
Aid-effectiveness: Technical Cooperation

Robert Muscat

Introduction

Technical cooperation (TC) comprises heterogeneous activities, involving numerous financing and technical agencies, located in many very diverse countries. To develop a bird's eye view of overall effectiveness, an extensive evaluation literature was reviewed. It covers many economic activities, in addition to TC's functional forms which include 1. pre-feasibility and feasibility studies for capital projects; 2. engineering design and construction oversight for capital projects; 3. research; 4. institution-building projects (free-standing or combined with capital projects); 5. policy studies; 6. individual free-standing fellowships (ie not part of an institution-building or capital project); 7. individual expert services (consultancies; seconded expatriates); 8. short-term training (seminars, study and observation tours, equipment familiarisation).

The difference between technical and capital assistance is clear enough in practice, although in many projects the two are intimately linked. The fact that technology is often 'transmitted' as embodied in a piece of equipment has been seen at times as blurring the distinction between technical activities and aid in the form of commodities. For our purposes we do not consider technology transfer in the form of mere embodiment as a TC process.

Methodology and Evaluation. For convenience we divide the effects of TC projects into proximate and ultimate. Proximate effects are the direct or immediate objectives (project 'outputs' in the evaluation methodology literature). Ultimate effects are the further objectives, in time and nature, expected to result from the project's outputs. In general, proximate effects are instrumental, ie trained people, skills, institutional capabilities, etc., expected to have ultimate effects on production, efficiency and other aspects of economic activity and growth.

Proximate effects are easier to specify unambiguously and are more commonly identified in evaluations. The

ultimate effects extend long into the future and are more difficult to specify and relate to a project, since ultimate goals tend to become 'joint products' of many preceding activities of which the aid projects are only a part. Project documentation normally deals with sequential effects only very generally, and they are increasingly difficult and costly to track and evaluate as time passes.

There is no ready methodology for measuring TC effectiveness. A TC activity can have several objectives that can be thought of as successive stages of impact. Take a project to help a country establish an agricultural extension training institution designed to help increase food output. We can imagine a series of stages through which the project's effects must pass before it can achieve its ultimate objective. Has the project delivered its inputs as planned? Have they combined with local inputs as planned? Has the institutional capability been created? Has the institution gone on to function as expected? Have the graduates been employed as planned? Have the farmers adopted their recommendations? Did the expected increases in productivity result? Were the farmers able to sell their increased production? Are the marketing systems such that the farmers and other economic agents involved received sufficient return so that the processes can be expected to continue to operate?

If the answers are yes all along, the project is effective. (Project 'efficiency' refers to how well the project was implemented — quality of experts and training, adherence to planned schedules, etc.). If the answer is no at some point, the rest of the sequence may collapse together with the preceding steps. But the latter stages may fail for reasons apart from the project. The project may have been a complete success in its own frame, but failed to have the expected benefits for reasons operating in realms apart from the project. (Whether it was *cost*-effective is a related but different question.)

Wrong conclusions may be reached about the effectiveness (or at least the efficiency) of the aid process itself if the chain of events is blocked by macro- or sector-level, or other, exogenous factors. In planning a project, it is critical to think about this chain, in order to take account of the framework that will mediate the effects of the proximate outputs.

There are also some TC subjects that have multiple effects that cumulate over time to greatly exceed the original objectives. For example, in the 1950s very few developing countries could collect, process and publish timely statistics. Years of assistance played a key role in the development of statistical offices in a large number of countries. As local capacities grew, the UN and bilateral programmes shifted attention and developed new TC capabilities themselves to assist the national offices in adding new capabilities (eg the household sample survey programme) to the census and other subjects that were the focus of earlier years. Each of the statistical areas where this capacity-building was taking place can feed research, planning and decision-making in many sectors and problem areas of development, enabling the data users to increase the effectiveness of their programmes and resource allocations.

A critic of aid might suspect the objectivity of the evidence on effectiveness since almost all of it is produced by the aid agencies themselves. In our view such suspicion is not warranted; the agencies' published evaluation materials contain much frank discussion of problems and failures, giving sceptics plenty of ammunition for criticism as will be evident below.

