



EU-Japan Centre
for Industrial Cooperation

日欧産業協カセンター

An assessment of key EU industrial sectors open to Japanese technological cooperation and investment

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NOTE: The project is intended to generally highlight, to the Japanese audience and potential investors and industrial cooperation partners, the current status and potential opportunities offered by EU Industry, based on a non-exhaustive analysis of a sample of industrial sectors, in the context of the new impetus provided by the latest “EU Industrial Policy” strategic documents and the advancements in the EU Single Market and the European Research Area.

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Executive Summary

0.1 Summary

The EU and Japan already enjoy close industrial ties, face similar challenges and are both looking for ways to strengthen and develop their economies and industries. The on-going negotiations for an EU-Japan Free Trade Agreement / Economic Partnership Agreement (FTA / EPA) aim to strengthen the relationship. Other initiatives (e.g. efforts to seek actively the involvement of Japanese researchers in EU Horizon 2020 projects) are also aimed at boosting the links. The EU Authorities are seeking a “European Industrial Renaissance” – and want to create the necessary conditions (business-friendly environment, transparent and effective rules, financing, etc.) to allow new industries and technologies to appear and to develop.

There are therefore considerable opportunities, now and in the future, for Japanese companies, researchers and other organisations to establish and develop industrial activities or relationships in the EU. This openness for industrial and research collaborations is actively supported and facilitated by the EU and Member State public authorities. The ‘fruits’ of the collaboration or ‘industrial activities’ can take many forms – e.g. joint research activities, joint-ventures, production partnerships, joint R&D activities, creation of subsidiary or affiliate companies, establishing / expanding production facilities in the EU, investment / M&A activity, contracting and sub-contracting, etc. There are already tangible benefits – from 2012-13, Japanese investments in the EU28 Member States almost doubled to €9.6 billion.¹

This report is intended to help Japanese companies or other organisations possibly interested in starting or expanding relationships/activities in Europe:

- to understand how EU industry is expected to change, the impact and benefits the EU Single Market offers, how IPR protection is being both simplified and strengthened and new research opportunities offered by the EU’s Horizon 2020 programme ([Chapter 1](#));
- it will identify key industrial sectors and sub-sectors likely to be of potential interest to Japan, including brief mention of some of the countless recent examples demonstrating the already-close industrial ties ([Chapter 2](#));
- and will use case studies from Japanese companies and business federations which have established activities in Europe, to show what can be achieved ([Chapter 3](#)).

0.2 The EU Industrial Policy and its new strategic initiatives, the Single Market, Patent Protection & Research – a new wave of opportunities

Following the eurozone crisis, the EU realised that it needed an industrial transformation if it were to address on-going challenges and ensure that the economic recovery strengthens and if its industry were to take advantage of new business opportunities in high growth areas. Three major policy initiatives were adopted to create the necessary conditions for the industrial ‘renaissance’. Japanese companies seeking industrial partnerships or other forms of cooperation or investment in Europe will benefit from this more business-friendly strategy.

The first initiative (in 2010) established the basic principle – support the economic recovery by shifting from national approaches to coordinated and strategic European policy responses,

¹ [Eurostat news release](#) of 06/05/2014

focussing on long-term structural challenges in a business-friendly way. The 2012 package set a challenging aspiration (raising manufacturing's share of EU GDP from 16 to 20%) and identified 4 pillars and 6 priority action lines. The most recent initiative (adopted in January 2014) emphasised the importance of industry's job-creation role; advocated a focus on specific sectors and investments in innovation, new technologies, skills and access to finance; as well as harmonising international standards. A complementary policy will ensure that the Internal Market (or Single Market) operated with greater certainty for businesses.

Underpinning the EU Single Market are the 'four freedoms' (free movement of people, goods, services and capital). These freedoms are guaranteed in law and make it much easier and cheaper for businesses to do business across borders, for example Member States can only restrict the free movement of goods in exceptional circumstances such as relating to public health, environment or consumer protection. 70% of EU economic activity relates to services. EU law guarantees EU companies (giving equal treatment to those arising from inward investments) the freedoms to establish themselves in other Member States and to provide services on their territories.

The EU ensures protection of intellectual property rights (IPR) and patents. Technical inventions can currently be protected by national patents (granted by the competent national authority) or by European patents (granted by the EPO). Soon a 'one-stop shop' option will be available – legislation creating a 'European patent with unitary effect' (or 'Single European Patent'), protecting an invention across 25 EU Member States, is currently being ratified.

[Horizon 2020](#) is the EU's flagship programme to promote research and innovation, ensuring Europe produces world-class science, removes barriers to innovation and facilitates public-private actions to deliver innovation. Over its 7 years (2014 to 2020), €80 billion of public funding will be available. Whilst Horizon 2020 is open to participation from entities across the world – including Japan – EU public funding would only be available to Japanese research entities based in Japan under [specific conditions](#).² However, Japanese affiliates based in an EU Member State would enjoy the same eligibility to public funding as domestic EU researchers.

In summary, in addition to being able to benefit from investment promotion programmes offered by the host region or Member State, the European affiliates or subsidiaries of Japanese businesses are able to take full advantage of the opportunities and guarantees offered by the EU – such as the Single Market, IPR protection and greater access to Horizon 2020 funding.

0.3 Brief overview of possible business and technological cooperation opportunities in key industrial sectors

Whilst Japanese investors are able to enter all industrial sectors, certain EU industrial sectors have a proven interest to Japanese companies (they have seen such investment activity in the past). By identifying current / likely trends or 'niches' in these sectors and examples of recent activity, interested Japanese firms can assess possible areas to direct their activities towards. More detailed information about the sectors and sub-sectors, together with examples of EU-Japan industrial cooperation or Japanese entities in Europe can be found in [Chapter 2](#).

² Where such funding is provided for in a bilateral EU-Japan scientific / technological agreement or similar; where the call for proposals clearly states that applicants based in Japan are eligible for funding and where the participation of Japanese researchers in Japan is deemed essential for carrying out the action.

0.3.1 Energy Sector

The EU's commitments to reducing greenhouse gas emissions (through embracing energy efficient technologies and design, CCS and minimum quotas for renewable energy, etc.), ensuring security of supply, developing energy technologies, addressing the future of nuclear energy (a decision for each Member State) and implementing a common international energy policy have enabled the EU to develop strong, innovative and leading technologies and have created investment opportunities:

A. Wind Energy

Current situation and possible 'niches': with its 117.3GW of installed wind energy capacity (the 6.6GW of offshore capacity accounts for 90% of the world's installed offshore wind power capacity), the EU's cumulative wind power capacity can supply 8% of the EU's electricity consumption. This combined with the fact that Europe has the world's most advanced wind power generation equipment manufacturers, means that there are strong possibilities for Japanese participation and investments in EU wind farm projects onshore and offshore, possibilities for joint venture agreements between key wind turbine manufacturers and cooperation and technology transfer agreements with key European players.

Examples of past / current Japanese activities in this area: acquisition of significant holdings in Belgian offshore wind farms; a Japanese-Bulgarian joint-venture to supply electricity in Bulgaria, generated by Japanese owned wind turbines; and a German-Japanese consulting work partnership.

B. Photovoltaics (PV)

Current situation and possible 'niches': the EU's 70GW of installed solar PV energy capacity is 55% that of the global market. A PV industry association forecasts that by 2020 there will be 250GW installed. Whilst application rates vary between Member States, on average 21% are residential, 19% industrial; 32% commercial and 28% ground-mounted. Japanese companies may be interested in taking part in and/or investing in EU solar farm projects and there is the potential for joint-ventures between key EU and Japanese PV equipment manufacturers.

Examples of past / current Japanese activities in this area: the acquisition of a majority interest in an Italian engineering transmission & distribution company; investments in companies managing PV plants; a German-Japanese partnership to import and sell equipment to manufacture PV batteries; the construction of PV power plants; collaborative research into PV technologies; a Japanese-Italian joint-venture for the production of thin-film solar cells; and an independent PV power generation business.

