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FOR

RESEARCH, DEVELOPMENT AND TECHNOLOGY TRANSFER
IN WATER AND SANITATION

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INTRODUCTION

The process of technology development and transfer comprises a complex cluster of aspects, not all of which receive due consideration in development cooperation. Major issues are:

- the appropriateness of the technologies under discussion for the circumstances in the country concerned, including those adapted to local conditions from technologies in use elsewhere;
- the existence of capacities which play an intermediary and supportive role for decision makers and project managers at the national and sub-national level in developing countries, in accessing and/or developing technologies for use in their countries;
- the comprehensiveness and communication orientation of the transfer processes, particularly regarding the ideas and skills behind technology;
- the cost involved in development and transfer, including property rights in cases of commercial products.

In implementation projects, which are conceived to establish infra-structural works based on existing, well established designs (e.g. a distribution network or community latrines), technology development and transfer are often merely seen as a project component ensuring effective implementation work, rather than as an objective in themselves. It may be argued, however, that from a development point of view, even in such straightforward cases as those mentioned, technology development and transfer indeed form an objective in their own right.

Indeed, a sound process of technology development and transfer should be regarded as one of the central issues in development cooperation. For, many projects copy technologies and approaches from elsewhere, without due attention to adaptation to local circumstances, and particularly to skills available.

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As a result, systems put into operation on that basis do not perform well, are under-utilized, fall into disrepair, or are abandoned altogether.

In this brief note, technology is understood as a method, design or approach, rather than as a commercial product. Aspects of the technology development process, national capacity development, organisation and roles of national entities, as well as of the underlying aspect of communication are briefly dealt with.

THE PROCESS

Technology development and transfer can best be dealt with by a specialised institution or individual, acting as an intermediary between supply and demand. In the match between the two, the process should in principle start with the potential user, not the supplier. In other words the prime objective should be solving a problem, not selling a product.

The process should begin with the identification of the needs of the target group(s) in question, and the specific problems to be dealt with. This may, for example, concern a community as a whole not having adequate sanitary facilities, or a water company having to produce safe water from a polluted source. The process continues with searches for available information about methods and approaches, and finally, designs. This requires continuous access, by the intermediary, to the required information.

Where a suitable technology does not seem to be available this step in the process may include carrying out, or contracting out **action research**. Use of locally available technologies and skills should thereby receive due emphasis.

The next important step is the evaluation and consolidation of the results of the earlier action, for easy consideration by the potential user. A solid basis for selection has then been laid.

In order to enable the future user to make an informed and well-considered decision about which technology to adopt and how, effective **communication**, as of the start of the process between user and intermediary, is needed. This communication, as an underlying factor in the whole process, serves the purpose of awareness raising, understanding, or change of attitude, as the case may require. For, flaws in technology transfer may be evoked by non-awareness or unfamiliarity with the technology, and also by non-acceptance caused by incomplete information or misunderstanding.

Communication as implied here is not merely passing on information. It includes dialogue, listening to and weighing arguments, possibly demonstration, and true assessment of pros and cons.

When a decision regarding the technology to be adopted has been reached, those to be charged with construction, operation and maintenance need to be prepared for their future tasks. This requires the essential factor of knowledge enhancement. Training, but also demonstration, and in some cases action research are ways of knowledge enhancement: translation of information into knowledge.

To complete the process, as a basis for corrective action and for learning from experience, monitoring and evaluation should be prepared for from the beginning.

Communication and knowledge enhancement are two equally important, but often underemphasized factors in the process of technology development and transfer.

NATIONAL CAPACITY

The described process can only be conducted effectively if the intermediary mentioned in the preceding section and the potential user are in easy reach of each other. This will ensure dialogue and mutual understanding of constraints and opportunities. Use of the same language is another obvious condition.

Consequently technology development and transfer in general in relation to the ultimate user can only be really fruitful if undertaken in the country itself. This requires national capacity, ideally at different levels.

The development of national capacity must be regarded as an essential component of development work. Indeed, it may be what development is all about. There is no short-cut. The many unmaintained, unused, unpaid for, and incomplete facilities together are sad proof of past inattention to capacity building. What results is unsustainability.

The development of capacities for information, research, communication, and knowledge enhancement in technology development and transfer will lead to better grounded decisions on technology application, greater efficiency of project operation, greater effectiveness of project outputs, and multiplication of efforts at the country level. Thus, special entities for technology development and transfer need to be developed, where possible through strengthening of already existing centres or units in institutions. In this paper they will be referred to as resource centres. They can form an important potential in the drive for greater sustainability.

Sustainability demands resource centres for information, research, communication and knowledge enhancement at national and sub-national levels.

