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D04588



United Nations Industrial Development Organization

Distr.
LIMITED

ID/WG.136/9
6 November 1972

ORIGINAL: ENGLISH

Meeting on Transfer of Technology to
Developing Countries through Subcontracting
and Licensing Agreements, with Special
Reference to the Automotive Industry

Paris, France, 27 November - 1 December 1972

ROLE OF UNIDO IN THE FIELD OF
AUTOMOTIVE INDUSTRIES

prepared by

the Secretariat of UNIDO

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id.72-6446

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1. BRIEF OUTLINE OF UNIDO

1.1 BACKGROUND

The United Nations Industrial Development Organization (UNIDO) was established in 1967 by the General Assembly of the United Nations, to promote and accelerate the industrialization of the developing countries. The Assembly also gave UNIDO the central role in co-ordinating all the activities of the United Nations system in the field of industrial development.

In fulfilling its mandate, UNIDO undertakes two basic types of activities: operational activities, involving direct assistance to developing countries, and related supporting activities, which include action-oriented studies, research and meetings such as the present one. Under its operational activities, UNIDO can make available to developing countries a wide range of services. It can help in:

- the establishment, operation and management of pilot industrial enterprises;
- the preparation of industrial development plants;
- the training of staff;
- the solution of problems related to the industrial use of natural resources and raw materials; and
- the building of effective national organizations to administer and promote industrialization either from global or specific viewpoints.

Member governments are assisted, at their request, to identify opportunities for investment, set up training institutes, operate industrial design centres and launch pilot or demonstration plants. Such long-term pre-investment projects involve the provision of experts, consultants and equipment, as well as fellowships for training abroad. In addition, UNIDO provides experts for periods ranging from a few weeks to a year, to help solve urgent industrial problems or advise on specific aspects of the industrialization process.

In support of its field activities, UNIDO convenes international seminars, workshops and expert group meetings to permit an exchange of views on various issues and problems of industrial development and to promote specific activities. It also organizes in-plant training programmes, at which industrial engineers and technicians from developing countries are given practical training in factories or institutions in industrialized countries.

Expenses for the administrative and research activities of UNIDO are borne by the regular budget of the United Nations. For its operational activities, UNIDO draws on part of the regular budget of the United Nations as well as on voluntary contributions from member governments, principally through the United Nations Development Programme (UNDP) which seats in New York.

1.2 HOW UNIDO ASSISTANCE IS REQUESTED

Procedures for the submission of requests for assistance vary from programme to programme. The UNDP Resident Representatives in the different developing countries advise the respective governments on these procedures.

The technical assistance programmes of the UNIDO falling under UNDP contributions are planned over five-year periods.

These national and inter-country programmes comprise individual projects agreed in advance with the recipient governments according to their requirements and priorities. These projects can be modified or changed as necessary on a yearly basis.

Requests for urgent short-term assistance, however, may be implemented on short notice under the programme of Special Industrial Services.

Voluntary contributions made directly to UNIDO are also utilised for the holding of meetings, procurement of equipment for the establishment of manufacturing and servicing units and staffing of projects.

Recruitment of experts, hiring of consulting firms to staff our projects as well as the purchase of equipment, is undertaken by UNIDO upon specifications, job descriptions, or terms of reference laid down in the project descriptions.

2. ACTIVITIES OF UNIDO IN THE FIELD OF AUTOMOTIVE INDUSTRY

The chances are that staff from the international automotive manufacturers, upon reading the title of this paper will ask: What has United Nations got to do with the Automotive Industry? This question leads to another one: Is there a role for the Automotive Industry in the developing countries? The answer for the latter questions is a definitive "yes" for many of the developing countries.

Statistics speak for themselves.

Developing countries produced or assembled in 1969, 1,909,618 motor vehicles (passenger cars, trucks and buses) up from 1,594,035 in 1968. This represents an increase of 19.8% over the 0.4% increase in the world production. Statistics for more recent years are not complete, but the major producing and assembling developing countries accounted for 2,113,550 units in 1971, showing that the upward trend is continuing.

Absolute figures, however, are not so impressive, since the world production in 1969 and 1968 was 30,933,995 and 29,625,935 units respectively.

