

DIRECTORATE-GENERAL FOR EXTERNAL POLICIES
POLICY DEPARTMENT



The development of a European Defence Technological and Industrial Base (EDTIB)

SEDE



DIRECTORATE-GENERAL FOR EXTERNAL POLICIES OF THE UNION

DIRECTORATE B

POLICY DEPARTMENT

STUDY

THE DEVELOPMENT OF A EUROPEAN DEFENCE TECHNOLOGICAL AND INDUSTRIAL BASE (EDTIB)

Abstract

In 2007 the EU member states inaugurated a European Defence Technological and Industrial Base strategy. The gradual integration of national DTIB should lead to self-sufficiency for security of supply – but on a European rather than national level. A better co-ordinated, less duplicative defence landscape was to emerge, to better serve the political objectives of European defence. Six years on, with the European Council on defence scheduled for later this year, this is the right time to define where EDTIB stands today and what added value can EU institutions offer to sustain and develop it. The current state and the long-term trend of the defence policies and industrial activities make the materialisation of the current vision of the EDTIB increasingly improbable. The joint political vision has lost contact with the individual political and industrial reality of the growing export orientation of European suppliers. In addition, security of supply depends ever more on the influx of civilian and defence goods as well as raw materials from beyond Europe's borders. The EDTIB is trapped between the national and global developments. New solutions have to be added to the already existing recommendations. A key step would be a revision of the 2007 EDTIB Strategy.

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LIST OF ACRONYMS

A&D	Aerospace and defence
AFV	Armoured Fighting Vehicle
AIFV	Armoured Infantry Fighting Vehicle
AMRAAM	Advanced Medium-Range Air-to-Air Missile
APC	Armoured Personnel Carrier
art	Artillery
BVRAAM	Beyond-Visual Range Air-to-Air Missile
CAS	Close Air Support
CBRN	Chemical Biological Radiological Nuclear Defence
CER	Common European Requirement
CFSP	Common Foreign and Security Policy
COTS-MOTS	Commercial and Military Off-the-Shelf solutions
CSDP	Common Security and Defence Policy
DI	Defence Industry
DPG	Defence Political Guidelines
DTIB	Defence Technological and Industrial Base
EADS	European Air Defence System
EC	European Commission
EDA	European Defence Agency
EDEM	European Defence and Equipment Market
EDTIB	European Defence Technological and Industrial Base
EP	European Parliament
ERDF	European Regional Development Fund
ESA	European Space Agency
ESF	European Social Fund
EU	European Union
FA	Framework Agreement
FP	Financial Perspective
GaN	Gallium-nitride
GDP	Gross Domestic Product
GNI	Gross National Income
HQ	Headquarter
ICET	Information, Communication and Electronic Technologies
IED	Improvised Explosive Device
IHG	Industrial Headline Goal
IPR	International Property Rights
ITAR	International Traffic in Arms Regulation
JSF	Joint Strike Fighter
KSA	Key Strategic Activities
LoI	Letter of Intent
M&A	Mergers and Acquisitions

MALE/HALE	Medium Altitude Long Endurance/ High Altitude Long Endurance
MBT	Main Battle Tank
MFA	Ministry of Financial Affairs
MHG	Military Headline Goal
MoD	Ministry of Defence
MoU	Memorandum of Understanding
MRO	Maintenance, Repair and Operation
MS	Member State
NATO	North Atlantic Treaty Organisation
NGO	Non-governmental Organisation
NSRF	National Strategic Reference Framework
OCCAR	Organisation for Joint Armament Cooperation
OP	Operational Programme
OPV	Offshore Patrol Vessel
P&S	Pooling and Sharing
PESCO	Protocol on Permanent Structured Cooperation
PPP	Public Private Partnerships
R&D	Research and Development
R&T	Research and Technology
RF	Radio Frequency
RTD	Research and Technological Development
SAM	Surface-to-Air Missile
SATCOM	Satellite Communication
SIPRI	Stockholm International Peace Research Institute
SME	Small and Medium Enterprises
SoS	Security of Supply
TEU	Treaty on the EU
TFEU	Treaty on the Functioning of the EU
TRL	Technology Readiness Level
UAS	Unmanned Aerial Systems
UAV	Unmanned Aerial Vehicle
UCAV	Unmanned Combat Air Vehicle

Country Acronyms

AT	Austria
BE	Belgium
BG	Bulgaria
CY	Cyprus
CZ	Czech Republic
DE	Germany
DK	Denmark
EE	Estonia

ES	Spain
FI	Finland
FR	France
GB	United Kingdom
GR	Greece
HR	Croatia
HU	Hungary
IE	Ireland
IT	Italy
LT	Lithuania
LU	Luxembourg
LV	Latvia
MT	Malta
NL	Netherlands
PL	Poland
PT	Portugal
RO	Romania
SE	Sweden
SI	Slovenia
SK	Slovakia

EXECUTIVE SUMMARY

Understanding the (E)DTIB

In 2007, the EU member states agreed to enhance the development of an “European Defence Technological and Industrial Base” (EDTIB) with the help of an EDTIB Strategy. Since then, the EDTIB has become a point of reference not only for the member states, but also for the European Parliament (EP) and the European Commission. Six years on, with the European Council on defence scheduled for December 2013, this is the right time to assess where EDTIB stands today and what added value EU institutions can offer to sustain and further develop it.

The defence technological and industrial base (DTIB) organizes the infrastructure, institutions, and ideas, that ensure the Security of Supply (SoS) of armed forces with defence material and services against political risks (another state blocks the delivery of means of warfare) or industrial risks (companies no longer offering supply).

Since the End of the Cold War, tensions have been growing between national politics on SoS and the international character of supply chains, production and markets. Many states continue to aim for a strong national DTIB. They see it as key to independence and sovereignty because they are reluctant to rely on others for the supply of defence material. However, today’s DTIBs are essentially international endeavours. This global DTIB is characterized by five major factors: 1) a hierarchical structure of industrial organisation with some universal producers and many smaller companies who supply them, 2) global shifts in defence spending, with European defence budgets decreasing, and their investments shrinking even faster than the rest of the budget, 3) increasing dependence of the defence industry on foreign sales, 4) a globalised defence industrial production chain, 5) the rise of a complex patchwork of civilian and military industries, technologies, and products with an increasing pace of innovation. Moreover, member states increasingly contradict themselves by on the one hand insisting upon a national DTIB while on the other decreasing investments and thus fuelling the entry of national companies into the globalised production and market of defence goods and services. To sum up: while the governments think nationally, their industries increasingly act globally.

As national SoS seemed to be no longer sustainable on the national level, member states aimed to ensure access to an effective DTIB by shifting SoS efforts to the EU level. This is why they agreed on the 2007 EDTIB strategy. The EDTIB is first of all a political vision that results from both, the broader idea of a more integrated European defence policy and from the increasing pressures on member states that follows from the changes in the defence industries in Europe. It envisages a European DTIB, in which the defence political and industrial landscapes of Europe are congruent. The gradual integration of national DTIBs should lead to self-sufficiency for security of supply – but on a European rather than on a national level. A better co-ordinated, less duplicative defence landscape was to emerge, to better serve the political objectives of European defence.

The political and industrial “E” in EDTIB

Hence, the “real” EDTIB is where the “E” (for Europe) makes a difference to member state’s SoS. This difference can result from the *political* “E”, i.e. community-based or intergovernmental politics to enable the EDTIB, especially through co-ordination of demand, procurement, R&D or market issues; as well as through national defence (industrial) policies that would actively support the EDTIB; or from the *industrial* “E” i.e. the Europeanization of structures and qualities of those companies that supply their goods and services to European countries and thus ensure the EU’s armed forces SoS.

In reality, however, since 2007, states and industries continue to go their separate ways. This creates a world of difference between the multinational, increasingly connected way in which the EU militaries

train and fight, and the stubbornly national, and increasingly unaffordable, way in which EU government procure weapons for them. It prevents the industries from putting in place changes which they see as necessary to become more efficient on the European continent: consolidation of demand allowing for larger production lots and simplified relationships between industry and governments. Thus, consolidation in Europe will more likely be industry-driven than policy-driven.

The two main drivers of the current and potentially the future development are:

Continued Nationalisation: The EDTIB related policies of member states have traditionally been less driven by security policy or capability than by a mixture of national industrial and technological policies. These have generated national DTIBs which are incompatible with each other. Future procurement projects will either be carried out on a more national or more global basis, but certainly less on an EU multinational level.

Increased Globalisation: Dependencies have increased in two ways: The civilian basis for defence industry is growing and defence establishments become more dependent on civilian supply chains. Moreover, as the civilian part of the business generate the majority of the turnover and income, it will get increasingly difficult and costly for the military to establish highly reliable supply lines. The other dependence comes with exports: the Lol countries' defence export rates are between 40-70%. What is more, the destinations are changing. Between 2007 and 2011 only Germany, the Netherlands and Italy delivered 30-40% of their exports to EU countries, whereas all other suppliers remained below 20%.

In effect, the landscape in the **DTIB has not changed** significantly compared to previous years. On the **political side**, the old habits of armaments cooperation prevail, enshrined in the principles of *juste retour* and Art 346 TFEU. At the same time, institutions and rules have proliferated on the EU-level – EDA, EC, Lisbon Treaty – without policy impact, however. The national political level mirrors the lack of influence of the EU level: the Lol-states, who represent 20% of the EU member states, dispose of about 80% of the EDTIB and are responsible for a similar split of defence investment turnover. The diversity of the 27 national marketplaces and DTIBs, controlled by 27 national policies towards defence, technology, markets, procurements, and exports is kept. Producers still buy their armoured vehicles, aircraft, vessels, at home. Non-producers do not care about EU or Non-EU purchase, as the acquisition of JSF and F-16 jets demonstrate. The future will see decreasing multinational and increasing national or renewed transatlantic projects (air) on the one hand, and less procurement and more services on the other hand.

As to the **industrial structure**, the EU did not deliver according to its own benchmarks and objectives related to the EDTIB. The top companies in the EU - BAE Systems, EADS, Finmeccanica, Thales – are global rather than European players. The top five companies concentrate 2/3 of the turnover on them. The defence industrial centres are still concentrated in the West of Europe rather than being dispersed in various regions. EU rules and regulations have played little role in forming the defence industrial landscape; co-operation patterns and institutions have evolved primarily outside the EU. No major consolidation has happened, or, like in the case of BAE-EADS, has been consciously prevented. The industry shows varying degrees of competences, capabilities and competitiveness along the sectors. They all have in common that Europe does not play a significant role as an actor that frames developments. While the companies in the land and naval sector are often nationalized and highly specialized in one sector, they are globalized and have more often diversified portfolios in the aerospace- and electronics sector. The countries or the companies themselves currently block national or cross-border consolidation in the land- and naval sectors. In contrast, the aerospace- and the electronics sectors show consolidation and a low defence dependence. The top companies are active in many sectors. Competences are generally high but the limited number of Sub-sectors in which the companies are often active in restricts the exchange of skills and knowledge. All sectors show excess

capacities. Yet, mainly the land sector may be able to adsorb in the future significant amounts of products. Often, competitiveness has to be increased by offsets.

Diversified Dependencies

While member state's dependence on non-EU platform suppliers has decreased, dependence has seriously diversified especially in the industrial dimension: both on exports and imports. A traditional concern of SoS is the dependence on supply of equipment from the US and Russia. While their role in the EDTIB is shrinking, the SoS that the EDTIB can deliver is under new sources of pressure. States primarily focus on the military supply. Yet, they miss the strong link between the military and industrial SoS, e.g. the possibility that the industrial supplier itself runs out of supplies, e.g. components and raw materials.

There are four main developments that compromise the role that an EDTIB can play in SoS:

1. The **globalisation** of production and markets, which has further diversified dependencies: companies manufacture increasingly less in-house and order a growing amount of their goods from sub-contractors all over the globe. A second, related shift is the one by military producers towards an ever stronger reliance on civilian suppliers.
2. Member states are allowing **economisation of supplies** to happen through the backdoor: because they are concerned about costs, they let producers decide what to purchase from others and from which ones, irrespectively of SoS implications. While member states are willing to waste serious resources to keep companies national, they are rather unwilling to pay for the industrial SoS.
3. A third important feature is the **growing reliance on civilian technologies**, which changes dependencies. Only very few technologies such as those needed for armoured vehicles are presently, and will be in the future, specifically military. Increasingly, military products result from civilian technologies.
4. **Extra EU-exports are a central element of the EDTIB but have ambiguous effects on it:** The growing extra-EU export figures show that non-EU destinations have become the lifeline for both many EU-based companies and for the member states who can buy at affordable prices. At the same time, exports increase the risks to the EDTIB, because EU-based companies engage in ruinous competition, share their IPRs and thus nurture their next generation-competitor on the new target markets.

All four factors imply that a meaningful understanding of EDTIB has to be based on functional relations rather than territorial proximity. A new paradigm for SoS is emerging: instead of national independence, member states will have to aim for managing critical global supply chains. This will be even more important if the EU becomes a bigger importer.

Outlook

The current state and the long-term development trend of the defence industrial activities make it increasingly unlikely that the member states and the EU implement the current vision of the EDTIB. The joint political vision has lost contact with the individual political and industrial reality of the growing export orientation of European suppliers. In addition, SoS depends ever more on the influx of civilian and defence goods as well as on raw materials from beyond Europe's borders. The European DTIB is trapped between the national and global DTIB developments: European demand is in decline. Hence, demand-based policy instruments such as the Commission's Defence Package cannot effectively reorganize the structure of the DTIB. National demand is declining as well, whilst global demand is growing, pointing towards a further globalization of DTIBs by market shifts and the internationalisation of production for the coming years. As a consequence, the EDTIB may well shrink even more, and the

national DTIBs might become more integrated into the global DTIB. Purely national DTIBs risk becoming increasingly difficult to sustain. These circumstances, together with the existing and predictable budget austerity, beg the question how Europe can uphold a DTIB that effectively delivers the needed spectrum of military capabilities.

EU Level Options

One often discussed way in which the EU could possibly add value to the effort to enhance and protect EDTIB is to use existing means in new ways. Those available means include a) policies protecting 'key industrial capacities', b) the reform and rationalisation of different existing funding and investment methods, and c) the possible use of structural and cohesion funds in relation to the EDTIB. However, this always requires a cautious assessment of the potential benefits, limits and side-effects of the above tools. It needs to be stressed that their added value will materialise only if they spawn co-operation both among the EU institutions and between the EU and its member-states. Since the member states are the main *demandeurs* on the European defence market, it is not surprising that their leverage over EDTIB is mainly related to the joint utilisation of defence investments and funds.

Recommendations

As the conditions for the creation of an EDTIB are changing drastically, the member states, European Parliament and the European Commission have to add new solutions to the already existing recommendations from the last years. The entire EU has to find new ways in managing its defence sector as a whole and the relations among the relevant actors. A key step would be a revision of the 2007 EDTIB Strategy. It has to be based on the new realities, both in terms of what a European DTIB means today and in the future; and the means available to achieve such an EDTIB. In core, it means to shift from a geopolitical to a functional approach to the EDTIB.

While this study offers new insights into the state and future perspectives of the EDTIB, there is the serious need for a continuous defence industrial monitoring and a regular assessment of risks and opportunities to the EDTIB. Far beyond specific defence aspects, national governments and EU institutions should develop an understanding beyond stereotypes about industrial priorities in times of austerity and thus find a formula for a more coordinated European industrial policy in relation with the EDTIB. Here, a Defence Sector Council would be necessary to get the political mandate from the heads of states and governments. Such a Council should first take a comprehensive look at the State of the EU defence sector and second develop a Military Headline Goal and an Industrial Headline Goal for the 2030 horizon that sets out common priorities for the European armed forces' procurement and the EDTIB. The possibility to elaborate an EU White Book on Defence could be explored as it may lead to the formulation of an overarching document shaping European action in this field.

None withstanding future visions of defence, current reality implies that EU member states should immediately engage in greater consolidation of demand through joint R&T projects and through bundling demand for shared capabilities, for example by harmonization of demand, synchronization of procurement, cooperative or common procurement. In this context, Pooling and Sharing (P&S) is particularly important and deserves a step change.

Moreover, EU member states should empower the European Defence Agency. They should allow EDA to take a more active role in shaping the EDTIB, thereby representing the intergovernmental dimension of the EDTIB

1. EUROPE'S DEFENCE TECHNOLOGICAL AND INDUSTRIAL BASE

What is the state of the European defence technological and industrial base and what added value can the EU offer to sustain and develop it? In 2007 the EU member states inaugurated an EDTIB strategy. Six years on, with the European Council on defence scheduled for December 2013, this is the right time to define where EDTIB stands.¹

Many states consider an appropriate defence technological and industrial base (DTIB) as central to political sovereignty. They have been willing to invest heavily in it to ensure security of supply (SoS) and make themselves independent from foreign governmental support and suppliers. In recent years, they have devoted smaller budgets to do so. However, decision-makers continue to think of DTIB as serving a broader purpose than producing defence goods; they also see it as a source of local jobs. These secondary objectives are often at odds with the government's desire for cheap defence equipment produced by effective defence companies.²

While defence industry has partly compensated for its diminishing domestic orders by globalising order books and production, the inefficiencies of national control are becoming increasingly visible in several domains:

- Economics: constantly increasing per-unit costs, loss of economies of scale and learning, absence of competition among companies;
- Defence: lower levels of technological sophistication, poor availability of cutting edge capabilities;
- Technology: slower rates of innovation, growing gap to leading companies outside the EU;
- Industry: loss of production capacities and changing markets;
- Security: increasing dependency on foreign suppliers.

These changes and problems have been in evidence long before the economic crisis. In the EDA's 2007 EDTIB strategy, member states respond to them by declaring the need to:

"[...] recognise that a fully adequate DTIB is no longer sustainable on a strictly national basis – and that we must therefore press on with developing a truly European DTIB, as something more than a sum of its national parts. We cannot continue routinely to determine our equipment requirements on separate national bases, develop them through separate national R&D efforts, and realise them through separate national procurements. This approach is no longer economically sustainable – and in a world of multinational operations it is operationally unacceptable, too. We need therefore to achieve consolidation on both sides of the market in Europe: aligning and combining our various needs in shared equipment requirements; and meeting them from an increasingly integrated EDTIB."

¹ Examples for earlier documents and studies from the European Parliament that deal with European defence industry are: European Economic and Social Committee (Ed.), *Opinion of the European Economic and Social Committee on the Need for a European defence industry: industrial, innovative and social aspects*, Brussels, 2012; European Parliament, *The cost of non-Europe in the Area of Security and Defence*, Policy Department External Policies, Study, Brussels, June 2006; European Parliament, *The Protection of the European Defence Technological and Industrial Base*, Policy Department External Policies, Briefing Paper, Brussels, October 2007.

² This and other chapters have benefited from: Mölling, Ch., *Die Europäische Verteidigungsindustrielle Basis und Deutschland*, SWP Study, to be published in 2013; Mölling C., *The Defence Industrial Landscape in Europe*. SWP Working Paper, to be published in 2013.

Since those words were written, the decrease in defence budgets has accelerated while markets and technological innovation has been moving to other parts of the world. Six years on, what added value can the EU offer to sustain EDTIB?

1.1 Understanding DTIBs: drivers and characteristics

A DTIB is the organisation of infrastructure, institutions, and ideas that convert state resources into the means of warfare.³ Today, DTIBs are essentially international endeavours. **Five major factors** affect the global picture of defence industry and drive major changes of its structure, organisation, activities and processes:⁴

Table 1: Drivers of DTIBs

Driver	Current feature
Industrial structure	A hierarchical structure of organisation
Defence spending	European budgets decreasing, global shifts in spending, defence investment shrink faster than other parts of the defence budgets
Defence market	Increasingly critical
Defence industrial production	Globalisation
Technology	Increasing influence of dual use industries and products

1.1.1 Defence spending

Defence spending is the prime factor affecting defence industry. In the first decade after the end of the Cold War, budgets decreased by over 30%. The size of the world's armed forces followed the trajectory set by budgets, shrinking from 28.6 million in 1989 to 21.3 million in 1999.⁵ Arms industries have followed too, with much rationalisation and consolidation taking place in the same decade. Defence production was concentrated in the hand of fewer but larger companies.

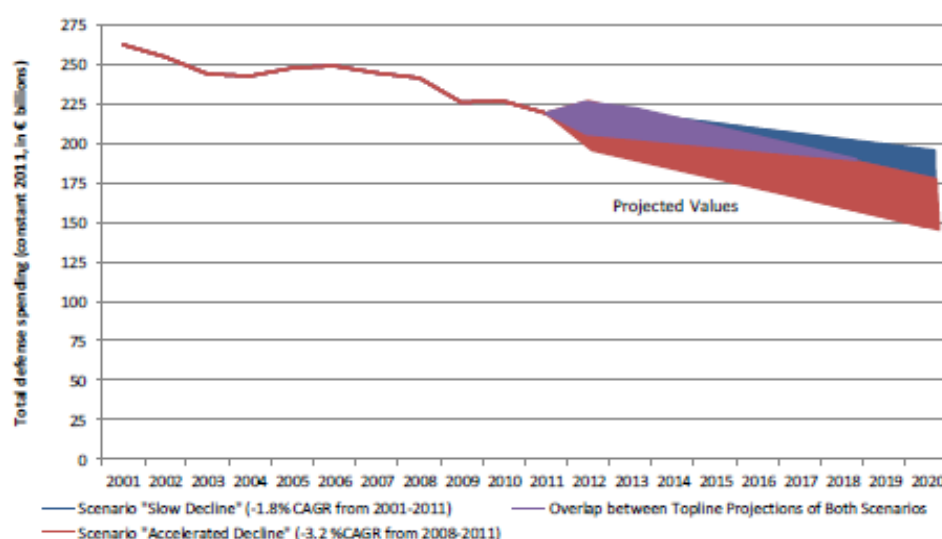
The 2000s have brought two new trends: a slight increase in nominal spending in the West and a considerable growth of defence spending in Asia.⁶ At the same time, effective European buying power of defence budgets has decreased constantly (see figure 1).

³ Geyer, M., *Deutsche Rüstungspolitik: 1860-1980*. Suhrkamp, Frankfurt am Main 1984; Hartley, K., *The Economics of Defence Policy: A New Perspective*, London 2011, pp. 147-181.

⁴ The categories and part of the content was derived from Bitzinger, R. A., (Ed.), *The Modern Defense Industry: political, economic, and technological issues*, Praeger Security International, ABC-CLIO, 2009, p. 1; Markusen, A. R./Costigan, S. S. (Ed.), *Arming the Future: A Defense Industry for the 21st Century*, Council on Foreign Relations Press, New York, 1999 gives an excellent overview over the situation and challenges in the 1990s; McGuire, M. C., "Economics of Defense in a Globalized World", in Sandler/Hartley(Eds.): *Handbook of Defense Economics*, Vol. 2, 2007; on the EU defence industry perspective: Guay, T./Callum, R., "The transformation and future prospects of Europe's defence industry", in: *International Affairs*, 2002, 78:4, pp.757-776; Hartley, K./Bellais, R./Hébert, J-P., "The Evolution and future of European defence firms", in: *War, Peace and Security, Contributions to Conflict Management, Peace Economics and Development*, 2008, 6, pp.83-104.

⁵ Bitzinger 2009, p. 3.

⁶ International Institute for Strategic Studies (Ed.), *Chapter Four: Europe*, in: *The Military Balance 2013*, 113:1, London, 2013, pp.89-198.

Figure 1 European States (EU + others) Defence Spending, 2001-2020 (projected), inflation adjusted

Source: Ben Ari et al 2012

For Europe, the future perspective, especially when taking into account real, inflation-adjusted spending, looks gloomy. EU countries will struggle to find a way to stabilise their defence industrial base. It may have to undergo a new wave of consolidation.

1.1.2 Criticality of global markets

Almost every defence manufacturer and every manufacturing country have become heavily dependent on foreign sales. Exports are no longer supplemental but vital for the survival of the DTIBs. At the same time, the global market has become more competitive and more complex. The majority of sellers is in the West, creating a market that favours the buyers, which come from the rest of the world. This has increased the role of extra incentives, be it offsets (industrial participation of companies from the buying country in the production), technology transfers or foreign direct investments.

1.1.3 Globalised production

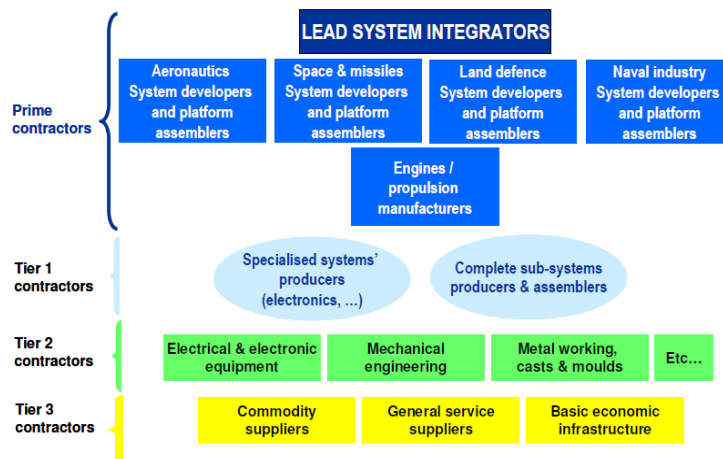
Twenty years ago national defence industrial structures were very common. Today, industries have shifted from traditional single country production to transnational development and production. From the production perspective, internationalisation was possibly the only way for many producing countries to keep a technologically and economically functioning DTIB. The trend has started in the 1980s with international subcontracting, joint ventures and even cross-border M&A. Multinational production has also become a supplement to purely national production due to costs. The result is a set of regional rather than national companies in Europe: BAE Systems, Finmeccanica, EADS and Thales are all international, rather than national, companies.

Globalisation of a different kind has come in the form of increased availability of civilian and dual use technologies, from companies all over the world. Armaments industry, too, has expanded into new areas of technology, such as information technologies. Military performance becomes increasingly dependent on how well defence industrial suppliers integrate military and civilian technologies. Writ large, this globalised availability of, and reliance on, civilian goods will likely create serious risks to national security on very different flanks. At the same time, globalised production questions national self-reliance of DTIB.

1.1.4 Industrial structure

The overall defence industry is organised hierarchically: relatively few companies can put together complex weapons systems, integrating different areas of defence such as sensors and weapons, while at the same time acting as a reliable partner to their government customer. This top tier is supported by companies lower on the production chain, who produce the specific components (such as optics) and subsystems. They, in turn, are supported by their own suppliers – and so forth.⁷

Figure 2 Hierarchical Structure of Defence Industries in the Value Chain



System integrators / Prime contractors

Lead system integrators – sometimes also named prime contractors or 'primes', platform producers and producers of weapon systems: in the EU these are mainly large companies (primarily national champions), specialising in defence production. Lead system integrators assemble defence systems (for example, an aircraft carrier) from several defence domains (for example optics, electronics or ammunition). Others specialise in only one area (transport aircraft, for example). Typical examples of system integrators in the EU are BAE Systems (UK); EADS (France and Germany, with headquarter in the Netherlands); Dassault (France) and Saab (Sweden) in fighter aircraft; Finmeccanica (Italy) in helicopters and armoured vehicles; Nexter (former Giat, France) and Krauss-Maffei Wegmann and Rheinmetall (Germany) in major battle tanks and AIFV; and Thyssen Krupp (Germany), Fincantieri (Italy) and DCNS (France) in naval vessels.

Source for Figure 1 and box text: Cauzic et al. 2009

Tier 1 contractors

Specialised systems producers, for example in electronics, and producers of complete sub-systems or major components: these are often subcontractor directors to the prime contractors. Often, these are also risk-sharing partners. Examples of such companies are Rolls Royce (UK), Groupe Safran (France), MTU (Germany) in engines, and Indra (Spain) in electronics.

Tier 2 contractors

These contractors produce components and supply services: electrical & electronic equipment, mechanical engineering, metal working, casts & moulds, etc., along with a variety of services. They are usually small and medium enterprises (SME) or subsidiaries of the major defence producers (prime contractors and subcontractors). The Tier 2 companies often produce dual-use goods or services. They are not always listed as defence producers since they operate on the margin of the defence sector.

Tier 3 contractors

These are commodity suppliers and general service suppliers, as well as capacity contractors. This level also includes all providers of general economic infrastructure services (transport network and services, communications, externalised training, etc.). At this level of the supply chain one finds a large number of small and medium enterprises (SME) as well as subsidiaries of major defence producers (prime contractors and sub-contractors), which supply dual-use products to prime contractors or subcontractors. In the statistics of the EU defence industry or in company lists of the defence sector, these companies are usually not listed since they operate mainly at the margin of the defence sector and often produce non-defence goods alongside defence ones.

The place on the production and value chain is a good indicator of how companies and countries are affected by, and respond to, changes in the global market place. A merger of major companies may

⁷ The model used in this study is a mainstream one. We group companies due to their role in the production and value chain. Alternative models are explained in Bitzinger 2009, pp. 2-3.; an alternative model can be found with Royal United Services Institute (Ed.), *The Defence Industrial Ecosystem: Delivering Security in an Uncertain World*, Whitehall Report 2-11, London, 2011.

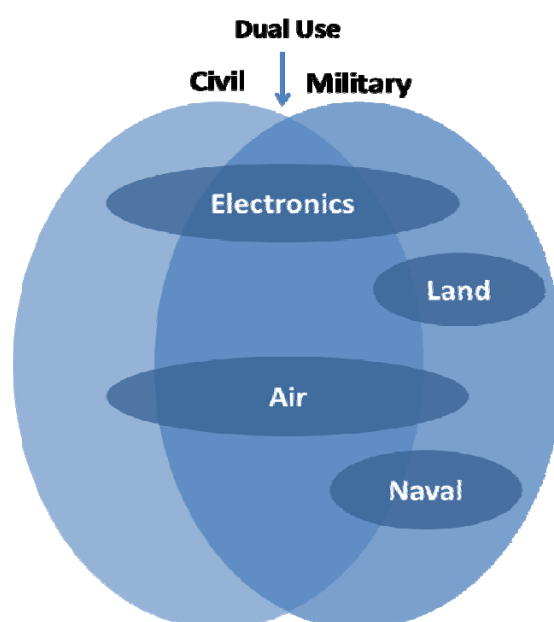
create a big new competitor to all other major defence companies on the global market. But when such mergers take place, companies at the lower tier often find themselves the victims of rationalisation, when the merged company starts slimming down its supply chain. Hence the lower tiers are dependent on the success and production course of the upper tiers. Countries are similarly dependent on this hierarchy: lower tier defence companies cannot supply them with the full range of defence capabilities. More often than not, medium- and smaller-sized countries depend on foreign prime suppliers to serve their needs.

