for the country in various emerging technology areas. TIFAC continues to strive for technology development of the country by leveraging technology innovation through sustained and concerted programmes in close association with academia and industry.

The Malaysian Health Technology Assessment was established in August 1995, under the Medical Programme, Ministry of Health Malaysia, in keeping with the Ministry's policy of ensuring that safe, effective and cost effective technology is being used in the Ministry of Health facilities in Malaysia. By June 2009, forty-three in-depth assessments had been carried out, and the recommendations of these assessments were subsequently implemented. In addition, approximately 140 rapid assessment reports were produced in response to requests from policy and decision makers. HTA has been able to provide input into formulation of policies, and provide a basis for clinical practice guidelines development, input into procurement decisions, regulation of drugs, as well as advertisements related to health.

In contrast to European countries and even other Asian countries, Japan does not have formal technology assessment activities. Several attempts were made in the 1970s when the Science and Technology Agency and the Ministry of International Trade and Industry started to investigate TA activities of the Office of Technology Assessment in the US with a view to introducing TA into the Japanese S&T system. An attempt was made to create a law for TA, but it failed.

1.1.4 Technology Assessment in Africa

In Africa, most of the TA reported is in the health sector. Institutional frameworks for TA are missing in most countries. South Africa has been at the forefront in health technology assessment activities on the continent. Most African countries participate in climate change mitigation activities as per the United Nations Framework Convention on Climate Change. Most technology assessments that are undertaken on the continent are on *Ad Hoc* basis.

However, in Ghana, there is a Technology Assessment Project that is as a result of collaboration between the University of Ghana and the Technical University of Denmark. The project is a long-term research collaboration that is expected to build local capacity for technology assessments.

1.1.5 Technology Assessment in Kenya

The Technological readiness pillar under The Global Competitiveness Report that is produced on an annual basis by the World Economic Forum measures the agility with which an economy adopts existing technologies to enhance the productivity of its industries. The readiness assessment which includes information and communication technologies (ICT), availability of latest technologies and technology transfer ranked Kenya at position 96 out of the 133 countries surveyed.

There are a number of Technology Assessment activities that are currently being undertaken in the country. A number of public institutions are involved in technology assessment and related activities. These institutions include:-