C. Marine Energy

Current situation and possible 'niches': this is another area Europe is leading – €600m of investment over 7 years has seen its installed capacity almost triple in just 4 years (to a total deployment of 10MW of ocean-going devices). The industry will continue to invest – 2GW of projects are planned by large utilities and renewable energy project developers and aim to deliver reliable and cost-effective electricity from small ocean energy arrays of up to 10MW from 2015 and 50MW projects by 2020, with a wholesale market roll-out from 2025. Possibility for EU-Japanese agreements for cooperation and for technology transfer.

Examples of past / current Japanese activities in this area: the European Marine Energy Centre (EMEC) has signed a Memorandum of Understanding (MoU) with the Ocean Energy Association of Japan with a view to advising and supporting it on the design, establishment and operation of Japan's first marine energy test centre. Under a separate agreement, EMEC will also host trials for a new Japanese tidal energy system.

D. Geothermal

Current situation and possible 'niches': the 237 geothermal district heating plants in the EU have an installed capacity of 1,100MWth. By 2017 there should be an additional 142 plants (8 were installed in 2013). Shallow geothermal is the largest sector in terms of installed capacity. With c. 80% of the world's geothermal turbines using Japanese technology and European countries looking to expanding geothermal power generation, Japanese technology companies are set to benefit from new geothermal projects.

Examples of past / current Japanese activities in this area: MHI has an installed capacity of 497MWel and FHI has installed 252MWel so far.

E. Oil and Gas

Current situation and possible 'niches': as the EU Member States look to replace aged coal-fired thermal plants and, in some cases, for alternatives to nuclear energy, demand for gas turbine combined cycle (GTCC) power generation is expected to see significant growth.

Examples of past / current Japanese activities in this area: the creation of an Austrian affiliate to address engineering and procurement in power systems and respond to rising demand for GTCC systems; Japanese participation in the fabrication of large welded-structures, and the repair and provision of technical services for the oil and gas industry in Scotland; and the acquisition by a Japanese company of a partial stake in North Sea oil.

F. Nuclear Energy

Current situation and possible 'niches': since the Fukushima accident in March 2011, European and Japanese companies in the nuclear energy sector have intensified their cooperation. As a result, there is a good potential for joint-venture and cooperation agreements to be reached by EU and Japanese nuclear integrators and manufacturers and the possibility of working together on new installations in third countries.

Examples of past / current Japanese activities in this area: a Franco-Japanese agreement to develop and market a new type of PWR and to establish jointly a company to handle all aspects from reactor planning and development to the production and sale of nuclear fuel; a joint-venture in the UK to address the handling of uranium products; a cooperation agreement to exchange information between two French and Japanese companies; and a Spanish-Japanese collaborative agreement to cooperate on bidding for the construction of new nuclear plants in Europe.

G. Energy Management and Smart Community Applications

Current situation and possible 'niches': as in Japan, local, regional and national authorities in the EU are looking to 'smart cities' to enhance access to all ICT-enabled services and applications, with a particular focus on merging the power and ICT industries and technologies.

Good possibility for Japanese ‘smart technology’ providers to take part in European ‘smart city’ projects (e.g. providing smart meter, electric vehicle, renewable energy or energy management system technologies – EMS).

Examples of past / current Japanese activities in this area: the opening of an R&D laboratory in Italy, to engage in research into energy management technology; significant Japanese participation (led by NEDO) in the Grand Lyon urban redevelopment project; the Spanish-Japanese Zem2all demonstration project to enable the mass roll-out of new e-mobility services and benefits; and an agreement between French and Japanese companies to complement their relative strengths in EMSs and in smart meters and storage batteries.

0.3.2 Automotive Sector

The EU is the world’s largest producer of motor vehicles and offers business opportunities for Japanese original equipment manufacturers (OEMs), parts suppliers / subcontractors, in the ‘aftermarket’ and on R&D. Japanese OEMs have been active in the EU for a long time. As a result, local, strong and efficient supply chains and skilled manpower (used to working for / with Japanese corporations) are available. The automotive industry is the largest private investor in R&D in Europe, investing over €32 billion (4% of its turnover) in R&D and applying for 9,500 patents per year. There is therefore good potential for strategic partnerships and research activities between EU and Japanese companies – as much for OEMs as for part suppliers or subcontractors.

A. Growth in the EU automotive sector is likely to be driven by 3 factors:

- Social market drivers: meeting the ageing population’s special needs; increased demand for smaller cars in congested areas; a focus on sustainable and environmental-friendly products; a growing income disparity among consumers; and the need for more varied / customised offerings if European drivers are to be persuaded to buy brand new cars;
- Technological market drivers: different companies are developing different e-vehicle technologies; an increasing incorporation of ICT in vehicles and the likelihood that connectivity will be the key technological trend in the short/medium-term; new hybrid, biodegradable, light-weight and nano-materials for use in vehicles and in spare parts;
- Economic market drivers: as the demand for new cars continues to decline, the average age of cars will increase, creating opportunities in the aftermarket. OEMs are expected to increasingly outsource more responsibilities to their first-tier suppliers.

B. Potential Opportunities for Japanese OEMs

Current situation and possible ‘niches’: for Japanese companies considering investing in / establishing production units in the EU, possible opportunities include the likely expansion of both the low cost and premium sectors (for compact and luxury cars, as opposed to mid-priced ones); the fact that early entry into the EU carbon-free vehicle market is likely to prove beneficial as take-up increases; the possibility of developing carbon-free technologies through R&D partnerships or joint-ventures with innovative European OEMs. It is likely that R&D activities will be focused in key technological markets in Western Europe whilst production capacities in Central and Eastern Europe will be increased to take account of their growing regional demand and lower labour costs.

Examples of past / current Japanese activities in this area: Investment programmes, often linked to the production of new models in the UK (Honda Swindon, Nissan Sunderland), France (Toyota Valenciennes) and Spain (Nissan Barcelona); joint R&D activities to develop/license new technologies (e.g. a new petrol engine or research into lithium ion battery materials); production joint-ventures (e.g. Toyota / PSA Peugeot Citroën, Fiat / Mazda Motor Corp., or Mitsubishi Motors Corp. / Peugeot); or using common architecture for different models (Renault-Nissan / Daimler).

C. Potential Opportunities for Japanese Parts Suppliers and Subcontractors

Current situation and possible 'niches': spare parts suppliers and subcontractors should seek to specialise in niche components with higher margins and which are in demand by different segments of the EU population (e.g. parts relating to safety, comfort, special needs, etc.); develop parts for smaller and (ultra) low-cost cars, technologies linked to carbon-free vehicles or to connectivity and to ICT-related products. They should also focus on producing sustainable and environmentally-friendly products (e.g. from biodegradable materials) researching opportunities using locally-sourced materials in traditional components (e.g. in dashboards or seats). Entering the EU aftermarket, through partnerships and subcontracting agreements with spare parts wholesalers will probably prove beneficial as demand for new vehicles falls, the average age of motor vehicles will rise, meaning sustained stable growth in demand for replacement parts. Parts suppliers and subcontractors should follow their (Japanese and European) OEM clients and build up their capacity in the emerging economies of Central and Eastern Europe so as to serve better their clients there.

Examples of past / current Japanese activities: the creation of an R&D centre for foundation brakes in France; the establishment of a European subsidiary to handle the sale of automotive parts; the acquisition and expansion of a German company active in the service parts market; a Japanese-German partnership for the manufacture and sale of coil springs and shock absorbers; and a UK-Japanese technical partnership for R&D in the use of carbon fibres, etc. in advanced crash structures and thereby enhance automotive safety.