1.1.5 Technologies and R&D

Defence industry is special in many ways – most importantly, it increasingly resembles a patchwork of numerous different industrial sectors, technologies and contributing actors. It cannot be located as one specific sector vis-à-vis others, like chemical and engineering. It is a cross-cutting industry or a conglomerate of companies that, taken together, constitute the supply chain for the military. Hence it incorporates all industrial sectors and technologies that generate defence products and services. This includes the explicitly dual-use products and services (those that can be used for military or civilian purposes). Thus, electronics, information technology, but also logistics are part of the sector as well as those companies which mainly operate on the civilian market.⁸

The dual-use nature has been deeply implanted in DTIB for a long time; civilian production is often the very heart of DTIB. This fact affects policies as well as statistics, as accounting for and targeting the defence sector is much harder than for other sectors. Still the technology diffusion between civilian and military poles of industries and technologies is different for the Air, Land, Naval and Electronics sector.

Figure 3 Defence industrial sectors related to Civil, Dual Use and Military applications



⁸ An example on security market segments in Germany: Bundesministerium für Wirtschaft und Technologie, Marktpotenzial von Sicherheitstechnologien und Sicherheitsdienstleistungen: Der Markt für Sicherheitstechnologien in Deutschland und Europa – Wachstumsperspektiven und Marktchancen für deutsche Unternehmen, 2009, <http://www.asw-online.de/downloads/Studie_Sicherheitstechnologien_09.pdf>

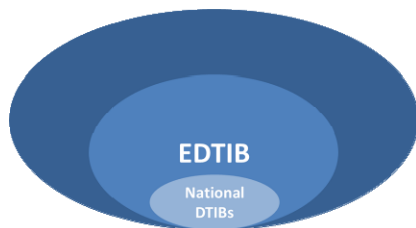
The basis and thus the key for these technologies is Research and Development, or R&D. The term refers to all industrial activities directed at developing a platform, system, equipment, or subparts of the same, up to the point where expenditure for production starts to be incurred. A subset of R&D is R&T, which refers to expenditures for basic research, applied research and technology demonstration. The intensity of R&D and R&T spending are therefore considered an important indicator of the technological level of an industrial sector: the more R&D-intensive defence spending is, the more advanced capabilities will be produced, which would hopefully trickle down and reverberates in other industrial sector.⁹

1.2 The European DTIB – political vision and industrial reality

The EDTIB is first of all a political vision, resulting from the broader idea of a more integrated European defence policy and the increasing pressures on member states resulting from the changes in the defence industries in Europe. The ideal vision of the EDTIB is that the political and the industrial landscape of European defence should be almost congruent. Closer integration among the national DTIBs, in turn, shifts the security of supply to the EU level, serving the political objectives of European defence. At the same time, EDTIB would build a significant element of the global DTIB as it would allow European companies to become a more effective part of the global production chain, and to access other markets. A modified concept assumes that this EDTIB would be big enough in market terms to allow EU member states to self-reliantly sustain the EDTIB without being dependent on the non-EU DTIBs.¹⁰

Figure 4 Ideal Visions on the relationship between National, European and global DTIBs

EDTIB integrated into global DTIB



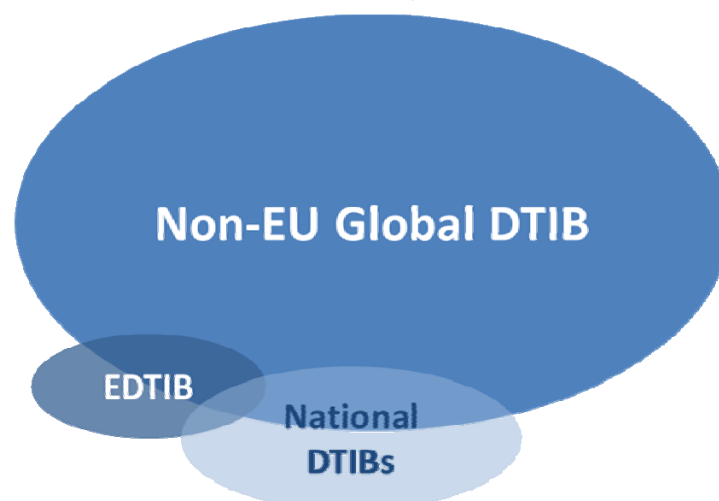
Self-reliant EDTIB, no dependencies from global DTIB



Against this normative approach, the political framework of the EU does not play a significant role in shaping the industrial landscape. Several studies on the EDTIB between 2008 and 2010 have outlined the limited impact of this political idea on the European industrial and political activities. They demonstrate that the member states have not implemented their EDTIB-Strategy. Instead, the DTIBs overlap only partly, indicating missing efficiencies, competences etc. Moreover, the EDTIB only partly influences the global or national DTIBs. National and global DTIBs are in fact more directly linked to each other than to the EDTIB and are thus more important to each other (see figure below).

⁹ Hartley 2007, pp. 1152-1154.

¹⁰ While several publications refer to the EDTIB, an academic definition has not been found, Hartley 2011, pp. 147-181.

Figure 5 Real type relation of national, European and global DTIBs

Analytically, the EDTIB has a political and an industrial dimension. Its existence and relevance depend on the extent to which national DTIBs in Europe interact more among each other than with their non-European parts of the global DTIB. The EDTIB also depends on a political framework, which defines the political aims that the EDTIB should contribute means to, and offer policies that support the Europeanisation of DTIBs.

A systematic assessment of the state of the EDTIB and the changing landscape in Europe requires an analysis of the 'E' in EDTIB: to what extent Europe exists today as a political and industrial actor in defence, and how big/important its influence is vis-à-vis the domestic and global DTIB. Hence the EDTIB's relevance depends on the extent to which national DTIBs in Europe interact and integrate more among each other than with the non-European parts of the global DTIB.

Moreover, an assessment has to take into account the potential pitfalls of the political nature of the EDTIB. It may collide with other political concepts such as the European Defence Equipment Market (EDEM). Also, there are contradictory aims embedded in the EDTIB idea itself: it should serve the cause of independence and security of supply for Europe's armed forces while generating economic benefits in the form of employment, exports and technological advance.¹¹ Some of these factors have already made national DTIBs into an often inefficient producer; they are now expected to be implemented at the EU level as well.

Working Definition of EDTIB:

EDTIB comprises the structure, organisation, activities and processes of those DTIBs linked to the European political space that change in a way that they become more integrated, more competitive or more capable on the European level. (EDAs 3C, see below)

1.2.1 Assessing the Political "E": the Impact of National and International Policies

An existing EDTIB implies that community-based politics (regulations, other incentives) will combine with intergovernmental politics to enable the industrial "E". Moreover, national defence (industrial)

¹¹ Hartley 2011.

policies would position themselves with reference to the EDTIB.¹² An existing EDTIB would thus on the intergovernmental and EU-level feature:¹³

- **A more homogeneous landscape in defence industrial policies:** Similar and co-operative policies or even co-ordinated European policy on security and defence industrial issues: co-ordination between individual member states would contribute to a clearer articulation of the future military and industrial requirements. As such, this will enhance the structure and quality of the EDTIB due to the improved efficiency and effectiveness of the industry; this would be expressed in their market regulations and offset policies as well as in the overall structure
- **Consolidation of demand and procurement policies:** A more harmonised or even common European approach to procurement and articulation of future demands could align individual member state requirements and stimulate the efficiency of the EDTIB;
- **European co-ordination of research and development:** the improvement of R&D coordination is expected to improve the innovative quality of EDTIB.

On the national level, the state plays a crucial role as a **demandeur**, who also regulates exports and tenders and uses legislation to protect its security of supply. Hence national preferences play a crucial role in shaping DTIB. A more pro-European approach would be expressed mainly in:¹⁴

- **Defence budgets:** arguably the most important factor shaping the development of DTIBs. While overall budgets are important, the portions dedicated to R&D and procurement play a key role;
- **Armaments co-operation between countries:** co-operation can be organised on a European level, but member states can also take the initiative to organise co-operation between individual nations or groups of nations;
- **Defence industry ownership:** In some member states a significant part of the national defence industry is owned by the government. This often stimulates national procurement and may be an impediment to the creation of multinational firms.¹⁵

1.2.2 Assessing the industrial qualities– The three Cs reflecting the industrial “E”

For the industrial side, the “E” consists of those companies that supply their goods and services mainly to European countries or which produce their goods in Europe i.e. involving sites in more than one country. These are for example transnational companies or joint ventures of companies, co-operating on a single product. Hence, non-European companies can be part of the EDTIB, too. Moreover, companies, EU, or non-EU, based on European soil can be irrelevant to the EDTIB as they do not supply it.

The EDA regards a ‘strong’ EDTIB through three variables (EDA, 2006):

- **Capabilities:** the way the EDTIB is capable of delivering and sustaining key military capabilities in both short- and long-term, in order to maintain the necessary levels of European and national operational sovereignty;
- **Competence:** the EDTIB should be able to develop new technologies and bring about innovation, in close co-operation with other R&D organisations (e.g. academia);¹⁶

¹² Bekkers, F. et al, *Development of a European Defence Technological and Industrial Base. Main Report*, 2009 <http://ec.europa.eu/enterprise/sectors/defence/files/edem_final_report_en.pdf> (23.10.2012), chapter 3.1.

¹³ Ibid.

¹⁴ BIPE (Ed.), *Anticipating Restructuring in the European Defense Industry*, Paris, 2008.

¹⁵ See also Hartley 2011.

- **Competitiveness:** in business terms, the EDTIB must be competitive (cost-efficient) in a global sense, being able to export and to attract co-operation with European SMEs and non-European partners.

Moreover such an EDTIB should deliver¹⁷:

More consolidation	by	being “ more integrated, less duplicative and more interdependent —increased specialisation at all levels of the supply chain must take over from all (or at least too many) trying to do everything”
More cooperation		
Regional distribution and hierarchies	by	centres of excellence , which will be part of the EDTIB although such centres will be determined by a combination of market forces moderated by policy considerations and a requirement for an ‘appropriate regional distribution’ ¹⁸
Decrease defence dependence	by	being more closely integrated into wider, non-defence European technological and industrial base (dual use); and
Portfolio diversification		
More European SoS	by	decreasing European dependence on non-European sources for key defence technologies.

1.2.3 Methodology and a caveat

Several studies between 2008 and 2010 have aimed to analyse the state and potential future scenarios of this EDTIB and advise on the changes needed to implement a truly European DTIB.¹⁹ These studies overlap in two ways: they use more or less the same approach to assess EDTIB. This study will take advantage of the commonality, and develop its **methodology along this mainstream type of studies**. It uses two studies in particular (EC 2009 and Hartley 2010) as blueprints for the chapter 3.2.1.

Moreover, all studies **share one severe deficit**: a missing or insufficient data base. Citing Keith Hartley, a leading European defence economist, a comprehensive and up-to-date overview seems virtually impossible.²⁰ Compared to other areas such as military capabilities where a decent amount of reliable data is available, a quantitative survey of the situation of the defence industry in Europe will inevitably be hindered by gaps in data. These come in two main forms: information gaps and research gaps.

¹⁶ On skills and competences: Cauzic et al., *A comprehensive analysis of emerging competences and skill needs for optimal preparation and management of change in the EU defence industry*, Final Report, Eurostrategies, May 2009; European Commission, (Ed.), *Rüstungsindustrie; Umfassende Sektoranalyse der neuen Kompetenzen und der wirtschaftlichen Aktivitäten innerhalb der Europäischen Union*, Generaldirektion für Beschäftigungspolitik, soziale Angelegenheiten und Chancengleichheit, 2009.

¹⁷ European Defence Agency, *Background Note on Capability Development Plan*, 2008, <http://www.consilium.europa.eu/uedocs/cmsUpload/080708-CDP_Press_Background_brief%20.pdf>

¹⁸ The study does not assess centers of excellence in the context of this definition.

¹⁹ BIPE 2008, Bekkers et al. 2009, Hartley 2011; European Defence Agency (Ed.), *Study on how to measure Strengths and Weaknesses of the DTIB in Europe*, Brussels, 2009.

²⁰ Hartley 2011, pp. 95-111; Drakos, K. “Security Economics: A guide for Data Availability and Needs”, in: *Defence and Peace Economics*, 2011, 22:2, pp.147-159.

Information gaps exist because defence industrial issues are often shrouded in extraordinary secrecy. This is often for business reasons: competitors benefit when companies disclose all about their business plans, vulnerabilities, etc. Other information is kept away from the public domain for reasons of national security. Research gaps exist because, while there is some open source information available on the defence industry (notwithstanding its penchant for secrecy), too few have made the effort to analyse it. Researchers are further confounded by definitional difficulties, such as how to define 'dual use' or what criteria make certain companies 'key industry'; there are also philosophical and ideological differences on the need to sustain elements of the EDTIB.²¹

This study contributes to minimising the information and research gap by searching for more detailed figures on defence sectors the companies are competing in. We offer a new set of data for the turnovers and manpower on European companies. This allows for significantly more precise insights into the defence sector than other studies have offered before.

²¹ Hagelin, B. et al, "Transparency in the arms life cycle", in: *SIPRI Yearbook 2006: Armaments, Disarmaments and International Security*, p.245-267, Stockholm.

2. MAPPING THE “E”-IN-EDTIB

2.1 The Political “E”

2.1.1 The International Perspective: Existing Elements of the EDTIB

On the international level, the EDTIB is characterized by 5 different elements:²²

Element 1: armaments co-operation

Armaments co-operation usually happens through ad-hoc programmes. The member states, rather than EU institutions, have shaped defence industrial policies, industrial landscape and armaments co-operation. Co-operation is often driven less by security policy considerations than by national industrial considerations and policies related to technological innovation and structural development.²³

In turn the armaments domain has traditionally developed outside the EU and has resisted most attempts to apply EU rules and regulations. Two principles enshrine the intergovernmental approach until today:

- Article 346 TFEU (ex 296 TEU): EU member states treat the area of armaments as their *domaine réservé*. This exemption is enshrined in Article 346 of Treaty on the functioning of the European Union. According to the article, a member state “...may take measures as it considers necessary ... for the protection of the essential security interests... connected with the production or trade of military items...” Consequently, the area of armaments is de facto excluded from the EU integration. Although Article 346 calls on the member states to adhere to principles of the common market wherever possible, they have regularly resorted to the derogation clause in order to escape from community procedures.
- *Juste retour*: EU member states have institutionalised the rule whereby in multinational state-based armament projects (as opposed to open market procurement) the national work-share equals the national financial investments. If, for example, Germany pays for 40% of the project, German companies receive contracts worth 40% of the overall project budget. This applies even if a suitable German contractor does not actually exist, or if the existing ones cannot deliver the required quality and quantity.²⁴

The absence of binding EU framework has led to the current fragmentation of the defence market in terms of demand, regulations, standards and supply. EU taxpayers carry the burden of resulting duplication of defence industrial production sites that the MS build to carry home the work share of *juste retour*. As a consequence, the sum of suppliers offers more than the EU market can absorb. Industries are forced into exports.²⁵

²² The following paragraphs are based on Mölling, C./Brune, S-C., *The impact of the financial crisis on European defence*, Subcommittee on Security and Defence, European Parliament, Brussels, 2011..

²³ On intergovernmental Cooperation: Hartley, K., *Defence Industrial Policy in a Military Alliance*, in: Journal of Peace Research, 2006, 43:4, pp.473-489; Hartley 2008 Hartley, K., *White Elephants? The Political Economy of Multi-National Defence Projects*, The foundation for European Reform, October 2012; Darnis, J-P. et al., *Lessons learned from European Defence Equipment Programmes*, EUISS Occasional Paper 69, October 2007.

²⁴ A 2008 assessment of collaborative procurement can be found in Heuninckx, B., *A Primer to Collaborative Defence Procurement in Europe: Troubles, Achievements and Prospects*, in: Public Procurement Law Review, 2008, 17.3, pp.123-145.

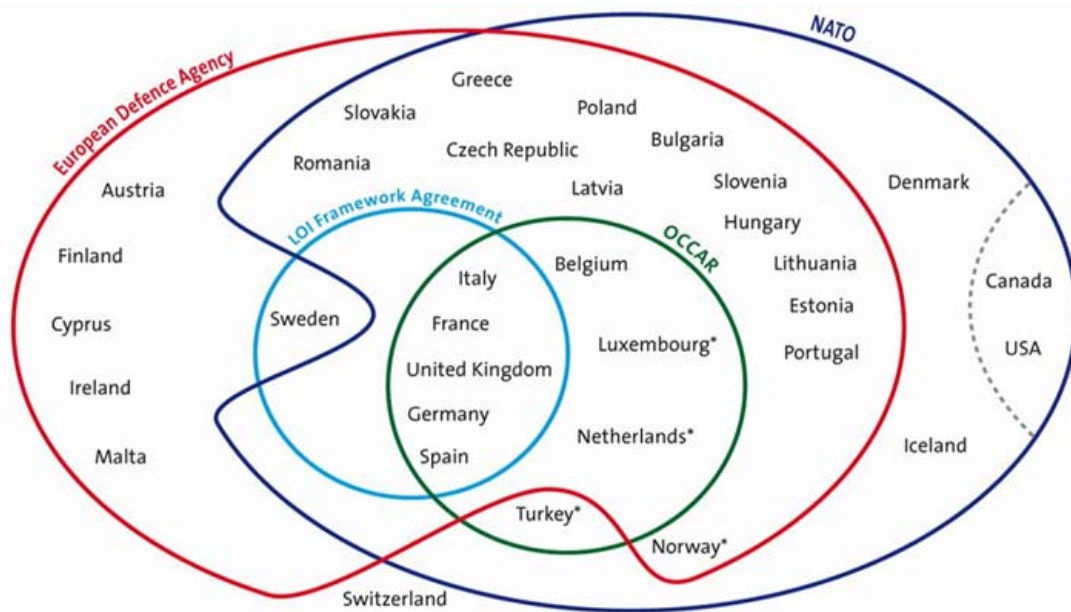
²⁵ On the principal effects of non-Europe in defence see: Küchle, H., *Die deutsche Heeresindustrie in Europa: Perspektiven internationaler Kooperationen und industriepolitischer Nachholbedarf*, Hans-Böckler Stiftung, Düsseldorf, 2007.

Element 2: armaments policy:

The gap between national policy planning vis-à-vis Europeanised and globalized production and markets on the other, is widening. Since the end of the Cold War, the defence sector has changed significantly but also asymmetrically. Economic conditions in post-Cold War Europe favour internationalisation of supply and demand. However, defence and procurement planning generally remains limited to the national level. While a common armaments policy makes economic sense, the member states worry that they would lose their industrial sovereignty and the ability to defend themselves.

The member states have made some effort to establish a more efficient European armaments policy, but this has chiefly resulted in increased institutional diversity in Europe, and overlapping memberships and responsibilities. In the Letter of Intent (LoI), the six major EU arms-producing countries (France, Germany, the United Kingdom, Italy, Spain, and Sweden) agreed in 1998 to co-ordinate the restructuring of their defence industries, and to make it easier to engage in co-operative arms projects. Another body based on a limited membership is the *Organisation conjointe de coopération en matière d'armement* (OCCAR). It serves as a management organisation for multilateral arms procurement projects. Additionally, several NATO bodies deal with the co-ordination of procurement, standardisation, interoperability, and research and development.

Figure 6 Institutional Frames of Multilateral Armaments Cooperation



* Participating at program level

Source: CSS Analyses in *Security Policy* No. 31, April 2008 (Center for Security Studies, ETH Zurich)

Element 3: European Defence Agency

The EDA has been invented to help close one of the EU's most serious defence deficits: the missing link between the EU armaments and the capability development. Both areas are institutionally and conceptually fragmented and under the control of individual EU member states. As a result, national and multinational equipment programmes usually arrive too late, are more expensive than envisaged, and under-perform. The link between the armaments phase and the capability development phase is of paramount importance for effective and efficient capability generation as a whole. In particular,

coherence in the generation of capabilities creates important advantages and even essential conditions for defence co-operation: what countries develop and build jointly, they can more easily operate and maintain jointly, too.

The EDA was set up to nudge the member states towards industrial co-operation, and to focus that co-operation on the most urgently needed capabilities. EDA's remit covers the whole spectrum of capability relevant issues: research & technology, markets & industry, capability development and armaments. However, the EDA has only limited success: ministries of defence only seldom choose to take advantage of their agency.

Element 4: European Commission

The European Commission has succeeded in establishing a role at the intersection of defence vis-à-vis issues of internal market, industrial policies and research. It may be the only actor that can effectively establish a framework for competitiveness through defence specific legislation and policies. In two areas, the Commission has achieved first successes: the 7th Framework' security research and the 'defence package', a set of two directives that offer a harmonised legal framework for procurement and the intra-Community transfer of military items²⁶. The procurement directive in particular not only challenges the member states' dominance in the armaments domain and Article 346 but it could also lead to a profound change in procurement practices.

The defence and security procurement directive aims to open up the European defence market. If implemented effectively, a far greater proportion of defence and security procurements than heretofore will be subject to competitive tenders. It covers military and sensitive security equipment (and associated services and works) – equipment that may be exempted from the current public procurement regulations through Article 346 TFEU. It sets Community procurement rules, which are adapted to the specificities of the defence/security sectors.

While the new directive limits exemptions from competition to very few cases, it leaves open a large loophole at the same time: intergovernmental armament programs are excluded from the new procurement rules. These are exactly the type of programmes that, as a result of MS insistence on Art 346 and *juste retour*, have generated the most expensive, time consuming and inefficient way to generate capabilities.

Moreover, the effect of the directive has yet to be manifested. Its effectiveness in enhancing the EDTIB will largely depend on full implementation by national authorities.²⁷ For example, it has to be seen how – and how much – the exemptions allowed by the directives, in particular the one on defence procurement, will be applied. Most importantly, no big procurement projects that could have an impact on market structures are on the horizon. More and more European defence companies focus on exports rather than sales on the internal market. The directive is the right instrument, but it may turn out to have come at the wrong time. Even in the case of optimal implementation the two directives (the second one eases intra-community transfer of defence goods) may not in the short term significantly improve EDTIB competitiveness or inspire consolidation.

Under the 7th framework research programme, the Commission has also set up a special 'security research' programme. Given the blurred boundary between security and defence, this programme has been perceived by many as the Commission putting a foot in the door of defence issues. Synergies and

²⁶ On the directive on EU transfers of defence-related products Mölling, C.: "Options for a Regime on Intra European Transfers of Defence Items", in: D. Keohane (Ed.): *Opening Europe's Defence Market*. Chaillot Paper 113, Paris, EU ISS, 2008: pp. 51-88.

²⁷ Marrone A., *Defence spending in Europe in light of the economic crisis*, IAI, October 2012.

added value of the programme increase tremendously, if the results can be transferred into the defence domain. This opportunity is especially salient in those cases where companies that participate produce items for both, the security and the defence domain.

The Security Research programme is exclusively dedicated to civil applications and supports the implementation of Community policies and initiatives relevant to security such as the establishment of an area of freedom, security and justice, transport, health, civil protection, energy, environment and external policies. Among other things, it aims to develop technologies and knowledge for building capabilities needed to ensure the security of citizens from threats such as terrorism, natural disasters and crime, while respecting fundamental human rights including privacy.

Element 5: The Lisbon Treaty

The Lisbon Treaty introduced an innovative package that has real potential to improve the coherence of the overall institutional framework and could be applied also to armaments co-operation. The protocol on '*permanent structured co-operation*' (*PESCO*) could in the long term bolster the link between the armaments framework and the capability development phase and, at the same time, enhance the role of the EDA. However, competing political visions and ambiguous strategic objectives complicate the road to implementing *PESCO*. In addition, the current financial crisis has weakened the member states' confidence, so far, to table tangible proposals on how to implement the tool.

2.1.2 The national perspective: DTIBs of Lol+ Countries

From a national perspective, the DTIB landscape in Europe is unevenly divided: the six Lol countries (France, Germany, Italy, Spain, Sweden and United Kingdom) hold about 80% of the relevant DTIB in the EU. Moreover, Poland increases its defence industrial footprint. The Lol plus Poland (Lol+) represents 75% of the EU defence budget.²⁸ Within the other 20 countries a DTIB exists only in some specific areas, as part of the globalised production chain (e.g. Netherlands – naval, air; Belgium – air, land; Austria – land), or to support national maintenance. The Lol+ DTIBs employ about 520,000 people. This represents only 0,024% of the total workforce in the EU 27.²⁹ The turnover of Lol+ may well account for 90% of the defence (industrial) turnover in Europe (roughly EUR 81 billion).

As Table 2 on the main characteristics of the defence industrial landscape in Lol+ countries shows, the DTIB's sizes and structures show very different characteristics, with almost no two countries whose DTIBs have a high degree of similarity.³⁰ In terms of **supply side structure**, for example, France, Germany and the UK have a very dispersed and widely developed DTIB: however France prefers national champions, Germany has perpetuated duopolies and the UK has an internationalised industry, with several major global companies. In terms of **company size**, French and British industries are closer to each other than German companies are to them. Italy plays in the same league as Germany, France and the UK, but its two major prime companies are also government controlled: Finmeccanica and Fincantieri. The **smaller defence industrial players** (Spain, Poland and Sweden) have similar integration structures with one major company at prime contractor/system integrator level. Moreover there are varying level of production capabilities. The table arranges the capabilities production (system

²⁸ Due to the concentration of DTIB relevant factors in the Lol+, this study focuses on them.

²⁹ EUROSTAT, *Key figures on European business*, p. 34: Non-financial business economy http://epp.eurostat.ec.europa.eu/cache/ITY_OFFPUB/KS-ET-11-001/EN/KS-ET-11-001-EN.PDF.

³⁰ The table is basically a stylised and re-organised version of a more in-depth analysis that the research team performed regarding the national DTIBs of Lol+ countries. Most characters are assessed from a qualitative point of view, as quantitative indicators are scarce and not always reliable or comparable.

integration) from “small” to “very high”, where “very high” means being able to produce state-of-the-art and complex platforms for all dimensions (land, air, sea, electronics).

Table 2: LoI+ DTIB

	France	Germany	Italy	Poland	Spain	Sweden	UK
Demand side	DI- Policy	Yes	De facto	Yes	Yes	De-facto	Yes
	Procurement policy	Buy national but build European supply chains	Buy national	Buy national	Buy National	National preferred	Selective buy national
	Offset policy, threshold	80-100%?	100%?	75-100%, 5M	100% min, 5M	100% min., 1M	100%, 10M
	market openness	Medium	Small	Small	Very high	Medium	Very high
	market absorption rate ³¹	40%	30%	40%	>80%	50%	50%
	Government influence over industry	Very high	High	Very high	Average/high	High	Low
Supply side	Turnover (Bn Euro)	14	16 (incl. security)	17,3	n.k.	5,4	3,2
	Employees (incl. Security)	165.000	80.000 (98.000)	62.000 (200.000)	50.000	20.000	32.000
	Capabilities range land, air, sea, electronics	Very high	Medium	Medium	Small	Medium	High
	DTIB structure	Dispersed, many major companies, different national champions	Dispersed, many medium companies, national duopolies	Concentrated, few prime companies	Concentrated, one prime contractor, highly internationalized	Concentrated, few prime companies	Concentrated, one prime contractor, many medium companies
	National Primes/ Distribution	Thales DCNS Dassault EADS Nexter	EADS Rheinmetall KMW Diehl TKMS	Finmeccanica 2/3 of DTIB Fincantieri	Bumar	EADS/CASA Navantia INDRA	Saab 64% of DI turnover
	Export ranking SIPRI ³²	4	3	9	21	7	11
DTIB Model (representing overall size and distribution of prime contractors)							

³¹That is, the percentage of national production absorbed by the national market, indicating the dependency of national industry from it. Estimates based on data retrieved from Jane's Defence Database, and: Direction Générale de l'Armement (DGA), International Directory of the Main Defence Companies Worldwide (09/2011).

³² Stockholm International Peace Research Institute (Ed.), *SIPRI Yearbook 2012: Armaments, Disarmament and International Security*, Stockholm 2012, p. 266.

Four different traits characterise national **defence industrial policies**:

- First, many arms-producing states see their national independence and the security of supply as requiring the existence of own, national armaments industry;
- Second, because countries think about national security differently, they demand different things from their industry – this has produced an European industrial landscape that varies greatly from state to state with little coherence or compatibility;
- Third, member states disagree on what role the governments should play in managing the defence industry: some see their role as a regulator, others as a shareholder, and yet others as a mere customer;
- Fourth, very few European countries possess a comprehensive production infrastructure of their own. This results in heterogeneous procurement and market policies. Arms-producing countries often prefer the products of their own industry. The bigger producing countries (France, Germany, the UK and Italy) tend to want to maintain as broad a range of national production capacities as possible. Non-producing countries, on the other hand, do not even necessarily purchase their defence products on the European market – often they choose other suppliers, especially from the US.

The mix of these factors leads to **heterogeneous procurement and market policies**. Arms-producing countries often prefer the products of their own industry. Moreover, among the bigger producing countries, France, Germany, the UK and Italy, there is a continuing tendency to maintain as broad a range of national production capacities as possible. All Lol+ countries show a clear preference for 'national first' acquisition policy. As long as the product can be produced nationally, Lol states procure at home. While the European Commission has, in its defence package, introduced important regulatory conditions aimed at introducing a degree of international competition in the defence market, all Lol countries put their national DTIB first when it comes to procuring defence goods. Examples are German feasibility studies for a new OPV platform, which among some ten German companies involve only one French; the British, which build their carrier at home to give jobs to an economically underperforming region in the UK; or the Swedish, considering to buy a new version of Gripen to keep the national production line going and improve the plane's export prospects, even at the expense the defence budget. France bought the Ceasar artillery system for similar reasons.

Countries use **offset policies** to prop up national defence companies.³³ Many countries, such as France or Germany, do not have formal offset policies and therefore the degree of their recourse to compensation is not clear. Offsets equivalent to 100% of the procurement contract value seem to be very common, even if for some countries (Poland, Spain) they represent a minimum value that governments demand from foreign producers, while for the United Kingdom it is a maximum. The UK has the highest threshold for offsets, with Sweden coming second, which is consistent with the open nature of their defence market.

Market openness represents the ease with which foreign operators can successfully compete for contracts in the country.³⁴ Two clearly different approaches exist in Europe. On the one side, countries such as Germany and Italy procure a large percentage of their equipment through sole

³³ We tried to assess their aggressiveness: however the usefulness of this data is limited by the opacity of available information.