Finally it is important to note that the evaluation evidence is negatively biased. Even if allowance is made for those aid agencies that publish no evaluation results and for dirty linen not publicly washed, evaluators tend to emphasise what went wrong as they reach for conclusions on how to improve future performance. Also, evaluation has focused on the more difficult sectors, eg rural development, irrigation, agriculture generally, to the relative neglect of hi-tech or highly specialised engineering or scientific areas. The latter subjects (remote sensing and meteorology are good examples) contain much apparently very successful TC experience, but relatively little evaluation 'evidence'. The TC task is easier than in the former subjects, where effectiveness requires wide diffusion of new knowledge and adoption of changed behaviour on the part of numerous less educated, low-income beneficiaries.

Efficiency Lessons

Despite the limitations of the evidence and the

heterogeneity of the subject, the results are significant to the extent that the literature does attempt numerically to record success and failure against proximate or immediate objectives. The several hundred evaluated projects tend to fall in the range of one-half to two-thirds judged satisfactory, of which one-third or more are judged fully satisfactory. Total failures range between 10 and 15 per cent. Performance one-third unsatisfactory and with only one total failure out of ten would put TC well within an acceptable performance level. The record also suggests that general condemnations of TC projects as ineffective (or counter-productive) have lacked discrimination and have erred by drawing conclusions from very selective evidence. The serious questions concern the factors that determine effectiveness in different country situations, the relevance and adaptability of external technology, the ability to learn from experience, and how to overcome political and bureaucratic constraints to further raising of success rates.

The literature amply documents inefficiencies in: project design; government commitment; timing and quality of project inputs (experts, training, equipment); technology; getting trainees to return to their jobs; participation of actual technology users (eg farmer 'beneficiaries') in decision-making about project design and implementation; coordination with, and commitment of, cooperating domestic agencies outside the project itself; consistency of sector policy framework with project assumptions; coordination of related donor activities; technical backstopping of experts by the supplying agency; and sensitivity and adaptation to local cultural factors.

The efficiency lessons are similar across sectors, even across projects. They are generally commonsense conclusions about good management. Efficient management of international TC is probably more difficult to attain and sustain than the average run of public affairs. The significant question for each agency is whether the overall level of shortfall is at a low enough rate of acceptability, and whether adequate efforts are being made to use evaluation as an integral part of management to continue to raise the level of efficiency.

In this respect, evaluation appears to have much further to go. Feedback appears to be more a matter of casting bread upon the waters than of systematic procedures for informing or retraining all those with a need to know, and ensuring (as does one door agency to our knowledge) that subsequent decision-making *must* take account of previous relevant findings. Even the bread-casting has limitations in terms of numbers of copies printed, and instances where agencies issue

and widely distribute brief summaries. While progress has been made, there is room for much better utilisation of evaluation findings.

While the project development process differs from one agency to another, it typically involves two groups: technical and programme formulators, and programme and policy reviewers and decision-makers. To ensure that evaluation lessons are being learned and taken into account in the design of new activities, and that institutional memory is being passed along to new personnel, agencies should consider imposing on both these groups mandatory review of relevant evaluation findings. Project formulators could be required to cite evaluation material reviewed in their documentation, and to show how the proposed new activity takes account of past lessons. The review and decision-making process, especially if it takes an adversarial form, could also be required to judge new activities against the relevant evaluation record. The record could be strengthened by requiring evaluation units to draw general conclusions for operations and policy, and by informing technical and managerial personnel in each agency of the lessons drawn in other agencies.

Development of country evaluation capabilities should be a subject of more TC than has been the case so far.

Some of these shortcomings will be found in virtually all situations. It is striking that the same assistance machinery, working in the same subjects, has made substantial impact in many countries that have experienced satisfactory modernisation and development, and appears unable to make a difference (or sufficient difference) in many other countries. Virtually all the evaluations of groups of projects of the same type show a higher proportion of disappointing results in Africa than in East or South Asia. The success of the Green Revolution TC in India (see Toye's paper in this *Bulletin*) contrasts sharply with the failure (thus far) of the same donor agencies and operating systems to make significant breakthroughs in African grain production. The same handful of agencies made important contributions to very successful family planning programmes (as in Indonesia), but were unable to bring either policies in much of sub-Saharan Africa, or programme implementation in Bangladesh, to any comparable level.

Where the political and socioeconomic context is favourable, the inefficiencies of the aid process do not appear serious enough to prevent effective TC. Where conditions are unfavourable, the systemic inefficiencies prevent projects from being designed and implemented with the maximum efficiency possible under the circumstances, in environments where projects must

be exceptionally well planned and executed to have a chance for significant impact. In addition, the machinery has apparently adapted its TC activities adequately where the performance has been broadly satisfactory; but has had less success in local adaptation to noticeably offset the contextual impediments to effectiveness in other countries, where the record has been unsatisfactory. This last point is particularly important for TC effectiveness in the so-called 'least developed countries', most of which are located in sub-Saharan Africa.