Another interesting fact to prove our point is that international bidding recently called in an African country, for passenger car assembly with the present market of 19,000 units during 1970, produced bids from 13 international manufacturers in the United States, Japan, United Kingdom, France, Italy, Czechoslovakia and the Federal Republic of Germany.

Since its inception, the United Nations has dealt with marginal fields of the automotive industry: standardization (where important agreements have been reached in the Economic Commission for Europe, on items such as headlamps and reflecting devices while others on safety requirements, pollution control, tires, braking devices, etc. are presently being discussed), vocational training (through the Centre established in Turin, Italy in co-operation with the United Nations International Labour Organization and Fiat), etc.

UNIDO's role in the automotive industry has been mainly in response to the requests received from developing countries wishing to establish or develop automotive and ancillary industries.

Needless to say that UNIDO does not promote the Automotive Industry for every developing country since we are conscious of the market and economy of scale considerations governing this industrial branch. In addition, our assistance has been aimed at locating the right opportunities in this field and advising the developing countries in a middle-of-road approach to maximize benefits deriving from such an industry while at the same time achieving a balance with other conflicting factors such as small markets, foreign exchange expenditures and lack of ancillary industries.

2.1 THE ROLE OF INTERNATIONAL MANUFACTURERS

The substantial capital costs associated with the design and the development of new products for the automotive industry (be they complete vehicles or their components) is well known. Therefore, it is practically impossible for the majority of developing countries to possess design capabilities in this branch of industry. Even adaptation of design has to be approached with great care and only in cases where relatively large production outputs justify it. Moreover, the operation of plants has to be envisaged with the closest co-operation from the international manufacturers either with joint ventures or in pure licensing agreements. It is obvious that international manufacturers play a central role in the establishment of an automotive industry in a developing country and that no assembly or manufacture operations can be started without their full co-operation. However, many governments in developing countries do not have the know-how to successfully promote or undertake the necessary negotiations and the results are well evident either in countries where enormous local contents were demanded resulting in very high capital investments, under-utilisation of equipment, high production costs or in others with a too liberal approach to the problem where a multitude of assembly plants covering practically the whole array of makes and models with negligible local contents, catering for a reduced market.

It is as much up to governments as to the international manufacturers to avoid these excesses and adopt more sensible approaches which in the long run will give increased benefits for both parties.

2.2 TECHNICAL ASSISTANCE OF UNIDO TO DEVELOPING COUNTRIES

The different forms of technical assistance provided by UNIDO to developing countries in the field of automotive industries has centered around the following areas:

- Advise on national policies concerning the establishment of assembling plants and negotiation of contracts, particularly in matters of local content and production programmes;
- Preparation of independent techno-economic feasibility studies for assembling and parts manufacture;
- Promotion of co-operation between countries for the interchange of parts and components;
- Rationalization of production through reduction of makes and models and amalgamation of manufacturing units;
- Development of parts manufacture and promotion of its exports;
- Setting up of national semi-governmental or autonomous bodies to: advise the government on technical and policy matters; provide independent quality control and arbitration services; and guide the local assembly and ancillary industries;
- Investigation of adequate technologies to suit low-level production such as completed bodies or its parts, in fibre-glass re-inforced plastic;
- Promotion of lower cost transportation means, for widening of the market, in opposition to the vehicle types generally favoured for assembly in developing countries, and of commercial vehicles and buses which will have higher social and economic effects;
- Study tours of government officials to other developing countries to get acquainted with their automotive industries and to learn from their past experience in this field.

2.3 SEMINAR ON THE ESTABLISHMENT AND DEVELOPMENT OF AUTOMOTIVE INDUSTRIES IN DEVELOPING COUNTRIES, KARLOVY VARY, CZECHOSLOVAKIA

We believe this was the first international forum grouping representatives from developing countries, international automotive manufacturers and international organizations, which discussed openly the different controversial aspects of establishing automotive industries in developing countries.

The Seminar was held under the common understanding that an automotive industry in a developing country should be undertaken from the outset in an orderly manner and only after a careful examination of all relevant economic and technical factors.