³⁴ The evaluation of this factor is necessarily the combination of a qualitative judgment from the research team, on the basis of the research, and some quantitative indicators, such as the percentage of procurement awarded by sole source or to national firms, or the presence of a formal 'national first' policy.

source awards to national industry. On the other side, Poland and especially Sweden procure with much less attention to their national producers and are much more interested in obtaining the best deal (though Poland, as noted earlier, demands very high offsets from foreign producers, which it uses to support domestic industry). Spain, the UK and France are somewhere in the middle, even though France is a more open market than is generally thought. However, from the point of view of trends, it could be argued that all countries that this study has examined are moving towards a more open and competitive market, though at different speeds.

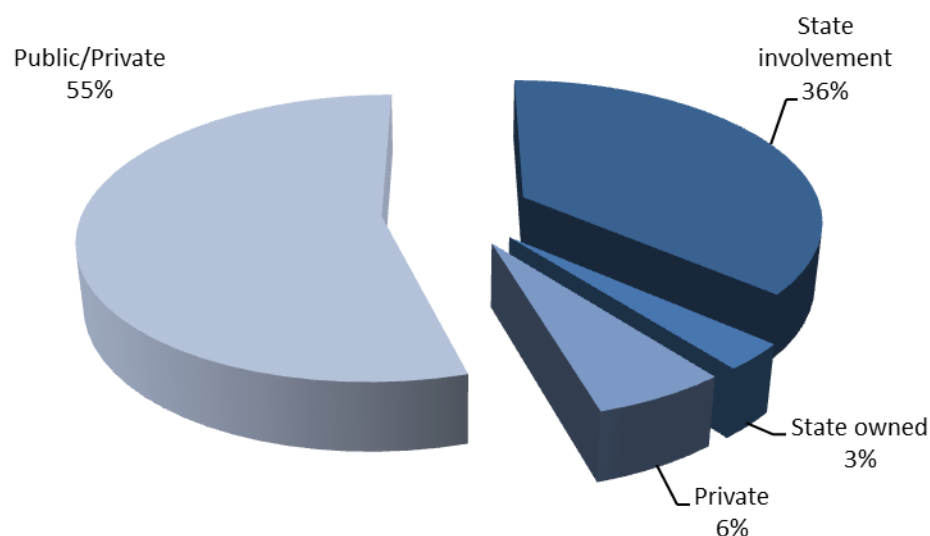
The level of **influence of governments over industry** varies considerably.³⁵ Some states only own or host some leftovers of arms industries, e.g. companies producing small arms or fitting international equipment to national demands as part of multinational procurement projects. These companies are often economically ineffective but of important symbolic character or perceived as a bargaining chip as well as allowing access to defence industrial decision making. Others governments exercise a very high level of control, through direct or indirect means. Germany and Italy, which have a less competitive market, also show a greater degree of governmental control, through informal influence and political contact for Germany, or, in Italy's case, through formal ownership of Finmeccanica. The more open markets of Sweden and the UK are less influenced by the respective governments. A counterintuitive exception here is France, whose government is firmly involved in defence industry through both direct ownership and political influence, but which is also an open market. Poland and Spain, in this respect, strike the middle ground: both governments own and/or control major defence firms (such as Bumar and Navantia) but consider public ownership as a means and not an end in itself: they are generally willing to sell firms to foreigners provided that national defence interests are satisfied.

Broadly speaking, however, the defence industrial sector in Europe shows high levels of state involvement.³⁶ This comprises direct ownership of companies by the state as well as holding significant (or even the majority of) shares or 'golden shares'. Such close links between government and industry exist in Eastern Europe, Italy, France or Spain. In other countries such as Germany, the UK or Sweden, government-industry relations are less formal, but not necessarily less intense. Out of 40 European companies whose ownership structure this study has assessed, 14 show state involvement and four are state-owned.³⁷

³⁵ The level of influence is graded from "low" to "very high". The judgment provided takes into account not only a possible direct ownership or control of industries, or shares, by the government, but also other ways of control such as golden shares, or informal links between the state and industries: therefore is a judgment base both on quantitative and qualitative elements.

³⁶ For an explanation of the different forms of ownership, see below

³⁷ Defence industrial data is only available as a patchwork of information bits. Out of this patchwork conclusions have to be drawn very carefully. The following statements and figures are based on the synthesis of in three principal sources: SIPRI's 2011 Yearbook, the Defense News Journal's "Top 100" defence companies listing (Source: Defense News (Ed.), Defense News Top 100, 2012, pp. 14-16) and the *Calepin international des principales entreprises travaillant pour la défense*, (Direction Générale de l'Armement 2012), representing especially quantitative accounts. Additionally, whenever available, we have taken into account companies representing the national defence industrial base of one of the EU 27. Therefore, the number of companies for which data are available varies with sources and areas of interest. The maximum of companies that could be assessed are 40.

Figure 7 Shareholder Distribution in EU Defence Companies

Source: own assessment³⁸

Defence-related R&D activities in the EU 27 amounted in 2010 to 8,6 billion euro, of which around 2 billion is R&T investments. In 2006, in constant prices, R&D spending was 9,7 billion, a loss of 1,1 billion, while R&T was 2,7 billion, a loss of around 700 million euro. Considered as part of defence spending, R&D represented in 2010 4,4% of total defence spending, while R&T accounted to 1,1%. In 2006 they amounted respectively at 4,8 and 1,3%. It should be mentioned that the European Council in 2008 set a goal of having R&T spending at 2% of total defence spending.³⁹

The vast majority of European R&T activities, around 87% of it, occur today at the national level, for a total of EUR1,8 billion. Around 12% of R&T spending, or 250 million, is related to R&T projects shared between two or more EU member states, with the possible involvement of a non-EU partner as minor contributor. It is an improvement from the 9,6% of 2006, but still quite far from the benchmark set by EDA at 20% of total R&T spending. An insignificant amount of R&T concerns cooperation between an EU MS and a non-EU partner. Interestingly, the percentage of both national and EU cooperative R&T activities grew respectively from 85,5% and 9,6% of 2006, while cooperation with non-EU partners shrank from 5 to the current 1%. However these EDA data cannot be considered conclusive, as the time taken into consideration (a mere 4 years) is too short considering the long cycles of defence R&D cooperation.

³⁸ **State owned:** the state or other official or public entities owns more than 49% the company; **State involvement:** the state or other official or public entities own a share/ is shareholder of the company or can influence its business through a significant amount of stock shares or golden shares; **Private:** the company is owned by private entities, e.g. a family, companies, banks, investment companies, etc. **Public/private:** the company is listed at the stock exchange without serious limitations on the spread of stock shares. Please note that for many companies this assessment was not possible, hence there may be an inherent bias.

³⁹ All figures in this paragraph: EDA 2010 Defence Data. This shift was provoked mostly because of highest procurement spending, which passed from 14,5 to 17,7% of total spending, while also other defence expenditures (like personnel and operations and maintenance) came slightly down from 80,7% to 77,9%.

While the impact of low levels of defence R&D and R&T investments can be partially mitigated by civilian and foreign technologies, the specificity of military needs does still require adequate defence-specific investments in innovation.

2.1.3 Future perspectives: Major procurement projects and effect of the fiscal crisis

The EDTIB will be affected by the changing character of procurement projects. These will be either carried out on a more national or more transatlantic base but less on a EU multinational level. Just as importantly, there will be significantly less procurement of goods but increasing demand for services such as maintenance, but also tasks that have been traditionally conducted by the armed services.

In the past, EU governments have fuelled the EDTIB through major projects. These are in their delivery phase, with the most innovation-intensive R&D phase behind them. While companies will still make money from selling these products and from maintenance, their ability to maintain innovative skills to produce the next generation of products will come under pressure. A comparison between the major programmes in the 1995-2012 time period (which have shaped the current DTIB) with (potentially) forthcoming programmes for 2013-2030 shows several major changes ahead.

The future procurement programmes, which are either already in the pipeline or are foreseeable, do not easily favour 'Europeanisation' of the industrial structure: many are based on national demands with national instead of multinational solutions needed (the AIVF or aircraft carrier, for example). Other are in new areas such as cyber security. The only area that remains transnational is air systems, yet with a strong transatlantic dimension: the JSF is mainly driven by the US. The US could cover also European UAV demand. The only exception from the US prevalence in the aerospace sector is helicopters. Here, we foresee a rising demand for light platforms, and possibly a heavy-lift platform as well.

Table 3 Major Programmes 1995-2012 and (potentially) Upcoming Programmes 2013-2030

	1995-2012	2013-2030
Air	Gripen, fighter jet Eurofighter, jet Rafale fighter jet NH-90 helicopter A-400 M transport aircraft	UAVs JSF F-35 Light helicopter platforms Heavy lift helicopters
Land	AIFV, e.g. Piranha, Puma and Boxer	AIFV in France (VBCM) and UK (FRES)
Sea	FREMM U-212 type Astute F-125 Frigate	Elisabeth class air craft carriers Trident Barracuda Type 26 Destroyer MKS-180 Corvette
Space	Galileo	MUSIS, based on national satellite platforms
Electronics	C4 infrastructure	Cyber Missile defence

In contrast to the decrease in platform purchases, service contracts are on the rise. In 2010, one fifth of the SIPRI Top 100 arms producing and military services companies were primarily military services providers.⁴⁰ Services like research and analysis, technical services, operational support and armed force are increasingly outsourced to private actors. The growth is enormous; since 2002 this industry increased its sales by 147 %. Even though 16 of those 20 military service companies are based in the USA, there is a spill-over effect to Europe. Three companies are based in the UK. And even countries which have been cautious about privatisation in general, such as France and Germany, are using PMCs for several purposes.

The main reason for this trend is the assumption within the governments that the private sector is cheaper, better, and more flexible than the state and its military. Most also see outsourcing as a way to access new knowledge, expertise and skill. The industry sees the provision of defence services as a good way to compensate for shrinking government procurement of goods. Also, as governments delay procurement and extend the life of existing systems, the need for modernisation and long-term maintenance increases.

While the European defence industry had not been initially affected by the crisis in 2010/11, it showed first signs of damage in 2011/12. Due to cancelled contracts (for maintenance, for example), companies such as BAE or Finmeccanica released several thousands of workers. In many countries, decisions on several large projects have been postponed, such as the UK's aircraft carrier and Italy's JSF programmes, or Germany's Tiger helicopter procurement. Major decisions are still pending especially on multinational programmes such as the A400M and the NH 90. However, member states have learned that the penalties for cancelling contracts may be as high as the cost of the procurement itself. So far, the fear of endangering their national DTIB has kept the producing countries from reducing or halting orders. There is anecdotal evidence that cuts in numbers of equipment to be procured do not always endanger industry's income; the companies tend to simply raise the per-unit cost to protect their bottom line. The A400M debate in Germany in recent years is a case in point: the industry will earn the amount of money originally agreed with the customer but deliver fewer units. Another example is the Puma IFV of which the Bundeswehr originally ordered 405 and will now only receive 355 – but the originally planned programme cost remains the same.

2.2 The Industrial “E”

2.2.1 The Overall Industrial Picture

The MS DTIBs cover almost every industrial or technological sector. The 40 EU based companies listed in SIPRI's Top 100 List comprise of system integrators and first-tier suppliers but also smaller companies⁴¹. However, not even the biggest producer countries possess the full spectrum of defence industrial capabilities. Hence they depend on foreign companies; not only on the level of 2nd or 3rd tier supply chain companies but also at the prime contractor level. One example is the UK, which has given up its own ammunition production in some important areas. Its security of supply now depends on a company based in Germany, Rheinmetall.

There is a long-term trend towards service industries becoming a significant part of the defence industrial business. This trend will gain momentum because many EU Member States opt for outsourcing many of the services, which have been traditionally provided by the armed forces themselves. Currently 20 of SIPRI's top 100 defence companies earn their money predominantly or

⁴⁰ SIPRI Yearbook 2012, Chapter 5/II.

⁴¹ The different types of companies are explained chapter 2.5.1.

entirely in the military service sector.⁴² These services include maintenance, repair, operation (MRO), after-sales service, software, intelligence training, armed security and logistics. Others firms have services as part of their wider portfolio. While services make up a growing share of the defence business, the actual benefits of the outsourcing approach are mixed. The questions of how much is enough and how to control the quality of services provided by outside companies deserve further study, as does the general picture of sectoral developments in the EDTIB.

Industrial Consolidation

While the European states hesitate to overcome the fragmentation of their national armaments policies, defence companies are competing in an increasingly globalised environment for profits and market shares. These changes were due to the sharp reductions in defence budgets in the 1990s. Like the US, though not as dramatically, Europe experienced a consolidation of production capacities through acquisitions, mergers and rationalisation efforts. The result was a concentration of production capacities in the shape of large, occasionally multinational defence corporations such as BAE Systems, Thales or EADS. However, these developments have not extended equally to the whole defence industrial sector. The consolidation of production capacities and the creation of multinational corporations in Europe have primarily affected the aerospace and electronics sectors. The market segments for land-based and maritime systems remain fragmented. At the same time, the network of subcontractors, i.e. suppliers of subsystems, components and parts, has become more transnational. Hence, for many current products and weapon systems, supply chains lead out of the country, and possibly out of the EU. As a renationalisation is virtually impossible due to the lack of skill and financial resources, national security of supply is increasingly undermined.

Europe's Leading Defence Companies and Defence Dependence

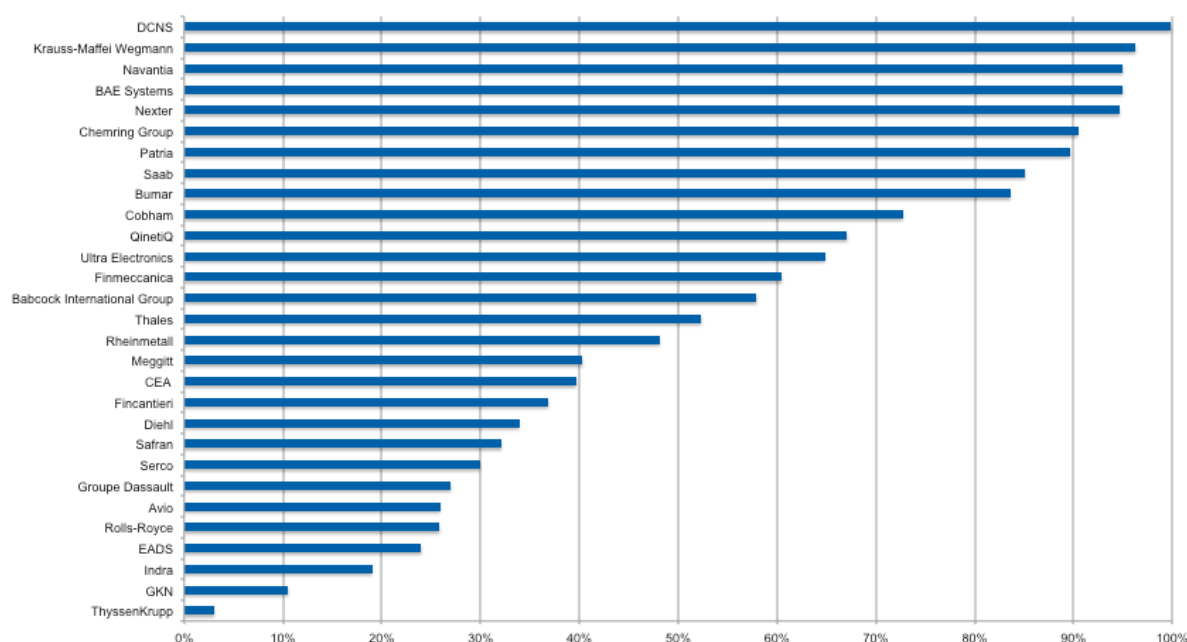
The current EU landscape spans from the top five companies, which cover nearly every defence industrial sector and are present on every continent, to an unknown number of small and medium enterprises, very often only part of national production chains with their specialised technologies and niche products. According to estimates, the top 40 European defence companies assessed employed in 2011 roughly 350,000 people.⁴³ The top five companies in terms of defence turnover are BAE (first), EADS, Finmeccanica, Thales and Rolls Royce (fifth). The top 40 companies generated about EUR 75 bn defence turnover in 2011. This represents an overall decline of about 2 %⁴⁴ compared to 2010. Defence Dependence

Many of the companies have diversified into various civilian businesses, they are hence less dependent on defence budgets. Among the big five, only BAE is almost fully dependent on the defence sector.

⁴² SIPRI 2011, pp. 252-253.

⁴³ This sometimes includes employees working in the civilian divisions of companies that are active in non-defence sectors (SIPRI 2013).

⁴⁴ This could be also be explained through exchange rate variances.

Figure 1: DTIB: Defence Dependence by Turnover

Note: Bars in this figure represent the percentage of a company's turnover made in defence.

The Regional Picture

Some 20 years after the end of the Cold War the defence industrial landscape still shows a clear East-West imbalance. The general tendency that large companies from the West of Europe strengthened their grip on the EDTIB as a whole has increased.

The five top companies are based in Western Europe. All of them conduct business on every continent. Consequently, their supply chains have changed accordingly from national to transnational ones. Besides aerospace technology (Dassault, EADS, BAE, Finmeccanica, MTU, Rolls Royce), the land warfare industry is also present at the global scale (BAE Systems, Rheinmetall, Nexter, KMW). Despite the pressure of consolidation in the land area, mergers and acquisitions have not widely taken place - except in BAE's case. The companies do engage, however, in joint ventures for European customers on a case-by-case basis.

There is a certain degree of interconnection between the companies in France, Germany, UK and Italy. It takes place mainly in three ways: through multinational companies such as EADS; through a strong presence in second countries of subsidiaries of the prime contractor (for example with Finmeccanica UK and Thales UK, which are among the largest suppliers to British MoD); through joint ventures for example in the space domain where there are two sister companies owned in a balanced and connected way by Thales and Finmeccanica: Thales Alenia Space (67% Thales, 33% Finmeccanica) and Telespazio (33% Thales, 67% Finmeccanica). A similar model has been applied for MBDA.

East European defence companies are still struggling to integrate themselves into a modern defence industrial landscape and the global production chain. Most of the companies are state-owned, not competitive and, hence, are not successful on the global market. Instead they depend upon state subsidies. Some companies have been bought by Western European companies or have engaged in joint ventures with them (in Poland, Agusta Westland bought the domestic helicopter manufacturer PZL Swidnik while DCNS bought Soczina Shipyards), either because those East European companies

were competitive or because the purchase was part of an offset deal or a market entry strategy for the Western companies. Poland has been comparatively successful in leading some of its companies into privatisation, but many others are still state-owned. The financial crisis has had a more direct impact on the fortunes of the East European companies than their counterparts in the West: because companies in the East depend on the domestic markets and do little international business, in those countries whose governments have had to slash spending, companies have lost substantial parts of their income. At the same time, some East European economies such as that of Poland have performed better than those in the West, and its defence companies have been relatively sheltered from the crisis.

The Scandinavian countries have a modern but small industry, which is often owned by external companies: in Sweden BAE owns Bofors, while Kockums Shipyards are owned by TKMS of Germany. In the Mediterranean countries such Greece, great deal of industry is linked to shipbuilding. A special case is Spain, where state subsidies have spawned an impressive build-up of defence industry based on the engagement of big US or European companies (General Dynamics and EADS).

2.2.2 Sectors assessment: Aerospace, Land, Naval and Electronics

The EDTIB is not only structured by companies but by the production sectors these companies are active in. This chapter sketches characteristics of the aerospace, land, naval and electronics sectors mainly along the EDTIB- Strategy variables: the criteria for the 3C assessment (Capacity, Competences, Competitiveness) but also patterns of cooperation, of state and foreign ownership and the business model, i.e. to what extent the companies have diversified across several military sectors (Cross-Sector Diversification) and reduced their dependence on defence business.

Table 4: Overview Defence Sectors Assessment

	Aerospace sector	Land sector	Naval sector	Electronics
No of companies ⁴⁵	9	9	9	10
Sector Turnover (bn €)	32.9	9.8	14.9	17.1
Centers	UK, FR, DE, IT, SE	UK, FR, DE, IT, FIN	UK, FR, ES, SE, DE, IT	UK, FR, IT, DE, ES, SE
Personnel	122,122	41,530	69,542	114,496
Collaborative programmes	Many serious programmes: JSF, Typhoon, Engines, NH 90	Virtually none, Boxer	FREMM Submarine 212A	?
Non EU Supply	Space UAV	No	No	Yes
Defence dependence	50% (25-95%)	71% (32-96%)	73%(37-100%) 43% (3-100%) ⁴⁶	49% (19-95%)
Cooperation	Transnational companies Intergovernmental programmes	Ad- hoc (Joint ventures)	License production	?
Consolidation	Medium-High, national and international	Low international High national	Low international Medium-High national	?

⁴⁵ Number of EU companies in TOP 100 defence companies 2011, according to SIPRI 2013.

⁴⁶ Including ThyssenKrupp.

The Aerospace sector

The aerospace sector comprises five major system integrators: EADS, BAE, Finmeccanica Dassault and Saab. There are also several important companies, which have specialised in components, such as Thales, Diehl, GKN and Chemring. The regional centres are the UK, Italy and France. Moreover, EADS offers the important case of a trans-European company with a major footprint on Germany. Substantial parts of industrial capabilities are tied to national sovereignty or industrial policy: for example Cassidian, Dassault, Saab. There are even two companies - Dassault, Saab – which primarily support national demand.

The sectors is an amalgamation of interlinked subsectors: fixed wing aircraft, helicopters, missiles, space and engines. Europe has inter alia two very strong companies in the special segment of helicopters, with Eurocopter and AgustaWestland. Both are under the roof of two major system integrators: EADS and Finmeccanica. This point towards a company structure within the European aerospace sector which is often very complex, with production elements in different branches.

Aerospace firms represent eight of the world's top 10 defence companies. EU and US aerospace companies differ only marginally in size. While BAE, EADS and Finmeccanica can keep up with their US counterparts in sales and production, the smaller companies in Europe are smaller than their US counterparts.

The average EU aerospace firm made EUR 6.3 bn in arms sales (as opposed to civilian business) in 2011. Europe has managed to shrink the gap between US and EU. There are still considerable opportunities for creating larger EU aerospace firms. For example, in the aero-engine sector both Rolls-Royce and SAFRAN have arms sales comparable to their US rivals but the German and Italian engine companies (MTU and Avio) are smaller than their US counterparts.

In terms of turnover, aerospace is the leading defence sector in EU. In 2011, the turnover was EUR 32.8 bn, a slight increase of 5% or EUR 6.3 bn compared to the 2010 figure. However, the US still has the biggest players in the market.

Figure 10: European Companies in the Aerospace Sector (turnover)⁴⁷

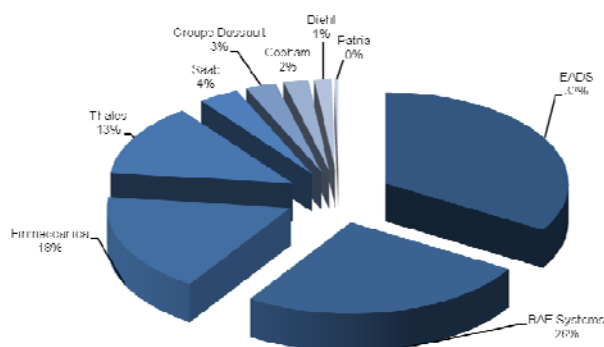
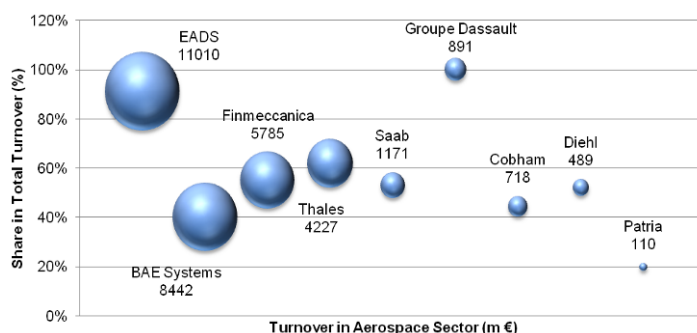


Figure 11: EU Companies in Aerospace Sector: Relative Sector Size and Cross-Sector Diversification



⁴⁷ Figures from own database. Sources are SIPRI 2012, Companies' Annual Reports, *Calepin international des principales entreprises travaillant pour la défense*. Figures for Thales are partly estimated and calculated. Percentual shares do not sum up to 100% due to rounding differences.

Cross-Sector Diversification: The overall level of specialisation in Aerospace is low. Among the Top EU companies, only EADS (91%) and Dassault (100%) have concentrated their military activity to this sector. All other companies present military activities in other sectors.

Employment: Roughly 120,000 people are directly employed in this military sector by the top companies⁴⁸. Aerospace is also important due to its high R&D intensity and tremendous technology spin-off into others industries.

Defence dependence:⁴⁹ The sector is highly dual-use, depending on defence to only a rather low level of 50% of total turnover. Only Saab and BAE, focus on military aircraft exclusively. All other system integrators have civilian and military aircraft businesses. The US is even less dependent on defence, for only 41% of aerospace firms' turnover. Among the other world leading companies, the Russian ones almost fully depend on military aircraft.

Table 5: Key Figures for the Aerospace Sector 2011

Company	Country	Ranking TOP 100	MILITARY ACTIVITY					OVERALL ACTIVITY
			Turnover Aerospace Sector 2011 (m€)	Share in Total Activity (%)	Total Turnover in Sectors 2011 (m€)	Share of Activity in all Sectors in Total Sales 2011	Military Employment Aerospace Sector 2011	Total Sales 2011 (m€)
BAE Systems	UK	3	8442	40%	21031	95%	31977	30689
Cobham	UK	47	718	44%	1617	76%	3542	2970
Diehl	DE	60	489	52%	939	32%	2518	4072
EADS	Trans	7	11010	91%	12078	25%	29072	68295
Finmeccanica	IT	8	5785	55%	10517	61%	23256	24074
Groupe Dassault	FR	62	891	100%	891	27%	3095	4594
Patria	IT	87	110	20%	557	90%	617	859
Saab	SE	25	1171	53%	2211	85%	5887	3619
Thales	FR	11	4227	62%	6836	53%	22157	18111
Sum/ % av.			32842	58%	56676	50%	122122	157283

Portfolio diversification: the aerospace sector shows a high level of diversification: an average of 4 subsectors with a maximum of 7. The US companies are on average slightly less diversified: 3.5 with a maximum of 5 subsectors. The aerospace business is often delegated to a special branch in a larger company or a sub company, like Eurocopter in EADS. Hence there are several specialised companies within the bigger holding structure of the big companies like EADS and Finmeccanica.

Co-operation & consolidation: The sector has a long history of integration and collaborative defence programmes. It experienced major structural changes after 1990, with many mergers, acquisitions and some exits, especially in the US aerospace industry. This involves the sharing of R&D costs and the pooling of production orders.

⁴⁸ The calculation of the employment in the aerospace sector is based on the assumption of a productivity rate of 1. The real productivity factor for the sector may range between 0.8 and 1.1.

⁴⁹ Average of arms sales as share of total sales.

In Europe, aerospace has been the starting point of integration. The sector presents a very dense net of co-operation by sub companies and joint ventures that resulted from a roughly two decades ongoing consolidation. Almost all actors are co-operating, especially through multinational programmes. It resulted in several European companies, namely, EADS, MBDA and Finmeccanica.

Collaborations have ranged from bilateral collaboration like the UK-FR JAGUAR aircraft to collaborations among three to seven governments, such as the Tornado and Typhoon jets or the A400M airlifter. European industries are also involved in co-operation with non-European partners (e.g. US and the F-35 combat aircraft/JSF).

Ownership: State involvement is less dominant but still present, e.g. in EADS, Finmeccanica.

Capacity: This sector is ready to deliver key military capabilities. Companies can design, produce, sustain and upgrade complex platforms such as modern combat aircraft (Gripen, Rafale, Typhoon) and important subsystems such as missiles and engines. Moreover, it currently delivers a European-level strategic airlift (A400M) and air-tanker capability. However, it misses a serious capability when it comes to UAVs (MALE/HALE) where current platforms are based on either US or Israeli designs. Moreover, European industries participate in 5th generation aircrafts (JSF/F-35) only as junior partners of the US. There are also industrial gaps in modern strategic bombers and inter-continental ballistic missiles and anti-ballistic missile defence systems. These, however, are less pressing, given the EU Member States low ambitions in these areas.

Competences: The sector is also competent and able to deliver cutting-edge technology, as the list of products above demonstrates. Aerospace companies aim to acquire new technologies such as UAVs and new engine technologies, in which the EU has fallen behind other industrial players. There are concerns about the future levels of R&D funding for the military aerospace sector and its continued national, rather than EU, focus. The transfer of knowledge into other sectors is easily possible for almost all companies.

Competitiveness: The industry has some world-class firms (BAE, Rolls-Royce, SAFRAN, EADS, MBDA, Finmeccanica or Thales). Their competitiveness varies. While helicopters, missiles and engines do well on the export markets, combat aircrafts have had a hard time chipping away at the dominant position of US companies. In terms of competitiveness, the future looks difficult for European manufacturers, as the current buyers in Asia and the Middle East aim to become producers themselves. European producers are uncompetitive mainly due to small production lots; they lack the economies of scale of their competitors.

Future perspectives: The 2012 failed merger of EADS and BAE may tell quite a lot about the future of the sector. France, Germany and the UK dominate it. They will influence the allocation of R&D funds and production sites to achieve a regional balance. There are options to improve costs structures. One area would be European collaborative military projects. Bureaucracy and work-sharing arrangements often lead to costs and delays. On the one hand mergers may allow companies to streamline supply chains and R&D efforts. Currently, co-operation is dense but often *ad hoc*: It consists of loose alliances of project-specific arrangements for individual programmes. Restructuring of the industrial base may allow for reduction of excess capacity. While the US is more successful in exporting military aircraft, it has three major companies while Europe has five. A new window of opportunity may open up with the coming end of manned aircraft production. While the need for maintenance capacity will remain for some time, the switch to UAV production may spawn serious capacity reductions in the military part of the aircraft sector.

European prime companies seriously push for more internationalisation. They seek new market opportunities, especially in the US and Asian markets, through acquisitions and joint ventures. This trend might have implications for employment and security of supply.

