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TECHNOLOGY ASSESSMENT FOR BETTER
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Introduction

1. Developing countries are often faced with the dilemma of accepting whatever technology is offered to them by the donor community. Even if some choices are presented to them, the recipients often lack the capacity to assess these technologies properly, and end up with environmentally unsound technologies. With the rise of environmental consciousness the need to assess technologies for appropriate technological choices has now become an integral part of technology acquisition, assimilation and internalization process. All the more since many technological projects have been utter failures because no due consideration was given to a combination of economic, social and environmental factors that impact on the results. With the green movement becoming more and more popular, the assessment of environmentally sound technologies is now highly recommended, and methodologies for such assessment are being introduced in all technology transfer institutions in developing countries.

Technology Choices in Africa

2. The lack of well defined technology policies in Africa has led to inappropriate technological choices. It is recognized that proper technology assessment paves the way for proper technology policies which in turn ensure a successful development and application of science and technology. Technology transfer projects in Africa have failed in many cases because no proper technology assessment has been undertaken at the start. Adequate environmental, social, cultural and economic impact studies are prerequisites and form part of technology assessment. Economic impact studies alone are not enough, for even if there are economic gains, the impacts on society and environment can be disruptive. This is evidenced by the problems of environmental pollution, acid rain, ozone layer depletion, carbon-dioxide increase and green-house effect, heavy soil erosion, desertification, drought and water shortages due to climatic disturbances, large population displacements with ensueing social and political instability and strife that mark the African region. In fact the root cause of most of these calamities is the improper application of science and technology resulting from poor technology assessment.

Technology Assessment Methodologies

3. Since technology assessment includes technology forecasting, monitoring and evaluation of social cultural and environmental impacts, it is also known as technology foresight. The methodologies for technology assessment vary from place to place, depending on the level of technological development of the country concerned. Developed countries pay much attention to frontier research leading to experimental development and then application as they are keen to have a competitive edge using the latest and most sophisticated technologies. Developing countries on the other hand, are more concerned with the application of technologies as a means to exploit their natural resources and raise living standards while meeting basic needs. In this process the need to stress on the application of appropriate technologies that are readily available, and then move to research and innovation. The technology assessment methodology could then have the following steps.

(a)   Definition of the assessment task.

(b)   Description of the relevant technologies available locally and abroad, after adequate sourcing.

(c)   Development of the state-of-society assumptions in terms of their needs, values and vision.

(d)   Identification of impact areas and undertaking preliminary impact analysis.

(e)   Identification of possible action plans, after formulation of alternative scenarios.

(f)   Discourse process involving debates with stakeholders and consumers.

(g)   Completion of impact analysis

(h)   Decision making with political actors involved.

4.   In the formulation of alternative scenarios, the technology assessment exercise incorporates cost-benefit, cost-effectiveness and impact analysis, and as such the methodology has interdisciplinary dimension.   Many other methodologies are available, some highly mathematical.

Institutionalisation

5.   It has been found that proper technology assessment can take place if there is an institution responsible for this. Developing countries are advised to set up a Technology Transfer and Assessment Unit within their national institution coordinating all activities in science and technology. This unit will study national technological needs, scan the local and international markets, evaluate existing as well as new technologies, organize concertation with stakeholders, negotiate with potential suppliers and help acquire the requisite technologies for the country. Its primary objective in most developing countries is employment creation, capital formation and the upgrading of local resources in order to increase their competitiveness in the market, while at the same time preserving a sound environment.

6. In the natural resources and commodity sectors, advances in biotechnology and new materials are plummeting the market prices of traditional exports. Only technology assessment can help to determine future development orientations that can enhance the competitiveness of products. While developed countries use technology assessment to stress on mass production of their manufactured goods, it is not necessary that developing countries follow the same path. Technology assessment can be used for production by the masses, increasing employment opportunities, in favour of small and medium scale industries more in harmony with the social and physical environment.

7 Technology assessment exercises are needed in the education and technical training programmes in schools and universities, so that they are more responsive to local needs and market demands, and produce the local skills and structures involved in the implementation of technology assessment.

8. Since appropriate, environmentally and socially sound technology application and development are they very basis of socio-economic growth, it is essential that governments establish specific credit lines and grants within national and regional development banks, and annual budgets for promoting science and technology as a critical area for development.

Role of the United Nations

9. At the regional and inter-regional levels, the United Nations can play an instrumental role in collecting and diffusing relevant information, trend monitoring and analysing the state-of-the-art of key technologies, promoting networking among technology assessment research and practising institutions, organizing regional focal points, workshops and seminars for experts and policy-,makers, and in promoting cooperation in the area of technology assessment and foresight. Access to international data banks is often a problem for many developing countries. The United Nations could therefore establish a clearing-house to alleviate this problem. Since technology monitoring, assessment and forecasting activities in a number of developing countries are still in the early stages, the UN System as a whole with the close involvement of regional commissions, can play a stronger role in promoting these concepts and thus ensuring sustainable development, in line with the recommendations of the global conference on environment and development, and the provisions of Agenda 21 of these recommendations.

Conclusion

10. The development of Science and Technology in general, and the sound practice of technology assessment in particular, require the framework of a proper vision at the policy-making level. The formulation of medium and long-term development objectives should therefore be based on informed and knowledgeable decision-making, and should incorporate local needs, the global trends, and the criteria of sustainability. This vision, based on a continuing stake-holders' dialogue, will pave the way for sustained growth in all sectors.

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