0.3.3 Aerospace Sector

The aerospace industry is one of the key high-tech sectors in the EU. 49% of this €186 billion industry relates to civil activities, whilst military activities are worth €96 billion. Highly-concentrated, both geographically and in terms of there being just a few larger enterprises and enjoying good levels of productivity, the EU aerospace industry offers research, supply and other opportunities for Japanese companies. Whilst most Japanese involvement in this sector has, to date, been channelled through Japanese subsidiaries of European aerospace companies, examples such as Toray's French polyacrylonitrile production facility (for the raw material for carbon fibres used in the aerospace sector) show that Japanese companies are looking to have a direct presence in this sector in Europe:

A. Civil Aircraft and Engines

Current situation and possible 'niches': develop civil airplanes for the EU aircraft market, perhaps with agreements for industrial cooperation / business opportunities (e.g. technology transfers, joint R&D or supply agreements).

Examples of past / current Japanese activities in this area: 21 Japanese companies took part in the A380 programme³, providing airframe, engine and equipment components and parts. Japanese aircraft manufacturers also take part in international collaborations for corporate jet planes and play important risk-sharing roles. Rolls Royce's civil and defence engine development programmes, involve Japanese risk and revenue sharing partners.

B. Space

Current situation and possible 'niches': the core of the EU's space manufacturing activity relates to the design, development and manufacturing of satellites for operational applications and parts (telecoms systems, earth observation systems and navigation / location systems). Another important area is launchers – both launch system sales and development and consolidation activities relating to the heavy-lift Ariane and lightweight Vega systems.

Examples of past / current Japanese activities in this area: a recent MoU between MHI and Arianespace, building on their long-term cooperation, addresses the implementation of joint proposals relating to commercial space rocket launches, through the creation of innovative launch services and standardised satellite preparation tasks at launch sites.

Potential for future Japanese involvement:

For larger companies and manufacturers: build on existing EU-Japan aerospace R&D and business and technological cooperation between Airbus (including Airbus Helicopters), Arianespace, Rolls Royce Trent engines, MRJ and HondaJet and seek partnerships on future aerospace programmes (e.g. ZEHST) or on advanced composite and lightweight materials. Existing relationships could be enhanced by strengthening the Japanese presence in key European aerospace hubs (Le Bourget, Farnborough or Bavaria).

For SMEs: collaborate on technical and academic research (e.g. on common R&D projects, technical meetings, or exchanges of researchers).

0.3.4 Electronics & ICT Sector

The digital industry is another key sector – contributing to the EU's economy (particularly through ICT services), research and productivity (enabling both product and process innovation). Japanese electronics and ICT companies have a strong European presence – their interests being represented by JEITA and by DIGITALEUROPE. Different Member States show particular strengths (data centres in Sweden, big data R&D in Finland, wireless and mobile R&D in Denmark, cybersecurity systems in Estonia, cloud-computing in Ireland, e-business in the UK, etc.). With Japan and the EU facing similar challenges arising from ICT, there is considerable scope for collaborative policies and R&D.

Current situation and possible 'niches': Japanese entities could join EU-funded ICT programmes (e.g. Horizon 2020 related ICT projects⁴ or [EIT ICT Labs](#) projects to encourage European leadership in ICT innovation). They could also cooperate with EU ICT companies on researching issues such as big data, cybersecurity, network capacity, storage, high density data

³ Correct as of December 2008

⁴ E.g. STRAUSS, on optical communications; MiWEBA, on wireless communications; NECOMA, on improved resilience against cyber threats; GreenICN, green & content centric networks; ClouT, 'extending the Cloud Paradigm to the Internet of Things'; or FELIX, global scale experiments over federated test-beds.

traffic and energy efficiency; and even establish research facilities in some of the EU's ICT clusters. The [Digital Agenda for Europe](#) (DAE) and the implementation of its [Digital Single Market](#) (DSM) will create further growth opportunities. Therefore, Japanese investors should closely follow the DAE's actions aimed at enabling citizens and businesses to make the most of digital technologies and the DSM's measures to boost the business of creative content downloads whilst better protecting EU online consumers, with a view to taking advantage of the new opportunities. There are also business consolidation possibilities through M&A activity in ICT segments such as e-commerce platforms, gaming and other software companies, ICT service providers, data centre services and mobile services companies.

Examples of past / current Japanese activities in this area: In terms of M&A activity: Rakuten acquired leading national e-commerce sites, a logistics company and a digital publishing company; Ricoh and NTT Data Corp. acquired IT solutions and consulting companies, respectively; SCE acquired a software company and NTT DoCoMo acquired a mobile services company. Other Japanese companies established subsidiaries and branches to sell electronic equipment and computers and digital device products; to manage or to translate online games; or a European headquarters to oversee their European affairs. Japan and the EU share the same ICT challenges (e.g. internet governance or cybersecurity) which could be addressed through collaborative policies and R&D: such as measures to combat counterfeit products in online auctions; partnerships on the cross-selling of security tags; creation of an id-management system for financial institutions; and a partnership to mass produce gallium nitride substrates. Other examples of R&D activities: Rakuten located its third R&D centre in France to capitalise on Europe's rich digital R&D ecosystem; and a semiconductor fabrication service provider built a facility in Germany to provide prototype manufacturing services and win business in the manufacturing of devices.

0.3.5 Other sectors with high investment potential

A. Key Enabling Technologies (KETs)

Current situation and possible 'niches': one area for EU-Japan cooperation would be the development of KETs – the likely driving force behind the development of future goods and services. These include advanced materials (Japan can benefit from the EU's world-class research base and strengths in both the producer and user industries); nanotechnologies (Europe has a well-established nanotech research base in materials, photonics and biotechnology and uses nano-materials in automotive, medical/healthcare and energy sectors); micro and nano-electronics (Europe has a number of regions with respected semiconductor competences); industrial biotechnology (Europe leads the world on key IB technologies such as enzyme technologies and fermentation); photonics (the EU has strong positions in applications such as solid state lighting, photovoltaics and laser-assisted manufacturing) and advanced manufacturing technologies (e.g. advanced metrology and testing, advanced biochemical processes, high-performance manufacturing including 3D printing or ICT-enabled intelligent manufacturing. Europe holds 35% of the global market for industrial automation solutions).

Medical technologies (from sticking plasters to pacemakers), pharmaceuticals, healthcare and biotechnologies are other possible areas for EU-Japan cooperation. European pharmaceutical

industries and associations are both active and represented in Japan by their industry body and account for almost a third of Japanese drug approvals in recent years.

Examples of past / current Japanese activities in this area: a Franco-Japanese partnership on therapeutic drugs used in regenerative medicine; German-Japanese research into protein pharmaceuticals; a partnership into antibody drug development; the creation of subsidiaries active in medical supplies, drug testing, the development of drugs to treat cancer, skin medicines or product development; the acquisition of a French pharmaceutical company and a German endoscope maker; the creation of a joint-venture to manufacture and sell ampules for injections; a Franco-Japanese partnership for the distribution in Japan of anticoagulants and a Japanese-Italian partnership to acquire the rights to develop and distribute antibiotics.

B. Textiles and Clothing (T&C) and Fibres

Current situation and possible 'niches': as recognised by the JCFA⁵, a strength of the EU T&C industry lies in its development of technical textiles with a focus on process technologies. Complementary relationships between Japanese chemical fibre manufacturers and EU industry and researchers benefit Japanese companies as Europe is both an important market and a major source of R&D (particularly in relation to bio and nano-technologies).

Examples of past / current Japanese activities in this area: acquisitions of a sealing materials production facility, of a major apparel manufacturer, or of an undergarment manufacture; joint-ventures to develop interior systems, to distribute raw materials for making carbon fibres, or to manufacture carbon fibre materials; a partnership to provide contracted manufacturing work producing foundation fabric for airbags; the establishment of subsidiaries to handle the sales of a flame-retardant fabric or to sell glass fibres for textile reinforcement; and the creation of new carbon fibre manufacturing sites.

C. Other possible sectors

With the food industry sector being the largest part of the EU manufacturing industry after metal (accounting for 14.5% of manufacturing turnover), the agri-food sector could potentially offer many investment opportunities. The EU machine tool industry accounts for 30% of the world's machine tool production and is highly innovative, so machinery and machine tools could be another attractive sector for investment activity. Other possible sectors include glass production; chemicals, plastics and rubber chemicals (EU actors account for 20% of the world's chemical production).