Land Sector⁵⁰

Europe has about a **dozen important companies** in the land armament sector. Apart from Bumar, Iveco and Oto Melara, they are all listed among the SIPRI top 100 defence companies. The main production centers are in the UK, Germany and France. The main suppliers are BAE Systems (40% of the turnover), Rheinmetall, Krauss-Maffei Wegmann (KMW) and Nexter. However, smaller companies such as Patria (5% of the sector's turnover) from Finland play a role as system integrator.

Figure 12: European Companies in the Land Sector (turnover)⁵¹

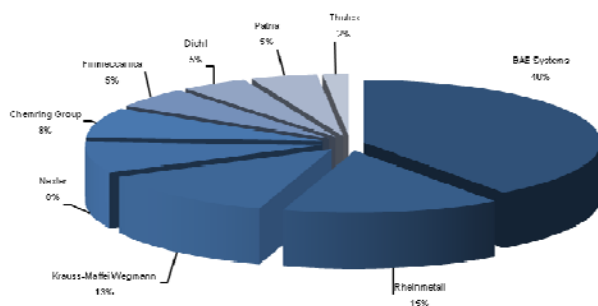
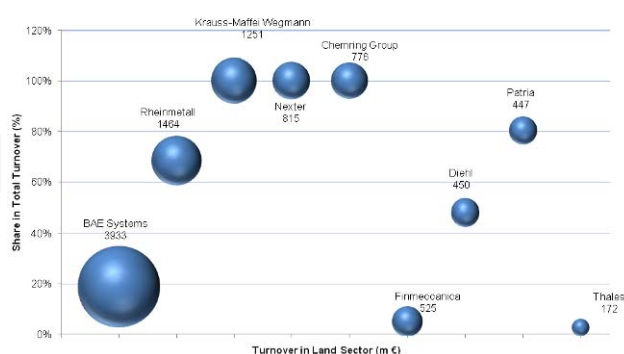


Figure 23: EU Companies in Land Sector: Relative Sector Size and Cross-Sector Diversification



Cross-Sector Diversification: Many companies in the sector have specialised in land systems: KMW, Chemring Group and Nexter have concentrated 100% of their military activity in the land sector. The bigger companies in this sector, BAE Systems, Thales⁵² and Finmeccanica are more diversified in their activities. Small companies in this area focus on classical land warfare equipment: vehicles, small arms and ammunition. The bigger ones also do artillery or electronics; BAE offers almost the full spectrum of defence industrial products.

The sector is less R&D intense. Land companies also tend to do less civilian business. Tanks seldom have a spin off application. Instead, military vehicles such as Dingo tend to be built on a civilian platform, or companies of civilian origin like Daimler, Iveco or Renault may indicate more a civilian spin in, i.e. civilian technologies and competences used in military applications.

In 2011, the turnover of the top nine firms was about EUR 9.8 bn⁵³, of which BAE accounts for 40%. This marks a decline of EUR 3 bn from EUR 12.9 bn in 2010⁵⁴. BAE accounts for almost all of this decline, though other companies such as Nexter lost as much as 22% of business from 2010 to 2011. The biggest increase in revenues comes from the smaller companies, which managed to raise revenues between nine and 21%. Compared to other world leading companies, European suppliers are slightly smaller, with the exception of BAE.

⁵⁰ Structure and variables of assessment is sourced by Bekkers et al., 2009 and Ikei/Industri All, *Study on the Perspectives of the European Land Armament Sector*, Final Summary Report, Donostia-San Sebastian, November 2012.

⁵¹ Figures from own database. Sources are SIPRI 2012, Companies Annual Reports, *Calepin international des principales entreprises travaillant pour la défense* Figures for Thales are partly estimated and calculated. Percentage shares do not sum up to 100% due to rounding differences.

⁵² The total turnover for Thales was partly estimated and calculated.

⁵³ Own assessment.

⁵⁴ Turnovers for Thales, Saab and Patria were not available for 2010 in this sector. Therefore the decline is approximate.

Table 6: Key Figures for the Land Sector 2011

Company	Country	Ranking TOP 100*	MILITARY ACTIVITY					OVERALL ACTIVITY
			Turnover Land Sector 2011 (m€)	Share in Total Activity (%)	Total Turnover in Sectors 2011 (m€)	Share of Activity in all Sectors in Total Sales 2011	Military Employment Land Sector 2011	Total Sales 2011 (m€)
BAE Systems	UK	3	3933	19%	21031	95%	16877	22059
Chemring Group	UK	8	776	100%	776	90%	4232	858
Diehl	DE	26	450	48%	939	32%	2328	2927
Finmeccanica	IT	54	525	5%	10517	61%	2114	17304
Krauss-Maffei Wegmann	DE	60	1251	100%	1251	96%	3371	1299
Nexter	FR	66	815	100%	815	96%	2524	850
Patria	FIN	68	447	80%	557	90%	2470	617
Rheinmetall	DE	87	1464	68%	2143	48%	6713	4451
Thales	FR	3	172	3%	6836	53%	902	13018
Total/ % av.			9833	22%	44864	71%	41530	63385

Figures for **direct employment** estimate that at about 128,000⁵⁵ people work in the land defence sector. These estimates include SMEs as well as numbers for Turkey and other non-EU countries. The calculated numbers of direct employment for the nine prime EU companies (cf. Table above) sum up to 41,530 people⁵⁶.

Consolidation: European markets for land equipment are highly nationalised. While the sector has undergone a serious consolidation since the end of Cold war, it occurred mainly within, rather than across, borders. This has led to an industry structure where many relatively small companies in the EU specialise in the same areas and offer very similar platform designs. But as they have poor access to those markets where governments protect domestic suppliers, they do not compete directly. The high degree of redundant specialisation blocks acquisition or mergers.

Defence dependence. A majority of land companies derive the lion's share of their revenues from defence. Only Diehl and Rheinmetall have significantly diversified their portfolio into civilian products. While the median defence dependency for EU companies is 71% of turnover, the US number is 56% and among the top ten non-EU suppliers the figure is 58%.

Co-operation in intergovernmental programmes has never been a success in land systems. While in the area of MBT, and AIVF joint programmes have been launched (Boxer, Leopard), they had to face problems with partners often dropping out after a while. The only bilateral project that has survived through the production phase is the Dutch-German Boxer (though the UK dropped out).

Ownership: There is little foreign ownership among EU based companies, though BAE Systems has bought Swedish Haggelunds and Bofors. Non-European suppliers also play a role in ownership structures: General Dynamics has acquired MOWAG (Switzerland), Santa Barbara Spain and Santa Barbara Germany and Steyr Daimler (Austria).

⁵⁵ Ikei/Industi All 2012, p.20

⁵⁶ Direct employment is calculated based on the share of turnover in the land sector in the total turnover of the companies. Numbers might be even lower as the productivity rate for each sector ranges between 0.8 and 1.1 %.

Capacities: The EU land sector is able to deliver, sustain and modernize military capabilities key to land warfare: Artillery, MBT, AIFV and small weapons. Moreover the sector produces ammunition, ranging from NATO standard size to highly specialized productions. Industrial capabilities especially for vehicles are concentrated in a few countries: Germany, the UK and France.

Competences: Those companies in particular that cover several sectors may have the ability to transfer knowledge. However, cross-sector companies very often expand over the full range of land warfare equipment.

Competitiveness: The land sector has shown its competitiveness by a large number of exports across the globe. Compared to the demand Europe has too many producers with very small production lots. At the same time the markets are nationalized. Hence there is no competition among the producers.

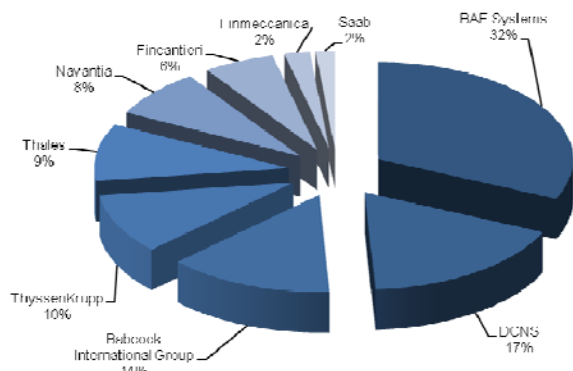
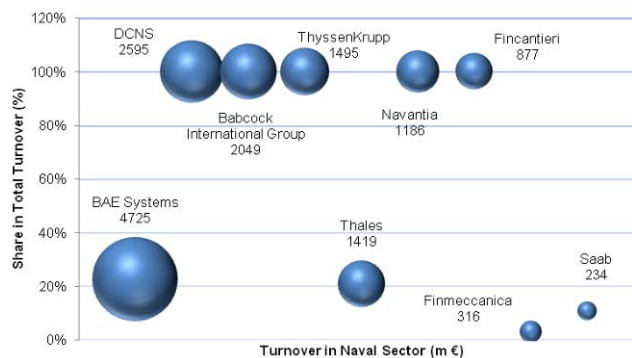
Future perspectives: The main challenge lies with the competitiveness of the sector and the declining production lots in and for Europe. As European companies are highly competitive and money on AV is spend elsewhere but not in Europe, This may be a sector that globalized without Europeanisation.

Naval Sector

The European naval sector comprises 7 major companies: BAE, DCNS, Babcock/VT, TKMS, Navantia, Fincantieri and Thales. There are also smaller companies in the Netherlands (Thales/Royal Schelde), Sweden (Kockums)⁵⁷ and in Greece. These are to a large extent involved only in maintenance or national licence production of foreign designs. Therefore the regional centers are the UK, France, Italy, Germany and Spain. Except for the UK and Germany (in some respect), there is only one big naval shipyard left in each of the regional centers. EU countries also have a large number of small repair shipyards.

In 2011, the combined turnover of shipyards in the EU was EUR 14.9 bn (excl. BAE) a slight increase of EUR 0.5 bn compared to 2010. Almost 70,000 personnel work for the top companies in the naval sector in Europe. The naval sector spends somewhat more on R&D than the land sector (about 10% of turnover). The US is the centre of global naval industries. The turnover in the US is about 5 times bigger than in Europe.

⁵⁷ Kockums designed (or is in the process of) the *Visby-class* corvette and the *A26* submarine; *Damen* (NDL) designed and produced the very competitive *SIGMA-class* corvettes, the *Holland-class* OPVs as well as Joint Support Ships. These companies may be small, but have a larger portfolio than only doing licence production or maintenance

Figure 14: European Companies in the Naval Sector (turnover)⁵⁸**Figure 15: EU Companies in Naval Sector: Relative Sector Size and Cross-Sector Diversification**

Cross-Sector Diversification: Military shipbuilders are highly specialised in the naval sector. Among the top companies, DCNS (17% of the sector turnover), Babcock International Group (14%) and Thyssen Krupp (10%) as well as Navantia and Fincantieri all focus their military activity by 100% in the naval sector. BAE is the biggest and one of the few companies that covers more than one sector. The five European majors are relatively small. Among them, DCNS is the biggest. **In comparison, the US** has three major shipbuilders, of which only one fully specialises in shipbuilding. Except for this company, other top non-EU shipbuilders tend to be much more diversified: they are involved in an average of 3.5 subsectors with a maximum of 5.⁵⁹ Europe shows an average of 2 and a maximum of 6 subsectors.

Defence dependence. The sector is highly defence dependent. The average of arms sales as share of total sales lies at 73%⁶⁰. Except for Thyssenkrupp and Fincantieri (37%), all companies receive the majority of turnover from defence business (58-100%). While the dependency is decreasing slightly overtime (it was 78% in 2006⁶¹), the US industry has managed to become much more independent from defence sales: it also at 78% in 2006 but lowered this number to 54 in 2011 (the world average in 2011 was 66%).

A special feature of the sector is the **importance of other companies** (such as those that supply electronics or navigation, for example) for shipbuilding. Many of the companies that supply elements of combat systems for military vessels are not only SMEs but also from different sectors such as electronics, weapons and missiles or radars. The shipbuilder acts as the prime contractor and system integrator. In major military vessels, the combat system (electronics, radars, navigation, weapons systems) will represent 60-70% of total costs, while the hull will only represent 20-30% of the price tag. For comparison, comparable electronic and navigation aids on a commercial ship will represent 20% of the cost while the hull 80% (the inverse from military vessels).⁶²

The European naval industry is capable of building major surface combatants and submarines; nuclear-powered submarines are only built in France (DCNS) and the UK (BAE). Both those companies as well as Navantia and Fincantieri are capable of building conventional aircraft carriers.

⁵⁸ Figures from own database. Sources are SIPRI 2012, Companies Annual Reports, *Calepin international des principales entreprises travaillant pour la défense*. Figures for Thales are partly estimated and calculated. Percentage shares do not sum up to 100% due to rounding differences.

⁵⁹ Thales AUSTRALIA has not been taken into account

⁶⁰ Excluding ThyssenKrupp which has a major civilian activity.

⁶¹ Bekker et al. 2009/SIPRI 2006 data

The nature of military shipbuilding implies a very diverse supply chain and wide-ranging interdependencies of the naval sector with other sectors. Major non-shipbuilding companies play an important role as 1st tier suppliers: Thales and Atlas Electronics regularly equip ships with electronics, while Thales also offers integration services. Rolls Royce and MTU design and provide engines.

Consolidation: There has been some consolidation and rationalisation, though mostly on the national level. The UK shipbuilders VT and Babcock have merged. Moreover, Babcock bought Devonport shipyards. For the new UK aircraft carriers, all remaining shipyards and suppliers have been collected into a national alliance. This is in great part to ensure the survival of domestic supply to UK MoD. Similarly, TKMS and Lürssen in Germany have been forced into collaboration for the Type 130 Corvette and the Type 125 Frigate. TKMS and Lürssen are the only two shipyards left after more than a decade of concentration and consolidation. France has forced Thales and DCNS to restructure. DCNS took over Thales domestic naval business. Against this overall trend of decline, Poland aims to boost its naval industries.

Table 7: Key Figures for the Naval Sector 2011

Company	Country	Ranking TOP 100	MILITARY ACTIVITY					OVERALL ACTIVITY
			Turnover Naval Sector 2011 (m€)	Share in Total Activity (%)	Total Turnover in Sectors 2011 (m€)	Share of Activity in all Sectors in Total Sales 2011	Military Employment Naval Sector 2011	Total Sales 2011 (m€)
Babcock International Group	UK	30	2049	100%	2049	58%	14581	3536
BAE Systems	UK	3	4725	22%	21031	95%	17765	22059
DCNS	FR	24	2595	100%	2595	100%	12830	2598
Fincantieri	IT	63	877	100%	877	37%	3696	2380
Finmeccanica	IT	8	316	3%	10517	61%	1269	17304
Navantia	ES	55	1186	100%	1186	95%	5254	1249
Saab	SE	25	234	11%	2211	85%	1222	2601
Thales	FR	11	1419	21%	6836	53%	7438	13018
ThyssenKrupp	DE	49	1495	100%	1495	3%	5487	49054
Total / % av.			14896	31%	48797	43%	69542	113799

Co-operation: There are some bi-national programmes in the EU, such as the Horizon and FREMM frigates as well as transatlantic consortia. Thales, DCNS and Finmeccanica have joint ventures on underwater warfare.

Ownership: State involvement dominates in the sector: DCNS, Navantia and Fincantieri are to a considerable part owned by governments. This has obviously very practical implications for the company strategies. Thales produces ships elsewhere in Europe and across the globe but it is only a supplier to the French national champion, the state owned DCNS. In general, state ownership often blocks the search for more cost effective production and lowest transaction costs – private investors would ask for more effective organisation, for example through sector diversification, than governments do.

⁶² Bekkers et al. 2009, Chapter 2.5

Capacities: The EU naval sector is able to deliver, sustain and modernise naval capabilities up to complex weapons systems: major combat surface combatants and submarines. France and the UK are leading the sector with their ability to design and support such complex systems as nuclear submarines and aircraft carriers. However, the sector has large excess capacity and too many small companies, preventing the resources poured into the sector from producing economies of scale. Moreover, the skills/specialisations are duplicated many times, while a competition is not taking place.

Competences: EU naval shipyards have the competence to manage the building process including the system integration. The degree of complexity differs from one type of ship to another. There is evidence that the role of a system integrator may shift towards electronics suppliers as these are the core of the weapon system. The supplying industry is competent in producing important components such as torpedoes, guns and sonars but also radar and combat management systems. Here, competences may be distributed among very few companies such as Thales, Atlas electronics etc. Moreover, some specific competences exist with TKMS (world leader in diesel submarine technology) and Kockums (which specialises in stealth technology). The ability to transfer knowledge among sectors only exists for BAE, which is present in several sectors. The company also has the ability to transfer stealth knowledge from aerospace into naval industrial applications.

Competitiveness: The naval sector has demonstrated its competitiveness by a large number of exports. Germany and France in particular are present globally with their frigates and submarines. Their products, especially those for littoral warfare and new types of missions, are competing against each other on the world market. Current demand prefers price over sophistication: the modestly priced frigates are more sought after than Britain's world-class destroyers. European shipbuilders compensate for their relatively low competitiveness by offering offsets and technology transfers. Many other national shipyards only supply national demand and have no export products. Markets for big warships are small as many countries, which aim for such big ships often have a domestic industrial base they want to be capable of building these ships. This explains why the UK has problems to sell their innovative naval products. Small production batches necessitate the presence of many parallel support chains and industrial bases, which have to be kept up expensively for very small quantities.

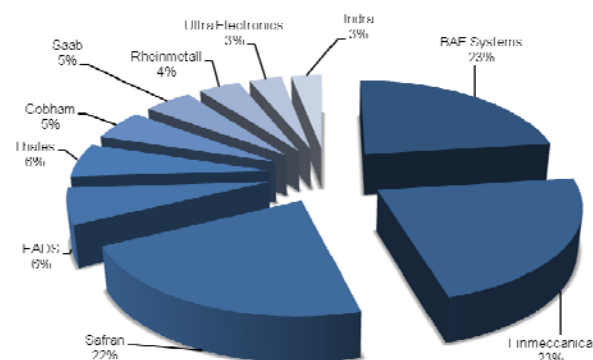
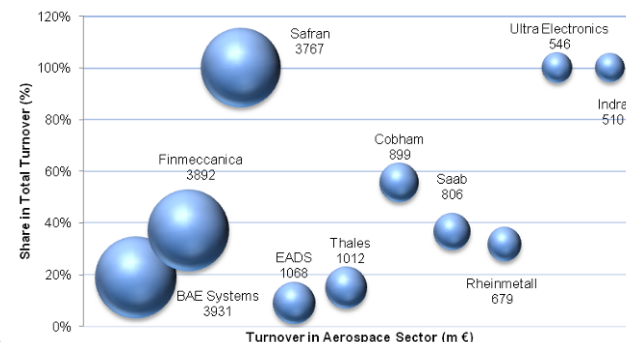
Future perspective: Especially in the UK, further rationalisation is likely, after the national aircraft carrier programme is over. Future competitors are Asian and US companies. OPV are the increasing product type. The demand for the industrial base may also shrink as European navies are reducing their fleets. Hence the repair shipyards come under pressure.

In the naval sector, EU Member States like their naval industries to remain independent and are willing to pay the price for that. The pressure of rising prices and R&D has not been high enough to reduce the Member States ambitions yet.

Electronics Sector

The two most important features of this sector are its high dual-use capacity and the fact that through the still ongoing information technology (r)evolution electronics is by design the cross cutting element of today's defence industrial products. At the same time, there have been only a few studies that assessed electronics as part of defence and supposedly none that did so in the context of EDTIB.

The European electronics sector comprises five major companies: BAE, Finmeccanica, Safran, EADS and Thales. There are also smaller companies in the UK (Cobham and Ultra Electronics), Sweden (Saab), Germany (Rheinmetall), and Spain (Indra). Due to the presence of EADS as a transnational company, the main regional centers are the UK, France, Italy, Germany and Spain.

Figure 16: European Companies in the Electronics Sector (turnover)⁶³**Figure 17: EU Companies in Electronics Sector: Relative Sector Size and Cross-Sector Diversification**

Cross-Sector Diversification: The top companies in military electronics have a diversified cross-sector activity. As electronics is the linking element among all sort of current defence activities, most of the major EU system integrators except of Safran have competences in electronics. Ultra Electronics and Indra are specialised by 100% in the electronics field.

Defence dependence. Due to the high level of dual-use in the sector, the defence dependence is low. The average of defence related sales in the sector as share of total sales lies at 49%. Those companies that have specialized in electronics (Indra, Safran, Ultra Electronics,) earn between 19% and 65% through the military activities.

Ownership: the state is less present compared to land or naval systems.

Capacities: the sector is able to deliver highest quality products and components like air defence systems, radar, sonar, avionics but also C4I elements. There may be a gap vis-à-vis US companies especially when it comes to cyber technology. Moreover, as shown in the dependence chapter (3.3.) Europe has (had) some problems in the area of hardware, where the production of cutting edge technology has moved to the US and Asia.

Competences: electronics is the key to network enabled defence systems. Hence the system integrators have acquired the necessary level of competence to deal with defence electronics as a cross cutting technology. Some may outsource part of this to specialized companies.

Competitiveness: European companies may have to struggle to close the gap between the traditional defence electronics and new applications that arrive from the link between civilian/security and military spheres.

⁶³ Figures from own database. Sources are SIPRI 2012, Companies Annual Reports, *Calepin international des principales entreprises travaillant pour la défense*. Figures for Thales are partly estimated and calculated. Percentual shares do not sum up to 100% due to rounding differences.

Table 8: Key Figures for the Electronics Sector 2011

Company	Country	Ranking TOP 100	Turnover in Electronics Sector 2011 (m€)	Share in Total Activity (%)	Total Turnover in Sectors 2011 (m€)	Share of Activity in all Sectors in Total Sales 2011	Military Employment – Electronics Sector 2011	OVERALL ACTIVITY	
								Total 2011 (m€)	Sales
BAE Systems	UK	3	3931	19%	21031	95%	12436	22059	
Cobham	UK	47	899	56%	1617	76%	4427	2135	
EADS	Trans	7	1068	9%	12078	25%	2875	49090	
Finmeccanica	IT	8	3892	37%	10517	61%	15645	17304	
Indra	ES	94	510	100%	510	19%	4005	2686	
Rheinmetall	DE	26	679	32%	2143	48%	3098	4451	
Saab	SE	25	806	36%	2211	85%	3999	2601	
Safran	FR	15	3767	100%	3767	32%	59800	11727	
Thales	FR	11	1012	15%	6836	53%	5305	13018	
Ultra Electronics	UK	90	546	100%	546	65%	2906	842	
TOTAL			17109	28%	61256	49%	114496	125915	

Overall assessment

European EDTIB shows varying degrees of capability, competence and competitiveness. The land sector offers world class products across the full range of **capabilities**. In the aerospace sector industry is highly capable. But the sector shows capability limits in Europe that will become more serious over the next years. In the naval sector, a comprehensive set of capabilities is available. However, they are spread across many companies. Moreover the supplying industries – very important in this sector – deliver high quality components and subsystems.

For all sectors, EU industries have the **competence** to manage the production process up to the level of system integration. Knowledge transfer of knowledge from R&D and production chain management is working well in aerospace, due to the high level of dual use. Similarly, knowledge transfer in the land segment works well, where the sectors the companies are active in, are interlinked in the battlefield. For naval knowledge and skills, the fragmentation of specific competences across many companies, the high degree of relevance related to the supplying companies, and the fact that companies are often active only in one single sector limits the knowledge transfers significantly. Moreover, for all sectors the R&D is still nationally spent but decreasing. For all capabilities and competences, there are regional centers.

Competitiveness: All sectors show excess capacities in production. This is expressed in many but small producers which are specialized in similar areas but do not compete against each other for the first production lot due to markets with high barrier for non-domestic suppliers. Moreover the production lot itself is often small. This increases the prices and limits economics of scale etc. In the air sector Europe has generated over the last decade three fighter aircrafts. Even more dramatic is the situation in the land and sea sectors: For the sea sector there is not only high number of companies but also a sharp decline in demand coming up, increasing the excess capacities.

The land systems sector seems to be an area where the external markets can still adsorb the excess capacities. Hence they do not feed back to the competitiveness. The naval industries have a very specialized market with only a few export segments. Competitiveness has to be increased by off sets.

This is similar to the aerospace sector, where the US companies realize huge economies of scale esp. in the fighter segment. Here offsets and technology transfer are used. However, companies in this segment participate regularly in the international production chain on the civilian and military side. Moreover, Europe has very competitive helicopter and engine producers.

Regional concentration: Much of the Three Cs features are concentrated in the major national defence industries, especially in France, Germany and the UK. These industries also have varying degrees of international competitiveness. Broadly, France and Germany are competitive in land and sea systems whilst the UK is competitive in the aerospace sector. Other EU MS have varying elements of the Three Cs in their national defence industries (e.g. Italy; Spain; Sweden).

The major drivers which have affected the current size, structure and performance of the EUs defence industries have been defence budgets, rising equipment costs, national defence industrial policies and industry supply side adjustments via mergers/acquisitions and entry into foreign markets with the example of BAEs entry into the US defence market. Even major European and international collaborations have reflected budget pressures, rising equipment costs and national support for defence industries (i.e. aerospace industries, often with the aim of avoiding undue dependence on the USA), rather than EU defence industrial policy.

Role of EU Policies: In contrast, EU policies have apparently not shaped the sector and have failed to deliver with regard to their own objectives and benchmarks. Hence the EU Level has been ineffective in influencing the size, structure and performance of the EUs defence industries and the policies of national governments. Instead, as highlighted by the blocked EADS-BAE Merger, EU Member States even actively hinder further industry driven consolidation but without offering alternatives for the industry interest.

Table 9: Synthesis of 3C assessment for the sectors

	Air	Land	Naval	Electronics ⁶⁴
Capacities:	<ul style="list-style-type: none"> deliver, sustain and modernize military capabilities limited to modern combat aircraft, strategic airlift and air tanker and important subsystems like missiles, engines. serious capability gap when it comes to UAVs, EU endogenous 5th generation aircrafts (JSF-equal) strategic bombers and inter-continental ballistic missiles and anti-ballistic missile defence systems. Substantial parts of industrial capabilities exist due to national sovereignty or industrial policy 	<ul style="list-style-type: none"> deliver, sustain and modernize military capabilities key to land warfare: including highly specialized productions. Major industrial capabilities concentrated in Germany, the UK and France. 	<ul style="list-style-type: none"> deliver, sustain and modernize naval capabilities up to complex weapons systems supplying industry is competent in producing important components like torpedos, guns and sonars but also radar and combat management systems. France and the UK are leading the sector large excess capacity and too many small companies, the skills/specialisations are duplicated many times, while a competition is not taking place. 	<ul style="list-style-type: none"> Deliver, sustain and modernize highest quality products and components be it air defence systems, radar, sonar, avionics but also C4I elements. Regional concentration in Western Europe
Competences:	<ul style="list-style-type: none"> manage the production process including the system integration. competent to deliver cutting-edge technology in the areas listed above. In UAV the sector is seriously lagging behind competitors concerns about the future levels of R&D funding for the military aerospace sector and its continued national rather than EU-focus. Transfer of knowledge into other sectors is easily possible for almost all companies. 	<ul style="list-style-type: none"> manage the production process including the system integration. World leading technologies. Knowledge transfer among the land sector relevant technologies: vehicles, ammunition. But limited transfer into civilian domain. 	<ul style="list-style-type: none"> manage the production process including the system integration. competences for specialized components may be distributed among very few companies like Thales, Atlas electronics etc. specific competences exist with TKMS (submarine technology) and Kockums (stealth technology), DCNS & BAE for nuclear submarines and Air craft carriers. The ability to transfer knowledge among sectors only exists for BAE. 	<ul style="list-style-type: none"> System integrators have acquired the necessary level of competence to deal with defence electronics as a cross cutting technology. Some may outsource part of this to specialized companies. Transfer of knowledge into other sectors or into the civilian domain is easily possible for almost all companies.
Competitiveness:	<ul style="list-style-type: none"> The industry has some world-class firms which participate in international production The competitiveness picture of the sector is rather mixed. Helicopters missiles and engines are strong on exports combat aircrafts have a hard time struggling against US dominance Competitiveness suffers significantly due to the lesser economies of scale European producers generate due to small production lots. 	<ul style="list-style-type: none"> large number of exports across the globe. too many producers with very small production lots. At the same time the markets are nationalized. Hence there is no competition among the producers on the EU markets but on the export markets. 	<ul style="list-style-type: none"> large number of exports. Especially Germany and France with modestly priced products. Missing competitiveness of products has been balanced by offsets and technology transfer. Many national shipyards only supply national demand and have no export products. No export market for huge systems like warships and aircraft carriers. 	<ul style="list-style-type: none"> Serious number of exports Competitiveness seems to exist but European companies may have to struggle to close the gap between the traditional defence electronics and new applications that arrive from the link between civilian/security and military spheres.

⁶⁴ The assessment of the electronics sector is based on a rather small amount of data available.

Future challenges and options for EDTIB

The creation of a 3Cs EDTIB needs urgently to address the following issues:

- The lack of an EU collective defence R&D effort capable of competing with the US defence R&D spending.
- The growing reliance in terms of turnover and revenues of companies on the civilian production and export markets.
- The massive duplication and excess capacity in the national EU defence industries, reflecting each nations continued commitment to supporting some form of national defence industry, leading to small-scale production for national markets.
- Emerging technology gaps e.g. in the area of UAVs and semiconductors
- The trend towards IT warfare means that there has been and will continue to be an increasing use of electronics in complex weapons systems.

Moreover, three long standing challenges are becoming ever more apparent:

- **Competition:** Although Europe has a high number of companies in every sector, they don't compete among each other. Instead, esp. in the land and naval sector, they produce for domestic demand. In the absence of competition, monopoly defence firms become regulated firms with the associated problems in prices, efficiency and profitability. Here the export market may help to some extent but only as far as export products are similar to domestic demand.
- **Key specialised defence capabilities:** These are specialist firms producing no alternative products for other markets (no dual use) but which are needed in the future (e.g. capability in nuclear-powered submarines; main battle tanks; aircraft carriers, combat aircraft). Such capabilities can be found on prime contractors or SME levels. Maintaining skills and technologies (see dependencies) during the current period will prove difficult. Austerity falls together with troughs in development and production work in the military part of industries due to outgoing programmes. Even restructuring may pose risks as it is often driven by economic pressure to rationalize along immediate shareholder values.
- **Restructuring:** Considerable opportunities remain for further re-structuring, especially in the land and sea systems sectors. In comparison, the US defence industry has a much smaller number of larger defence firms. Two general models for system integrators and larger companies exist. They represent alternative methods of economising on transaction costs. First, there is the aerospace and defence firm model which is represented by Boeing and EADS where each are large firms with a defence business and a substantial civil aircraft business. Second, there is the large specialist defence firm involved in air, land and/or sea systems as well as defence electronics. Examples are BAE, Lockheed Martin and Northrop Grumman. These are large defence firms able to achieve economies of scale, learning and scope with further potential for technology transfer from, say, aerospace to land and sea systems (e.g. application of stealth technology to tanks, AFVs and warships). Increasingly, defence firms have acquired electronics firms reflecting the greater emphasis on electronics inputs in modern defence equipment.

