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**TRANSFER OF TECHNOLOGIES IN
AGRICULTURE: THE CASE OF DEUTZ
IN ALGERIA**

The current economic situation Algeria is very difficult; the social conditions in the country

are hard as well (**Figure 1**). Foreign debt amounts at present to 25 billion US\$. The relevant debt service rate in the amount of 10 billion US\$ consumes approximately 75% of Algerian export income.

Algeria has a favourable balance of trade of approximately 3.5 billion US\$. The reserves of foreign currencies presently amount to 1.6 billion US\$.

Basic food, for example grain, has to be imported and absorbs foreign currency which is badly needed for industrial purposes as well.

The yearly increase in population is 3%. Approximately 21% of the employable population is jobless.

7.5 million people, that means 29% of the population, are illiterate; 53% of them are women (**Figure 2**).

After a period of economic liberalization the new legislation of October 1992 subjected the economic policy to a strict austerity, which means a sort of control over foreign currency and a prioritization of certain key industries.

Fundamentalists are trying to influence politics by attempts at "Islamization".

The "case of KHD in Algeria" originated 23 years ago and started in 1969 with the agreement to construct an engine and tractor factory in Constantine. This agreement was an element of the Algerian policy of nationalization and industrialization which was initiated by the Government after independence in 1962.

In so far the "case of KHD in Algeria" is part of the various stages of industrialization (**Figure 3**).

What is KHD?

Why is KHD an "ideal" partner for Algeria, for Algerian industry?

Here I explicitly correct myself: not trading partner, but partner for industrialization (**Figure 4**).

KHD is a German industrial enterprise operating in the field of industrial engineering covering three strategic industries important for the industrialization of a country.

Here the interests, i.e. strategies, of KHD and Algeria come together (**Figure 5 and 6**).

The construction of the engine and tractor factory was concluded with the start of production in 1974.

Essential elements of this project (**Figure 7**) were:

- transfer of manufacturing technology;
- transfer of product technology;
- extensive training programs in manufacturing methods, management and marketing analysis;
- quality standards;
- production planning.

Let me take this opportunity to mention that the National Board for the Agricultural Engineering Industry - PMA (Entreprise Nationale de Production de Matériels Agricoles), at the same time as the engine and tractor factory, built a combine factory with the assistance of the German company Claas on the same basis. Further cooperation and licensing of various agricultural engineering products promoted the set-up of an independent agricultural engineering industry in Algeria.

Back to the "Case of KHD in Algeria": two years prior to starting production in the engine and tractor factory the KHD "Industrial Plants" Division signed a contract for the construction of a cement plant.

In the early 1980's studies were conducted on extending the engine and tractor plant because local requirements could not be covered by this new installation.

In the middle of the 1980's the first signs of wear and tear could be seen in the industrial plants. Negotiations started (**Figure 8**) on:

- restructuring of the complexes;
- extension of capacities;
- installing "state-of-the-art" product technologies;
- substantially lower in-plant content in the various complexes, especially with a view to increasingly low budgets;
- harmonization of national capacity requirements of the various stages of net product value;
- inclusion of the German partner in exports;
- training of the Algerian partner in export business, especially for Western Europe.

Recently KHD received an order for planning the lay-out of the plant to meet future requirements. Which criteria of success do we have in a critical analysis or which aims were reached?

Which aims remained a vision and could not be realized up to now?

Concerning the critical analysis/success factor, the related problems are (**Figure 9**):

- lack of planning ability in middle management;
- insufficient maintenance in the plants;
- considerable cost caused by production shutdowns;
- increasing aging process of equipment;
- internationally declining competitiveness; national industries suffer from high production costs;
- low-cost imports are menacing the national industries;
- negative influence on trade balance by drain of hard foreign currency;
- insufficient flexibility in parts supply on account of financial control by the Government;
- non-existing but necessary continuity of supplies;
- lack of national medium-sized supplier industries;
- the national industrial complexes are largely dependent on the original partners' respective countries of origin.