0.4 The views of some Japanese investors and business organisations

A survey of Japanese industrial and research organisations and companies as to their experiences of investing in Europe and their motivation for doing so, helps explain why Japanese companies invest in Europe: Given the size of the EU market and the fact that the EU's regulatory standards often establish global standards, Japanese companies need to follow EU industrial policy development as closely as possible and in doing so can avoid the 'Galapagos effect' characteristic of the Japanese consumer market. The fact that the EU and Japan face similar challenges means that there is considerable scope for developing common

⁵ Japan Chemical Fibers Association, in a report published in 2007

solutions. The size of the EU market and its strong IPR protection means the EU is an attractive market and location for R&D activities. To be successful in the EU market, Japanese companies need to have a local base if they are to understand the local market conditions and establish effective business relations. The EU is a predictable market – it has no internal borders and the strong single currency reduces exchange risks; its strong environmental awareness and energy-related legislation makes this an attractive market for eco-technologies. Participation in EU-funded research activities can help with finding technical solutions and establishing business relationships. Europe is at the heart of innovation and offers a skilled workforce. Testimonials from a range of Japanese companies and business organisations can be found in [Chapter 3](#).

0.5 Conclusions

With negotiations towards an ambitious EU-Japan FTA / EPA well under way, and with the Japanese Prime Minister and the Presidents of the European Council and Commission hoping for a ‘speedy and successful conclusion’ to the talks (provided that the deal will be ambitious and comprehensive), now is the perfect time for Japanese companies to consider developing or expanding their activities in the EU.

As will be seen from the examples given, there is already a high-level of Japanese investment in Europe (be it through M&A; or establishing joint-ventures, collaborative projects, or subsidiary companies, etc.) and there are also many examples of joint research or production facilities. With EU public policy seeing such ties as being both extremely desirable and consistent with its wish to bring about an industrial renaissance, Europe is very much ‘open’ to approaches from Japan. By identifying synergies between its activities and plans and the trends highlighted in this material, a Japanese company may be able to find potential business opportunities to investigate further.

Chapter 1. Towards a new industrial ‘Renaissance’ and the Advantages of the Single Market

EU industry currently generates a daily €1bn surplus in the trade of manufactured goods – mainly from a few high-end medium technology sectors (e.g. automotive, machinery and equipment, pharmaceuticals, chemicals, aeronautics, space, creative industries) and from high-quality goods in other sectors.⁶ But the EU is not complacent – it knows that an industrial transformation is essential if it is to address on-going economic, technological, environmental and societal issues and ensure that the economic recovery strengthens, stimulate innovation and new technologies, embrace resource efficiency and address challenges posed by issues such as the ageing population.

For this reason, the EU adopted three major policy initiatives (in 2010, 2012 and 2014) seeking to transform and revitalise industry and innovation in Europe, ensuring competitiveness and sustainability. By embracing and capitalising on opportunities offered by new technologies and the size of the EU market, new business opportunities can be created. These new business opportunities will be in likely high growth areas and are all in sectors or sub-sectors of probable interest to Japan given the similar challenges faced and policies and solutions sought.

1.1 An Integrated Industrial Policy for the Globalisation Era – Putting Competitiveness and Sustainability at Centre Stage (2010)

The [2010 initiative](#) was designed to support the economic recovery. Part of a holistic “fresh approach” – instead of focusing exclusively on policies with a direct impact on industrial innovative competitiveness (e.g. standardisation, innovation or sectoral policies) it would address the competitiveness effects of all policy initiatives as they too have an impact.

To take full advantage of the business benefits offered by the Single Market and to ensure comprehensive and systemic change, there would be a shift from national approaches towards “strategic European industrial interests,... uncoordinated national policy responses must give way to coordinated, European policy responses”. This would enable the transition to a low-carbon, resource-efficient economy,⁷ focussing on “long-term structural challenges, in particular maintaining global competitiveness, climate change, energy, population ageing, skills and knowledge”. The new approach would be business friendly – improving the business environment and strengthening companies’ ability to innovate or enhance energy efficiency whilst also including, as appropriate, policy measures to accompany ongoing industrial structural change:

- Improving framework conditions for industry (competitiveness-proofing and implementing smart regulation; improving access to finance for businesses);
- Strengthening the Single Market (developing the Single Market and enforcing IPR; competition policy; improving infrastructure, standardisation);

⁶ [MEMO/14/37](#) – Member States need to act to boost European industry (22/01/2014)

⁷ [COM\(2010\)614 final](#) – An Integrated Industrial Policy for the Globalisation Era – Putting Competitiveness and Sustainability at Centre Stage. See also [IP/10/1434](#) – Industry for Europe – Europe for industry (both documents of 28/10/2010)

- A new industrial innovation policy (addressing the skills base and industrial innovation – e.g. via the [Innovation Union](#); encouraging the use of ICT for industrial competitiveness, resource optimisation and innovation; or developing clusters and networks);
- Capitalising on globalisation (addressing trade and international regulation and ensuring access to raw materials and critical products);
- Promoting industrial modernisation (through resource, energy and carbon efficiency; addressing structural excess capacities and building on Corporate Social Responsibility);
- A targeted approach to sector-specific issues.

1.2 A Stronger European Industry for Growth and Economic Recovery (2012)

Having identified the need for reform, in its [2012 Communication](#) the European Commission set a challenging aspiration⁸ (raising manufacturing industry’s share of EU GDP from 16% to 20% by 2020) and called for concerted action, “focusing on investment and on innovation, but also mobilising all the levers available at EU level, notably the single market, trade policy, SME policy, competition policy, environmental and research policy in favour of European companies’ competitiveness. [And] a partnership between the EU, its Member States and industry to dramatically step up investment into new technologies and give Europe a competitive lead”.⁹ To strengthen the Single Market and industry’s access to international markets, the Commission would focus on key areas for improvement: cost reduction, increasing confidence, fostering entrepreneurship and intellectual property protection. The 2012 initiative had 4 ‘pillars’: business confidence, market demand, finance and skills.

Six priority action lines were identified as foci for investment and innovation and would be championed by specialised partnership task-forces: **advanced manufacturing technologies for clean production; key enabling technologies; bio-based product markets; sustainable industrial policy, construction and raw materials; clean vehicles and vessels; and smart grids.** These are expected to see high growth, give European industry ‘first mover advantage’, revolutionise engineering (e.g. intelligent materials), transform the production of goods (e.g. 3D printing) and provide game-changing new foundations for traditional markets (e.g. smart grids). They would provide considerable opportunities for close EU-Japan cooperation.

The main measures contained in the Communication: Using priority action lines and accompanying measures to facilitate investment in new technologies and innovation; improve market access by improving the internal market for goods, applying ‘fitness checks’, promoting entrepreneurship (e.g. via the Digital Agenda for Europe and Industrial Policy Flagships’ promotion of internet and digital technologies), strengthening intellectual property (such as through the introduction of the unitary patent and the development of a unified patent litigation system) and addressing supply of raw materials; address access to finance and capital markets – particularly for SMEs and using ‘smart specialisation’; and improve skills and training to maximise the role of human capital. Japanese companies engaged in EU-Japan industrial cooperation or investing in Europe will also benefit from these measures.

⁸ Based on manufacturing % of GDP in 2011 and to be achieved by a recovery in investment levels, an expansion of trade in goods in the Internal Market and a big increase in the number of SMEs exporting to third countries. In 2013, the rate fell from 15.4% to 15.1% (source: [MEMO/14/37](#) – Member States need to act to boost European industry)

⁹ [COM\(2012\) 582 final](#) – A Stronger European Industry for Growth and Economic Recovery. See also [IP/12/1086](#) – Although EU leads in energy efficiency and foreign investment, Industrial performance across Member States is not balanced (10/10/2012)

To ensure the maximum possible benefit from industrial policy and ensure an even more business-friendly environment, synergies between a broad range of key Community policies and synergies between EU-led and Member State industrial policy actions should be exploited. On-going monitoring and reform efforts (such as through the European Semester) and combining the use of EU instruments such as Horizon 2020 and COSME, with Structural funds and Member States own funds, notably to deliver major investment projects, including demonstration projects and pilot lines will also improve the business environment and will potentially benefit Japanese companies engaged in activities in or with the EU.