2.3 EDTIB outside the EU: Military and Industrial Dependencies

Security of Supply (SoS) is a traditional concern of those Member States that favour national control over sources of their military goods. SoS is also ingrained in national concepts and policies such as the French *strategic autonomy* or the British *industrial and operational sovereignty*. At the same time, the national or state-based provision of such autonomy has become increasingly expensive.⁶⁵

The globalisation of defence production and markets has turned SoS into a multi-faceted problem. It now has a military and an industrial dimension: industrial SoS concerns the supply of raw materials, technologies or critical parts of components to industrial producers. Military SoS concerns the supply of spare parts, components, or entire systems by those producers to the purchasing governments (purchases from the US and Russia have traditionally posed military SoS concerns to European customers). In addition, there is a third dimension to SoS, which is the dependency of domestic industry on exports to foreign markets. The risk to SoS has technological, economic, material, bureaucratic and political reasons (see Table 10 below).

Table 10: Type of Dependency and Examples

Type of dependency	Example
Political	Japan not delivering defence material
Bureaucratic	US-ITAR regulations
Industrial	Production of hard drives concentrated in one region in Asia
Technological	US and Asian market dominance in advanced semiconductors
Material	Chinese quasi-monopoly on white phosphor
(Export-)Market	The Lol DTIBs rely on non-domestic markets for 60% of their turnover on average

MS seem not to be overly concerned or aware of the multifaceted dimension of SoS. An exception may be France, which has a very active SoS policy. But in general, MS experience problems of SoS merely as a military logistical problem, i.e. a malfunction or underperformance of the logistical chain leading to an untimely limited unavailability of required quantities of goods. The problem with ammunition during the 2011 Libya campaign was in fact mainly a logistical problem of stockpiling.

There is **however a strong link between the military and industrial** SoS, e.g. the possibility that the industrial supplier runs itself out of supplies. The UK has lately joined Dutch forces in becoming dependent on a non-national supplier, German company Rheinmetall, for some of its ammunition. This dependency may be potentially troubling for several reasons. On the industrial side, Rheinmetall itself had already concentrated their ammunition production on very few sites in Europe. Meanwhile, from the market point of view, Rheinmetall has bought the South African defence company Denel, mainly to use its access to markets in the Middle East and Asia. However, it seems a waste of resources to duplicate production sites. Hence, in a midterm perspective it is very likely that Rheinmetall will shift production away from Europe to South Africa in order to consolidate further production to offer competitive prices to European and global costumers. At the same time this would generate a significant shift in a very sensible area towards dependency on a non-EU manufacturer.⁶⁶ Moreover, all ammunition companies in this segment, including Rheinmetall, are themselves dependent on two critical raw materials: red phosphor and Tungsten/Wolframite – the main exporter of which is China. Finally, Rheinmetall is a private, stock market listed company: if

⁶⁵ EDA has already conducted a Study on Defence dependencies: FOI/ONERA/RAND, 'Addressing Key European Defence Technology and Industrial Dependencies', Executive Summary, 11/05/2012.

⁶⁶ Interview with private expert 21 March 2013.

shareholders come to the conclusion that ammunition should leave the company's portfolio, there is little that can be done against it.⁶⁷

Another example shows that such dependencies have existed since long but have been ignored: for years, the British Army aimed to keep its own tank maintenance facility operating, arguing that it would be too risky to rely wholly on the manufacturer's (Vickers) line. However, it was discovered that tank overhaul – on both the Army's and the Vickers line – involved removing the optics package and sending it for maintenance to the manufacturers SAGEM in France. SAGEM in turn has obviously proven to be speedy and reliable.⁶⁸

2.3.1 Military Dependency

Military dependency is the most widely known dimension of dependency. It relates to the availability to governments of spare parts, components or entire systems provided by foreign companies. States have since decades silently allowed for increased non-national dependency.

There are several examples where logistical or military SoS can seriously compromise operational readiness. For example, Spain had to ground all its F-18 jets during the 1991 Gulf war because of missing spare parts. To this day, Boeing has a monopoly on the spare parts for its CH-47 Chinook helicopter. It is flown by four European armed forces but no licence production exists. Hence, today as well as in all future cases when the US is engaged in a deployment using its heavy lift helicopters, Europeans will have to wait in the second row (about 72 months) to receive a spare gearbox, unless they build stocks for critical components. Bureaucratic hurdles and ITAR restrictions can also damage SoS.⁶⁹

States can sometimes mitigate SoS problem. One long-standing practice is to sign inter-state agreements. The 1972 Schmidt-Debré agreement between France and Germany was designed not only to support export into third countries but notably to mitigate de facto interdependencies resulting from joint armament developments. An important case supported by this agreement was the mutual allowance to exchange spare parts for jointly developed equipment such as the C-160 transport aircraft, Milan missiles or Roland air defence systems.

Some states solve security of supply problems during operations by switching to equipment that may offer similar capabilities to the one that has ceased to be available. The use of helicopters instead of airplanes for CAS during the Libya operation is a good example. In other areas, Europe is wholly dependent without any currently available alternative. This is the case for GPS which is controlled by the US. Here, the European satellite navigation system Galileo may decrease dependence.

2.3.2 Dependency on Suppliers: United States and Russia

Historically, EU MS have been military dependent on the two main armaments producers in the world, the US and Russia. Today, however, the role of US and Russian companies in Europe is different. Russian suppliers already play a marginal role as industrial base to EU forces, and are increasingly losing ground as opportunities for M&R of Soviet-era materiel shrinks. Even the US footprint shrank considerably in the last decade; however, US companies have been able to keep and sometimes even increase their traditionally strong footprint on the continent in very specific market segments, especially in the aerospace sectors. Generally speaking, US producers are rarely able to sell

⁶⁷ Interview with private expert and desk officer of an EU-Institution. 21 March 2013.

⁶⁸ Email exchange with an ex-UK MoD officer 21 March 2013.

⁶⁹ Interview with desk officer from an EU-Institution. Brussels 21 March 2013.

platforms to EU countries, though they supply systems, sub-systems and components. EU industry is increasingly active in segments that have been dominated by the US, such as AA missiles or UAVs. On present trends, EU dependency on US exports will probably be limited to sub-systems and components in state-of-the-art technologies.

European defence industry was re-started after the end of World War II by building US platforms on license. During the 1960s and 1970s, US producers dominated in all market segments and equipped most of the West European armed forces. Today, however, the growth of the EDTIB allows European armed forces to procure locally most of the capabilities they need. Consequently, Europe has lost status as top destination of US exports, accounting for only 18% of the total exports value between 2002 and 2011, while Asia together with Oceania and the Middle East account respectively for 45 and 27%⁷⁰.

A brief analysis of recent US exports to European countries shows a very clear US dominance in specific market segments, particularly in aerospace, and a much more limited presence in other segments, such as land systems and shipbuilding⁷¹. US products are leaders in the field of guided ammunition, mainly with the Paveway, GBU 39 and JDAM guided bombs. In the missile segment, notwithstanding the growing role of European producers such as MBDA, American firms are also very present with anti-tank and anti-ship missiles, and especially the air-to-air and BVRAAM segments dominated by Raytheon's AIM9 and AIM120C.

US producers are also important suppliers of engines. France and Italy's FREMMs and two of the French Horizon frigates are equipped with General Electric Aviation's LM 2500 gas turbine, which also powers other German, Italian and Spanish classes. Sweden procures US-made motors for its Visby corvettes, the BvS APC family and, more importantly, for the JAS 39 Gripen and the Saab Sk-60 trainers. Aerospace is the area in which the role of US producers is most pronounced: incidentally, aircraft makes up 63% of US exports from 2007-2011⁷². Lockheed Martin's C-130s and F-16s⁷³ are present in many countries, while Boeing's F/A 18 Hornet has also been exported to Finland and Spain. Another segment in which US companies enjoy something close to a monopoly is the MALE UAVs/UCAV segment with the Predator family, even though European companies are working hard to catch up.

Much less substantial is US presence in the sectors in which the European industry is well positioned, such as in the land sector, with some exceptions linked to the war effort in Afghanistan and Iraq. Also, in the area of electronics and sensors European firms have been able to replace foreign competitors, with most sensor-related exports from the US being in the aerospace and avionics segment.

Direct US acquisitions of EU industrial assets are not common, as most EU national governments protect them from foreign takeover as strategic assets. The biggest US presence in Europe is that of General Dynamics, which created a European subsidiary, GD European Land Systems, by acquiring a number of European companies between 2001 and 2003: Spanish Santa Bárbara Sistemas, German EWK, Austrian Steyr, and Swiss MOWAG⁷⁴. Between 2007 and 2009 there were 36 acquisition of EU-

⁷⁰ SIPRI Factsheet 2012; a general account on the transatlantic equipment market: European Security and Defence Assembly 2010.

⁷¹ The examples which follow are all taken from the SIPRI Arms Transfers Database, with specific reference to Lol plus Poland in the years 2000-2012, <http://www.sipri.org/databases/armstransfers>.

⁷² SIPRI Factsheet 2011, cit.

⁷³ Lockheed Martin bought the production from General Dynamics in 1993; the F-16s are now a Lockheed Martin plane.

⁷⁴ GD European Land Systems website, http://www.gdels.com/about_us/heritage.asp.

based defence companies for a total value of USD10.6 billion; however 21 of these acquisition, worth USD6.6 billion, where of UK firms only.⁷⁵

Data suggest that US involvement in European market is slowly being eroded by a growing 'buy European' preference. A review of 33 major competition programmes (with value over USD50 million) awarded in Europe between 2006-2008 shows that US firms were successful only three times,⁷⁶ only when the US product was clearly superior or there were no existing, affordable or reliable European alternative. An analysis of US firms' involvement in the top 25 European programmes, moreover, shows that US firms have increasingly less significant roles in the value chain, acting as system producer only in two instances (KC 767 and licence-built F-16) while most of the time acting as supplier of components and minor subsystems.⁷⁷ The study argues that European procurement spending habits are gradually evolving towards a more competitive and open attitude, while at the same time there is a growing tendency towards European co-operation on major programmes. Coupled with the growing European *acquis* in the field of defence, this is producing market dynamics unfavourable to US firms and favouring a 'European preference'.⁷⁸

The role of Russian defence suppliers in EU countries is even smaller, and is shrinking even faster than that of the US. A few decades ago the militaries of the newer member states inherited Soviet (mostly Russian but sometimes also Ukrainian or Belarusian) arms from the Warsaw Pact days, little of which was modern or compatible with NATO's technical standards. In order to modernise forces and improve their ability to work with the rest of NATO, the countries of Central Europe have been gradually replacing Russian arms with Western ones. This shift has left Russian defence companies with a limited role in EU countries, especially in repairing ageing equipment and, on rare occasions, selling new goods or services. While in the first five years of independence (1991-1996) Russia sold EUR1.9 billion in arms to current EU countries, in the past five years (2007-2012) the value of exports to the EU dropped by nearly 90%, to EUR215 million.⁷⁹ Opportunities for maintenance and repair, too, are shrinking with time as the remaining Soviet-era equipment in EU countries is taken out of service.

The air forces are a good example of the changing fortunes of Russian defence suppliers. In 1990, all new member states had Russian-made supersonic fleets, mostly built around the Mig-29 fighter or its older cousin, the Mig-21. By 2013, the Czech and Hungarian air forces have switched to Swedish-made Gripens and Poland flies primarily US-made F-16s (it also owns a fleet of 13 Mig-29s). Soviet-era helicopters have fared better; most of the new member states still fly Mi-17 transport helicopters or the Mi-24 combat version. Similarly, transport planes such as the An-24 or the An-26 are common in armed forces in Central Europe. In addition to the newer member states, Greece bought considerable amount of Russian arms in the mid-1990s including air defence missiles and landing crafts but their mutual trade has declined; Greece has bought no Russian arms since 2006.⁸⁰ Germany inherited much Russian equipment from the former East German armed forces but it has been gradually disposing of it, transferring two dozen Mig-29s to Poland in 2004 and selling BMP-1 infantry fighting vehicles to Greece. Finland pursued a policy of balancing Western arms purchases with Soviet ones

⁷⁵ Fiott, D., *Safeguarding the EDTIB: the Case for Supervising non-EU FDI in the Defence Sector*, Egmont Security Policy Brief No.41, December 2012.

⁷⁶ Bialos, J., Fisher, C., Koehl, S. (Eds.), *Fortresses and Icebergs: the evolution of the Transatlantic Defense Market and the Implications for US national security policy*, Center for Transatlantic Relations, Washington, 2009.

⁷⁷ Ibid.

⁷⁸ Ibid.

⁷⁹ SIPRI Arms Transfers Database, <http://www.sipri.org/databases/armstransfers>.

⁸⁰ Ibid.

during the Cold War; at one point it had a considerable holding of Mig-21 fighter jets and various Russian main battle tanks. All of the country's recent purchases, however, have all been of Western provenance, much of it American⁸¹ (such as the F-18 fighters).

Some new Russian equipment made its way to the newer EU countries since the Warsaw Pact days as a way of settling Moscow's debt. When the Soviet Union collapsed, Russia assumed its obligations, including debt owed to Central European governments. Some of them have accepted repayment in military hardware rather than cash. Slovakia, for example, acquired S-300 surface-to-air missiles this way. Russian defence suppliers benefitted from such deals, though they have been paid by the government in Moscow rather than the actual buyer of the equipment.

Russian companies occasionally service equipment originally made by them, but most Central European countries have their own repair and maintenance facilities and prefer to service the old Soviet weapons themselves. They are in constant discussion – and often disagreement – with Russian manufacturers over the legal right to do so. Russia asserts the authority to deny foreign companies the right to service Russian-made equipment, and it has used that power before. Some EU countries have challenged Russia's policy, on the grounds that they have upgraded the originally Soviet-made equipment so much that Russian claims to ownership of the technology no longer apply.

The war in Afghanistan has temporarily boosted the importance of Russian arms to EU countries. The urgent operational requirements of the conflict prompted some member states such as Poland to suspend the policy of purchasing local or western weapons. Poland bought a batch of Russian transport helicopters because Polish pilots could fly them without the need for additional training. However, this was an exception rather than a rule: in general, former Soviet arms are disappearing from EU markets, and Russian suppliers are ceding the EU markets to local or western ones.

2.3.3 Industrial Dependency

The term 'industrial dependency' refers to the dependency of European manufacturers (and, by extension, their customers – European governments) on foreign-provided raw materials, technologies or critical parts or components. Dependency often exists for only small parts, which are nonetheless critical for the functioning or the performance of the whole system. Industrial SoS is multifaceted, both in terms of the areas of SoS as well as the reasons for it. One of the most important features is the growing reliance on civilian technologies, which changes dependencies. Only very few technologies such as those needed for armoured vehicles are and will be in the future specifically military. Increasingly, military products result from civilian research and development. Companies apply or modify technologies or products to make them compliant with specific military requirements such as acceleration, pressure, physical or chemical stress.

Currently, technology dependencies exist that will prevail for the next years. Although some European countries (France, Germany, Italy, Spain and UK) have built up their satellite development and construction knowledge over the decades – and the ESA as a pan-European organisation too – European satellite producers remain dependent on certain very specialised US technologies. Without these American technologies in the supply chain, Europe would not be capable of operating its own satellites. The same applies to UAVs and UCAVs, where European countries still depend on the US or Israeli technological edge. Programmes have been launched (by the European Commission, EDA, France and the UK) to close the gap, but it remains in existence today.

⁸¹ Salenius-Pasternak, C., *Not just another arms deal: The security policy implications of the United States selling advanced missiles to Finland*, The Finnish Institute of International Affairs, September 2012.

On a broader level, China's imposition in 2010 of restrictions on exports of so-called rare earth materials (in which it accounted for 95% of global production at the time), has been a very important wake-up call for both the industry in general and defence industry and militaries in particular. It has spurred Western companies to look for indigenous sources (since 2010, rare-earth mines have opened or re-opened in the US and elsewhere), and to switch to new techniques reducing or eliminating the need for rare earths.

Carbon fibre supply presents a unique mix of problems: high-quality carbon fibre is needed for airplanes and satellites. Japan and the US lead in its production. They remain dominant by keeping prices so low that it is economically unattractive for others to invest into the technology and production. At the same time, the portion of military-specific carbon fibre compared to the overall market is so small, that it is economically unattractive for the producers to deliver to MS militaries. Japanese producers of carbon fibre have also faced a political problem: while Japan has been willing to deliver for civilian purposes, it rejected until recently for a long time to supply military specific carbon fibre as its constitution forbids exports of defence goods.

While semiconductors and advanced RF products play a key role in defence electronics, this is another area where Europe's domestic supply has been in a state of slow decline since the mid-nineties. Europe's monthly production capacity of commercial wafers and integrated circuits was surpassed by China in 2007, making Europe the lowest-producing region in the world. The massive growth of production in China, South Korea, and Taiwan has made East Asia the new manufacturing powerhouse of the commercial market for RF devices and microcomputers.

At the same time, such a regional concentration of production capability among very few suppliers can itself pose a serious SoS risk. Natural disasters in 2011 (the tsunami in Japan and floods in Thailand) have almost halted the global production of semi-conductors and hard drives. 'Western' industry, many of them suppliers of defence equipment, quickly ran out of supply.

This has forced civilian and military companies to rethink their just-in-time supply strategies on special components from Asia. The US and Japan have led investments in sub-1/4-micron gallium-nitride (GaN), which is said to be the holy grail of next-generation semiconductors. Once they reach a point of scalable production, they will reap the benefits of broad demand among defence customers for the material's application in EW and IED jammers, radiation-hardened SATCOM. As a result, Europe's defence titans will have to rely on US semiconductor companies in order to remain competitive in these very critical segments of the A&D market.

The challenges of semiconductor supply in Europe also extend further upstream, where European wafer suppliers face two supply challenges of their own. First, leadership in advanced semiconductors is dependent on a steady supply of raw materials. Gallium in particular will likely become more expensive as demand for it grows among semiconductor suppliers. Also, much of the metal will come from mining facilities in China and parts of Central Asia, creating some potentially thorny resource security issues.⁸²

A recently developing problem is that of hidden functionality: tools and machines bought from elsewhere on the globe have reported to have backdoors and means to gain access to information systems, in order to ease servicing and maintaining the product. However, this may be a risk if the tool is used for the production of critical components, as it greatly eases industrial intelligence.⁸³

⁸² Archer, J., *A Reality Check for the U.S. Semiconductor Industrial Base*, CSIS Washington Current issues No 32, April 2013, p. 2.

⁸³ Interview with a representative of EDA, 21st March 2013.

A similar problem is created by counterfeit parts, i.e. components or parts that do not offer the technical performance standards defined in their design and thus cause malfunction or underperformance. The US Senate has in a 2012 study revealed the role of Chinese electronic counterfeits in particular in the military supply chain, noting astonishing cases. In one case, the US bought a component from BAE Systems: BAE itself, however, used an electronic module from China that seriously missed all the standards defined.⁸⁴

On the general policy level, the debate on security of supply is primarily focused on the economic aspects and protection of consumers, rather than on military aspects. But if one reads recent security doctrines of some nations, it is striking how much emphasis is put on economic aspects and supply chain security, not least in the US doctrine of Supply Chain Security of January 2012.⁸⁵

2.3.4 Export-Market Dependency

Due to the decline of domestic demand, there is an increasing need to boost exports in order to ensure that production lines operate at full capacity and to maintain competitive per-unit prices via economies of scale. Thus, the shrinking markets in the EU have pushed the European defence companies to look beyond Europe and to globalise their commercial strategies. Most national DTIBs considered in this study now mostly rely on foreign markets to survive (See: Chapter 3.1). This tendency is likely to continue as long as investments in the domestic markets do not increase significantly. All top companies have successfully accessed new target markets. While these companies may have their headquarters in Europe, they have long outgrown the European market and hence EU states as (main) costumers. This is a trend that smaller companies increasingly follow.

Expansion strategies into non-EU markets differ considerably among MS. UK-based firms, for example, opt for countries such as Oman and other Middle Eastern states. This may indicate that such developments follow long-established political relationships and profit from governmental support. Other main reasons for exports are long-term client-customer relations or traditional procurement habits. Companies increasingly establish joint ventures or subsidiaries in non-EU countries to gain access to the market, transferring their EU-internal strategy to the global markets.

In fact, the export drive is neither new nor has its history shown that such exports can be boosted easily. France and the UK in particular have been constantly pushing, over the last decades, to increase exports. Although flanked by special agencies and strong governmental support, the success has been mixed. Moreover the run towards emerging markets comes with several potential downsides. It may take away the attention from investment into technological leadership, a traditional European defence industrial strength. Not only governments but also companies consider reducing their research and technology (R&T) investments. At the same time, European exports only take place if they incorporate a significant level of technology transfer, thus reducing technological leadership and therefore the selling argument for future exports to these customers.

Moreover, the export drive increases the competition among European companies and among companies and governments. European companies choose – sometimes because they have to, due to offset regulations – local companies as partners. Entering into joint ventures or buying them up allows to access domestic markets. At the same time, those companies become competitors with other European companies aiming towards the same market. The potential export of fighter planes

⁸⁴ Committee on Armed Services United States Senate, *Inquiry into Counterfeit Electronic parts in the Department of Defense Supply Chain*, Report, May 2012, Washington DC.

⁸⁵ Hilpert, H. G./Mildner, S.-A., *Fragmentation or Cooperation in Global Resource Governance?*, SWP Research Paper, Stiftung Wissenschaft und Politik (SWP/German Institute of International and Security Affairs), Berlin, March 2013.

to India is a perfect example of such intra-European competition in foreign markets. Eventually, defence companies compete with their home countries' governments that would like to sell surplus equipment on these new markets as well.

Export is already an important lifeline for national DTIBs in its current configuration and hence to all LOI Countries (except Poland). Export rates vary between 40 and 70% of overall national defence industrial turnover. Thus, prices on the domestic market often depend more on the option to export than on national demand.

Moreover, the main destinations of exports are changing. While traditionally NATO and EU allies have been main recipients, the markets have changed significantly.⁸⁶ Between 2007-2011, only Germany, the Netherlands and Italy delivered 30-40% of their exports to EU countries whereas all other suppliers remained below 20%

Germany in particular perceives significant pressure to change its target markets. European markets will shrink in the coming years. But a model that would count heavily on extra EU-demand is countered by the fact that new customers aim for technology transfer as well. This has severe implications for short-term technology transfer as well as the longer-term ascendance of extra-European competitors in the target markets.

Table 11: Destinations (Regions) of Top Ten Suppliers (% of national exports 2007-2012 of major conventional weapons)

	USA	Russia	Germany	France	UK	China	Spain	Netherlands	Italy	Israel
Africa	2	17	9	10	4	9	2	5	6	4
Americas	7	8	12	6	28	6	30	24	19	22
Asia Oceania	45	63	27	51	25	73	9	25	28	31
Europe	18	3	41	21	13	0	60	37	33	19
Middle East	27	10	11	12	30	12	1	10	13	23
EU	17	0	40	19	10	0	10	37	31	18
Non EU	82	100	60	81	90	100	90	64	69	81

Source: SIPRI Arms Transfers Database, <http://www.sipri.org/databases/armstransfers/>

The table also shows the strong position of the US in the important markets in Asia and the Middle East. US companies already feel renewed thirst for exports as national demand is being pushed back.

2.4 State and future perspectives of the EDTIB

2.4.1 State of EDTIB

The landscape in the DTIB has not changed significantly compared to the years before. No major consolidation has happened, or, like in the case of BAE-EADS, has been consciously prevented. The long-term trend towards more exports on the global market continues. The EDTIB today is not a unified defence industrial entity but a complex structure, still defined by the diversity of the 27 national marketplaces and DTIBs, controlled by 27 national policies towards defence, technology, markets, procurements, and exports. Some regional commonalities can be observed, shaped by national industrial (including armaments) policies on the one hand and an increasingly internationalised market and production structures on the other. EU rules and regulations have

⁸⁶ SIPRI 2008, p. 320.

played little role in forming the defence industrial landscape; co-operation patterns and institutions have evolved primarily outside the EU. There is a world of difference between the multinational, increasingly connected way in which the EU militaries train and fight, and the stubbornly national, and increasingly unaffordable, way in which EU government procure weapons for them. These circumstances, together with the existing and predictable budget austerity, beg the question how Europe can uphold a DTIB that effectively delivers the needed spectrum of military capabilities.

Generally, there is a growing gap between the perceptions and strategies of governments and those of industries. While many Member States still think of industries as 'their' domestic suppliers and act accordingly, most major European defence contractors are already largely internationalised and thus less dependent on national orders and national policies European market.

So far, neither the long-known deficits in the EDTIB nor the actual and potential effects of the financial crisis have led Member States, especially the L-States to change their defence industrial policies from a 'domestic first' to a 'value-for-money' approach. Although the Member States called in many declarations in 2011/12 for a more critical approach to industries, they do not seriously envisage rationalising the overcapacities and engaging in structural reforms of the EU framework. Only France and the UK involved themselves in some sort of cross national coordination. The main objective of the Member States is to consolidate or protect national assets. Those with significant defence industry or obvious financial buffers still procure and plan in line with their traditional approach.

This prevents the industries from putting in place changes which they see as necessary to become more efficient on the European continent: consolidation of demand allowing for larger production lots and simplified relationships between industry and governments. Hence consolidation in Europe will more likely be industry-driven than policy-driven.

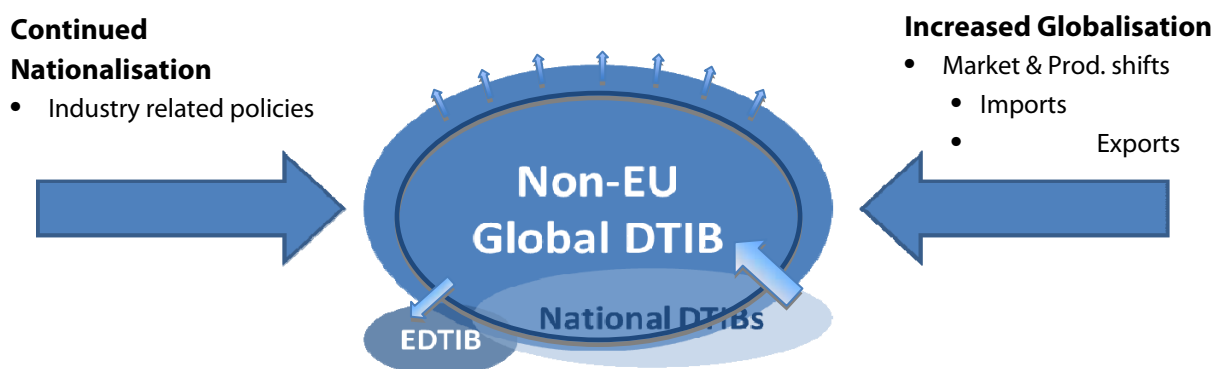
Regarding the industrial structure, the EU did not deliver according to its own benchmarks and objectives related to the EDTIB. The industry shows varying degrees of competences, capabilities and competitiveness along the sectors. They all have in common, that Europe does not play a significant role as a frame. They are either nationalized like land and sea or globalized like aerospace and electronics. Competences are generally high but the exchange of skills and knowledge is limited due to the limited subsectors the companies are often active in. All sectors show excess capacities. But mainly the land sector may adsorb in the future significant amounts of products. Often competitiveness has to be increased by offsets. Consolidation has been limited or even actively prevented by some MS. Only the Aerospace and the Electronics sector show consolidation. What has taken place is a concentration: the five top companies take about 2/3 of the overall turnover of the top 40 EU Companies. Moreover there is a regional concentration with still the main centers of production are in the Western part of Europe. On the level of the top companies cooperation takes place.

2.4.2 Future Perspectives for the EDTIB

The current state and the long-term trend of the defence industrial activities make the materialisation of the vision of the EDTIB increasingly improbable. The political idea has lost contact with the industrial reality of the growing export orientation of European suppliers. In addition, security of supply depends ever more on the influx of civilian and defence goods as well as raw materials from beyond Europe's borders. The European DTIB is trapped between the national and global DTIB developments: European demand is in decline. Hence, demand-based policy instruments such as the Commission's Defence Package cannot effectively reorganize the structure of the DTIB. National demand is declining as well, whilst global demand is growing, pointing towards a further globalisation of DTIBs by market shifts and the internationalisation of production for the coming

years. As a consequence, the EDTIB will shrink even more, and the national DTIBs become more integrated into the global DTIB. Purely national DTIBs will become increasingly more difficult to sustain.

Figure 18 Likely future relationship of national, European and global DTIBs



Especially from a budgetary viewpoint, the future perspectives for the European defence industry are gloomy. Based on the overall fiscal development and the forecast of future debts, a long-term fiscal downturn is likely, which implies serious cuts or delays to future programmes in almost all EU Member States. Another result may be stronger competition for contracts within a lower-demand environment and increased value-for-money imperatives. Budgets for investment are not likely to increase. Forecasts see a further reduction of the EU market volume by about three % by 2016, while other markets may increase by four to six % in the same time period.⁸⁷

There are options as well as signs for industry-driven consolidation especially in the land warfare and maritime sector. Yet, unless Member States create and support the political and legal conditions for such consolidation, it is most likely to take place increasingly in a global, instead of a European, environment among those willing and able to cooperate and to grow.

Hence, European defence industries will most likely not disappear. But their character will change significantly. At least three developments are conceivable: smaller, non-competitive companies will be bought up by bigger ones who are able to secure access to funds from those domestic governments, which continue to invest in defence. Non-competitive companies in countries with larger debts will disappear altogether; the competitive ones will leave the home market and look for business elsewhere. First- and second-tier suppliers with world-class niche products will remain competitive and interested in strategic alliances with system integrators to involve their output into a larger product and service portfolio.

As the bigger companies further internationalise their portfolio and increase access to foreign markets, EU states will further lose influence on equipment specifications because they will represent a shrinking share of those companies' orders. Hence, it will become increasingly difficult for EU states to secure purely national procurement in sufficient quantities. First examples have been reported where European companies respond to EU Member State demands by proposing 'export' versions of equipment, instead of tailoring it 100 % to the national demands.