The more specific goals of the Seminar in subject were (1) discussions on the present status and future trends of this industry in developing countries; (2) the analysis of the methods for promoting this industry, particularly regional co-operation and integration; and (3) the adaptation of existing techniques or development of new techniques for the needs of the developing countries.

This meeting was organized by UNIDO in co-operation with the Government of Czechoslovakia and took place in Karlovy Vary from 24 February to 14 March 1969. It was attended by approximately 85 people representing 27 countries (developed and developing), representatives of all major automotive manufacturers and observers from United Nations organisations.

2.4 PERSPECTS AND POSSIBLE FORMS OF REGIONAL INTEGRATION IN THE LATIN AMERICAN AUTOMOTIVE INDUSTRY

UNIDO collaborated with the United Nations Economic Commission for Latin America (ECLA) in the implementation of a research project (sponsored jointly with the Inter-American Development Bank) on the possibilities for integration and complementation of the automotive industries in the Latin American region. In spite of the limited progress achieved in the past, it is hoped that this research project will identify fruitful areas for future negotiations between the parties involved, i.e. governments, automotive vehicle manufacturers and the parts and components industries.

It is anticipated that the regional integration and complementation of automotive markets in Latin America may proceed along the following lines:

- (a) product specialization between affiliates of the same parent company established in different Latin American countries and among Latin American licensees related to the same foreign licensor;
- (b) product specialization between independent Latin American companies, which have competitive programmes, either through deliberate arrangements between firms or through increased competitive forces which would act within a combined or enlarged market;
- (c) a shift towards intra-regional sources in countries or areas which are partially or wholly dependent on imports from extra-regional sources of automotive supply; and
- (d) arrangements between the aforementioned countries aiming at a certain degree of national specialization on the basis of those automotive products which are not yet manufactured in the area of the negotiating countries.

Obviously, such a process of economic integration would have a substantial impact on manufacturing and procurement costs.

One of the main objectives of the project was to define the range of possibilities of those patterns of specialization among companies and countries and to estimate the economic consequences which would take place after implementation, i.e., its effect on a given country, on its automotive industry and on the consumers of vehicles.

In this respect, a meeting in Santiago, organized in 1970, brought together participants from a certain number of automotive companies from the terminal sector, as well as the parts and components sector established or operating in Latin America. These companies prepared in advance a series of case studies on the subject of the whole project.

A final report was prepared and is being published by ECLA covering the conditions under which an integration and complementation of Latin American automotive markets could actually be

achieved. An appraisal was made of the position of each of the sectors facing economic integration - governments, terminal industries, parts manufacturers, distributors, international local firms - thereby taking into account considerations of balance of payments, foreign investment, employment and changing conditions of competition, etc. This approach will help to identify the general conditions and institutional arrangements required to implement the integration and complementation of Latin American automotive markets.

The Andean Group of countries (Bolivia, Chile, Colombia, Ecuador and Peru) is now considering this matter with a view to achieving a suitable market integration and production specialization among its members.

2.5 FUTURE PROGRAMME FOR UNIDO'S ACTIVITIES

UNIDO's activities in the field of the automotive industry will follow basically the guidelines drawn up in 2.2. It is doubtful, however, that many more assembling plants will be installed around the world. Emphasis will have to be put on the better utilization of existing facilities. However, greater scope will exist for ancillary industries. It is evident that industrialized countries are more and more concentrating their production efforts on capital intensive and higher-skilled activities. In this connexion, quite a number of automotive components will be sub-contracted for manufacturing in developing countries. The present trend in reducing the total number of large international manufacturers both in the terminal and ancillary industries will facilitate this scheme. UNIDO can be instrumental in this transfer of production through the location of interested sub-contractors and the financing of the necessary technical assistance. For a smooth development of this transfer, it will be necessary to consider an integrated approach for the questions of investment, sub-contracts or licenses and know-how.

UNIDO also intends to study and promote in the future adequate technologies specially adapted to the low volume production in developing countries, such as the building of bodies using fibre-glass re-inforced plastics.

Other areas where some research has been done but which require further study are listed in chapter 3.