1.3 For a European Industrial Renaissance (2014)

Building upon the previous initiatives, the key message of the [2014 initiative](#) is that Member States should “recognise the central importance of industry for creating jobs and growth and ... mainstream industry-related competitiveness concerns across all policy areas”.¹⁰ Particular focus will be given to energy, transport, space and to digital communications networks – all areas for EU-Japan activities – whilst legislation to complete the internal market will be implemented and enforced.

Investments in innovation, new technologies and skills and access to finance and dedicated EU funds will help industrial modernisation. Europe will become more business-friendly for domestic and Japanese firms as the legislative framework is simplified and the efficiency of public administration improves. Harmonising international standards, opening up public procurement and strengthening patent protection will also benefit Japanese partners.

A series of measures would enhance Europe’s industrial competitiveness:

- Strengthening mainstreaming of industrial competitiveness in all policy areas;
- Maximising the potential of the internal market (including completing the integration of information, energy and transport networks and converging ICT and energy and logistics networks – a possible area for joint EU-Japan activities or cooperation – and ensuring the implementation and enforcement of other measures to ensure effective harmonisation);
- Securing access to energy and raw materials at affordable prices;
- Using a combination European financing instruments (COSME, Horizon 2020 and the Structural Funds) and national funding to pursue innovation, investment and reindustrialisation with a focus on ‘breakthrough technologies’ in the 6 fast-growth areas identified in 2012. Digital technologies being at the heart of productivity increases, it is essential that new technological opportunities are integrated into industrial policy – this could provide an opportunity for Japanese ICT companies to license or work cooperatively with EU companies on R&D and technology;
- Increasing the competitiveness of SMEs and other companies by facilitating their progressive integration in global value chains; encourage them to ‘internationalise’ including through market access and FTA/EPA negotiations such as the one underway between the EU and Japan; and improving education and training systems, including encouraging students to take up foreign traineeships.

¹⁰ [IP/14/42](#) – Commission calls for immediate action for a European Industrial Renaissance. See also [COM\(2014\) 14 final](#) – For a European Industrial Renaissance and [MEMO-14-37](#) – Member States need to act to boost European industry of 22/01/2014

To balance the need for regulatory stability and technological and societal challenges, a separate Communication,¹¹ issued at the same time, provides [a vision for the internal market for industrial products](#) and will provide greater certainty, equal treatment and ensure that the internal market is more business-friendly. It will ensure a more predictable, transparent and business-friendly environment. Economic sanctions for non-compliance with harmonisation legislation will be streamlined and harmonised and the legal framework for the marketing, maintenance and after-sales of industrial products will be simplified. Innovation and technological developments will be addressed by any new internal market for product proposals and the Commission will seek to improve the manufacturing products / services interface. To ensure equal treatment and avoid late transposition of legislation, the Commission will prefer Regulations rather than Directives. During periodic review of sectoral rules, the Commission will consider grouping the rules with other legislation applying to the same product category. The EU will also continue to promote international convergence in rules and in technical standards. All these measures should increase the confidence of Japanese companies considering establishing new activities or projects in Europe.

1.4 The Advantages of the Single Market

The [Single Market](#), established in 1992, has not only played an undeniable role in the growth and prosperity of the EU, but it also created millions of new jobs and made lives easier for millions of citizens and also for many enterprises. The cornerstones of the Single Market are the “four freedoms”: the free movement of people, goods, services and capital. These are enshrined in the Treaty on the Functioning of the EU (TFEU) and form the basis of the single market framework.

But what do the “four freedoms” mean in practice for everyone in the EU?

- For Individuals: the right to live, work, study or retire in another EU country
- For Consumers: increased competition leading to lower prices, a wider choice of things to buy and higher levels of protection
- For Businesses: much easier and cheaper to do business across borders¹²

1.4.1 A Single Market for People

The free movement of persons is one of the fundamental principles guaranteed by the European Union. Any EU citizen has the right to travel, live, study, work, become established or provide a service in another Member State without being subject to nationality-based discrimination. The EU works towards making freedom of movement effective and simple within its borders, in particular concerning social security schemes. This principle applies to all European citizens whose period of residence does not exceed three months. After that period, the exercise of the freedom of movement is subject to certain conditions. However, migrant workers enjoy better conditions than non-active citizens.

The principle of free movement of workers entitles all European citizens to work in another EU country (TFEU, Article 45), and they are entitled to pursue their professional activities under the same conditions as national workers. The counterpart of the free movement of

¹¹ [COM\(2014\) 25 final](#)

persons is an external border policy which is designed to guarantee an area of freedom, security and justice and which covers the entry and stay of non-Europeans.¹³

This external border policy is already very favourable for Japanese citizens, since they can enter the EU “Schengen” area, as well as the not (yet) Schengen EU members like Bulgaria, Croatia, Cyprus and Romania, for pleasure or business, without having to apply for a visa. They are allowed to stay for a maximum of 90 days in any 180 day period.¹⁴ As stated earlier, one important goal of the EU’s investment policy is to facilitate the movement of investment-related persons or ‘key personnel’.

1.4.2 A Single Market for Goods

Another of the ‘four freedoms’ of the Single Market is the free movement of goods. Member States may restrict the free movement of goods only in exceptional cases, for example when there is a risk relating to issues such as public health, environment, or consumer protection.

Approximately half of the trade in goods within the EU is covered by harmonised regulations, while the other half is accounted for by the ‘non-harmonised’ sector, which is either regulated by national technical regulations or not specifically regulated at all. Trade in the ‘non-harmonised’, or lower-risk sectors, has not in general been the subject of legislation on a European level. This sector relies on the ‘mutual recognition’ principle, under which products legally manufactured or marketed in one Member State should, in principle, be able to move freely throughout the EU. Other sectors, such as the pharmaceutical and construction sectors, obviously present higher risks than, for example, office equipment or pasta. In order to minimise risks and ensure legal certainty across Member States, EU legislation harmonising technical regulations has been introduced in the higher-risk product sectors.¹⁵

1.4.3 A Single Market for Services

Services are crucial to the European Internal Market. They are everywhere, accounting for over 70% of economic activity in the European Union, and a similar (and rising) proportion of overall employment. Also FDI is expanding more rapidly for services than for goods, and is increasing at a more rapid pace than conventional trade in services. As a result, the share of services in total FDI flows and positions has increased substantially, as the service sector has become increasingly international.¹⁶

The central principles governing the internal market for services are set out in the TFEU. This guarantees EU companies the freedom to establish themselves in other Member States, and the freedom to provide services on the territory of another EU Member State other than the one in which they are established.

A Directive on Services in the Internal Market was adopted by the European Parliament and the Council in December 2006 and was transposed into Member States’ national law. This directive aims at eliminating obstacles to trade in services. Its full implementation should significantly facilitate the establishment of service providers at home or abroad. It should also

¹³ European Commission webpage: [Living and Working in the Internal Market](#)

¹⁴ Under [Council Regulation \(EC\) No 539/2001](#) of 15/03/2001

¹⁵ European Commission webpage: [A Single Market for Goods](#)

¹⁶ Eurostat Pocketbooks – [International trade and foreign direct investment](#) (2013 edition)

significantly facilitate the cross-border provision of services into other EU countries. The Directive also strengthens the rights of service recipients, in particular consumers, and should ensure easier access to a wider range of services.¹⁷

1.4.4 Single European Patent and IPR rules

The EU and Japan are strikingly similar when it comes to the importance attached to IPR. A study,¹⁸ by the European Patent Office (EPO) and the Office for Harmonization in the Internal Market (OHIM), and presented to the European Commission on 30 September 2013, indicates that roughly 35% of jobs (56m jobs) in the EU rely on IPR-intensive industries. Furthermore, €4.7 trillion is generated annually by IPR-intensive industries, which equals about 39% of total economic activity!¹⁹ Therefore, it is without any doubt that the protection of intellectual property rights and patents is crucial for the EU economy.

