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## Observations in Asian Countries

Observations dans des pays asiatiques

Beobachtungen in asiatischen Ländern

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#### 1. INTRODUCTION

The paper on cooperation presented in the introductory report was interesting and it would be appropriate to make some observations based on experience gathered in Asian countries from a base in an Asian institution (the Asian Institute of Technology).

Taking the points in the order used in the paper:

#### 2. LOCAL EXPERTISE

In many developing countries of Asia there are engineers with excellent qualifications and experience who can give valuable assistance to foreign companies. A considerable number of these engineers have been trained and have gained practical experience in developed countries but unfortunately, many of them have adopted the standards and methods used in these countries (normally capital intensive, machine based technologies) and are not willing to adapt the procedures to suit their own countries.

This institute is based in Thailand but it is an international institution and has students from 20 countries in the Asian region. The training given at AIT is designed to produce Asian engineers equipped to tackle the problems of Asia. They are not only given a firm grounding in the theoretical aspects of their profession but they are also taught how to handle problems of engineering practice, processes and management which they will meet when they enter practice in their own countries. This aspect of training is extremely important for young engineers who will find themselves in positions of great responsibility much earlier than their counterparts from developed countries.



### 3. LABOUR INTENSIVE METHODS

#### 3.1 Use of Labour Intensive Technique

The use of labour intensive techniques is often considered by developing countries in the initial planning stages of large projects. In most cases financial assistance is needed and is sought, either from a single country as bilateral aid, or as a loan from an international agency. Although the pattern may have changed a little recently the donor agencies have always tended to either specify methods of construction (with advice from foreign consultants who normally favour capital intensive methods) or they provide only the foreign exchange element of the finance (labour intensive work is almost entirely dependent on internal funding). Not only is there no encouragement for developing countries to adopt labour intensive methods but in this way they are actively discouraged. Governments and international agencies giving aid should re-examine their criteria for selection and support of projects and consultants and international contracting companies must be willing to review their methods and approach to projects in developing countries before any significant progress can be made in the use of labour intensive methods.

#### 3.2 Information on Labour Intensive Methods

There is a dearth of information concerning labour intensive methods. Although several trial projects have been monitored and documented by the International Labour Organisation the amount of technical data available is pitiful when compared with the libraries of books devoted to machine orientated construction. So long as this paucity of information exists it will be difficult, even for its advocates, to justify the labour intensive approach.

### 4. MATERIALS, TOOLS AND EQUIPMENT

#### 4.1 Use of Locally Manufactured Materials and Equipment

The comments concerning the risks of importing materials also apply to tools and equipment. Locally produced tools are not always of good quality or design. Tools and equipment have been adapted and developed on several labour intensive projects but there is still great scope for development. When hand tools are to be used in large numbers the additional problem of supplying sufficient good quality tools must be considered. Local industry is not normally able to produce on a large scale without assistance and forward planning.

#### 4.2 Development of Suitable Tools and Materials

A great deal of research on alternative materials is being carried out in developing countries. At AIT investigations are continuing into the use of local materials in the construction industry (e.g., bamboo as concrete reinforcement, burnt rice husk in cement production, the use of local waste products in the production of construction materials). At the same time as developing new tools and equipment it is necessary to reconsider the specifications for the quality of work or product produced. The specifications should be consistent with local conditions and the work to be done using the tools and materials.

## 5. LINKS WITH DEVELOPING COUNTRIES

Human relations and cultural considerations are extremely important when dealing with large numbers of workers. No foreign engineer can expect to cope with all of the local problems which are bound to occur. There is much to be said in favour of long term relationships (formal or informal) between foreign engineering companies and their local counterparts.

## 6. MAINTENANCE

Although maintenance has always been regarded as the poor relation of construction, it is essential. It is mainly labour intensive (even in developed countries) and developing countries have adequate manpower to maintain civil engineering works provided this is not made difficult by sophisticated design or maintenance specifications. Governments throughout the world have a reluctance to spend money on maintenance when it can be spent elsewhere and this is a major obstacle to providing adequate maintenance especially in developing countries where there is great pressure to put as much money as possible into new projects. In addition, improper use of the works (e.g., weight limit abuse on roads) in some developing countries makes more maintenance necessary.

## 7. CONCLUSIONS

The major problems of design and construction in the developing world will only be overcome when a concerted effort is made to tackle the problems of

- a) Providing adequate numbers of proficient, locally trained engineers
- b) Gathering and disseminating knowledge of alternative techniques and materials
- c) Convincing foreign engineers that the methods used in their countries may not be appropriate in other situations
- d) Donor agencies need to make a critical reappraisal of their methods and criteria for allocating loans and aid.

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