Concerning the Critical analysis/success factors, the related opportunities are (**Figure 10**):

- Algeria has built up the only substantial agricultural engineering industry in the Maghreb area. In the meantime our partner locally manufactured approx. 100,000 tractors. The export of tractors and implements to the Algerian neighbours in the Maghreb area as well as to other African countries is part of this strategic concept. Looking to a long-term strategy of cooperation or industrialization of countries which are much less developed than the North African countries, the Algerian industry could become a "generator", for example, of agricultural engineering adapted to African requirements. Regarding this inter-African exchange of goods, the cultural relationship is playing a major part. Moreover, there are no language problems with these customers, which is an important factor for success in business;
- with this tractor population, a mechanical service network has been set up in Algeria. This is a positive development from the standpoint agricultural engineering as well as for the general economy and means a substantial contribution to industrial development.

Finally, also in relation to the theme of the meeting, it is important to summarize that:

- during the past 30 years Algeria has taken giant strides towards the industrialization of the country. Various industrial branches have been developed in Northern Africa;
- industrialization has also nurtured the level of education and professional training substantially.

Not in all cases efforts were successful to focus priorities to a continued systematic improvement of all processes in the enterprises. There arose temporary standstills and today there is even the danger of a collapse of production systems.

Consequently now - after the start 30 years

ago - all efforts of the Algerian partners are focused on stabilizing the existing industrial complexes and increasing their output. The aim is to increase food production with local means so that in spite of population increases the country can cover these requirements from its own resources. Foreign currency can thus be used for the modernization and extension of industry.

The future prospect for these enterprises and countries lies in the following:

- to become the turntable for deliveries to third markets;
- favourable labour costs with tolerable production deficiencies;
- recommendation as good quality suppliers for the industrialized countries.