In Europe, (technical) inventions can be protected either by national patents, granted by the competent national authorities or by European patents granted centrally by the European Patent Office.²⁰ The European Patent Convention (EPC), signed on 5 October 1973, to this date remains the foundation of European cooperation in the field. The EPC has established a single European procedure for the granting of patents on the basis of a single application and created a uniform body of substantive patent law designed to provide easier, cheaper and stronger protection for inventions in the contracting states.²¹ In each contracting state for which it is granted, a European patent gives its proprietor the same rights as would be conferred by a national patent granted in that state.²²

Two guides for applicants may be downloaded from following website:

<http://www.epo.org/applying/european/Guide-for-applicants.html>

From 2014, those who wish to protect their invention in Europe will benefit from a third option: the European Unitary Patent (the EU Patent) that will come with huge cost advantages (up to 80% cost reduction) and a reduced administrative burden.

In 2012, Member States and the European Parliament agreed on the ‘patent package’ laying the ground for the creation of unitary patent protection in the EU. The patent package implements enhanced cooperation between 25 Member States (all EU Member States except Croatia, Italy and Spain). An Agreement on a Unified Patent Court has been also reached. The EU ‘patent package’ is expected to enter into force in the course of 2014 thus making it possible to obtain an “EU Patent” with unitary effect, ensuring uniform protection for an invention across 25 Member States on a one-stop shop basis.²³

1.4.5 A Single Market for Research and Innovation

European Research, and more specifically the creation of a European Research Area, is high on the policy agenda in Europe. Conducting European research policies and implementing European research programmes are primarily a legal and political obligation resulting from

¹⁷ European Commission webpage: [A Single Market for Services](#)

¹⁸ [Intellectual Property Rights intensive industries: contribution to economic performance and employment in Europe](#) (September 2013)

¹⁹ [IP/13/889](#) – Intellectual Property Rights: study indicates that roughly 35% of jobs in the EU rely on IPR-intensive industries (30/09/2013)

²⁰ European Commission webpage: [Patents](#)

²¹ The contracting states are: the EU28, Albania, FYROM (Former Yugoslav Republic of Macedonia), Iceland, Monaco, Norway, San Marino, Serbia, Switzerland and Turkey.

²² [How to get a European patent – Guide for applicants](#)

²³ European Commission webpage: [Patents](#)

the Amsterdam Treaty. The Treaty in fact includes a whole chapter on research and technological development (RTD), which highlights RTD’s essential role in the functioning of industrialised countries, such as the EU Member States. The competitiveness of companies and the employment they can provide depend to a great extent on RTD.

The Horizon 2020 programme is the biggest EU Research and Innovation programme ever with nearly €80 billion of funding available over 7 years (2014 to 2020), in addition to the private investment that this money will attract. Its goal is to accomplish more breakthroughs, discoveries and world-firsts by taking great ideas from the lab to the market. It is the financial instrument implementing the Innovation Union (a Europe 2020 flagship initiative) aimed at securing Europe’s global competitiveness. Seen as a means to drive economic growth and create jobs, Horizon 2020 has received full political backing. By coupling research and innovation, Horizon 2020 is helping to achieve this with its emphasis on excellent science, industrial leadership and tackling societal challenges.²⁴

On 11 December 2013, the first calls for the Horizon 2020 Work Programme were published and focused on 12 specific areas representing around 15% of the total number of calls covered by the Work Programme (for a total 2014 budget of €2 billion).²⁵ Horizon 2020 is open to everyone, with a simple structure that reduces red tape and time, so participants can focus on what is really important. This approach makes sure new projects get off the ground quickly and achieve results faster.

Information on funding opportunities offered by Horizon 2020:

<http://ec.europa.eu/research/participants/portal/desktop/en/home.html>

In short, the Single Market offers multiple benefits to businesses (including for investors):

- Trade within the EU has become much easier. The absence of border bureaucracy has cut delivery times and reduced costs. Before the frontiers came down, the tax system alone required 60m customs clearance documents annually: these are no longer needed.
- The mutual recognition principle means that, in most cases, companies can do business across the EU by complying with the rules in their home Member State.
- In many cases, rather than adding to red tape, EU Directives and Regulations replace the large number of complex and different national laws with a single framework, often reducing compliance costs for businesses.
- Over 60% of companies exporting to more than 5 EU countries confirmed that the Internal Market had helped to boost their cross-border sales.
- Companies are now able to bid for contracts to supply goods and services to public authorities in other Member States, thanks to the opening up of public procurement.
- The introduction of the new EU Unitary Patent means up to 80% reduction in the IPR protection costs and a significant administrative reduction, resulting in a much more attractive and competitive overall business environment.

²⁴ European Commission webpage: [What is Horizon 2020?](#)

²⁵ [MEMO/13/1122](#) – Horizon 2020 – first calls (11/12/2013)

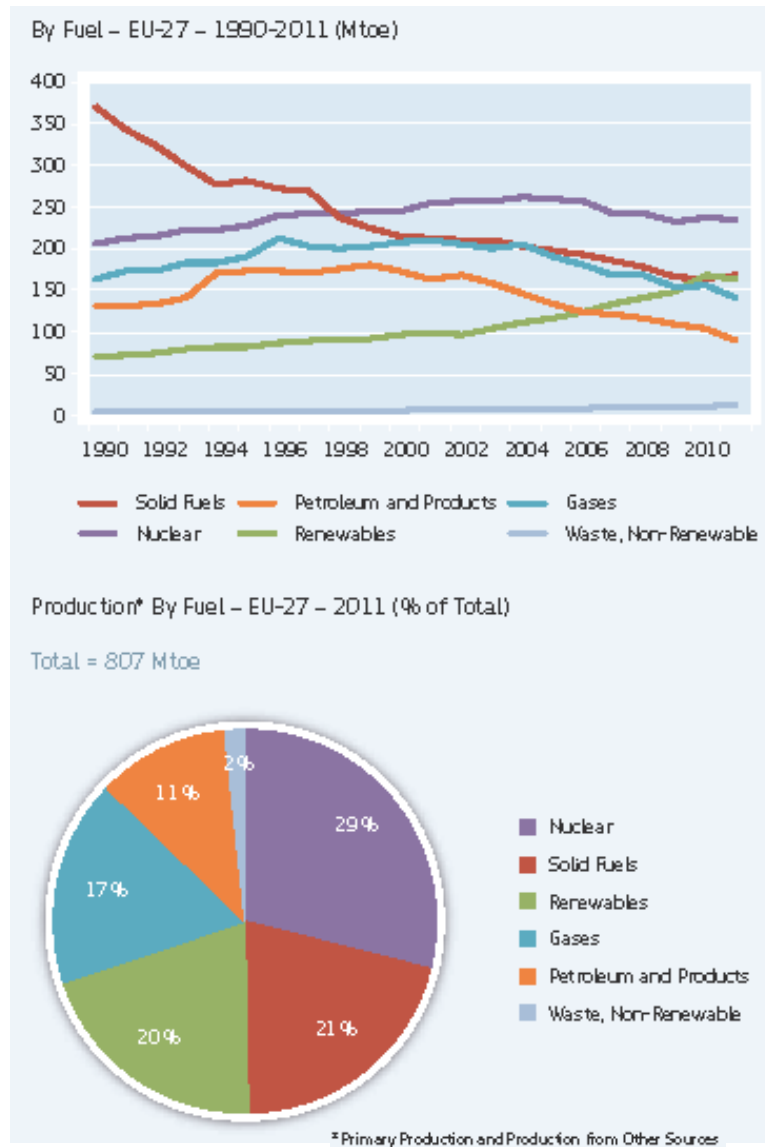
Chapter 2. Presentation of Selected Industrial Sectors in the EU

2.1 EU Energy Sector

2.1.1 Brief Market Overview

A. GENERAL TRENDS in the EU Energy Sector

Source: European Commission²⁶



The EU is committed to reducing greenhouse gas (GHG) emissions to 80-95% below 1990 levels by 2050. In January 2014, the Commission proposed energy and [climate objectives to be met by 2030](#). The pillars of the [policy framework for climate and energy \(2020-2030\)](#) are: reduction in GHG emissions to 40% below the 1990 level, a binding EU-wide renewable energy (RE) target of at least 27%, renewed ambitions for energy efficiency policies, a new governance system and a set of indicators to ensure a competitive and secure energy system.²⁷

In addition, the [Energy Roadmap 2050](#) illustrates different ways in which decarbonisation can be achieved: energy efficiency, renewable energy, nuclear and CCS. The Renewable Energy Industry is rapidly growing into different segments and, consequently, there are many opportunities for EU-Japan

industrial cooperation.