Determinants of Effectiveness

We summarise the key determinants of effectiveness, aside from efficiency of project execution. TC effectiveness is more difficult to achieve:

- (a) the further the country is from self-reliance in institutions and skills;
- (b) the greater the cultural difference between source country (of the technology, experts and training) and recipient country, with respect to the activity involved;
- (c) the greater the differences in ecology between developed and developing countries, with consequent need for extensive adaptation of biologically-based technologies;
- (d) the 'softer' the subject of the activity, ie the more the TC is directed at institution-building, activities requiring changes in social structures or behaviour, or development service functions (eg health, education);
- (e) the larger the 'adoption community' that must absorb and apply the technology or functions involved;
- (f) the more poorly endowed the region, especially within a country where competing regions are developing more dynamically and have weak linkages for pulling along the backward areas;
- (g) the more the TC focuses directly on the least-advantaged, least educated, least risk-taking segments of a country's population;
- (h) the more dependent for its effects the individual project is on other cooperating agencies and policies, especially if the latter have to be changed.

In each *sector* lessons have been learned about the characteristics of technology transfer and institution-building peculiar to the subject. In some cases, a learning and feedback process has resulted in completely new strategies. 1. In health, the failure in many countries to make a dent in most major causes of morbidity resulted in a shift of strategy toward community-based, prevention-orientated primary care in contrast to the traditional approach of hospital-based, curative medicine. While some functional

'campaign' strategies have been very powerful (eg smallpox eradication, oral rehydration), the main thrust of TC health strategy is now to assist countries to build up primary care *systems*. 2. In nomadic herding, TC that was dependent on changing age-old social and economic behaviour has failed and still lacks effective approaches. The lessons of failure have been drawn, but effective approaches have yet to be developed. 3. The Green Revolution experience taught many useful lessons about the interaction between technical change, the framework of agricultural policy, and the incentives for farmers to adopt new technologies. It is probably as a result of this experience that much greater emphasis is being placed on agricultural *policy* in Africa than was the case earlier in agricultural work in Asia. 4. The record in agricultural extension is very mixed, although a shift to new approaches in recent years in India (under TC auspices) appears to be significantly more effective (see, however, Toye's article in this *Bulletin*).

As for *context*, there are two dimensions. First, repeatedly, effectiveness of the individual project has been seriously diminished because of *factors outside the project itself*, eg unfavourable price policy framework or failure of other parties to take expected actions; thus project design must be improved to take these factors into account. Forestry is an interesting case. Despite the recognised high professional quality of FAO and bilateral TC, and the development of the 'social forestry' concept more apposite to Third World conditions than forestry strategies of the industrial countries, forestry faces very powerful and destructive demographic and economic forces. In such conditions, to continue to provide TC, where the proximate objective of the project is attained but the resultant technical capacity remains unutilised, is wasteful of TC resources, and wasteful if not counterproductive for the country. If the TC agency wishes to obtain assurances that the necessary measures will be taken, outside the scope of the project itself, the agency may be raising issues that appear 'inappropriate', or of a character that probes into the operations of other agencies or policies not within the jurisdiction of the institution or ministry hosting the project in question.

Many agencies' project planning procedures require the designers to describe the ultimate development objective of the project, to which its proximate outputs will contribute, and to specify the policies and/or activities required of other organisations if the project is to achieve that objective. If the project is large enough, these requirements may take the form of conditions precedent, or formal understandings that the government will take the specified steps. Even though made in good faith, such undertakings often prove disappointing. When the donor, in the interests of businesslike management and responsible admini-

stration of public funds, insists on more careful or rigorous attention to these wider circles of project-related matters, the government may regard this 'extension' or 'conditioning' as excessive intervention in domestic affairs. However, where the evaluation evidence suggests that the project will not work otherwise, both provider and recipient need to tackle these problems seriously, if the concern over aid-effectiveness is genuine.

The second contextual determinant of effectiveness is the *level of a country's development*: the degree to which the existing institutions and capabilities are able to absorb and exploit the technical and material resources provided from outside. The observation that technology transfer and TC effectiveness increases through time, along with rising skills and institutional capacities, implies that effectiveness would normally be lower among the least developed countries.