UNIDO's activities in the field of automotive industries has been undertaken mainly in connexion with the activities of the developing countries. In the near future it is hoped that UNIDO will strengthen contacts with international and national automotive organization in order to achieve a better co-operation and to avoid duplication of efforts.

2.6

NEED FOR EXPERTS

As it can be seen from this paper, UNIDO covers many aspects of automotive industries: market analysis, production of components, quality control, etc.

Because it is impracticable to maintain a permanent staff capable of tackling so many different subjects, UNIDO relies, for the carrying out of its projects, on individual experts or consulting firms who provide, under headquarters planning, the assistance requested. Thus we are very anxious to strengthen our contacts with industry in order to make the most up-to-date technology available to interested developing countries. For this we need the full support of industry in locating experts for short durations (1 month to 2 years) in specific subjects for our field activities.

3. TOPICS OF INTEREST FOR AUTOMOTIVE INDUSTRIES OF DEVELOPING COUNTRIES

3.1 MARKET REQUIREMENTS

Many developing countries have started assembly operations for certain models of passenger cars and commercial vehicles which do not meet their actual requirements. In this respect, there would appear to be an excessive number of types of medium and large-size passenger vehicles in relation to low-cost and commercial vehicles. This is a reflection of the fact that few incentives are given for the production of vehicles which can make a real contribution to the economic development of the country, such as smaller passenger cars, delivery vans, trucks, buses, etc. Moreover, these types of vehicles are often more highly taxed than passenger vehicles. This unbalanced situation not only hampers the growth of an automotive industry but also it does not have the desired impact on the economic development. Care has to be taken to provide vehicles for the widest possible market in order to maximize production. In this connexion, low-cost multi-purpose vehicles should be more seriously considered by developing countries when contemplating the establishment or development of automotive industries.

3.2 ANCILLARY INDUSTRIES

Because of the tendency to associate the final product, be it an automobile or a truck, solely with the assembly plant, insufficient attention is given to the benefits derived from the development of new and the expansion of existing ancillary industries.

This approach overlooks the fact that assembly is merely the final stage in a complex industrial process involving a wide range of separate manufacturing activities. In fact, the major advantage in establishing an automotive assembly plant is defined in terms of its linkage to existing engineering industries and the stimulus it provides for the development of new industries. Moreover, the benefits derived from ancillary industry development will, for the following reasons, far outweigh the benefits directly

associated with assembly.

- (1) A wider range of skills is required in ancillary industries, thus adding to the stock of technically proficient and highly adaptable labour. With the exception of the paint shop, and excluding professional personnel, only a low level of specialized skills is generated by an assembly plant.
- (2) The machinery and equipment utilized in ancillary industries are normally far less specialized than in an assembly plant and are, therefore, adaptable for the production of other industrial products. This allows for product diversification which, in turn, increases the load factor on machinery and equipment.
- (3) Since many automotive parts and components can be manufactured with minor modifications on available machinery, capital investment can be minimized. That is, to say, existing industries may be able to supply the assembly plant with acceptable parts and components simply by modifying the existing machinery and procedures.

In practice, the relationship of the assembly plant to ancillary industries is that of a contractor to sub-contractors. This would involve contractual arrangements between the contractor (the assembly plant) and independent subcontractors (ancillary industries) for the manufacture of parts, components and sub-assemblies for incorporation with the final product which is assembled and marketed by the contractor. Problems in terms of quality control and effective cost accounting should be anticipated and minimized through the provision of technical assistance to the sub-contractors.

Therefore, special attention must be given to the possible linkage between an assembly plant and ancillary industries. While this is a complicated exercise, it is essential in order to estimate the feasibility of introducing an automotive industry. Moreover, it is necessary to differentiate between the parts, components and sub-assemblies which could reasonably be produced in the country according to the following criteria:

- (a) those which could be readily manufactured by existing industries with small requirements for additional equip-

ment and/or re-tooling and training:

- (b) those which could be manufactured only after extensive re-tooling and/or additional equipment and training inputs: and
- (c) those which would require the establishment of new plants.

In (a), the question of economies of scale is not so critical insofar as production costs can be spread over a wider product range.