In 2012, domestic production of primary energy in the EU28 was 794 Mtoe. Nuclear energy accounted for the largest share (29%), followed by renewables (22%), solid fuels (21%), gas (17%), and oil (10%).

²⁶ http://ec.europa.eu/energy/observatory/statistics/statistics_en.htm and <http://ec.europa.eu/eurostat/>. The graph and pie-chart are from the *EU Energy in Figures – statistical pocketbook 2013 booklet* – http://ec.europa.eu/energy/publications/doc/2013_pocketbook.pdf

²⁷ http://europa.eu/rapid/press-release_IP-14-54_en.htm

B. The EU RENEWABLE ENERGY MARKET

Evolution of Energy Data over time shows the shift towards renewables and the gradual reduction in conventional sources of energy. Traditional electricity sources such as nuclear, coal and fuel oil have been decommissioned more than newly installed. For example, in 2012, for the second year in a row, Solar PV (photovoltaics) had the biggest new (added) generation capacity in the EU27; with 16.7GW connected to the grid, PV outscored gas, wind, nuclear and others.

Renewable Energy Sources (RES) related statistics for the EU28²⁸

The share of energy from renewable sources in gross final energy consumption increased from 8.1% in 2004 to 13.0% in 2010. This is considered to be good evidence for steady progress towards the Europe 2020 target of 20%. In 2011, the total EU28 electricity generation from renewable sources, with necessary adjustments for wind power and hydropower, accounted for 21.8%. In the same year, renewable energy accounted for 15.1% of the total energy used for heating and cooling in the EU28 (a significant increase from 9.6% in 2004). The key contributing factor to this growth is an increase in industrial sectors, services and residential use (the buildings and construction sector). In 2009, 550,000 people worked in RES in the EU, and the sector was worth €70 billion.²⁹

European level industrial representation

Until March 2014, the [European Renewable Energy Council](#) (EREC), hosted by the iconic 'Renewable Energy House' in Brussels, was the umbrella organisation of the major European renewable energy industry, trade and research associations active in the field of photovoltaic, small hydropower, solar thermal, bio-energy, geothermal, solar thermal electricity and ocean energy. Currently the European level representation of the industry is witnessing a process of re-organisation in order to better serve the needs and expectations of its stakeholders and better face the challenges of implementing the ambitious EU green energy/climate change goals. The industry currently has an annual turnover of €70 billion and employs more than 550,000 people.

C. The EU WIND ENERGY MARKET

[European Wind Power Statistics](#) (as of February 2014) – The EU power sector continues its move away from fuel oil and coal with each technology continuing to decommission more than it installs. There is now 117.3GW of installed wind energy capacity in the EU: 110.7GW onshore and 6.6GW offshore. 11.159GW of wind power capacity (worth between €13 and €18 billion) was installed in the EU28 during 2013. The cumulative wind power capacity at the end of 2013 corresponds to a production of 257 TWh of electricity in a normal wind year – that is 8% of the EU's electricity consumption. The global wind power generation market is expected to quadruple by 2025, and about 10% is expected to come from offshore projects.

²⁸ <http://epp.eurostat.ec.europa.eu>

²⁹ <http://www.erec.org/statistics.html>

The European offshore wind industry – key trends and statistics

In 2013, 418 offshore turbines came online in Europe, making a record 1,567MW of new capacity. This is one-third more than the capacity installed in 2012. This makes a new total of 6,562MW of offshore wind power – enough to provide 0.7% of the EU's electricity.

European level industrial representation

The [European Wind Energy Association](#) is the voice of the wind industry, actively promoting wind power in Europe and worldwide. It has over 700 members from almost 60 countries, including wind turbine manufacturers, component suppliers, research institutes, national wind and renewables associations, developers, contractors, electricity providers, etc.

D. The EU SOLAR ENERGY MARKET

EU Market Outlook for Photovoltaics 2014-2018 (2013 data³⁰)

The European PV market remains quite heterogeneous, with diverse segmentation from one country to another. On average, market segment shares are: 22% for residential applications, 17% for industrial applications, 27% for commercial applications and 34% for ground-mounted applications. In 2013, Europe's cumulative installed capacity had increased by 15% to 81.5GW or 59% of the global cumulative PV capacity. For the first time since 2003, Europe was not the biggest installer of PV – Asia (particularly China and Japan) accounted for 56% of the world market. Europe's share was 29% (down from 55 in 2012 and from 74% in 2011).

European level industrial representation

The [European Photovoltaic Industry Association](#) (EPIA) is the voice of the photovoltaic industries in Europe, with Members active along the whole solar PV value chain: from silicon, cells and module production to systems development and PV electricity generation as well as marketing and sales.

E. The EU MARINE ENERGY MARKET

Europe is currently the leader in exploiting this energy. It also has the potential to maximise the value of investments in infrastructure, expertise and equipment in Europe's oil, gas and offshore wind sectors. Currently 1,000 people are directly employed in this sector. However, Europe must maintain its leadership position if it is to secure the full industrial benefits of a manufacturing supply chain that could create 20,000 new jobs by 2035. So far, the UK is leading European development but wave power resources are also available in other (Atlantic) Member-States: France, Ireland, Spain, Portugal, Denmark and Sweden.

Industry investment of over €600m in the last 7 years has triggered significant progress. EU installed capacity has tripled in 4 years. Over 10MW of ocean-going devices are currently deployed in European waters (compared with 3.5MW in 2009), including several devices of 1MW or more. In the next 7 years the industry will continue to invest considerable resources to achieve its vision for the sector. There are 2GW of projects in the planning pipelines of Europe's largest utilities and renewable energy project developers. The industry goal is to deliver reliable and cost-effective electricity from several small ocean energy arrays of up to

³⁰ <http://www.epia.org/news/publications/>

10MW from 2015; and for the front-runners to deliver larger-scale projects of up to 50MW by 2020 in preparation for wholesale market roll-out from 2025.

European level industrial representation

[Ocean Energy Europe](#) is a fast-growing membership organisation set up to represent the sector to the European Commission, Parliament and the EU Council. Its goal is to leverage at least €500m in financial support for the ocean energy sector between now and 2020.

F. The EU GEOTHERMAL ENERGY MARKET

Geothermal-generated electricity was first produced at Larderello, Italy, in 1904. Geothermal energy's potential is limitless and only a small fraction of the potential is used today. It could deliver heat and power 24 hours a day throughout the year, unaffected by climatic conditions, unlike PV or wind energy. The concept of Enhanced Geothermal Systems, including the 'Hot Dry Rock' idea is considered to substantially increase the potential. [Geothermal energy](#) can even be generated at temperatures of 3-15°C (the average temperatures in Europe's shallow underground) provided a heat pump is used allowing both cooling and heating to be supplied. There are many opportunities for EU-Japan R&D cooperation since both the EU and Japan are investing in research to extract more energy from the vast potential that geothermal offers.