On the broadest level, TC is part of the whole international development effort that has not succeeded in helping to achieve satisfactory overall development in much of Africa. In many of its specifics, lower levels of TC achievement are also evident. Agricultural research has yet to produce 'breakthroughs' or even substantial accumulations of incremental improvements that can be shown to be widely applicable to reverse the decline in *per capita* food output. The problems in nomadic pastoralism have been mentioned. In health, much African endemic disease takes forms (or is transmitted by vectors) not found elsewhere, and for which no effective counter-measures are yet available. Independence a mere decade or two ago found many of these countries with rudimentary education systems and tiny cadres of people with middle or high level training. The internal brain drain from government and other aided institutions to the higher-paying private sector will not be alleviated by saturation from accumulated trained labour supplies for many years. This makes institution-building more difficult.

In the face of these problems, TC effectiveness is bound to be relatively low in many endeavours for some time, even were the policy framework closer to optimum. Most of the effectiveness-reducing list (above) applies to the countries where development is proving more difficult. The problem of how to accelerate development in Africa goes beyond an examination of TC effectiveness, but a few observations pertinent to the objectives of TC can be made.

First, time, persistence and adequate scale of effort have brought to their present state of middle-income development other countries that were once deemed unlikely to overcome the hindrances to their development. Some of the problems cited reflect

simply the very few years in which modern science has been addressing African problems. It will take time and persistent application of international resources before agricultural and health research in particular begins to yield significant results.

Second, the bedrock problem underlying much of the difficulties of TC in Africa (aside from civil disruption) is probably the distance yet to go in education. In this context it is regrettable that donors no longer favour large fellowship programmes in general development skills (economics, accounting, engineering, administration, etc.) not associated with specific projects, and large-scale overseas education programmes which could take advantage of presently under-utilised university capacity in the industrial countries.

Third, the list also specifies the substance of the familiar 'absorptive capacity' problem. Regardless of the political preferences from one country to another for more or less scope for private initiative, or more or less decentralisation of public-sector functions, there are powerful reasons for arguing that development will be enhanced in countries that open many levels, areas and organisational forms to the benefits of TC, compared with countries where central government is the only instrument for absorption of external assistance and technology. Encouragement of expanded social and economic roles of NGOs and local government, and of their direct access to TC programmes, could be a way around the absorptive capacity problems posed by inadequate institutional development, shortage of management in skills in government, the need for diversity and experimentation in social and behavioural change, and the need to expand outreach in agricultural and health technology diffusion. The TC community needs to develop more effective ways of reaching indigenous NGOs and helping them to develop more rapidly.

Fourth, the mistakes that arise because of cultural differences can probably be reduced by greater use of (non-economics) social scientists in project design work. This should be done through increased employment of social scientists by aid agencies (their numbers are now minuscule), and by regular use of local social scientists as consultants, especially for rural projects and activities in the 'soft' sectors.

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The evaluation literature frequently singles out the *expert*, and the expert-counterpart relationship, as a key element of TC needing strengthening. The great increase in expert costs in recent years is particularly troublesome. More use of volunteer programmes and of local expertise is recommended, but the greatest

scope for cost reduction (and for increasing the number of expert-months that can be financed by any given project) lies with recruitment of developing country nationals with salaries set in accordance with prevailing *local* market compensation for professionals rather than at international levels. For bilateral agencies this means 'untying' aid for expert recruitment among developing countries. For the UN system this would require development of a two-track personnel system. Neither of these routes would be easy.

For all the years of agency experience in expert recruitment, it remains a problem that technical quality and personal facility as counterpart and advisor are often inadequate. While these problems stem partly from simple failure of management to persist in applying recruitment lessons learned many times over, they might also be reduced if TC agencies trained experts in cross-cultural communication and techniques for effective inter-personal relations. Both governments and agencies could be much tougher in refusing to retain in the system individuals with demonstrated technical insufficiency or inability to work well in foreign environments.

Coordination and Programme Planning

Between the increasing multilateral development bank (MDB) resources devoted to TC and institution-building (or at least institution-strengthening), the relative stagnation of donor contributions for TC activities of UN system agencies, and the apparent increase in IBRD (and to a lesser extent other MDB) concern over the substance of TC and institution-building theory and operations, there is a strong possibility that the traditional distinction between MDBs and capital projects and UN system (UNDP and specialised agencies) will break down. Intellectual and operational leadership in TC may drift to the MDBs, in particular IBRD. These changes pose serious issues for the internal staffing and operations of the MDBs, and for the relations and coordination processes between MDBs and agencies, especially in the field.