In (b), and particularly in (c), where considerable capital investment may be required, the output level must be sufficient to meet minimum economies of scale. The probable demand for a given part or component can easily be determined on the basis of the projected output of vehicles from the assembly plant and the basis of the estimated demand for replacement parts.

The manufacture of parts falling under category (b) and particularly (c) should be considered to cater not only for a national market but with a view to inter-country co-operation based on specialization of production. These schemes are now in operation (or being studied) for different areas - Andean Group (Bolivia, Chile, Colombia, Ecuador and Peru), ASEAN Group (Indonesia, Malaysia, the Philippines, Singapore and Thailand), Chile-Argentina, Argentina-Uruguay, etc. There is a wide scope for these kinds of bi-lateral or multi-lateral agreements in developing countries. These schemes can be worked out from a different viewpoint more in line with sub-contracting i.e. the licensor manufactures certain parts, which will be utilized by the licensee himself.

3.3 PLASTIC BODIES

With respect to the advantages and disadvantages of plastic or steel bodies, it is perhaps surprising that the former are better suited to the conditions prevailing in developing countries. This system has been mainly used for small batch production in developed countries for sports cars and special bodies for vans.

It would be interesting to quote here a few cases which have been successfully implemented in developing countries.

The first is the Anadol, which is being manufactured in Turkey. This car was designed in the United Kingdom by the Reliant Company using a FRP body and Ford Cortina 1300 mechanical components which are presently imported from the United Kingdom. There are plans, however, to manufacture the engines in Turkey to cater for a stepped up production.

The following items are locally produced: steering wheels, elements for front suspension (upper and lower wishbones, damper/spring units, front hubs, brake discs, anti-roll bars), exhaust manifolds, flywheels, clutch flywheels, clutch housing, gear box cases, rear extension housing, rear axle cases, the FRP body, steel frames, glasses, door fittings, flasher lamps, rear lamps, soft trim and seats, bumpers, petrol tanks, batteries, radiators, heaters, wheels, tires, brake drums, handbrake levers and cables, and wiring harnesses.

The propshaft and parts of the rear brakes are to be produced in Turkey in the near future. Present production is about 25 units per day.

The local ex-works price is 28,000 Turkish Lira (US\$3,100).

Other interesting examples are the BMC Mini 1000 and MG 1300 which are being assembled in Chile. They are similar in all respects to the British products except for their FRP bodies.

A four-seater van-type to suit local taxation rules is produced in Uruguay utilizing the Vauxhall Viva mechanical components.

The capital requirements for all-steel vehicles production on a basis of 25,000 units of the same model per annum (the absolute minimum for the economic manufacture of steel bodies) are an estimated US\$20 million. On the other hand, capital costs will not exceed US\$1 million for a plant producing 5,000 units of the same model using a FRP body.

Consequently, whenever evaluating assembly operations in a developing country, attention should be given to the possibility of manufacturing bodies from FRP.

3.4 INEXPENSIVE MEANS OF TRANSPORTATION

Many developing countries start the assembly of passenger and commercial vehicles without due consideration to the production of inexpensive means of automotive transportation such as mopeds, tri-wheelers and motorcycles.


The establishment of industries for producing such equipment can pave the way for an automotive industry.

