9. Maintenance, Repair & Replacement

(a) Why Costs are High

Although maintenance and repair of specialist buildings and equipment is extremely important, it is a notorious weakness in many systems. Ineffective maintenance and repair systems increase overall costs in three main ways:

— buildings and equipment suffer from reduced life spans,
— teaching is disrupted by breakdowns, and
— broken materials occupy valuable storage space.

It is not uncommon for schools to have 'graveyards' of expensive equipment that has been allowed to deteriorate simply because of inadequate maintenance and repair. And sometimes badly maintained equipment is dangerous to its users.

Equipment that has been donated by aid agencies is often particularly problematic. Frequently, the equipment is made in the country of the agency that donates it, and neither the necessary expertise nor the spare parts are available locally. Also, many aid projects only provide the equipment itself, and make no financial provision for subsequent maintenance.

(b) How Cost-Effectiveness can be Improved

Eight strategies are particularly useful:

i) *Finance*: Make sure that every school/local authority has a budget allowance for maintenance, repair and replacement.

ii) *Standardisation*: As far as possible, use commonly available equipment, which can easily be repaired in the neighbourhood, and for which spare parts are readily available. If equipment

Financial Allocations for Running Costs: A Rule of Thumb

Although it is impossible to devise a rigid formula, a useful 'rule of thumb' on running costs may be highlighted. It is that 10% of the basic cost of equipment should be set aside each year for (i) consumables, (ii) maintenance and repair, and (iii) consumption of water, electricity and gas.

For example, if a school allocates $5,000 for equipment in a home economics room, it should also allocate $500 each year for running costs.

Clearly this rule has to be treated cautiously, and individual authorities should work out their own requirements in their own situations. However, it does provide a starting point. Too many projects run into major trouble because they budget only for capital works and completely forget about running costs.

donated by aid agencies is problematic, make sure that the agencies understand the difficulty.

iii) *Expertise of Technical Staff*: Make sure that teachers and support staff know how to maintain equipment. Provide relevant pre-service and in-service training courses.

iv) *Incentives*: Make sure that schools have an incentive to maintain and repair equipment. Penalise institutions that fail to maintain equipment, and reward the ones that do. Penalties and rewards can be financial or verbal (e.g. praise or criticism in public speeches), and can affect the promotion opportunities of the people concerned.

v) *Student Attitudes*: Breakdowns are often caused by pupil disregard for correct behaviour, and even by student vandalism. The authorities need to be alerted to the consequences of this type of attitude, and appropriate rewards and penalties need to be implemented.

vi) *National or Regional Centres*: Establish national or regional equipment centres to repair equipment. Either (i) require schools to bring equipment to the centres, or (ii) require staff from the centres to travel round the schools. The latter strategy encounters problems in carrying equipment and spare parts, but it avoids the danger of the schools' equipment being damaged again on its way back from the centres to the schools.

vii) *Contracts with Local Businesses*: If governments do not wish to set up special centres, they can instead make arrangements with local businesses. As with the centres, either (i) schools bring equipment to the technicians to be repaired, or (ii) the technicians travel round the schools.

viii) *Disposal of Useless Equipment*: If broken equipment is really useless (i.e. cannot even be used as raw material in metalwork classes, etc.), it should be disposed of. Otherwise, it occupies storage space and increases costs further. Improvement of methods for disposal may require review of regulations and delegation of responsibility to individual school principals.

Where governments are faced with the choice of (i) requiring schools to do their own maintenance, (ii) setting up government maintenance and repair centres or (iii) giving a contract to a private company, they should weigh up the following factors:

* Special centres or agencies may be efficient, but their existence reduces the burden on the schools themselves. Staff and pupils could become careless because they know that someone else is always available to repair damage and pay bills.
* Specialist agencies are more likely to have skilled personnel, and to have access to spare parts.
* Private businesses can manipulate the availability of spare parts to their advantage (e.g. if later models come on to the market). Also, they may try to make extra profits by replacing parts that do not really need replacing.
* Government enterprises do not always work well. In some countries they have a reputation for inefficiency and communication problems.
* If the authorities have a contract with one particular business,

they may be unable to secure independent outside help during an emergency.

* When all work is done by a centralised agency, it becomes easier to compare schools with excessive wear and breakage because of faulty instruction or weak discipline.

An Example of a Centralised Service Agency

The Maintenance Training & Security (MTS) company in Trinidad & Tobago provides a centralised service for schools and other government institutions. The Permanent Secretary of the Ministry of Education is a member of the Board of Directors, but financial arrangements are controlled by the Ministry of Works.

The company's services include:

- *building and plant maintenance,*
- *janitorial maintenance,*
- *grounds maintenance,*
- *security, and*
- *maintenance of instructional equipment.*

The company also undertakes investigations into the causes of equipment failure, and arranges for substitute equipment if necessary while an item is being repaired.