ORGANISATION

The resource centre, dealing with information, research, communication and training, needs to be closely linked with the operational organisations (ministry departments, government institutions), to enable it to act on the basis of real-life situations. It also needs to be formally detached from them, to enable it to remain objective in its focus, and independent in its priority setting. Nevertheless, the centre needs to be part of the government, from which it must derive its mandate.

The centre will require a core subsidy enabling it to hire core staff with a working budget (general operations, travel, housing, etc.) and to perform basic tasks (such as library, external relations etc).

Programmes and projects would preferably be financed separately through extra-budgetary funding by beneficiaries or their financiers. This will encourage meaningful work which responds to market needs, thus ensuring application of results. Perhaps most importantly, it will enable limiting the core subsidy to cover costs of core staff and basic tasks, which must include acquisition and project generation. Because larger potential is then possible than would be on the basis of a core subsidy alone, it will also enhance impact of the centre as a whole. It is well worth re-emphasising, however, that in view of the centre's tasks, a core subsidy is indispensable.

The aspect of staffing merits the comment that a multi-disciplined and broadly-experienced staff are necessary requirements. In view of the complexity of work and the communicative aspects, each staff member needs to have management qualities and good writing capabilities, in addition to being flexible and having good communication skills.

The type of work CINARA undertakes, including its research on pre-treatment, makes it a clear example of the type of resource centre in question.

Resource centres need government support and entrepreneurial approaches through broadly experienced staff.

ROLES

To keep their experience up to date and be able to select and operationalize information, resource centres need to be involved in an array of projects. These range from in-depth approaches towards selected target groups (such as demonstration projects and advisory services), via more widespread activities towards larger groups (such as general

training activities and publications), to activities reaching wide audiences (such as newsletters and documentation services). These need to build on an information base, supported by literature searches and field research as and when required.

In addition to work related to technology development and transfer, resource centres can also play a valuable role in more general information exchange. Much information on a variety of issues is often lost, since information developed in one department is not accessible to others, or experience obtained in one region is not accessible to a neighbouring one. Also, individuals often have no outlet for valuable information generated in the course of their work. Information management can therefore be a valuable component of the resource centre's work.

In cases where this is not already organized otherwise, such resource centres would also be in an excellent position to undertake and support monitoring and evaluation activities at project and national level. Linkages with such initiatives as the present UNICEF WASAMS monitoring approach would be one opportunity.

With all these resources and information available, the centre would be the right place to undertake public information activities towards beneficiaries of the water and sanitation sector and the general public at large. These would generally serve to enhance and maintain an awareness of the need for and importance of the sector, while at the same time contributing to, for example, health and hygiene education efforts.

In all of these roles resource centres will not necessarily have to do all the work, but work in close cooperation with others. Their work is complementary to that of others and have a strong service orientation.

Resource centres may form an answer to the manifold constraints voiced over many decades by the majority of the developing countries.

COMMUNICATION

The need for enhanced communication was recognized at various regional meetings around the world as well as at the New Delhi Global Consultation held in 1990. During these meetings field experiences and issues were analyzed to find ways to accelerate progress and enhance sustainability.

Influenced by experiences related by some of the represented countries during the deliberations at New Delhi, as well as at the Collaborative Council's Global Forum at Oslo last September, communication was clearly present in all

recommendations. It is also at the basis of community management, the inevitable direction the sector - and its supporters - must take.

The New Delhi Consultation concluded that political commitment for the sector is essential and must be accompanied by intensive efforts to raise awareness through the communication and mobilisation of all sections of society.

The Oslo Global Forum agreed that for the sector to raise its profile among politicians and beneficiaries alike, the introduction of what the New Delhi consultation called a 'communications culture' is indispensable. Furthermore, for the sector to learn from its past experiences and failures, lessons learned need to be internalised. The Forum concluded that the concept of IEC-Information, Education, Communication must become part and parcel of the sector's work in the 1990s.

Governments, more than before, must benefit from a broad coalition of partners - community and grassroots groups, religious and social institutions, mass media, non-governmental organisations, and international agencies - to coalesce all available resources to tackle the tasks at hand. The 'communications culture' can play a crucial role in raising recognition, efficiency, effectiveness and participation in and for the sector, thus contributing to greater progress and sustainability.

Expenses for effective communication will ultimately prove cost-effective. Communication, presently a missing link in the sector's approaches, carries a tremendous potential to strengthen political will; generate more resources, including those from the beneficiaries; promote self-initiative and hygiene behaviour; ensure better maintenance and optimise sector efforts at all levels.

Country-based activities on IEC supported by international initiatives should be undertaken on the widest possible scale and as much as possible in a collaborative way. The resource centres as described are well placed to play a leading role on this development.

Resource Centres are well placed to initiate the much needed communications culture in the sector and to undertake actions accordingly.

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