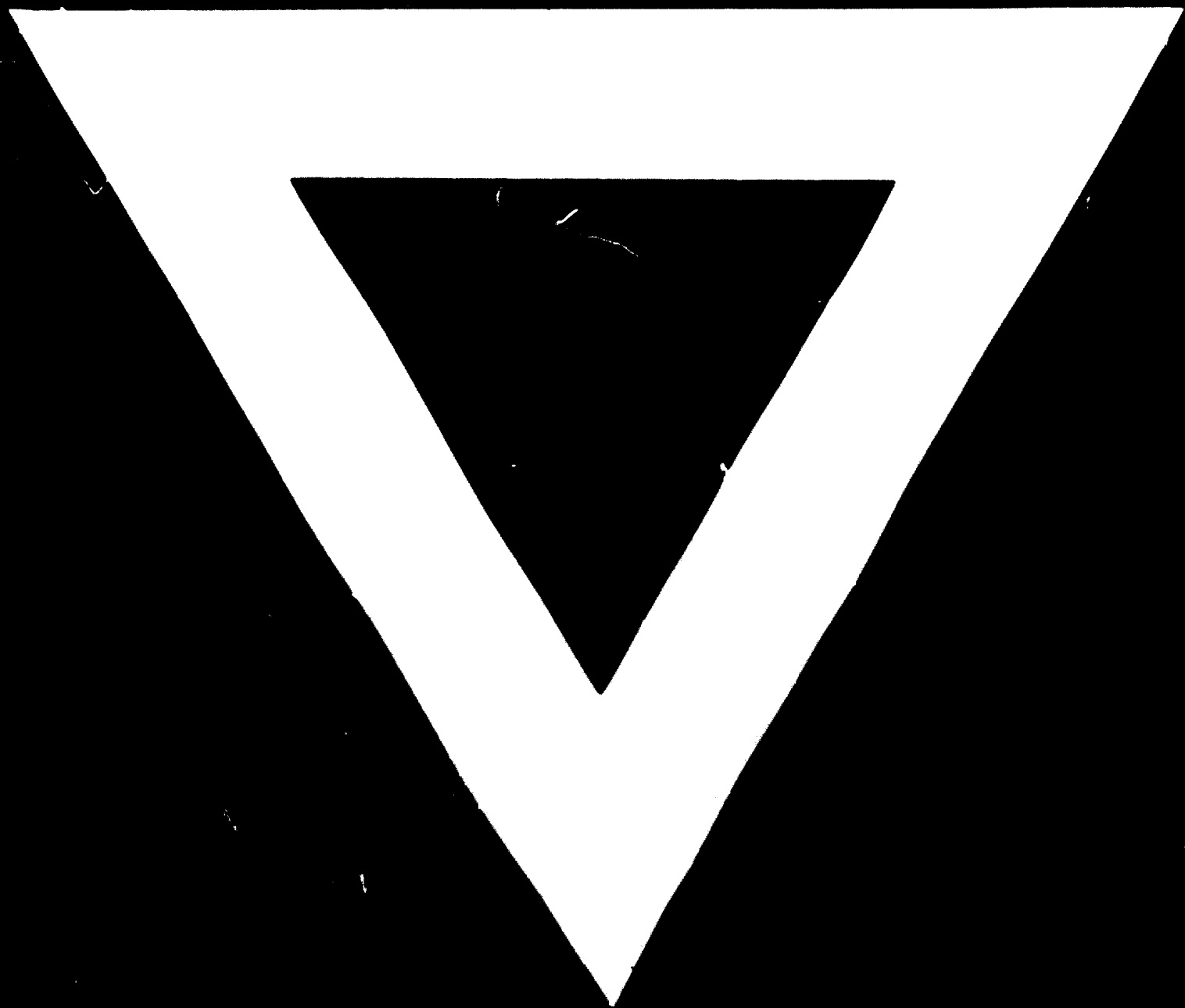
It is unlikely that a cart driver will be able to switch directly to a truck, because of financial, social and infra-structural reasons. However, he may be able to do so after having owned during a given span of years for instance a motorized tri-wheeler.

A good example of the production of this type of vehicle, which is particularly well suited to conditions in most developing countries, is found in Greece, where a tri-wheeler with a FRP body is produced at the rate of 3 per day. Although there are few incentives to manufacture locally, the cab (FRP), tray (steel), frame, rear springs, tires, batteries, soft trim and seats are produced in Greece. This vehicle was designed by the Reliant Motor Company, Ltd. and retails in Greece (with a Ford engine of 1200 cc) for about US\$2,100.

Another example which should be quoted here refers to the recent joint venture signed on 16 June 1972 in New Delhi whereby the full production of Innocenti scooters and tri-wheelers will be transferred from Milano to India. Provided that suitable incentives are given and a proper credit system is utilized, we are convinced that these scooters can have a much bigger impact on the Indian economy than all the passenger vehicles built there now. On the other hand, they will promote and pave the way for a future more sophisticated motorized road transportation system.

The problem of inexpensive means of transportation has been extensively studied by the two largest United States' companies, GM and Ford. Details on the respective end products will be given by their representatives at this conference.





5 . 8 . 74