Figure 1 - Economic situation in Algeria

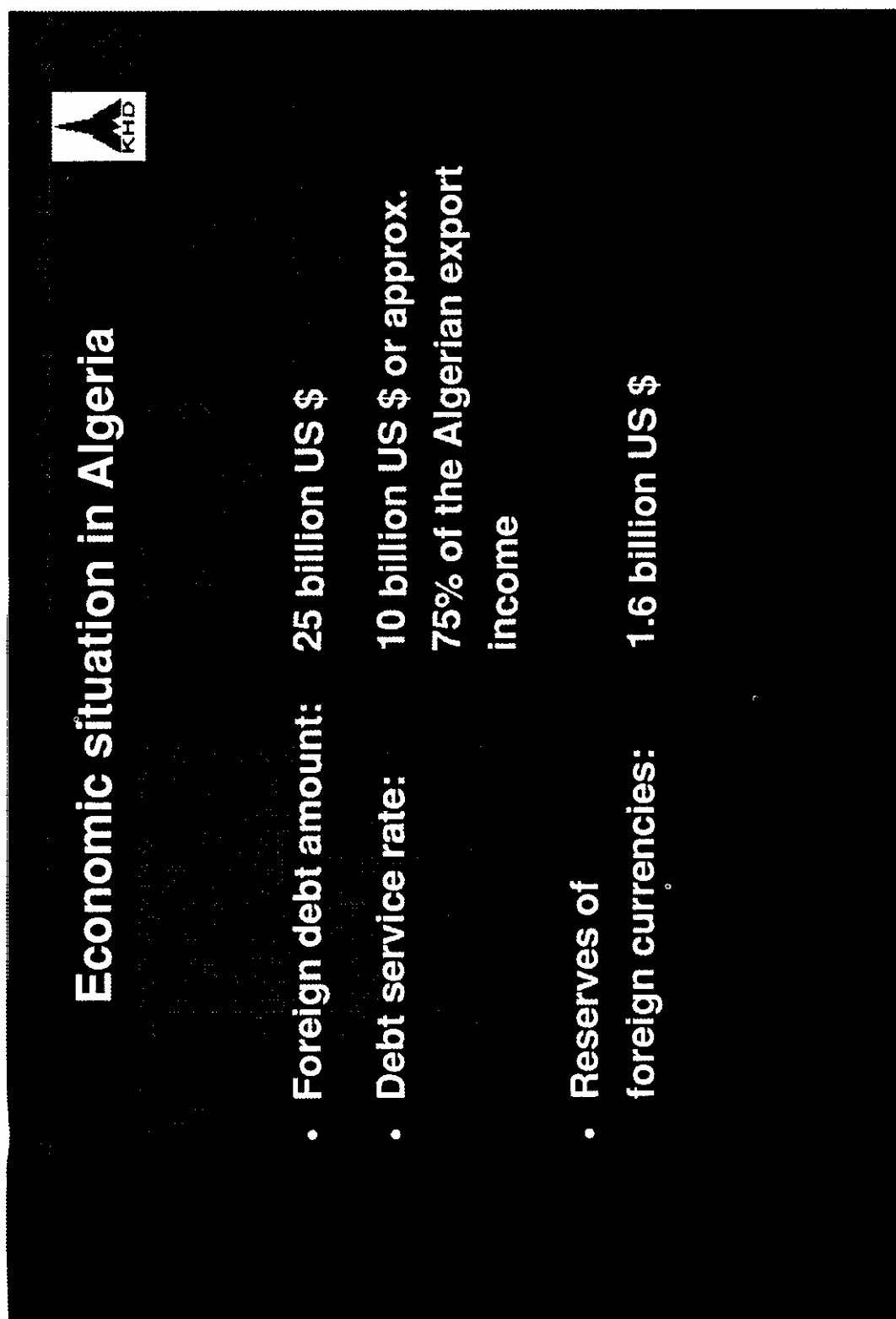


Figure 2 - Social situation in Algeria

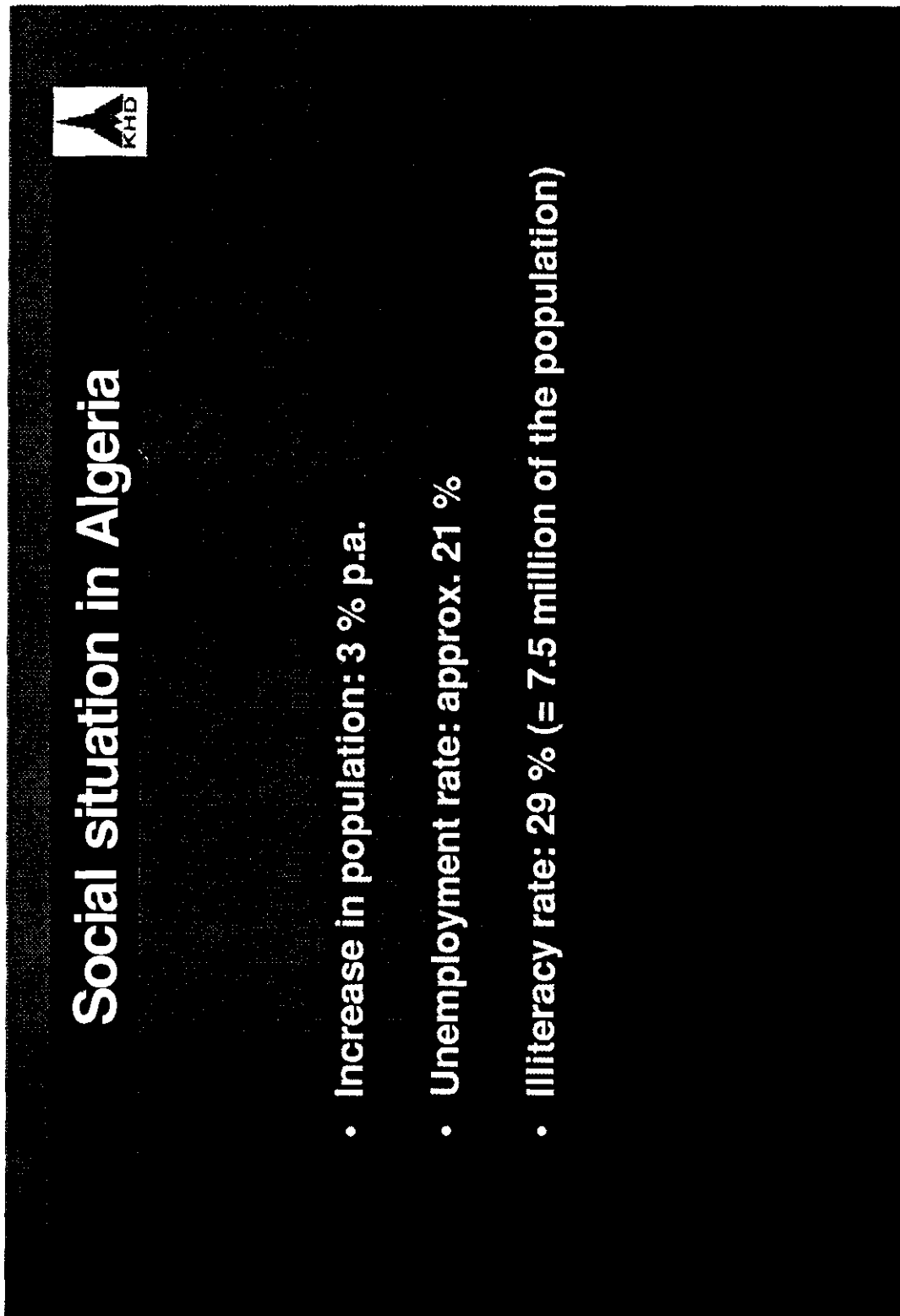


Figure 3 - Stages of industrial development

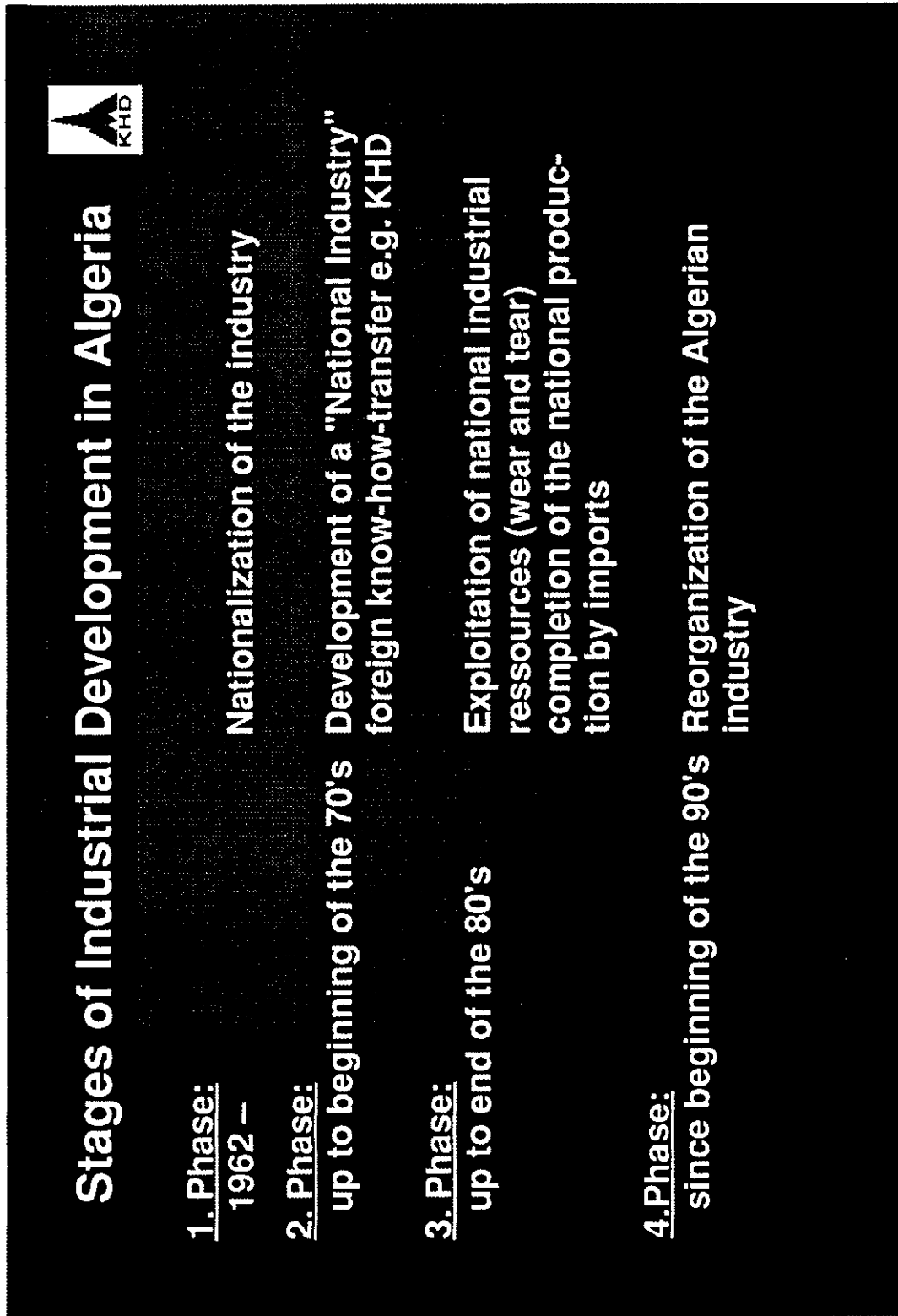


Figure 4 - KHD: Divisions and Key Industries

