

industry in that the EC companies are involved in both civilian and military production, while U.S. companies are involved in either one or the other but not both.

EC companies have capabilities in the production of military vehicles such as armoured and other vehicles, and, with the exception of emerging technologies (advent of new potential in the robotics field), there is no technology threat from the U.S. However, the production of armoured vehicles is highly fragmented. Main battle tanks are produced by France, the Federal Republic of Germany, Italy, Spain and the U.K.. This has led to duplication of effort and facilities, small production runs and high unit costs. Furthermore, EC military vehicle companies face intense competition in the export markets. For instance, they compete on the armoured vehicles market not only with the companies from the U.S. but also from Brazil and Sweden.

The European technology base in conventional weapons, conventional munitions and powders, explosives and warheads is quite competitive.⁴⁷ National governments look on the capability to produce munitions and conventional weapons as being necessary to assure national defence capability.

Areas of potential weakness for Europe are the developing fields of new-generation guided weapons,⁴⁸ autonomous weapons and the so-called "smart" weapons (particularly in sensors and in computation capability). European weakness is also created the development and production of national weapon systems that are directly competitive and thus lead to a fragmented rather than a united EC in this area.

In the defence ships⁴⁹ and submarines⁵⁰ industry, Europe is fully competitive and has a strong record of innovations, although capabilities vary from country to country. However, there is an overcapacity in the ship-building industry worldwide because of an acute scarcity of civil orders and because of the competitiveness of producing nations such as the Republic of Korea, Japan and Taiwan.

Going into the 1990s, the European defence industry will be affected by the changing nature of

worldwide markets in the defence industry. This will be characterized by attempts to develop next-generation equipment in relation with the industry's access to other markets or increased share of the global market. The main areas of growth by the year 2000 will come from dual or mixed nature industries.

Purchase of goods and services of European defence companies from external suppliers are roughly estimated at between 40 and 50 per cent of their production value. For the most part, these supplies continue to be purchased from specialized national manufacturers.

In summary, the European defence industry restructuring is designed to achieve increased international competitiveness, a goal that can only be attained at the expense of jobs losses. Expected growth in the civilian aerospace industry will probably not compensate for this decrease since this sub-industry represents only 30 per cent of the industry total sales in Europe and since an increase in competitiveness is targeted for this sector as well.

Concerns of European companies with respect to their ability to compete focus on the critical electronics industry, in which Europe is lagging perhaps several years behind the U.S. Thus, the EC considers this a critical industry. In the field of electronics, more than in any other technological area (with the possible exception of materials), there is a strong interaction between military and the civilian oriented innovations, making the defence electronics industry even more important for the EC.

European Defence Electronics

The European electronics industry specializes in micro-electronics, opto-electronics, millimetric waves sensors, acoustic systems, radars, communications, navigational systems and integrated systems.⁵¹

The defence electronics industry enjoys a solid technological base,⁵² especially in the fields of battlefield communications, infrared surveillance, weapons guidance (weapons-aiming) systems technology applicable to field and weapon platform use, some radar systems, active and passive sonar systems and associated data processing and display