The *programming* processes for allocating TC resources in any one country are notoriously uncoordinated. For country planning authorities, the very processes for receiving and allocating external aid create hindrance. The country must cope with a large number of agencies that vary with respect to the ways in which their resources are programmed and can be obtained: multi-year planning cycles vary in length and initial year, and may not coincide with the country's own planning cycle; most bilateral donors have priorities of their own that limit the subjects or goals for which their aid can be used; the procedures,

information and planning documentation requirements differ; aid organisations have different practices with respect to the size, authority and capability of field-level representation, and the speed and efficiency of the programming role of headquarters; the ability, or willingness, of aid agencies to coordinate their country-level planning varies among countries and subjects. Even without a conspiracy theory, one would expect that inertia, or the simple desire to avoid diverting time from getting on with the job, would militate against coordination, in the absence of deliberate arrangements built around common programmes or financing structures, or mandated by a host government.

The developing countries also vary with respect to the ability to develop a planning framework or efficient coordinating machinery. Some governments prefer, or even require, that aid agencies do not coordinate programming among themselves. More commonly, one finds government aid coordinating agencies that channel and administer the external inflow but do little substantive planning, especially of TC which they find difficult to allocate according to a scheme of priorities that would result in pressures from ministries that did not get their 'share'. Rational planning is not helped by conflicting advice from external agencies, and by the need of overburdened senior staff to devote much time to dealing with visiting officials.

Repeated efforts have been made to rationalise these processes, but, except in countries where government have developed the ability to orchestrate these flows themselves, it would be difficult to demonstrate systemic improvement. Within the UN there is a long history of efforts to grapple with programming inefficiencies. Some UN agencies have resisted closer coordination; the effort of the General Assembly to induce the system to use the UNDP country programme as a 'framework' for other agency programming has produced little result. Donor governments have contributed to the coordination problems by channelling increasing funds directly to the specialised agencies, causing a steady decline in UNDP's relative funds and a concomitant weakening of the relative size of the country allocations and of the reality of the idea of the UNDP programmes as the framework for planning the entire system's allocation. One can only conclude that the governments most forcefully engaged in drafting the UN operational legislative landmarks (including some developing-country governments) have lost interest in the rationalising objectives that were earlier seen as essential for improving the system's effectiveness, or have been unable to consort effectively in the face of inertia, jurisdictions and non-developmental considerations.

The efficiency problems of TC programming have their parallel in actual operations. Coordination among agencies working in the same subject is often poor. In many mundane details, the sheer numbers of actors and the legislative and systemic (if not political) differences cause daily inefficiencies that reduce aid-effectiveness. Examples are: inadequate exchange of information; poor coordination even where the interdisciplinary nature of the subject has been prominently proclaimed by the aiding organisations; difficulties in coordinating because agency field personnel with different degrees of delegated authority for decision-making on the spot; and personal rivalries among UN system field representatives.

Listing operational woes cannot be interpreted as a general indictment or characteristic description of a complex system operating on several continents. Cooperation among UN funding agencies, and between them and bilaterals, tends to be much better than with technical UN agencies. Professional cooperation in the field is often excellent, and one often finds informal coordination arrangements built around subjects or local institutions. Coordination depends heavily on local 'personalities'.

Willingness to coordinate, and even the general level of technical competence and implementation efficiency, vary enormously *within* UN agencies. Inside some of the largest, some technical divisions merit the highest international respect for quality of performance, while others have very mixed reputations. The overall performance of the TC agencies could be substantially improved if the lagging units in each agency could be brought up to the high standards of the best operational units.

Our own impression is that the 'average' situation in the field is 'less than satisfactory', ie, that significant improvement in TC efficiency could be attained if these problems could be ameliorated. They become less of a hindrance to TC effectiveness as the administrative capabilities of a recipient government strengthen. By the same token they are likely to be most severe in least developed countries, compounding the inherently greater difficulties of effective TC there. The 'less than satisfactory' rating is most applicable in these countries. It should be treated as totally unacceptable by the aid community.