Three issues will be increasingly on the table, whether the future is dominated by intra-European consolidation or extra-EU exports: export strategies, IPR and offsets. Exports to emerging markets will include offset deals, thus often involving government-to-government negotiations. As for European

intergovernmental projects no common export strategy and no joint approach to offsets has been agreed, such business will be handicapped. Offsets usually entail loss of exclusive IPR because when the final product is assembled in the purchasing country, its workforce eventually learns to build some or most of the system without help from the original manufacturer.

3. ANALYSIS OF SPECIFIC EU LEVEL OPTIONS

One often discussed way in which the EU could possibly add value to the effort to enhance and protect EDTIB is by using existing means in new ways. Those available means include the protection of 'key industrial capacities' or 'key strategic activities',⁸⁸ the reform and rationalisation of different existing funding and investment methods, and the possible use of structural and cohesion funds in relation to the EDTIB. This chapter assesses the potential benefits, limits and side-effects of the above tools. It needs to be stressed that their added value will materialise only if they spawn co-operation both among the EU institutions and between the EU and its member-states. Since the MS are the main *demandeurs* on the European defence market, it is not surprising that their leverage over EDTIB is mainly related to the utilisation of defence investments and funds.

3.1 Protection of key industrial capacities / key strategic activities within EDTIB

The idea of a common EU policy to protect key elements of Europe's defence industrial base has first appeared several years ago. However, instead of EU-level action, MS have opted – individually or in smaller groups – to take action to protect their DTIB, especially by installing legal barriers to discourage or prevent purchases of large portions of shares in big defence companies.⁸⁹

The Letter of Intent/Framework Agreement (LOI/FA) signed in 2000 by six EU members calls such sectors 'key strategic activities' (KSA).⁹⁰ The LOI states defined KSA as "certain limited areas of technological capability considered necessary by the participants for the essential interests of their security"⁹¹. Therefore, they can be considered at the core of DTIB both in terms of relevance for national security, security of supplies and operational sovereignty, and in terms of technological edge being largely based on advanced technologies.

The individual LOI countries have different approaches to KSA but follow the same objective: to maintain a degree of national control over KSA, in order to guarantee country's security interests and particularly the security of supply and the operational sovereignty. Germany does not have a formal list or definition of KSA. The government defines strategic activity on a case-by-case basis, occasionally reviewing or blocking the acquisition by foreign investors of German companies that are considered essential to the DTIB. Moreover, a joint declaration issued by the German government and the Federation of Defence Industries includes a definition of 'national key defence technology capabilities' and identifies 14 'strategic sectors' which are further specified into about 80 core capabilities. In Italy, KSA are formally defined by a 2012 law as part of the "activities which are strategically relevant for the national system of security and defence". The law also specifies six main categories of systems/sensors and further lists 18 types of KSA, while providing to the Italian government special powers to veto or influence acquisition of companies managing KSA by foreign

⁸⁷ Anderson, G., *Major Defence Markets in an Age of Austerity – Trends and Developments*, IHS Jane's Report, October 2011.

⁸⁸ The EDA term 'key industrial capacities' is similar to the LOI term, "key strategic activities".

⁸⁹ European Parliament 2007.

⁹⁰ The LOI/FA is an international agreement signed by France, Germany, Italy, Spain, Sweden and the United Kingdom aimed to provide the legal context for consolidation of European defence industry.

⁹¹ Data from LOI/FA.

investors. France refers to “*intérêts essentiels de sécurité*” and does not have a codified list or definition of KSA. It prefers to leave itself more room for manoeuvre and does case-by-case assessments of whether an activity is strategic and should be protected by legal means to keep it in national hands.⁹² The UK government has adopted a less codified approach, by seeking, on a case-by-case basis, to ensure operational sovereignty by guaranteeing on the British territory and at national level the ability to operate, maintain and upgrade core platforms and systems, through the possession of industrial capacities in the defence sector and the related technologies and know-how⁹³.

While Germany and Italy take a more codified approach, in contrast to France’s and the UK’s more *à la carte* philosophy, all four countries have something in common: they focus on the ownership of the companies managing KSA, and seek to prevent foreign investors from gaining control. Such focus, however, does little to reduce the globalisation of the supply chain, analysed in the first chapter of this report. The growing dependency on foreign suppliers, in turn, is heavily influencing the relations between national, European and global DTIB; it also reduces the national governments’ ability to meaningfully guarantee security of supply.

Recommendation: EU countries have the option of protecting KSA as in the past. Their approach, however, is less and less effective. They should consider the possibility of a shared European approach to KSA, to make it more effective in protecting and sustaining the EDTIB. The countries willing to maintain the KSA should take a joint initiative in this regard. Such initiative should involve EU institutions, including the EDA⁹⁴ and the EC, which have significant and complementary roles to play in accordance with their competencies established by the Lisbon Treaty.

A first obstacle to a more effective protection of KSA is the lack of awareness among policy-makers that the ownership of defence companies managing them, although crucial, is not the only element to consider when assessing the relation between national, European and global DTIB and its consequences for security of supplies and operational sovereignty. A second challenge is the divergence of approaches among major European countries. This divergence is only partly mitigated by the common EU legal framework established by the Lisbon Treaty, and particularly by Article 346, since governments retain wide room of manoeuvre.

3.2 Pooling national and EU funds for research & technology

Research and technology (R&T) budgets have suffered particularly hard during the recent round of cuts. In order to limit the impact of these cuts on EU defence capabilities, member-states should pool their R&T funds. Moreover, technology is increasingly dual-use, which means that it can be used with small adaptation by defence or civilian actors, regardless its civilian or defence origin.

The EU and the member-states could push strongly for full co-ordination and co-operation of R&T activities, civilian and military, at both the national and the EU levels. Existing common needs between member-states and EU policies and institutions could be the first place to start. For example, the EU is already an R&T customer when it comes to certain security-related capabilities. Investments could focus on those key enabling technologies that are mainly military: naval systems, complex weapons, sensors, electronic warfare technologies and materials, and simulation. In the second order,

⁹² Nones, M., *Le attività strategiche chiave: aspetti metodologici, giuridici, industriali e militari*, CEMISS, 2012; Royal United Services Institute (Ed.), *The Defence Industrial Ecosystem: Delivering Security in an Uncertain World*, Whitehall Report 2-11, London, 2011.

⁹³ Ibid.

⁹⁴ The EDA already uses the concept of “key industrial capacities” to ensure the independent development of those key technologies necessary to meet the military capability needs at European level.

investments should be steered towards those areas, which can be funded and used by both civilian and military actors, with benefits reaching beyond EDTIB. Examples include unmanned aerial systems (UAS), satellite communications, and cyber capabilities.

The Lisbon Treaty has opened new ways to finance and conduct defence R&T activities. Article 179.1, by changing the scope of European research policy, links defence research to the EU's general research policy. This increases the pressure to find a common organisational framework. In line with this vision, the new EDA statute established on July 2012 enhances the Agency's role by linking it more closely with other EU institutions. Moreover, the Commission, the EDA and European Space Agency (ESA) launched in 2010 a European Framework Co-operation scheme aimed at synchronising research activities in the three frameworks, and to allow for mutual use of results. In 2011, EDA and ESA signed an administrative agreement on co-operation, establishing a structured relationship between the two agencies.

Negotiations on the EU's multi-annual budget for 2013-2020 ('Horizon 2020') will determine whether defence or dual-use R&T might be included in the EU budget as a separate item or not. At present, the European Commission seems to lean towards negating the possibility of using EU funds for defence-related R&T at all. In its proposal for the H2020 legal basis the Commission proposes that all research activities financed with the H2020 "shall have an exclusive focus on civilian application".⁹⁵ However, this appears contradictory with the provision of Article 45 of the TEU which, among other things, establishes the duty of the European Defence Agency to "support defence technology research, and co-ordinate and plan joint research activities". This is not the place for an in-depth discussion of legal issues, but it seems clear that TEU wording is the final reference.

If defence R&T were not to be included in the EU budget, however, then it would continue to be financed exclusively from national budgets – a decision that cannot be amended for the duration of the financial perspective. As a consequence, the potential for closer and innovative co-operation between military and civil R&T and a more efficient use of scarce defence R&T funds for CSFP capability development would be lost. If so, a maximum effort should be made to mitigate the adverse effect of this situation and increase the interaction and coordination of different R&T activities.

If defence R&T is included in the financial perspective, research activities required for the CSDP could be financed, at least in part, through the EU budget.⁹⁶ In addition, article 45.2 TEU gives governments the rare opportunity to further redefine - acting by qualified majority - the role and position of the EDA vis-à-vis the other EU institutions. In this context, three options for future financing and organising European defence R&T exist, varying as to who would oversee the formulation of research policy and who would manage the use of defence research funds. Defence research could be included in H2020 as part of FP8 and overseen by the Commission; defence research could be overseen by an enhanced EDA; finally, it could be performed through flexible co-operation by interested member states in a dedicated project organization.

⁹⁵ European Parliament and the Council, Proposal for a Regulation establishing Horizon 2020 - The Framework Programme for Research and Innovation (2014-2020), EC, COM (2011)809 final, 30/11/2011.

⁹⁶ While research for nuclear weapons or encryption would remain national responsibility, research on CSDP capabilities such as CBRN, intelligence, surveillance, target acquisition and reconnaissance architecture or medical support could benefit from EU funding. For a list of relevant areas see European Defence Agency, Background Note on Capability Development Plan, 2008.

a) Defence research as part of H2020 overseen by the Commission

Defence research could be integrated to the largest possible extent with the EU's existing research instruments. Just as FP7 (2007-2013) included, for the first time, security research, the next FP could expand EU aid to include defence research as a new domain. The Commission drawing on advice from governments and industry would plan, oversee and manage its funding.

While such a solution could generate a maximum of synergies with other civilian research themes, there are considerable risks and disadvantages. The general orientation of the FP on basic research and its rules, designed to promote openness towards the world and sharing of research results, are ill-suited for defence research, which is capability-driven and where secrecy can be essential for security reasons.

The political leadership would stay with the Commission, delegating the implementation to the EDA via a contribution of 'earmarked revenue' to the Agency's general budget. This is a poor solution for national governments, parliaments or the EDA. Research funding cannot be spent on personnel, and the new duties would overburden the EDA's staff. Their number could be increased via raises in the EDA's annual budget, but this requires unanimity in the Council, which may not be forthcoming.

b) Defence research overseen by an enhanced EDA

Alternatively, the EDA could be given a new statute and operational rules. Article 45 of the TEU provides the legal basis for such a move and requires only a qualified majority in the Council. The EDA would receive financial resources not through the Commission but as a separate budget line from the EU and could implement it independently. A similar solution has already been suggested by the EP in its CSFP resolution of 2012, which calls to the HR/VP to put forward proposals for "strengthen the institutional character of the EDA"⁹⁷.

In this way, the EDA would be in a stronger position within the entire EU machinery, with governments maintaining political oversight over defence research. In the long run, this would have the surest and largest benefits for the development and procurement of defence capabilities. Co-operation between the Commission and the EDA in order to achieve synergies would be more balanced. However, significant political resistance can be expected from countries who have in the past openly opposed an increased role of the EDA in defence research such as the UK or the Netherlands.

This way would, nevertheless, generate maximum savings through European co-operation. If a significant part of defence research is managed at the EU level, national management capacities in the 26 participating MS could be made more cohesive and may even be reduced. While this makes fiscal sense, defence administrations may be less than enchanted by this prospect. After all, the R&T steering board of the EDA is composed of national R&T directors, whose internal position and influence is often considered proportional to the size of staff working for them.

c) Flexible co-operation among interested member-states using Article 185 TEU

The third way for closer integration of defence R&T at the EU level might therefore be most promising. While R&T would be included in the EU budget, management and implementation would proceed through a mechanism provided by Article 185 TEU. It concerns not only research but also development programmes, i.e. a scope that would be suitable for defence purposes with its focus on

⁹⁷ European Parliament Resolution of 12 September 2012 on the Annual Report from the Council to the European Parliament on the Common Foreign and Security Policy (12562/2011 - 2012/2050(INI)).

capability development. The article states that the Union “may make provisions” to programmes “undertaken by several member-states”.

This option implies, on the one hand, that a defence research programme would need to exist among MS. Only then could the Commission contribute to it. Given that there would not be any right of initiative for the Commission, MoDs would remain in control of the defence research. On the other hand, the flexibility provided by Article 185 would allow for an opt-out by some governments. They would only participate through the EU budget in these projects, which would enable the EDA to draw on companies from those countries.

This method would require the Commission to define very clear criteria and guidance on which R&T programs are to be covered by EC action under Article 185, and on how much money is to be made available to each project. There is a risk that some countries will find it politically unacceptable to fund other member states’ R&T or R&D effort with common funds. Regarding the criteria, these should refer explicitly, and be consistent with, existing EU-level documents on defence capability development, *in primis* the EDA’s Capability Action Plan. This could provide a ‘political cover’ for the funding by clearly showing that this particular effort is undertaken to the benefit to all member-states. The EC would also have to make a prior decision on how many funds it would make available for Article 185-led R&T financing, in order to have some possibility of planning.

Finally, Article 185 implies that an implementing structure has to be created for such programmes. Thus, the EDA will not need to employ additional personnel and could continue to operate on its existing (or a slightly altered) legal basis. The potential for mid- to long-term cost savings would be considerably smaller than in the second way as national defence research administration would be required for an active support of the “implementing structures” of each project.

3.3 Joint Procurement: Common European Requirement and flagship programs

In addition to the pooling of R&T funds, common investment and procurement programmes offer an option to consolidate demand. The EU itself is a procurer and an end-user, as it buys and/or rents vehicles, infrastructures and services in order to fulfil its obligations. Recently, for example, the Council decided to establish a warehouse for storing civilian crisis management mission equipments,⁹⁸ while it is very common for an Agency such as Frontex to rent flights in support of its border control missions. However, the EU is not nearly a large procurer as a member-state in the field of border and security equipment, and of course is not involved in defence procurement. On the other hand, there would be quite a lot of space for improvement in the establishing of joint investment and procurement mechanisms between member states. Existing programmes, e.g. the A400M or the Eurofighter, can be assessed only as a limited success. Although they deliver the equipment needed, they also show a magnitude of organizational and technical problems, stemming from the political, not economic, character of the primary impulse for co-operation. Thus, the willingness of the EU states to establish new joint programmes, particularly ambitious ones, is currently reduced.

Yet, international armaments co-operation is not inherently more complicated than national armaments projects. While in practice it tends to augment the political and administrative challenges present at the national levels, these challenges can be handled in three complementary ways. First, by paying close attention to the harmonisation of requirements: every new joint procurement

⁹⁸ European Council decision 2012/698/CFSP of 13 November 2012 on the establishment of a warehouse for civilian crisis management missions.

programme should be established according to a Common European Requirement (CER) fixed at the very beginning of the programme and kept stable overtime. By sticking to an early-established CER, member-states avoid the proliferation of versions of the original platform; a practice which made past procurement programmes overly complicated and expensive while massively reducing the economies of scales and savings achievable. Second, in joint research, development and procurement programs, a step-by-step development geared to 80 per cent rather than 120 per cent solutions should be favoured. This would help the governments avoid the trap of diminishing returns (the pursuit of the last 10-20 per cent of perfection usually adds the bulk of the costs). Finally, the jointly procured capabilities should be jointly shared, maintained, repaired and upgraded through the entire life-cycle, to avoid duplication and maximise savings. Where it turns out to be adequate, procurement ought to rely to a greater extent on commercial and military off-the-shelf solutions (COTS-MOTS) as well as on outsourcing through public-private partnerships (PPP) or private providers.

In certain areas a long-term and forward-looking investment is needed both to ensure operational sovereignty on complex weapons and the maintenance of a strong and competitive EDTIB. It has to be noted that current major European procurement programmes in sea (FREMM), space (Galileo) and above all air domain (A400M, Eurofighter, NH90) have been launched 20 or 30 years ago, while no single major programme has been put forward in the past decade. That means that there is little push from the demand side of the European market for research and development activities on technologies, for later production by EDTIB⁹⁹. This is likely to lead to an erosion of European technological edge not only with respect to other well-established competitors – such as those in US and Israel – but also to emerging competitors in fast-growing countries such as Brazil and India. To counter this erosion, member-states would need to undertake not only a substantial, co-ordinated, effective and efficient investment on R&T activities, but also launch new flagship programmes in areas critical for both European capability requirements and the future defence market demands.

The UAS are a case in point, since they represent the new technological frontier for air power. Most European armed forces are procuring different UAS from non-European supplies – mainly the US – and the UAS world market is set to grow exponentially in the next decade. The EDTIB competitiveness and sustainability would greatly benefit from a European R&D and procurement program on UAS based a CER, to supply the EU armed forces and take advantage of export opportunities.

To implement the project, the EU countries could apply a 2012 EDA – OCCAR agreement, which allows the latter to manage defence procurement programmes agreed by the MS in the EDA framework. In the future, the EDA could act as facilitator for the launch of new European procurement programmes among willing and able national governments – allowing for great flexibility on the number of participants – which OCCAR would manage.

⁹⁹ Actually Europeans in the 1990s missed the opportunity to develop together a 5th generation fighter aircraft, therefore several European countries then joined the US-led procurement programme F-35 which is set to be a huge driver for technological innovation and industrial activities which will mainly benefit American DTIB. For more details see M. Nones, G. Gasparini and A. Marrone, *Europe and F-35 JFS programme*, IAI Research Papers, 2009.

3.4 Using structural funds to support the EDTIB

3.4.1 An overview of the structural funds

Structural funds are the core instrument of the EU's regional cohesion policy. There are three main funds: the Cohesion Fund, the European Social Fund (ESF) and the European Regional Development Fund (ERDF). Together, these amount to around 35 per cent of the overall EU budget, or EUR49 billion annually, for a total of EUR347 billion for the 2007-2013 financial period. The cohesion policy focuses on three objectives:

- **Convergence:** It aims to reduce regional disparities in Europe by helping regions with GDP per capita of less than 75 per cent of the EU average to catch up with the better-off parts of Europe. The money usually goes to improving basic infrastructure, helping businesses, water and waste treatment, high-speed internet connection, training, job creation, etc.
- **Regional competitiveness and employment:** The aim is to create jobs by promoting competitiveness and making the regions concerned more attractive to businesses and investors. This objective includes all regions not involved in the Convergence basket. Projects regional competitiveness and employment encompass development of clean transport, support for research centres, universities, small businesses and start-ups, training, etc.
- **European territorial co-operation.** It aims to encourage co-operation across regional or national borders that would not happen without help from the cohesion policy. Projects regards mainly shared management of natural resources, risk protection, improving transport links, creating networks of universities, research institutes etc.

Regional policy priorities are set by the EU and implemented by member-states and the regions. The Council and the Parliament decide the rules of the funds and the budget on the basis of a proposal by the Commission, for a seven year framework. The 2013-2020 programme – Horizon 2020 - is currently being decided.

Once the financial perspective is agreed, the Commission and the member-states decide the principles and the priorities of the cohesion policy, and draft strategic guidelines for the implementation through national strategic priorities and planning. Each country produces a national strategic reference framework (NSRF), which outlines the country's strategy and proposes a list of operational programmes (OPs). These present the priorities of the country and/or of the regions. The NSRFs are validated by the Commission, which sends them back with comments. Finally, the OPs are implemented by the nations and regions by management authorities, while the Commission allocates the funds, pays the expenditures and monitors the programmes.

3.4.2 The structural funds and the EDTIB: opportunities, challenges and risks

The EDA and the European Commission are currently working to verify the possibility of using resources available from the structural funds to support EDTIB. The use of community funds in relation to EDTIB has been a relatively new idea. At first glance, it looks attractive: a substantial share of the structural funds for the current fiscal frameworks (2007-2013) has not been spent, a sum estimated at several dozen billions of euro. At the same time, the EDTIB is lacking investments because of the shrinking of European defence budget. The Commission seems to be interested in expanding its presence in the policy field of defence. And the regional authorities, which control the eligibility of applicants for funding, may be interested in preserving jobs in EDTIB and in supporting applications from defence industries.

The eventual use of structural funds in relation with EDTIB presents both opportunities and challenges.

3.4.3 Opportunities

Clearly the funds have some potential for EDTIB. Funded projects may stimulate entrepreneurship on the small- and medium enterprise (SME) level, research and development activities on new technologies, workers adaptability and the upgrade/update of their competences.

- **Support for SMEs:** They constitute a substantial part of EDTIB, particularly in countries such as Italy and the UK, and are often active in highly innovative sectors. European SMEs may produce dual use technologies and components usable in both defence and civilian market, or being exclusively part of the supply chain of a large defence company. Considering this particular situation, they can greatly benefit from the availability of structural funds, although a top-down one-solution-fits-all may not work with a he varied range of SMEs in the EDTIB.
- **Industrial R&T gaps.** The use of structural funds could help to target sectors with industrial or R&T gaps which are at the same time not defence-specific but necessary for civilian future business. Examples include but are not limited to electronics (for example Gallium nitrate and Gallium arsenite based semiconductors or reprogrammable semiconductors), as well as to UAS related technologies such as robotics and traffic control. Here, the structural funds may be used in synergy with the R&T funds from FP8, EDA and ESA to focus on key enabling technologies.
- **Conversion of surplus defence industrial producers and transfer of workforce into other sectors.** The structural funds could be used to allow for the reduction of existing duplications, thus increasing competitiveness of the EDTIB. For example, when certain lines of production and/or industries are not fit anymore for the defence market or are redundant with respect to rationalisation needs, structural funds may be used to re-train workers and provide engineers with extra education in order to prepare for new jobs outside the defence business. The funds could be used to manage the negative effects on employment of defence rationalisation for those regions that most depend on EDTIB jobs. This would be more in line with the original intent of the funds.

3.4.4 Challenges

How such an approach can be applied to the new financial framework after 2014 is not clear. The idea of using these funds is a driven by pragmatic short-term considerations, since it seeks to use instruments not designed for a certain purpose but currently available. However, the use of structural funds in relation to EDTIB presents multiple challenges. Indeed the three objectives, as well as the criteria and examples for typical projects, do not immediately make the funds as instruments of first choice to alleviate the specific situation in which the EDTIB finds itself.

First, the use of structural funds for sector specific support (to EDTIB-related research, in this case) is excluded. Barring a change to regulations, any eventual support to EDTIB through structural funds can happen only indirectly and with several constraints, for example by focusing on industrial R&T gaps related to dual-use technologies. The funds cannot support directly the production of defence goods, the build-up of defence infrastructure or basic research. The growing civilian content in defence products makes it difficult to define what defence industry is: in fact, the key areas demanding investments in R&T activities are dual-use or even civilian. Moreover, the companies that provide components or service solutions rather than defence systems are active in both civilian and defence sector.

A second challenge is that the funds focus on poorest regions, which are recipients of 81 per cent of the funding. The majority of 'convergence' projects aimed at underdeveloped regions are unlikely to be redirected to defence because the need to spend on more pressing social needs, basic institutions, infrastructures, workers' skills, etc., will inevitably seem more urgent. And because EU

rules require the recipient communities to match EU funding with local investments, actors in the regions will think hard about what is possible and appropriate investments for the region's needs.

Third, the project application process works bottom-up: the idea that the process can be controlled and directed to support EDTIB via guidelines etc. seems difficult to implement. While the Commission and the member-states set priorities and principles, it is the civil society (individuals, NGOs, private enterprises, local entities...) which proposes and creates the projects and spends the funding.

Fourth, EDTIB may not be ready to successfully compete in applications for EU funds. Especially at times of austerity, companies have to prioritise investments in human resources. They will think twice about entering into competition with other actors from outside the defence sector, with potentially long track records of success in applying for EU funds – actors who may legitimately be more eligible for the money. It should be noted that the funds will not be earmarked for EDTIB specifically. Civilian businesses that offer better returns to regional authorities, mainly in terms of jobs and taxes, may be considered more appropriate and less risky vehicles to secure EU funds.

Fifth, the use of structural funds for EDTIB would require a prior accommodation of the Commission with EDA when it comes to the evaluation of possible defence-related NSRFs & OP – both the prior evaluation and the oversight. EDA is in fact required by Article 45 (1) of the TEU to “contribute to identifying and, if necessary, implementing any useful measure for strengthening the industrial and technological base of the defence sector”. Therefore it could be argued from the EDA side that the Agency would need to be part of the process. In this case the EC and the agency would need to liaise and establish joint teams, operational and evaluation criteria, etc. The potential for an institutional feud could prove to be high.

The rationale behind the idea of using structural funds is that gaps in industrial and technological capability of defence industry can be closed. This implies first of all a long-term policy and a strategic planning defining the key industrial and technological capabilities that the EDTIB should have, and which are at risk. It is questionable whether the European Commission can provide that political guidance. A poorly applied subsidy policy risks creating artificial supply chains where no large costumers really exist.

Other risks of this approach may also materialise:

- **Competition:** current receivers of structural funds will continue to compete for resources and, as there is no possibility of establishing a specific defence-related preference, from a statistical point of view only a fraction of the EDTIB-related proposal will be successful. Therefore, structural funds would be off use for the wider EDTIB framework; at best they can only be envisaged for an *ad-hoc*, fragmented use;
- **Duplication:** the use of structural funds may lead to the build-up of technological capacities that already exist within the Union. However, as the Commission and the MS have no comprehensive landscaping of EDTIB, they can concentrate only on those areas where a need is obvious in order to prevent this risk to come true;
- **Low sustainability:** the short-term success will largely depend on whether the EDA and the Commission can provide a business case to invest in certain structural funds in relation with EDTIB. However, while the technology or product may be then available, its generation may be not always economically sustainable: if the technology or product can be bought much cheaper on the world markets, governments would have to pay a high price for independence – something they already do for certain areas of EDTIB;
- **Blocking restructuring:** the use of structural funds may distort normal functioning of markets in several ways. For example, they may be used to keep up unprofitable industries and thus remove a key incentive for restructuring and consolidation;

- **Area for turf wars:** The general competence split between the Commission and the member-states may resurface also in this area in the long run. While the Commission may hold the money, the member-states are not willing to allow it to get a bigger footprint in the defence area. So projects funded by structural funds in relation with EDTIB may become a place for turf wars.

In conclusion, structural funds may offer a solution for areas where a gap in technology or industry exists and a market is plausible on competitive levels with the world market. However, a closer look shows the limits of this approach. Indeed, such funds may be applied only to a limited number of cases, in particular SME with dual-use production, R&T activities, or specific less developed regions where EDTIB factories are located. Hence structural funds can only be one element of a more comprehensive approach. As these funds have not been designed to support single sectors but rather socio-economic conditions, not only inherent limitations of the funds apply but also potential incoherencies may surface if the measure is combined with other instruments. The member-states, the Commission and the EDA have to address key challenges and risks before they decide to use these funds in relations to EDTIB.

4. RECOMMENDATIONS

A comprehensive reform of the EU Defence Industrial Sector is necessary to achieve an EDTIB that effectively serves the demand of MS to have assured access to supplies of defence material and services. As the vision of and the need for an EDTIB is even more valid than in 2007, the core objective would be to adapt to the changed environment.

The development of the EDTIB continues to depend to a serious extent on Member States' defence policy and industrial policy, while the EU role in this regard is not that important. There are three parallel trends over the last two decades: First the reluctance of national governments to move towards forms of cooperation and integration, transferring the pooling and sharing approach into the area of defence procurement. Second the slightly increased role of the EU, through the EC involvement on defence market, the establishment and activities of EDA, and a general enhancement of EP voice due to Lisbon Treaty innovations of EU decision-making. Third the globalisation of European industrial activities and dependencies continues. These three trends have either not really achieved a real European DTIB or even continue to undermine it.

As the conditions for the creation of an EDTIB are changing drastically, new solutions have to be added to the already existing recommendations. The EU as a whole has to find new ways in managing its defence sector as a whole and the relations among the relevant actors.

While this study offers some unprecedented insights into the state and future perspectives of the EDTIB, there is the serious need for a continuous defence industrial monitoring and the regular assessment of risks and opportunities to the implementation of the EDTIB. Far beyond specific defence aspects, national governments and EU institutions would have to develop an understanding beyond stereotypes about industrial priorities in times of austerity and thus find a formula for a more coordinated European industrial policy in relation with the EDTIB. Here a Defence Sector Council would be necessary to get the political mandate from the Heads of states and governments. Such a Council should first take a comprehensive look at the State of the EU defence sector and second develop a Military Headline Goal and an Industrial Headline Goal for the 2030 horizon that sets out common priorities for the European armed forces' procurement and the EDTIB. The possibility to elaborate an EU White Book on Defence could be explored as it may lead to the formulation of an overarching document shaping European action in this field.

None withstanding future visions of defence current reality implies that EU Member States should immediately engage in greater consolidation of demand through joint R&T projects and through bundling demand for shared capabilities, for example by harmonization of demand, synchronization of procurement, cooperative or common procurement. In this context Pooling and Sharing (P&S) is particularly important and deserves a step change.

Moreover, defence firms should be encouraged to expand their activities into the security and civilian field to buffer against cuts to defence budgets and to offer alternative options vis-à-vis export markets. In this context the structural funds may play a certain role, but many constraints exist and several issues have to be clarified before allocating such resources in the defence field.

Four sequences that form a cyclic process can be identified for the implementation of the recommendation. The sequences of implementing the recommendations are as important as their content. Timing and the question whether the outcomes will feed back into the political decision making will decide over the quality of outcome.

The first sequence entails two **fundamental decisions**: a) MS together with European Parliament and Commission have to agree to make the effort to revise their approach or respective strategy to the EDTIB. As this decision affects many areas of national and European politics, such a decision is

to be taken by the highest levels of institutions. b) This group who has taken the decision also has to keep itself engaged and interested in the EDTIB developments for a considerable time. Delegation to subordinates will lower the outcome. An Annual Defence Council has to receive a yearly report on the state of the EDTIB and decide on further steps.