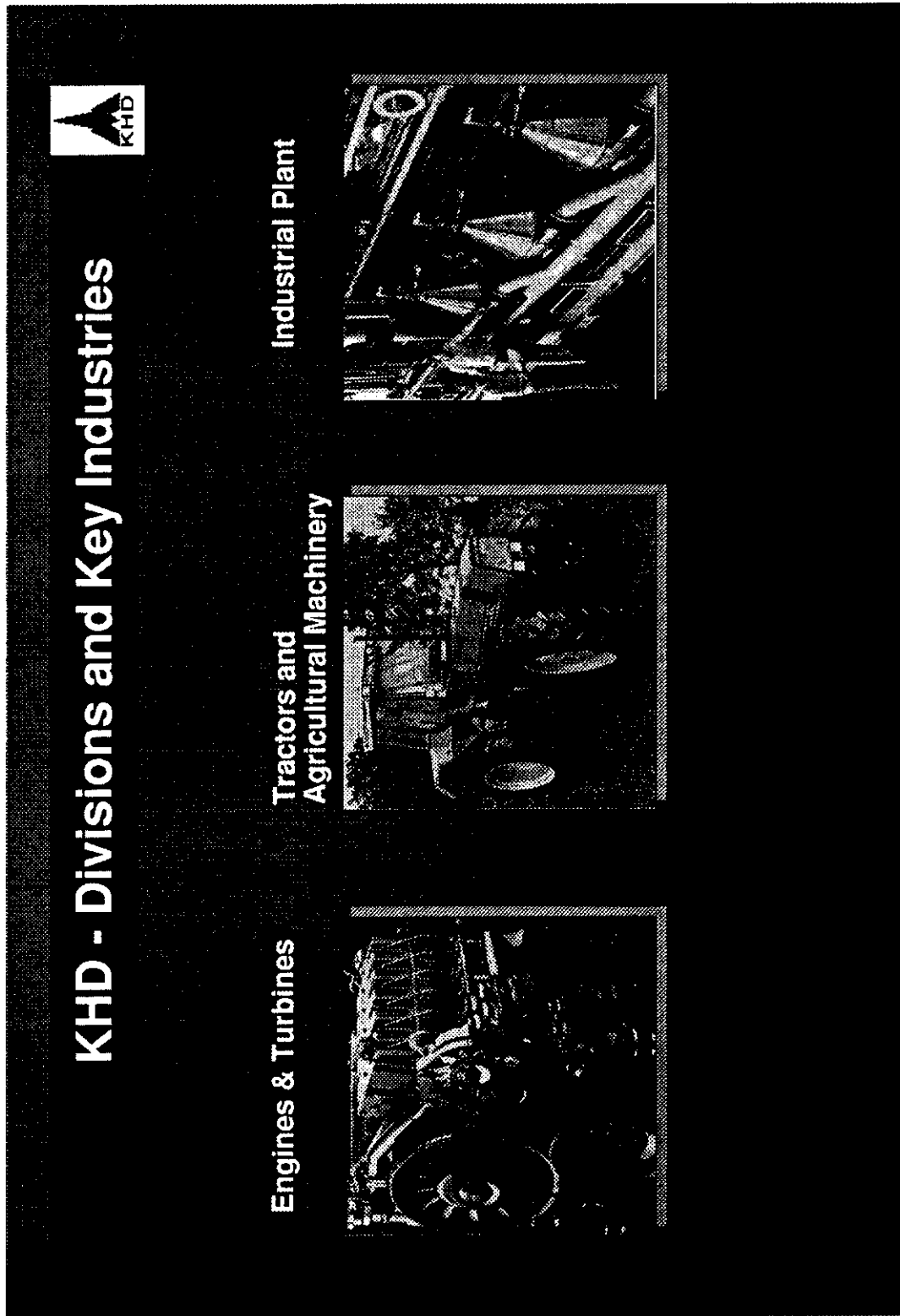


Figure 5 - KHD as Algeria's partner

Algeria

KHD as Algeria's Partner



Heavy Industry

- Construction Equipment
- Vehicles
- Buses /Trucks

Agricultural Industry

- Tractors
- Agricultural Machinery
- Combines