An important aspect of self-reliance is a country's ability to make effective use of aid resources. The crucial objective in coordination of aid donors and agencies, therefore, should be the development of *government* capacity to do the job. Many countries have aid coordination units, but many of these are primarily administrative rather than substantive in

their work. UNDP would be the most appropriate agency to assist governments in developing such capacity.

Where governments feel unable to devote staff resources to coordination, they may prefer and encourage (or require) aid agencies to develop arrangements in which the government would participate. Such arrangements can run from mere exchange of information to highly structured relationships for coordinating planning and operations.

In particular subjects where several agencies are conducting projects involving the same institutions and officials, *ad hoc* coordinating committees have often proved useful, whether run by government or a donor agency. In food and nutrition, for example, both UNDP and UNICEF have had successful experience along these lines. These arrangements tend to rely on individual initiative, and not on models developed through coordination at headquarters level. While no one model would be appropriate for all local situations, more local initiative for coordination would be forthcoming if headquarters were to enunciate clear desire for such. Apparently the General Assembly resolutions on this problem have not been adequate.

It is proposed that the aid project process be consolidated in countries where government administrative capacity is being overstretched by the very size and variation of a multitude of donor projects. Consolidation could take the form of settling on a narrower range of objectives, institutions and strategies for concentrating donor efforts. Institution-building could be enhanced by ensuring a scale of training that could deliberately take account of an expected 'drain' rate, and accumulating sufficient donor financing of local recurrent costs to protect the institutions from unanticipated local budget problems. Very helpful would be agreement among donors and agencies to require only a single set of documentation covering all external inputs and descriptors of the project, with each donor then meeting its own documentation requirements internally without further involvement of host government officials.

Joint or parallel projects are often undertaken by groups of donors. They are useful arrangements, for example, for advisory projects where acceptability is enhanced by sponsorship by more than one country. What is envisaged here is a focusing of effort on the programme level so that sectoral studies and dialogue are also reduced in scope and made easier for the government to handle. Involvement of several donors and agencies in a joint activity can also lead to delay and added administrative nuisance if each party insists on consensus on all matters as they arise, and if the

purposes and activity designs are not fully spelled out and accepted by all parties at the start. The key to such arrangements is the quality of coordinating leadership.

A useful service to many countries would be the occasional drafting of a TC 'sectoral' review. It should perform, for training and institution-building, and associated TC, a function analogous to that of IBRD economic memoranda for reviewing the state of an economy. The review could describe and assess the programmes of the donors and agencies, the relevant government policies, the state and adequacy of coordination arrangements, regional or sectoral patterns of donor allocations, trends in the volume of TC and their relationship to requirements, operational problems, emerging areas of technical need, articulation between domestic and inter-country TC activities, TC implications of a new five-year development plan, and findings of recent TC evaluations. A review of this sort could be done each year by the government TC agency or as part of the Annual Report on Development Cooperation now routinely done (but mainly limited to project information) by the Resident Coordinators, or as a separate occasional study.

Finally, on efficiency and coordination: governments have the determining influence on the operations of the multilateral institutions. Donors determine the system through the ways they coordinate their bilateral programmes, and through their funding decisions and the positions they take on governing bodies regarding the UN system's operations. Developing countries help determine the system through the arrangements they impose, or tolerate, in their own countries and on agency governing bodies. It all boils down to a simple question: do governments with major voices in the assistance system care enough about effectiveness to take the strengthening steps necessary, or are the political costs of doing so judged too great to bother?

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High-tech poses novel problems for effectiveness compared with TC in traditional subjects, stemming from the high rate of change in these technologies, the rapid obsolescence of hardware, the greater information gap between younger technicians and their senior supervisors, the attraction of modernity and danger of 'technology-driven' proposals. Aid agencies need to examine high-tech TC and its peculiar requirements for effectiveness, including how the TC process and TC staff can keep abreast.

Finally, there is a striking weakness in the intellectual underpinning of institution-building, human capacity creation, and associated TC compared with the

theoretical and qualitative analysis tools that have been developed to rationalise the planning of physical capital formation. While some methods are available for manpower planning and development of individual institutions, there is little guidance for planning institutional requirements of whole sectors, for matching institutional needs with evolving economic structures, or for systematically defining intersectoral

institutional linkages (analogous to the economic input-output matrix). The basic TC objective of self-reliance has not been defined in operationally meaningful terms that would aid the planning of institutional needs and facilitate rational institutional 'make or buy' decisions. While this article has attempted to make some suggestions along these lines, it is clear that the subject is in need of development at the conceptual level.