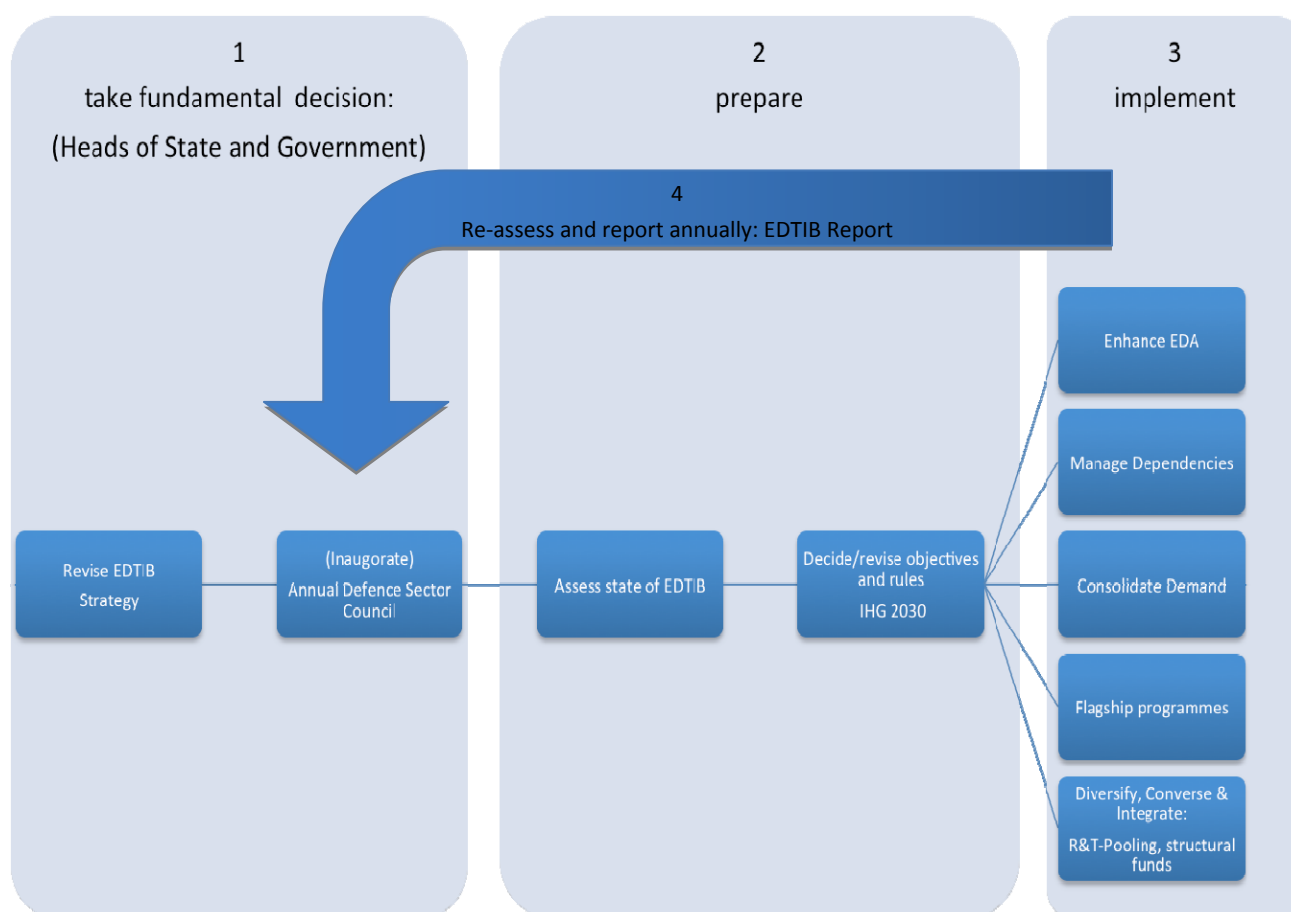
A second sequence is to **prepare** for the implementation by making a baseline assessment of the EDTIB and enable the EU to follow the development of the EDTIB by a constant monitoring mechanism. Only based on such an assessment, a proper decision can be taken on achievable objectives and rules that reflect a proper EDTIB. These elements are put together into an Industrial Headline goal 2030.

The Third sequence is the **implementation** of the different recommendations as the means to implement the new objectives to achieve a EDTIB.

The fourth sequence is the **annual reporting** on the EDTIB that feeds back into the decision-making of the Annual Defence Council.

None withstanding future visions of defence current reality implies that EU Member States should immediately engage in greater consolidation of demand through joint R&T projects and through bundling demand for shared capabilities, for example by harmonization of demand, synchronization of procurement, cooperative or common procurement. In this context Pooling and Sharing (P&S) is particularly important and deserves a step change.

Figure19: implementation sequences and cycle



4.1 Revising the EDTIB strategy

EU MS should revise the 2007 EDTIB Strategy. It has to be based on the new realities, both in terms of what a European DTIB means today and in the future; and the means available to achieve such an EDTIB. This creates a feedback loop in the strategy making that should allow MS to come with an EDTIB strategy is more likely to be implemented because, the means are available. While they also can become aware of the repercussions if they do not implement it.

Issue

MS have tried for too long to maintain their national independence regarding Security of Supply. This prevented them from increasing the political and industrial congruence within the EU and from effectively implementing the EDTIB as the central political and industrial framework for SoS. However, while politics have remained national, the industrial activities have increasingly gone global. The result is current state in which the political and industrial realities are increasingly drifting apart.

Proposal

MS should revise the EDTIB strategy with the help of a two-step strategy cycle assessment.

First, they need to address three key questions:

1. *Assess and Understand*: What is the current state and likely future of the EDTIB?
2. *Objectives*: Which common objectives can they define and what would happen if these objectives are not implemented?
3. *Instruments*: Which old and new instruments would allow implementing the objectives?

Second, MS should allow themselves a *feedback loop* in this strategy making process by answering the following question: Which of the identified objectives are they still able to implement; which should they better discard because the means are not available; and which objectives could still be implemented but require new means to do so?

The second step is the crucial one. Strategies are indeed cyclic processes in which ends and means need to be constantly adapted to both, each other and to the changing environment. MS thus need to think carefully through the whole strategy cycle, especially in case they potentially lack the means to achieve their objectives. This process may allow MS to become aware of the current state of the EDTIB, especially that the EDTIB is today far more than just what is happening in Europe. MS have to realise that these new realities, particularly the increasing dependence from outside Europe, require their reactions: the challenge is to manage global supply risks rather than to ensure national independence.

MS should accept to define the EDTIB from a functional rather than a territorial perspective. In terms of composition, this would imply to include non EU-companies and supplies. In terms of tasks, it would mean to aim managing global dependencies instead of cherishing the illusion that national SoS is still possible.

Eventually, competences and responsibilities for defence industrial aspects are distributed among a variety of actors. Involving the European Parliament European Commission and various non-state stakeholders makes the strategy more likely to be implemented.

4.2 Political Commitment is needed: An Annual Defence Sector Council

One EU Council of Heads of states and governments per year should be devoted to define the necessary European military capabilities and their industrial basis: a Defence Sector Council. It would be an important political step, whose implementation should be monitored through annual

meetings of the Council. An independent panel of experts should advise and inform the Heads of states about the recent state of implementation.

Issue

Defence issues lack the political mandate from the highest level of European decision-making to overcome diverging views between MS and among institutions both at national and EU level. Strategic decisions on industrial and military capabilities require an overall agreement at the level of European Council in order to pave the way for the working at ministerial level. At the same time, defence issues also lack a constant level of political attention to keep the various actors committed and the process running.

Proposal

In order to define reasonable P&S projects, the MS have to identify their military ambition for the future and which industrial basis is needed in order to achieve it. Therefore a conference of the Heads of states and governments is advisable. They are the only ones able to lead the way and to effectively engage the defence, the finance and foreign ministries. The implementation efforts of the agreed objectives should be evaluated annually.

This Council would have to tackle the following questions during its first meeting:

- The set up of a European Defence Review: what are the military capabilities operationally available today – not just on paper - and what is planned to be achieved by 2030.
- EU level of ambition: what does the EU and its member states have to be able to accomplish? Which military capabilities should be maintained, extended or developed and which ones could be abandoned?
- Which defence industrial and technological basis is needed?

The answers to these questions could be a blueprint for the elaboration of two implementation documents: the Military Headline Goal 2030 and – derived from it - the Industrial Headline Goal 2030 (IHG 2030) (see below).

The Defence Sector Council already features a working muscle to contribute to the implementation of its decision: the EDA, which on the basis of the Lisbon Treaty is fully fledged EU institution tasked to deal with a broad range of defence issues. In addition, an independent panel of *Senior Personalities* (military and civil experts, economists and politicians), which reports annually at the Council, should support the Agency's and the Council's work. This mixture of expertise and political weight of *Elder States(women)* should get the necessary attention of the EU member states.

Role of European Parliament

The EP should hold an annual debate on defence issues, including EU level of ambition, military and industrial capabilities, before the Defence Sector Council, in order to offer its view and increase the legitimacy of the political process. Moreover, the EP should have an annual hearing of the panel of Senior Personalities aimed to get a report on the implementation of the decisions taken by the Defence Sector Council and to engage in a debate with these personalities – something important both in terms of accountability and legitimacy.

4.3 Knowledge is Key: A Systematic Monitoring of EDTIB

There is the serious need for a continuous defence industrial monitoring and the regular assessment of risks and opportunities to the implementation of the EDTIB. The EU should set up an independent systematic monitoring of the defence industrial and technological base to support decision-makers with situational awareness and a proper factual base for policy making.

Issue

The EDTIB is at a critical juncture. But policy advice and decision making are undermined by missing knowledge. Developments in the defence sector speed up and are currently approaching a critical phase. Over the next five years a high number of key decisions on cuts, cooperative opportunities and restructuring of technological and industrial sectors will be taken. These will define the level and quality of EU defence technological and industrial capability in the decades to come. Decisions taken by MS, industries and EU institutions should be ideally based on proper data, their analysis and reasonable estimates on the effects on EDTIB. However, comprehensive assessments on this highly dynamic environment have been delivered only as one off studies, which are among themselves incomparable because of different methodologies and lack sustainability as they outdate very quickly.

Proposal

The relevant players need a **continuous systematic and independent defence industrial monitoring** that supports their decision making by an account of current developments: a monitoring of EDTIB in times of austerity.

Such a monitoring effort has to be based on the analysis of the developments in the individual EU27 defence sectors. Out of this, it should synthesise a comprehensive picture about the impact of such developments. In order to go beyond a pure description of past events and enable proactive policy recommendations, the analysis should identify trends and mechanisms, which could then allow for some preliminary estimates on future scenarios and recommendations based on these assessments.

An appropriately established monitoring centre would be able to deliver:

- Continuous analysis of available data (open source) and evaluation along central categories for general economic and fiscal context, defence industrial and technological base for all 27 EU MS.
- Six-monthly reports on new developments in these central categories and visible trends.
- Assessment of implications for the EDTIB.

Such monitoring is an analytical tool with important political effects, as it would contribute to remove wrong perceptions and scepticism on the need for EU action from the European debate, caused by scarce awareness of current developments of EDTIB.

Role of EP

The EU should make an effort in setting up a EDTIB monitoring centre. Within a short term such a centre could offer serious results. It has to be and kept independent in financial and political terms. While EP or EC could input resources, EC and EDA could also offer part of their staff to the centre.

4.4 Managing Global Dependencies

EU MS should start assessing and managing their global dependencies by decreasing critical dependencies or alleviate them through increased interdependence. This would need to be integrated into a comprehensive and proactive industrial policy on the EU level. Helpful best practices may be found through civilian industry or the European Space Agency's approach.

Issue

The EU faces multi-fold dependencies with non-European DTIBs. These dependencies tend to increase particularly in non-traditional areas: they mainly concern platform suppliers and prime contractors, suppliers for technologies and raw materials, and producers of critical components. At the same time, the MS' ability to cope with these developments individually is diminishing. Hence, on

both sides, the political and the industrial, the SoS-gap is deepening. MS are prepared for this in very different ways. Not at least due to their DTIB protection policies, the Lol states are generally more aware than pure importers. The latter are dependent anyway, eventually, they care less on whom they are actually dependent.

On the general policy level, the debate on supply chain security primarily focuses on the economic aspects and on the protection of consumers, rather than on military aspects. However, a look at recent security doctrines of a number of European countries reveals a striking emphasis on economic aspects and supply chain security. Moreover, civilian actors increasingly purchase the bigger portion of raw materials and goods than military actors. Indeed, this civilian flow could well cover the military related demand. At the same time, because it is shrinking, the military demand will decreasingly less often be able to generate the sufficient buying power to purchase specific goods on its own. Hence the military side will depend more than ever on the civilian side.

The likely future is that MS will have to manage ever more critical global supply lines for both civil and military items, instead of re-gaining national production capacities on military critical technologies. Quite understandably, some states will certainly criticize this European dependency as a non-optimal situation, but given that national SoS is no longer a viable option, those states have to offer credible alternatives.

Proposal

On a very general level, the European states can manage the dependencies in two different ways: first, they can seek to decrease dependencies; second, - where such an approach is impossible - they can strive to consciously increase and strengthen the interdependences in view of using them as a bargaining power when negotiating with suppliers and the supplier's nations.

EU public and private actors should first gain a joint full spectrum assessment of their critical dependencies. Moreover, they should compare the result with their dependencies or activities in the global civilian market. Indeed, most of the problems are the same in the military and civilian area. Hence, experiences from the civilian dimension of materials, technologies and products as well as civilian actors might offer solutions from which the military side can benefit. Generally, military SoS is increasingly dependent on the broader civilian technology dynamics in which it is embedded. Hence also civilian management of SoS may offer helpful best practices for defence related SoS.

Managing SoS more proactively would imply a more active industrial policy on the EU level. One helpful element would be that the European Commission delivers a more strategic industrial policy. This could include to continuously support the development of key technologies and to keep them in (at?) the appropriate Technology Readiness Levels. The European Commission could support within its own new policy of critical technological enablers also the area of defence. Moreover, it puts together a list of critical materials. As it is currently updating the list, there is the opportunity to add material that is of specific importance to the defence industry. For critical technological dependencies, it seems plausible and meaningful to use the European Commission's Horizon 2020 programme to ensure general technological innovation that also supports security and defence applications and may thus help to reduce Non-EU dependencies.

Moreover, the European Space Agency policy on SoS may offer a best practice model to sustain the supply with technologies in an area very similar to what EU MS may be interested in: space is a civilian technology area that is considered as a strategic area with high relevance for the military as well. ESA conducts a very active SoS policy, by reviewing every two years a list of critical space technologies.

In terms of raw materials, Europe is the world's most unexploited continent. The European Commission should assess under which political and economic circumstances and in which areas it may be possible for Europe to decrease its dependence if it would exploit its mineral resources and raw materials. For the time being exploitation and mining of Europe's potential mineral resources are politically sensitive and economically not a business case.

4.5 A Long-term Strategic Guidance: Industrial Headline Goal 2030 linked to capability needs

The EU should develop two blueprints for the time horizon 2030, on the basis of which member states can organise the military and industrial capabilities in order to maintain an overall European full-spectrum capacity: An Industrial Headline Goal 2030 (IHG 2030) based on a revised Military Headline Goal 2030 (MHG 2030). With the help of these goals the EU member states should jointly plan national cuts and build up military and industrial capabilities in order to bring an end to the current un-efficient and dangerous lack of coordination.

Issue

Member States need to find common denominators in their approach to procurement policy in order to define a strategic European defence-industrial policy. First, European shared guidelines are needed for effective P&S programmes, to coordinate decisions at national level on current and future defence budget cuts, and for a role specialization aimed to prevent EU as a whole to lose certain military capabilities as a result of un-coordinated decisions across Europe. Second, this would contribute to the consolidation of EDTIB by strengthening those sectors in which Europe's defence industries hold a comparative advantage on the global market. Candidates to such strategic European industrial policy could be the aerospace (aircraft, UAV, satellites), missile, naval (including submarines) and protected-vehicle sectors.

Proposal

The states have to attune future cuts and jointly plan the (re-)construction of their defence industrial capabilities. The IHG 2030 should form a blueprint for the coordinated specialisation and the *pooling* of industrial capacities. They are built on the basic resolutions taken by the Heads of states and governments, ideally from the Defence Sector Council (see above) which also agrees on a MHG 2030 as the point of reference on which capabilities to have ready in the next decades.

Building the basis for the IHG 2030 the military headline goal has the following objectives:

- The identification of gaps and excesses in national capabilities and the development of a realistic EU level of ambition. This is where traditional strategy steps are changed: feasibility instead of wishful thinking will be the starting point. The challenge is great, nonetheless, because states have to accept that the units serve primarily joint European goals.
- The development of a working plan for EU military capabilities inspired by the EU level of ambition and the translation of this working plan into national and multilateral capability goals. The latter should facilitate a European built up of capabilities and the pooling of their militaries at the same time. Today states already have difficulties providing national contributions to the extent that would be needed.

It links the EU working plan with the national reforms and the monitors the implementation of these objectives. The analysis should show which state provides what and whether this leads to a build-up or a reduction of capabilities in the way that was envisaged.

The elaboration of MHG should take advantage from the Capability Development Plan (CDP) already elaborated and updated by EDA which makes an effort to look at the European capabilities needed in

a medium-term framework. This planning should be done in synergy with NATO defence planning process, through a constant liaison between EDA and the NATO Allied Command Transformation (ACT). The MHG should be explicitly linked to the EU level of ambitions, which require a debate and an agreement about MS on the kind of military operations Europeans want to be prepared to undertake together. The definition of MHG and IHG is not only a military or technical exercise, but pretty much a political one since it implies difficult decisions on priorities about defence and industrial policies. The possibility to include them in an overarching document such as a EU White Book on Defence should be explored.

In combination with the MHG 2030, an Industrial Headline Goal would have the following objectives:

- The assessment of the strengths and weaknesses of the EDTIB.
- The definition of objectives to reach in order to improve cooperation between national and EU industrial policies, especially in those sectors that should be technologically and industrially independent and where EU industries need to stay competitive in comparison to Non-European providers.

The MHG and the IHG should be the groundwork for a continuous evaluation process of military capabilities and industrial capacities.

Regarding the implementation of these documents, MS have to translate their content to the national capability planning, to the procurement cycles and to the industrial policies. In contrast to previous attempts, European similarities during operations should stand in the foreground. As interventions will get even more likely in the next 20 years – and Europeans are also more likely to act without substantial military support from US in the EU neighbourhood – MS states should concentrate their national reforms and defence planning on the creation of efficient European units.

While MS are fully responsible for their failure and success with the MHG 2030, with the IHG they are only able to influence the demand and procurement side of the defence market. Through a dialogue with EC – particularly the two Directorate General Industry and Competition – with the EDA, and with other important actors such as industry, the IHG would have an important advisory and consultation function, as it depicts the possible development of the demand side and the future industrial policies. At the same time, this would represent an offer to other actors to start a dialogue about the concrete implementation of these goals.

In order to link the EU defence and industrial policy in a more coherent way MHG and IHG should be connected with regard to content and procedure. The EDA should evaluate the plans every two years. This would start with military requirements and existing capabilities, their supply and the connected industrial requirements. The IHG should first state which existing capacities can support military capabilities, where gaps can be found and where the EU is dependent on non-EU providers. Inversely, the MHG shows where industrial capacities are important, where there is excess production and where capacity lacks can be found. That way, EU member states get a gradual overview of the consequences of their industrial and military decisions on their interdependencies, their capacity to act and the costs that result from that for the EU as a whole.

A strategic industrial policy should be linked to the full integration of the European defence market in order to increase competition and efficiency, as well as competitiveness of EDTIB vis-à-vis non-European defence industry. In order to achieve this goals, the 2009 “defence package” should be fully implemented by national authorities.

The IHG should also be linked to an improved protection of Key Strategic Activities (KSA) at European level. Indeed, as EDTIB become more globalized and more dependent on export in non-EU countries, a flexible, coordinated and effective protection of KSA is crucial for armed forces security supply is needed at European level.

Role of the EP

The EP should exercise political pressure on the EC and on the Council to establish both MHG and an IHG and actively contribute to the debate on EU level of ambitions in the defence domain as well as on EDTIB. In doing so, it could fully exploit the possibility offered by its status of co-legislator, provided by the Lisbon Treaty, on policy fields such as industry, market, trade, research, as well as on internal security. In addition, this active role can be translated into political initiatives, and can encompass a specific mention and conceptualization of MHG and IHG to be included into the contribution of the EP towards the December European Council which will discuss defence issues. Furthermore, studies on specific aspects of MHG and IHG can be commissioned by the EP, for example on the further assessment of EDTIB.

4.6 Empowering EDA

EU MS should empower the European Defence Agency. They should allow EDA to take a more active role in shaping the EDTIB thus representing the intergovernmental dimension of the EDTIB. The agency should receive the responsibility to assess EU MS's DTIB in terms of strengths and weaknesses and report this to the Council. In addition, it should receive more resources to set up joint programs that can potentially change the defence industrial structure in Europe.

Issue

The EDA is the core institution within the intergovernmental pillar of European Defence. As the other institutions, EP and European Commission, seek to increase their standing in European Defence, EU MS risk losing influence in EU Defence: because the intergovernmental pillar is comparatively weakened, and because the EDA does not have similar instruments and competences to play at the same level as EP and Commission.

The EDA can be the crucial element that allows the member states to keep the balance, within the European settings, in their favour. Many decisions in the area of defence already require the EP and the Commission to be involved, be it in industry, technology or trade policy. Member states would harm themselves if they were to continue (as they do in the moment) to refuse EDA the right to stand up and effectively defend member states interests. Put differently, it is the member state's very interest to establish EDA as *their* agency, that is, as the genuine player to defend member state's goals and equip the agency accordingly.

Proposal

MS should aim to let their Agency play at the same level (in terms of competences) as EP and Commission and become more effective in implementing the EDTIB. In order to play its role much better vis-à-vis the other institutions, MS would have to let EDA become more independent and enable the agency to influence the structure of the MS DTIBs. Hence, Heads of State and Government should reaffirm EDA's very comprehensive mandate as anchored in the EU Treaty: in fact, the agency is allowed to deal with almost all aspects of defence and defence industry, except of the market dimension, which is for the European Commission only.

EU MS should give the Agency two explicit tasks: First: to assess EU MS's DTIBs in terms of strengths and weaknesses and report this to the Council; and second, to change the defence industrial structure towards a more integrated EDTIB. To implement this double task MS would have to enable EDA: for the strategic monitoring and reporting task, MS would have to lend EDA more executive power. In order to change the EDTIB structure, they should confer to EDA more resources to set up significant joint programs that can potentially induce change. Whether such an approach works

could be tested during the defence review that MS have already envisaged to carry out. EDA could receive freedom for a limited time followed by a subsequent evaluation.

Role of the EP

The financial support could come from EP. At the same time EP has to respect that funding offers are perceived by some MS as a threat to functioning of the agency. Hence the rules MS would have to accept have to be very clear and respect the intergovernmental character of the EDA. EDA does not have to change its internal mechanisms or structure.

4.7 Getting Better Value for Money: Consolidation of Demand

Member states should reengage into the pooling of demand, not only for Equipment but also for R&T and Services. Keeping key technological capabilities may be easier or even only possible by launching European flagship R&D and procurement programmes. As efficiency of spending and the coordination with defence related Community policies are key, MS should engage early with the European Commission and the European Parliament.

Issue

The fragmentation of demand is causing waste of resources and is harming EDTIB competitiveness. Consolidation can happen either through joint R&T projects or through bundling demand for shared capability needs – i.e. by harmonization of demand, synchronization of procurement, cooperative or common procurement.

Proposal

As discussed in Section 4, a number of actions can be taken to reform and make a more efficient use of existing funds related to the demand side of the defence market:

- pool R&T and R&D funds between national and EU level as well as among EU institutions such as EC, EDA and ESAs, and focus them on dual use technologies
- launch of flagship European R&D and procurement programmes on key military capabilities such as UAV, based on a Common European Requirement
- establish reinvestment pools to finance joint acquisition of new capabilities
- reform and expand of the Athena mechanism in order to purchase equipment for CSDP missions together

Consolidation of demand is a matter of defence policy and needs to occur along politically defined strategic lines, possibly based on the aforementioned European Defence Review and MHG 2030. European demand – with harmonized and controlled requirements – needs to be bundled with greater coherence and efficiency, in order to generate according revenues and economies of scale at the European level.

Having said that, as a matter of fact the EDTIB will be more and more dependent from exports since European defence budgets have been cut and will continue to decline in the next years. At the same time, recipient countries such as Brazil and India increasingly use their procurement programmes to build up autonomous DTIB, while the US are likely to further support foreign military sales in order to protect American industries from the effects of next cuts to defence budget.

The external dimension of European action in relation to EDTIB is beyond the scope of this paper. However, considering the European dependence from American suppliers underlined by this study, it is worthy to make the point that a Transatlantic Trade Investment Partnership (TTIP) between US and the EU should be pursued and should include measures to ensure real reciprocity of access between American and European market, as well as a level playing field which takes into account the obvious differences which characterize the DTIB on the two shores of the Atlantic.

Role of the EP

The EP role in this regard should be to advocate a more efficient and effective use of the European taxpayers money. The quality of the debate on defence procurement can be improved by an EP voice able to move beyond ideological debate and national divergences, and to focus on how to get better value from money through more Europe in the defence domain. Hearings, studies and generally speaking an active political role of the EP on these issues can contribute to this end. With regards to the TTIP, the EP should exploit its power as co-legislator on trade and market issues in order to contribute to a fair transatlantic deal.

4.8 MS should explain future rules and preferences for industrial activities in the EDTIB

The EU member states should make it plain to the defence industry what are the industrially relevant sectors for defence and what are the models on the basis of which they want to conduct business, especially with regards to P&S.

Issue

In recent years Pooling and Sharing (P&S) has been an important element of the debate on the defence procurement and the consolidation of demand, but so far has not realized its potential. In line with previous recommendation on MHG and the consolidation of demand, a step change is needed in this regard.¹⁰⁰

Proposal

From the very beginning, the real saving potential in the medium and long term lies in permanent commitment and mutuality. Everything MS are building together, they can jointly operate afterwards. The lion's share of the expenses for equipment (50-80%) is not spent on the initial purchase but on operation and maintenance, which is increasingly shouldered by the industry.

If the states want to seize these saving potentials they should include the industry in their plans at an early stage. They should point out the business opportunities on the growing P&S market: which business models and which sectors would be relevant?

At the same time, the states would have to affirm the rules by which they are intending to place orders. The instruments provided by the European Commission – the 2009 defence package – forms the basis for this. It should be immediately applied to all defence projects. Without the insurance of a fair market competition, the firms are likely to stick to the old national rules. Regarding the business models, the states should demand the industry to make offers that do not need any pre-investments, which means they need options for leasing, for example for helicopters, and the outsourcing of services.

In the short term, states could enhance industrially relevant P&S in civil and military CSDP operations especially through logistical support of interventions: a transportation pool (air and sea) or the supply of mobile infrastructures, water, electricity and subsistence could thwart the forcing up of prices. On the other hand, states could focus on the medical supply of mobile care centers and civil-military sanitary facilities. This would also mean that some states would specialize in this area, which could lower costs.

¹⁰⁰ James, A. D., "Smart Business Models: Industry's Role in Efficient Multinational Development and Procurement" in: Royal United Services Institute (Ed.), *Reflections on Industry's Contributions to Smart Defence*, Occasional Paper, London, October 2012, <http://www.rusi.org/events/past/ref:E4FB4E158D4D20/> (23.10.2012), pp. 22-25.

Role of the EP

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4.9 EU Structural Funds to Support EDTIB Diversification and Restructuring

European Parliament, EU MS and European Commission should work out a comprehensive approach for EDTIB Diversification and Restructuring and assess the role of structural funds in that. They have to be placed in the context of the other instruments. Moreover the side effects like short-term support may prevent long-term restructuring, and uphold duplication.

Issue

The diversification EDTIB portfolios from military equipment to security and civilian markets, particularly through dual-use technologies, can benefit industrial adaptation to current budgetary reality, its restructuring and consolidation. In this context, structural funds may play a role. A big share of the Cohesion funds money for the current fiscal frameworks has not been spent – the sum is some 10s of billions of Euros – and the EC and EDA are currently working on opportunities to exploit resources available from the Cohesion fund.

However, structural funds can only be applied to a limited number of cases (R&T, specific territorial regions). Hence structural funds can only be one element of a more comprehensive approach. As these funds have not been made to support single sectors but socio-economic conditions not only inherent limitations of the funds apply but also potential incoherencies may surface if the measure is combined with other instruments. MS, Commission and EDA have to address key questions before they spend money in the name of defence.

Proposal

As discussed in the previous section, structural funds may offer a solution for areas where a gap in technology or industry exists and a market is plausible on competitive levels with the world market. However, a closer look shows the limits of this approach. Indeed, such funds may be applied only to a limited number of cases, in particular SME with dual-use production, R&T activities, or specific less developed regions where EDTIB factories are located. Hence structural funds can only be one element of a more comprehensive approach. Structural funds could be also used for conversion style policies, an option would be more in line with the foreseeable situation of certain sectors of EDTIB and with the original intent of the funds.

Role of the EP

The EU could have a serious role to play in coordinating and harmonizing approaches. First, it can raise the awareness for the limited success national approaches have had until today, and are likely to have given the budget decline and globalisation in defence matters, second, to discuss EU-level options that mitigate problems MS face but cannot manage. This includes the role which can be played by structural funds.