Basic Industry

- Construction Materials
- Ore dressing
- Extraction of Aluminium

KHD

Engines & Turbines



Tractors and Agricultural Machinery



Industrial Plant



Figure 6 - Engine and tractor factory

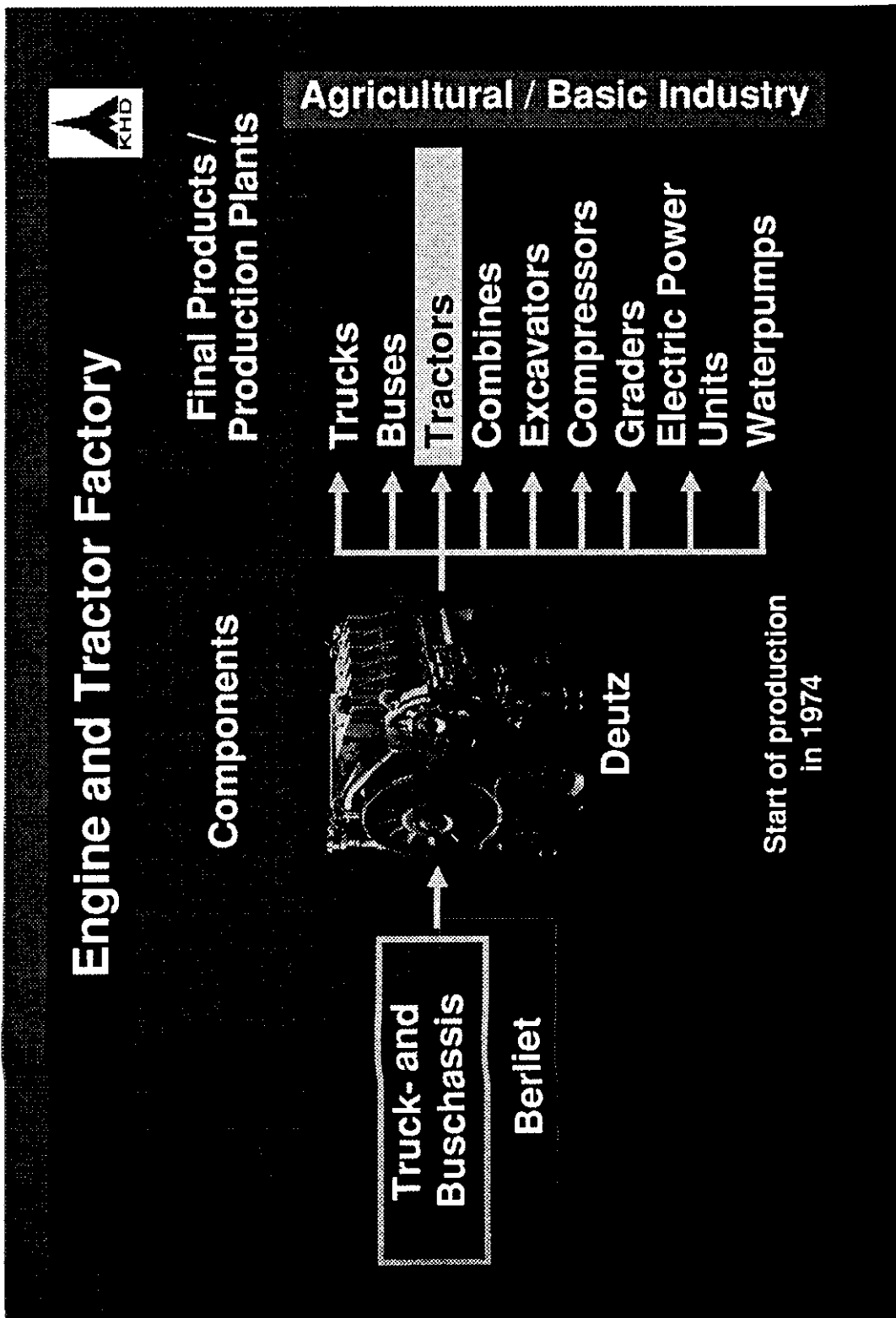




Figure 7 - Essential elements of KHD-Project



Essential Elements of the KHD-Project

- Transfer of manufacturing technology
- Transfer of product technology
- Extensive training programs in manufacturing methods, management and marketing analysis
- Quality standards / management
- Production planning / engineering

Figure 8 - Restructuring algerian industry



Restructuring the Algerian Industry

- Restructuring of the complexes
- Extension of capacities
- Installing state of the art product technologies
- Cooperation with the industrial partner in exports
- Training of the Algerian partner in export business, especially for Western Europe

Figure 9 - Critical analysis/success factors

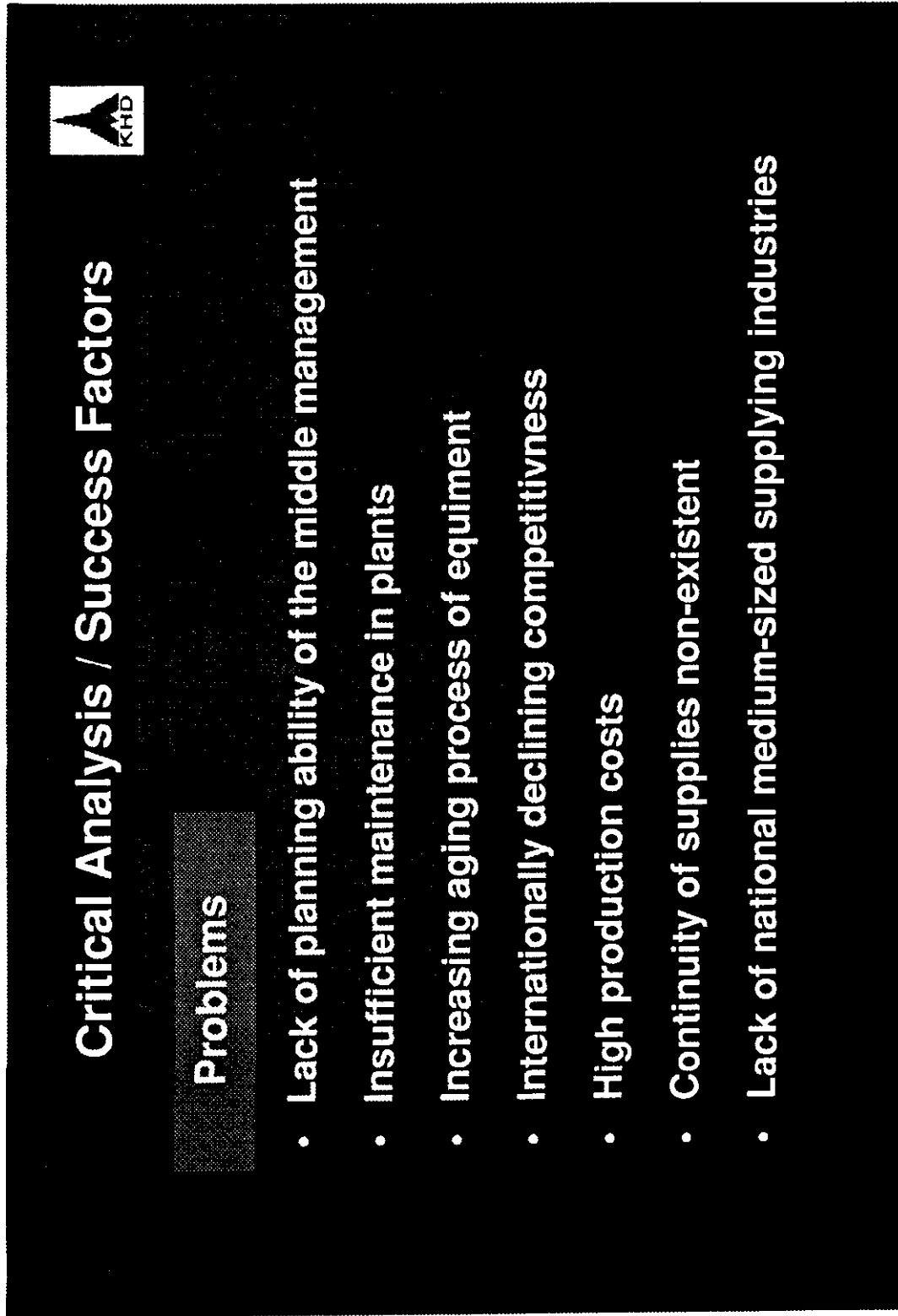



Figure 10 - Critical analysis/success factors



Critical Analysis / Success Factors

Chances

- The Maghreb tractor producer
- Local manufacture of approx. 100.000 tractors
- Export of tractors
- Cultural relationship
- No language problems with customers
- Set-up of mechanical service net