BIBLIOGRAPHY

- Anderson, Guy, *Major Defence Markets in an Age of Austerity – Trends and Developments*, IHS Jane's Report, October 2011.
- Archer, Joshua, *A Reality Check for the U.S. Semiconductor Industrial Base*, CSIS Washington Current issues No 32, April 2013, p. 2.
- Bekkers, F. et al, *Development of a European Defence Technological and Industrial Base*. Main Report, 2009 <http://ec.europa.eu/enterprise/sectors/defence/files/edem_final_report_en.pdf> (23.10.2012).
- Ben-Ari, Guy et al., *European Defense Trends. Budgets, Regulatory Frameworks, and the Industrial Base*, in: CSIS Report, Washington D.C. 2012.
- Bialos, J., Fisher, C., Koehl, S. (Eds.), *Fortresses and Icebergs: the evolution of the Transatlantic Defense Market and the Implications for US national security policy*, Center for Transatlantic Relations, Washington, 2009.
- BIPE (Ed.), *Anticipating Restructuring in the European Defense Industry*, Paris, 2008.
- Bitzinger, Richard A., (Ed.), *The Modern Defense Industry: political, economic, and technological issues*, Praeger Security International, ABC-CLIO, 2009.
- Bundesministerium für Wirtschaft und Technologie, Marktpotenzial von Sicherheitstechnologien und Sicherheitsdienstleistungen, Thema: *Der Markt für Sicherheitstechnologien in Deutschland und Europa – Wachstumsperspektiven und Marktchancen für deutsche Unternehmen*, 2009, <http://www.asw-online.de/downloads/Studie_Sicherheitstechnologien_09.pdf>.
- Cauzic et al., *A comprehensive analysis of emerging competences and skill needs for optimal preparation and management of change in the EU defence industry*, Final Report, Eurostrategies, May 2009.
- Committee on Armed Services United States Senate, *Inquiry into Counterfeit Electronic parts in the Department of Defense Supply Chain*, Report, May 2012, Washington DC.
- Darnis, Jean-Pierre et al., *Lessons learned from European Defence Equipment Programmes*, EUISS Occasional Paper 69, October 2007.
- Defense News (Ed.), *Defense News Top 100*, 2012.
- Drakos, Konstantinos, *Security Economics: A guide for Data Availability and Needs*, in: Defence and Peace Economics, 2011, 22:2, pp.147-159.
- European Commission, (Ed.) *Rüstungsindustrie; Umfassende Sektoranalyse der neuen Kompetenzen und der wirtschaftlichen Aktivitäten innerhalb der Europäischen Union*, Generaldirektion für Beschäftigungspolitik, soziale Angelegenheiten und Chancengleichheit, 2009.
- European Council decision 2012/698/CFSP of 13 November 2012 on the establishment of a warehouse for civilian crisis management missions.
- European Defence Agency (Ed.), *Defence Data: EDA participating Member States in 2010*, Brussels, 2010.
- European Defence Agency (Ed.), *Defence Research & Technology Expenditure*, Data Portal: <<http://www.eda.europa.eu/DefenceData/EDA?DDYear=2010#2>> (16.08.2012).
- European Defence Agency (Ed.), *Military Information 2010*, Brussels, 2010.
- European Defence Agency (Ed.), *Study on how to measure Strengths and Weaknesses of the DTIB in Europe*, Brussels, 2009.

- European Defence Agency, *Background Note on Capability Development Plan*, 2008, <http://www.consilium.europa.eu/uedocs/cmsUpload/080708-CDP_Press_Background_brief%20.pdf>
- European Economic and Social Committee (Ed.), *Opinion of the European Economic and Social Committee on the Need for a European defence industry: industrial, innovative and social aspects*, Brussels, 2012
- European Parliament and the Council, Proposal for a Regulation establishing Horizon 2020 - The Framework Programme for Research and Innovation (2014-2020), EC, COM (2011)809 final, 30/11/2011.
- European Parliament resolution of 12 September 2012 on the Annual Report from the Council to the European Parliament on the Common Foreign and Security Policy (12562/2011 - 2012/2050(INI))
- European Parliament, *The cost of non-Europe in the Area of Security and Defence*, Policy Department External Policies, Study, Brussels, June 2006.
- European Parliament, *The Protection of the European Defence Technological and Industrial Base*, Policy Department External Policies, Briefing Paper, Brussels, October 2007.
- European Security and Defence Assembly, *The transatlantic defence equipment market*, Assembly of Western European Union, Report, June 2010.
- EUROSTAT: *Key figures on European business*, p. 34: Non-financial business economy <http://epp.eurostat.ec.europa.eu/cache/ITY_OFFPUB/KS-ET-11-001/EN/KS-ET-11-001-EN.PDF>.
- Fiott, D., *Safeguarding the EDTIB: the Case for Supervising non-EU FDI in the Defence Sector*, Egmont Security Policy Brief No.41, December 2012
- FOI/ONERA/RAND, *Addressing Key European Defence Technology and Industrial Dependences*, Executive Summary, 11/05/2012
- Fondation pour la Recherche Stratégique, *The "Transfer Directive": perceptions in European countries and recommendations*, Recherches & Documents N°04, Paris, 2010.
- Geyer, Michael, *Deutsche Rüstungspolitik: 1860-1980*. Suhrkamp, Frankfurt am Main 1984
- Guay, Terrence/Callum, Robert, *The transformation and future prospects of Europe's defence industry*, in: *International Affairs*, 2002, 78:4, pp.757-776.
- Hagelin, Björn et al, "Transparency in the arms life cycle", in: *SIPRI Yearbook 2006: Armaments, Disarmaments and International Security*, p.245-267, Stockholm.
- Hartley, Keith, "Collaboration and European Defence Industrial Policy", in: *Defence and Peace Economics*, 2008, 19:4, pp.303-315.
- Hartley, Keith, "Creating a European Defence Industrial Base", in: *Security Challenges*, 2011, 7:3, pp.95-111.
- Hartley, Keith, "The Arms Industry, Procurement and Industrial Policies", Chapter 33 in: *Handbook of Defense Economics*, Volume 2, edited by Sandler and Hartley, 2007.
- Hartley, Keith, *Defence Economics and the Industrial Base*, Centre for Defence Economics, University of York.
- Hartley, Keith, *Defence Industrial Policy in a Military Alliance*, in: *Journal of Peace Research*, 2006, 43:4, pp.473-489.

- Hartley, Keith, *The Economics of Defence Policy: A New Perspective*, London 2011.
- Hartley, Keith, *White Elephants? The Political Economy of Multi-National Defence Projects*, The foundation for European Reform, October 2012.
- Hartley, Keith/Bellais, Renaud/Hébert, Jean-Paul, "The Evolution and future of European defence firms", in: *War, Peace and Security, Contributions to Conflict Management, Peace Economics and Development*, 2008, 6, pp.83-104.
- Heuninckx, Baudouin, *A Primer to Collaborative Defence Procurement in Europe: Troubles, Achievements and Prospects*, in: *Public Procurement Law Review*, 2008, 17.3, pp.123-145.
- Hilpert, Hanns Günther/Mildner, Stormy-Annika, *Fragmentation or Cooperation in Global Resource Governance?*, *SWP Research Paper*, Stiftung Wissenschaft und Politik (SWP/German Institute of International and Security Affairs), Berlin, March 2013.
- IHS Jane's World Defence Industry, *Babcock Defence and Security*, October 2012.
- IHS Jane's World Defence Industry, *Babcock International Group plc*, October 2012.
- IHS Jane's World Defence Industry, *BAE Systems*, October 2012.
- IHS Jane's World Defence Industry, *DCNS*, July 2012.
- IHS Jane's World Defence Industry, *Defence Industry Country Overview, France – Defence Industry*, July 2012.
- IHS Jane's World Defence Industry, *Defence Industry Country Overview, Italy – Defence Industry*, October 2012.
- IHS Jane's World Defence Industry, *Defence Industry Country Overview, Poland – Defence Industry*, September 2012.
- IHS Jane's World Defence Industry, *Defence Industry Country Overview, Spain – Defence Industry*, January 2012.
- IHS Jane's World Defence Industry, *Defence Industry Country Overview, United Kingdom – Defence Industry*, October 2012.
- IHS Jane's World Defence Industry, *QinetiQ*, September 2012.
- IHS Jane's World Defence Industry, *Rheinmetall*, November 2012.
- IHS Jane's World Defence Industry, *Rolls-Royce plc*, November 2012.
- IHS Jane's World Defence Industry, *Safran Group*, November 2012.
- IHS Jane's World Defence Industry, *Thales*, July 2012.
- Ikei/IndustriAll, *Study on the Perspectives of the European Land Armament Sector*, Final Summary Report, Donostia-San Sebastian, November 2012.
- International Institute for Strategic Studies (Ed.), *Chapter Four: Europe*, in: *The Military Balance 2013*, 113:1, pp.89-198, London, 2013.
- International Institute for Strategic Studies (Ed.), *The Military Balance 2012*, London 2012.
- James, Andrew D., "Smart Business Models: Industry's Role in Efficient Multinational Development and Procurement", in: Royal United Services Institute (Ed.), *Reflections on Industry's Contributions to Smart Defence*, Occasional Paper, London, October 2012, <http://www.rusi.org/events/past/ref:E4FB4E158D4D20/> (23.10.2012).
- Küchle, Hartmut, *Die deutsche Heeresindustrie in Europa: Perspektiven internationaler Kooperationen und industriepolitischer Nachholbedarf*, Hans-Böckler Stiftung, Düsseldorf, 2007.

- Markusen, Ann R./Costigan, Sean S. (Ed.), *Arming the Future: A Defense Industry for the 21st Century*, Council on Foreign Relations Press, New York, 1999.
- Marrone Alessandro, *Defence spending in Europe in light of the economic crisis*, IAI, October 2012.
- Masson, Helene/ Marta, Lucia/ Leger, Patrick/ Lundmark, Martin, *The "Transfer Directive": perceptions in European countries and recommendations*, (Fondation pour la Recherche stratégique). Recherches & Documents N°04, Paris, 2010.
- McGuire, Martin C., "Economics of Defense in a Globalized World", Chapter 21 in : *Handbook of Defense Economics*, Volume 2, edited by Sandler and Hartley, 2007.
- Ministère de la Défense (Ed.), *Calepin international des principales entreprises travaillant pour la défense*, Direction Générale de l'Armement, Paris 2012.
- Mölling, Christian/Brune, Sophie-Charlotte, *The impact of the financial crisis on European defence*, Subcommittee on Security and Defence, European Parliament, Brussels, 2011.
- Mölling, Christian: "Options for a Regime on Intra European Transfers of Defence Items" , in: Daniel Keohane (ed): *Opening Europe's Defence Market*. Chaillot Paper 113, Paris, EU ISS, 2008: 51-88.
- Mölling Christian, *The defence industrial landscape in Europe*. SWP Working Paper, to be published in 2013.
- NATO (Ed.), *Financial and Economic Data Relating to NATO Defence*, April 2012, <http://www.nato.int/nato_static/assets/pdf/pdf_2012_04/20120413_PR_CP_2012_047_rev1.pdf> (23.10.2012).
- Nones, M., Gasparini, G. and Marrone, A., *Europe and F-35 JFS programme*, IAI Research Papers, 2009
- Nones, M., *Le attività strategiche chiave: aspetti metodologici, giuridici, industriali e militari*, CEMISS, 2012.
- Royal United Services Institute (Ed.), *The Defence Industrial Ecosystem: Delivering Security in an Uncertain World*, Whitehall Report 2-11, London, 2011.
- Salonius-Pasternak, C., *Not just another arms deal: The security policy implications of the United States selling advanced missiles to Finland*, The Finnish Institute of International Affairs, September 2012.
- Schmitt, Burkard, *The European Union and Armaments. Getting a Bigger Bang for the Euro*, European Union Institute for Security Studies, Chaillot Paper No. 63, Paris, 2003.
- Stockholm International Peace Research Institute (Ed.), *SIPRI Yearbook 2006: Armaments, Disarmament and International Security*, Stockholm 2006.
- Stockholm International Peace Research Institute (Ed.), *SIPRI Yearbook 2008: Armaments, Disarmament and International Security*, Stockholm 2008.
- Stockholm International Peace Research Institute (Ed.), *SIPRI Yearbook 2011: Armaments, Disarmament and International Security*, Stockholm 2011.
- Stockholm International Peace Research Institute (Ed.), *SIPRI Yearbook 2012: Armaments, Disarmament and International Security*, Stockholm 2012.
- Stockholm International Peace Research Institute (Ed.), *The SIPRI Top 100 arms producing and military services companies in the world excluding China*, 2011.
- Valasek, Thomas, *Surviving Austerity. The Case for a New Approach to EU Military Cooperation*, Centre For European Reform, 2011.

APPENDIX 1: Methodological notes

Sectors assessment: Most figures are sourced from our own database. Mains sources for that are SIPRI yearbooks, companies' Annual Reports, the Calepin - issued by the Ministère de la Défense / Direction Générale de l'Armement, Paris. and Interviews . Figures for Thales are partly estimated and calculated.

Sectors and related sub sectors that were assessed in the study.

SECTOR	AEROSPACE	LAND SYSTEMS	NAVAL	ELECTRONICS
SUB-SECTOR	Aircraft Engines Missiles Space	Artillery, Military Vehicles Small arms/ammunition	Naval	Electronics

Currency conversion: SIPRI collected the data in local currency and at current prices. For the conversion from local currencies to US-Dollars, SIPRI uses the IMF-Database annual average of market exchange rates. We used the OANDA- annual average of exchange rates to translate the SIPRI-numbers to EURO. It can be expected that the conversions lead to minor errors (concerning rounding). Furthermore rate of inflation and change in civil- and military-turnover giving occasion, to use the data with caution.

Employment figures are calculated on the base of the % share of sectors turnovers in total sales. The % share is applied to the total employment figures. Hence the rule of thumb was: share of turnover equals the share of workforce in employed people. The calculation of the employment in the sectors is based on the assumption of a productivity rate of 1. The real productivity factor according to other sources may range between 0.8 and 1.1 depending on factors like inter-sectoral knowledge transfer and dual-use options in each sector. Overall employment figures for the sectors where not available is usable forms.

Share of Sectors in Total Activity /Cross-Sector diversification: is calculated as subtotal of companies' activity in each sector as share of total military activity (sum of all sectors).

Defence Dependence / Share of Activity in all Sectors in Total Sales 2011 is calculated as total of companies' activity in all sectors as share of total sales.

% Shares in Tables: Percentage of shares do not sum up to 100% due to rounding differences.

APPENDIX 2: Report from the workshop and the hearing on European Development Defence Technological and Industrial Base (EDTIB)

27.05.2013, European Parliament, Brussels

prepared by Anita Şek, TEPSA

1. Workshop “Development of a European Defence Technological and Industrial Base (EDTIB)”

Introduction

The workshop allowed Michael GAHLER, MEP, Rapporteur, Subcommittee on Security and Defence, to meet Dr Christian MÖLLING, German Institute for International and Security Affairs (SWP), and Valerio BRIANI, Istituto Affari Internazionali (IAI), experts from an international team who under the auspices of Trans European Policy Studies Association (TEPSA) prepared a study on the “Development of a European Defence Technological and Industrial Base (EDTIB)”. The participants exchanged views on the development of EDTIB, particularly in light of preparations for the December 2013 European Council on the Common Security and Defence Policy.

Expert’s presentation

After introductory remarks by Michael GAHLER, Christian MÖLLING presented the analysis on current state of play of EDTIB. He stated that DTIB is all about ensuring the supply of defence material and services against political and industrial risks. EDTIB is the difference that European Union (EU) makes to the EU Member States’ security of supply, offering a less duplicative, more integrated, more diversified, more cooperative and more consolidated portfolio within ‘the 3Cs’: Capabilities, Competences, Competitiveness. In consequence, the 2007 EDTIB Strategy was introduced in order to alleviate the tension between the political and industrial dynamics. The result is however poor; half of a decade has been lost and the truth is that EDTIB is shrinking, due to marginal Europeanization of policies and industries, continued nationalisation and increased globalization. Therefore, a revised approach to defence industrial aims and means of EU Member States is needed. Christian MÖLLING proposed a set of recommendations towards a comprehensive reform of the European defence industrial sector: 1. to revise the EDTIB Strategy; 2. to introduce an annual Defence Sector Council; 3. to permanently monitor EDTIB; 4. to manage global dependencies; 5. do define Industrial Headline Goal 2030; 6. to empower European Defence Agency; 7. to consolidate the demand; 8. to encourage Member States to indicate rules and preferences on EDTIB activities; and 9. to use structural funds. The expert added that all of the recommendations shall be implemented in a specific sequence and that a cycle of revision of the strategy should allow the stakeholders to maximise the effects of EDTIB.¹⁰¹

Discussion

In the following Q&A session, Michael GAHLER agreed that the evaluation of the 2007 Strategy, as well as of other documents related to EDTIB, must start with an assessment of what was and was not eventually implemented. The experts Christian MÖLLING and Valerio BRIANI pointed out the lack of European awareness and a common understanding on what the EDTIB actually means and why it is so crucial for ensuring security in Europe. This is especially relevant with regard to on-going globalisation processes and the fact that EDTIB does not anymore evolve on a purely geographical European territory, what makes the EU dependant on non-European (or no-more

¹⁰¹ For further details see the PowerPoint Presentation.

European) suppliers. EDTIB must be further developed in order to decrease dependency, increase competitiveness and manage the current duplication, overlap, fragmentation and imbalance existing among the European countries (developed West vs. underdeveloped East companies, with an exception of Polish BUMAR). Moreover, global shifts in defence spending, with European market and defence budgets decreasing, forces the industries to go beyond their national borders, aiming not only at the European, but most of all at the global market. That is the reason why the EU Member States should immediately engage in greater consolidation of demand through joint research and development (R&D) projects and through bundling demand for shared capabilities. Moreover, defence firms should be encouraged to expand their activities into the security and civilian fields to buffer against cuts to defence budgets and to offer alternative options *vis-à-vis* export markets. Christian MÖLLING assessed the current level of ambitions of European politicians with regard to EDTIB as shrinking, and is of opinion that the political moment is being missed. The chance that the forthcoming December European Council brings, signifies a window of opportunity which opens only once every five years.

Closure

In his closing remarks Michael KEHLER stated that it is a role of both the European Parliaments and the European Commission, under the lead of the High Representative/Vice President Catherine Ashton, to keep this momentum.

2. Public Hearing “European Defence Industry Strategy”

Background

In the hearing, chaired by Arnaud DANJEAN, Chairman of the Committee on Security and Defence, participated the following experts: Eric TRAPPIER, Chief Executive Officer at Dassault Aviation/Chairman of ASD Defence Commission, Daniele ROMITI, Chief Executive Officer of AgustaWestland, Jan PIE, Secretary General, Swedish Security and Defence Industry Association, and Dr Christian MÖLLING, supported by other members of the research team Valerio BRIANI and Tomas VALASEK.

Presentations by representatives of the industry

Eric TRAPPIER presented the importance of defence sector for European citizens with regard to the current financial and institutional crises, a growing technological gap with the United States and the shifting balances towards new competitors, such as China. Particularly pertinent are questions related to cost-efficiency and national sovereignty. Eric TRAPPIER was convinced that the only way for the EU in order to not repeat its mistakes from the Balkan wars, Libya and Mali, is to immediately build the common European defence industry, e.g. to master high-tech, to invest in R&D etc. To achieve it, Eric TRAPPIER as a representative of industry, proposed the following solutions: 1. to set up a transparent legislative framework; 2. to ensure the security of supplies; 3. to consolidate the industry; 4. to provide guidelines and the mapping of skills already existing throughout the EU; 5. to invest into (new) research programmes; and 6. to bear in mind the special role of the defence sector while negotiating the Free Trade Agreement with the US, as the European side must be protected until it is on equal footing and able to compete with Americans. Naturally, as noted by Eric TRAPPIER, none of these might be achieved without close cooperation between the EU Member States.

Daniele ROMITI stated that the defence industry in Europe must aim not only to survive, but that it must be more competitive. Thus it is crucial to invest in R&D, especially in light of the American policy becoming much more aggressive in the last years. According to Daniele ROMITI, his

company AugustaWestland is a leader in its field, having invested 12% of its income into new technologies, and having created the most advanced programmes, such as e.g. the Eurocopter. The company is a perfect example that even in times of tougher economic situation, it is possible to evolve. Daniele ROMITI believed that the good practices of AugustaWestland, such as: consolidation, integration, rationalisation and smart expenditure or economies-of-scale, shall be an example for the whole Europe. Nevertheless, he admitted that in the current circumstances of cutting spending on R&D, it is becoming harder to keep the competitiveness *vis-à-vis* the global competitors.

Jan PIE analysed the process which his institution, the Swedish Security and Defence Industry Association, has undergone in the last years. The association is nowadays a vigorously functioning, cost-efficient system of platforms, less and less dependent on European demands, and increasingly concentrated on emerging markets. From his side, Jan PIE perceived a couple of challenges for Europe to be especially dangerous, mainly: the economic recession, the ineffective EDTIB and a lack of key enabling capabilities, reaching a critical tipping point. The way forward in this regard could be in four-steps: firstly, to welcome the European Commission's instruments into the sector; secondly, to monitor the system on implementation of a defence package; thirdly, to harmonize the requirements and consolidate the demand; finally, to create market-driven clusters - centres of excellence, not politically, but pragmatically designed and able to finance themselves. According to Jan PIE, only on a true level playing field Europe can have the potential to meet the demands of the 21st century.

Debate

In the discussion following the presentations of industrial representatives, Members of the European Parliament took part, *inter alia*: Michael GAHLER, Maria E. KOPPA, Geoffrey VAN ORDEN and Krzysztof LISEK.

Michael GAHLER took as a starting point the present European perspective on how to achieve more with less within the new legislative framework, particularly in light of HORIZON 2020, and questioned how this could be employed in the example of the drone programme and civil-military relations. Maria E. KOPPA wondered to what extent the required consolidation of the sector, as well as the restructuring processes would result in the loss of jobs and what changes they would bring to the small and medium enterprises, the backbone of European economy. Geoffrey VAN ORDEN proposed the sector to focus more on bi- and trilateral projects. Krzysztof LISEK pointed out on one side fragmentation and differentiation of the defence firms, and on the other overlapping and duplication of some e.g. types of equipment produced by them. He was also concerned if the consolidation of the sector would result in the decline and fall of the smaller enterprises.

Expert's intervention

After the comments and questions raised by the MEPs, the voice was given to the research expert. Christian MÖLLING presented the main findings on the state of play of EDTIB and a set of recommendations as proposed by his research team in a study delivered to the European Parliament and announced earlier that day on a Workshop "Development of a European Defence Technological and Industrial Base" (please see above). He answered the concerns on the loss of jobs, underlining that the sector of defence matters not in terms of jobs created, constituting e.g. in Germany just a tiny fraction of all employed, but because of its strategic importance and the necessity of being secured and independent from others.

Answers by representatives of the industry

Jan PIE replied that the European market still remains closed and that the higher number of countries involved in the project, the harder it becomes to manage it. Basing his opinion on the experience of the Swedish Security and Defence Industry Association, Jan PIE said that a concentration on exports resulted in increasing the number of jobs. *En effet*, the only way to lose jobs at a European scale is to stick to the current *status quo* of ineffective European defence industry. Daniele ROMITI added that the best way for the EU to strengthen its defence sector is to secure both civic-commercial and military demands via the development of platforms following the example of AgustaWestland. Finally, Eric TRAPPIER drew attention to a necessity of respecting intellectual property rights and once again reiterated the impossibility of the EU to compete on equal footing in the current circumstan

APPENDIX 3: Workshop power point presentation

European Defence Technological and Industrial Base

Workshop & Hearing
at the
European Parliament

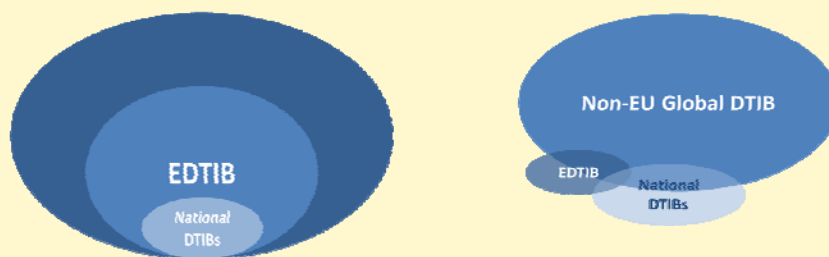
27th May 2013

What is it all about?

- Issues of DTIBs is all about how to ensure the supply of defence material and services
 - Political risk
 - Industrial risk
- Growing tension since End of Cold War
 - National Politics on Security of Supply (SoS)
 - International structure of supply chains
- 2007 EDTIB Strategy to alleviate the tension between pol. and industrial dynamics
- Half decade lost: EDTIB shrinking
 - Continued nationalisation
 - increased globalization
- Revised approach to Defence industrial aims and means needed

EDTIB SoS from national to European Basis

- MS agreed EDTIB Strategy 2007: national SoS no longer sustainable:
 - Ensure MS access to effective DTIBs by shift SoS from national to EU level:
 - Political vision Congruence of political and industrial landscape



How do we recognize an EDTIB when we see it?

- EDTIB is the difference that EU makes to EU MS SoS:
 - less duplictive, more integrated,
 - 3C
- Political and industrial dimension
 - Political:
 - International
 - National
 - Industrial
 - Structure
 - Qualities
 - Non EU Dependencies

Political „E“

- International
 - Prevailing habits of armaments cooperation: Juste retour, Art 346,... former 296 former 223
 - No effect on policy but proliferating institutions: defence planning, EDA, EC, Lisbon treaty
- National:
 - „LoI +“-States: 80/20 Rule, ca EURO 81 bn turnover,
 - procurement, DI- and market policies have not changed significantly, national influence kept – influences supply side
 - Producers still buy at home: AFV, Aircraft, Vessels,
 - Non producers don't care about EU or Non-EU purchase: JSF, F-16
- Future
 - Decreasing multinat – more national or transatlantic (air)
 - Less procurement - More service

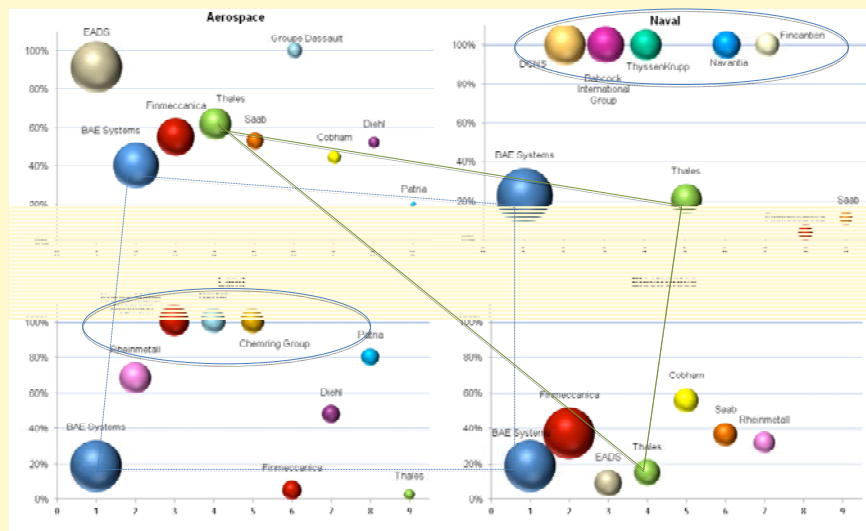
Overview Defence sectors

	Aerospace sector	Land sector	Naval sector	Electronics
No of companies	9	9	9	10
Sector Turnover (bn €)	32.9	9.8	14.9	17.1
Centers	UK, FR, DE, IT, SE	UK, FR, DE, IT, FIN	UK, FR, ES, SE, DE, IT	UK, FR, IT, DE, ES, SE
Personnel	122,122	41,530	69,542	114,496
Collaborative programmes	Many serious programmes: JSF, Typhoon, Engines, NH 90	Virtually none, Boxer	FREMM	?
Non EU Supply	Space UAV	No	No	Yes
Defence dependence	50% (25-95%)	71% (32-96%)	73%(37-100%) 43% (3-100%)	49% (19-95%)
Cooperation	Transnational companies Intergovernmental programmes	Ad- hoc (Joint ventures)	License production	?
Consolidation	Medium-High, national and international	Low international High national	Low international Medium-High national	?

Industrial „E“

- Top companies are more than European global players
 - BAE, EADS, Thales, Finmeccanica,
 - Concentration: top 5 = 2/3 of Turnover of top 40
 - Regional imbalance: West VS East
- Sectors: (Air, Land, Sea , Electronics)
 - Consolidation in Land and Sea currently hits national barriers
 - Specific aspects:
 - Land
 - Sea
 - Air
 - Electronics

Cross sector perspective



Dependencies



Type of dependency	Example
Political	Japan not delivering defence material
Bureaucratic	US-ITAR regulations
Industrial	Production of hard drives concentrated in one region in Asia
Technological	US and Asian market dominance in advanced semiconductors
Material	Chinese quasi-monopoly on white phosphor
(Export-)Market	The Lol DTIBs rely on non-domestic markets for 60% of their turnover on average

Potential Future EDTIB

Caught between Nationalisation and Globalisation

Continued Nationalisation

- Industry related policies
- procurement

Increased Globalisation

- Imports
- Exports
- Market & Prod. shifts



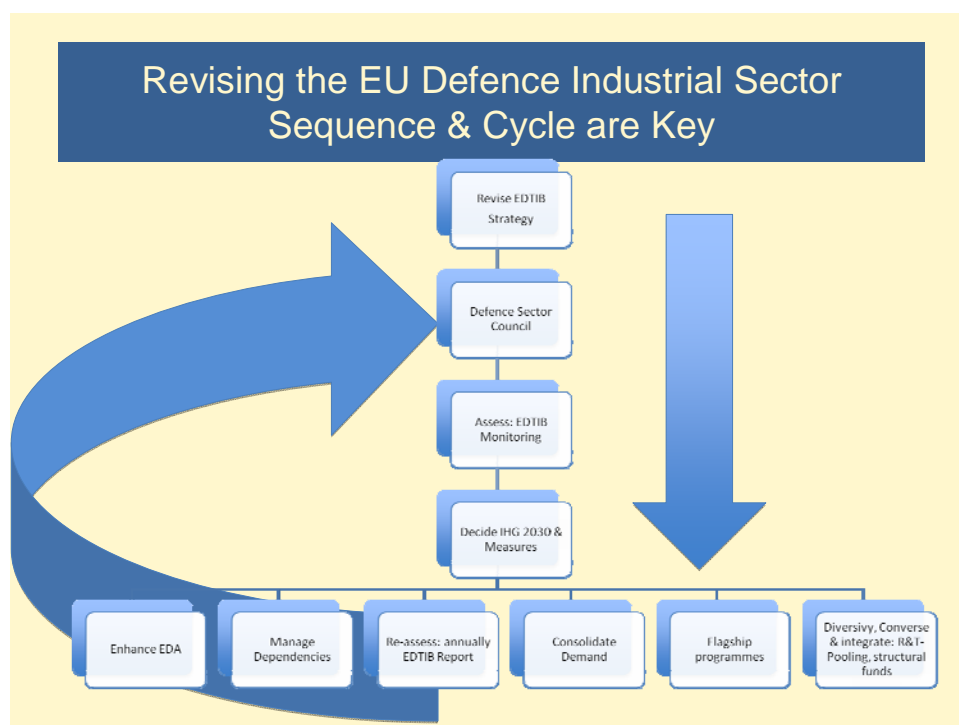
The EDTIB increasingly exists as relations outside the EU Territory

EU- Level Options assessed

- Protection of EDTIB Elements
- Pooling of R&T
- Joint procurements
- Structural funds

Recommendations

1. Revise EDTIB Strategy
2. Annual defence sector Council
3. Review & Monitor EDTIB
4. Managing global dependencies
5. Industrial Headline Goal 2030
6. Empower EDA
7. Consolidate Demand
8. MS indicate rules and preferences on EDTIB activities
9. Use structural funds



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