Geothermal Heating in Europe

The largest of the EU's 237 geothermal district heating systems (GeoDH) are in France, Austria, Hungary, Italy, Poland and Slovakia. The EU's 237 plants have a total installed capacity of 1,100MW (almost a quarter of the installed capacity in the whole of Europe) and produce 12.883 TWh of thermal power. 11 new GeoDH plants were installed in 2013 with a capacity of 122MWth.

- **Shallow Geothermal in Europe:** is the largest sector in terms of installed capacity: 17,000MWth, with 1.3m geothermal heat pumps installed.
- **Geothermal Electricity in Europe:** The European Geothermal Energy Council (EGEC) forecasts 142 plants by 2017, as over 50 projects are currently on-going. 8 new power plants were installed in 2013, equivalent to a capacity of 145MWel. Among Japanese turbine manufacturers, MHI has installed 497MWel of capacity, and FHI has installed 252MWel so far.

European level industrial representation

The [EGEC](#) was founded in 1998 and is the voice of the geothermal sector in Europe and has more than 129 members from 28 European countries: private companies, national associations, consultants, research centres, geological surveys and other public authorities.

G. ENERGY MANAGEMENT and SMART COMMUNITY APPLICATIONS

The concept of 'Smart Cities'³¹ is gaining increasing importance in the EU as a mean of making available, to citizens, companies and authorities, all the services and applications enabled by ICT and that are part of a city's system. Smart Energy Grids are the backbone of the 'Smart City' and are seen as a major opportunity for merging the power and ICT industries and technologies. In the EU, several projects are under development addressing Smart Cities.

³¹ http://www.networks-etp.eu/fileadmin/user_upload/Publications/Position_White_Papers/White_Paper_Smart_Cities_Applications.pdf

Some of the test projects are run in partnership with NEDO and Japanese energy-related companies.³² Further details are given in Chapter 3 in the testimonials of [NEDO](#) and [Toshiba](#).

2.1.2 Examples of Japanese Investments and Acquisitions in the EU Energy sector

| Company Names | Field/Country | Summary ³³ |
|------------------------------------|-------------------------------------|---|
| Sumitomo Corporation | Solar PV Energy (France) | Sumitomo invested a small amount of capital into photovoltaic power plant managing companies in France (2010) |
| Chori Co, Ltd | Solar PV Energy (Germany) | Chori invested a small amount of capital into Eurosol GmbH, a company dealing in photovoltaic power generation systems (2011) |
| Mitsubishi Corporation, Acciona SA | Solar Energy (Spain) | Mitsubishi invested a small amount of capital into a Spanish company engaged in solar thermal power generation (2011) |
| Toshiba and Ansaldo T&D SpA | Solar Energy Engineering (Italy) | Toshiba acquired a 67% stake in Ansaldo T&D. It also began full-scale operations in an electricity transmission/transformation project and solar power plant project in Europe |
| Hitachi Power Europe GmbH (HPE) | Electric Power Generation (Germany) | Hitachi and group company Hitachi Power Europe GmbH announced the acquisition of Xervon Energy GmbH, a German supplier of services to energy installations and power plant equipment (2012) |
| Yanmar Co, Ltd | Energy Management (Italy) | Yanmar established a subsidiary/R&D laboratory in Florence engaged in research into energy management technology (2011) |
| Mitsui & Co, Ltd | Oil Energy (UK) | Mitsui acquired a partial stake in North Sea oil from BP (2012) |
| Sumitomo Corporation | Wind Energy – offshore (Belgium) | Sumitomo Corp. acquired an interest in the Belwind 1 (operational since late 2010) and Northwind (construction was completed at the end of June 2014) offshore wind farms. The two wind farms will have 127 Vestas wind turbines. Electricity generated will be sold through long term agreements to Electrabel and will correspond to the needs of approximately 370,000 households. It is planned that Sumitomo Corporation will acquire the shares in the two wind farms during the second half of 2014 (2013) |
| Mitsubishi Heavy Industries (MHI) | Wind Energy – onshore (Bulgaria) | MHI began its electricity generation through wind turbines business through a joint-venture (JV), in Bulgaria, with Inos Ltd. All electricity produced by the 35-turbine, 35MW Kaliakra Wind Power AD JV is sold to Bulgaria’s state-owned electricity utility (2008) |

³² In Japan, there are a number of on-going projects too (especially, in the Tohoku region, devastated by the March 2011 Great East Japan Earthquake and tsunami) to demonstrate how to build energy systems that connect power systems to local areas throughout the country. For example, the “Demonstration Project of Next Generation Energy and Social System” (FY2010 to FY2014) consists of experiments implementing local EMS in four places in the country. Smart Community Promotion Policies are part of what is called the “Green IT Initiative in Japan”, which includes “taking smart community systems offshore” (including to the EU). The “Green IT Promotion Council” is cooperating in the EU with the ICT4EE (ICT for Energy Efficiency) Forum, as well as with BITKOM and BCS (Chartered Institute for IT).

³³ JETRO, EU-Japan Centre for Industrial Cooperation, GBMC

2.1.3 Examples of Joint R&D and Industrial Cooperation

Smart Community Project in Lyon

As part of the Grand Lyon urban redevelopment project (2005-2025), French and Japanese technologies are being deployed in order to make the 150-hectare Lyon ‘Confluence area’ a smart and sustainable model district, featuring innovative green technologies, for example energy saving and management technologies, solar renewable energy powering a fleet of electric vehicles, visualisation and planning of city energy usage. NEDO is the financial sponsor and Toshiba is the overall project manager of a consortium of more than 30 French and Japanese companies.³⁴

Smart Community Project /e-Mobility Services in Spain: The Zem2all Project in Malaga³⁵

‘Zero Emissions Mobility To All’ ([ZEM2ALL](#)) is a 4-year, €60m Spanish-Japanese demonstration project to enable the mass rollout of new e-mobility services and benefits. Endesa leads Spain’s part (also involving Telefónica and Ayesa), while MHI – under NEDO’s supervision – leads Japan’s part (with Mitsubishi Corporation and Hitachi). Under ZEM2ALL, 200 residents of Malaga will rent Mitsubishi iMiev electric cars and will have 200 conventional charging points equipped with Endesa technology at their homes or places of work. Nine fast charging stations with capacity for 23 vehicles will be installed around the city. The entire infrastructure will be connected to a specific control centre (EV management centre) and thus, users will have useful real-time information.

Marine Energy: The Japanese Marine Energy Centre (JMEC) Project

In March 2012, the Orkney-based (UK) European Marine Energy Centre (EMEC) signed an MoU³⁶ with the Ocean Energy Association of Japan (OEAJ), with the potential for EMEC to provide advice and support on the design, set up and operation of the first Marine Energy Test Centre in Japan. Construction will cost at least USD \$37m and using a vast area of the sea will, by law, require tests on the potential environmental impact. The partnership follows the announcement, in 2011, that Kawasaki Heavy Industries (KHI) will test a newly developed tidal energy system at EMEC. (Set up in 2003, with GBP £30 million of public funding, the Centre provides internationally-recognised purpose-built, open sea test facilities for wave and tidal energy converters.)

Examples of Cooperation between European and Japanese Private Companies

| Company Names | Field/Country | Summary ³⁷ |
|-------------------------------|-------------------------|--|
| Mitsubishi Group and AREVA SA | Nuclear Energy (France) | AREVA (France) and MHI (Japan) have created the ATMEA joint-venture to develop and market the ATMEA1 reactor (a mid-sized generation III+ Pressurised Water Reactor) |
| | | Jointly established Mitsubishi Nuclear Fuel Co, Ltd to handle everything from the planning and development to the production and sale of nuclear fuel for nuclear power plants |

³⁴ Source: Toshiba Corporation

³⁵ http://www.eu-japan.eu/sites/eu-japan.eu/files/june13_0.pdf (page 10) and <http://www.mhi-global.com/news/story/120127.html>

³⁶ <http://www.emec.org.uk/japanese-collaboration-agreement/>

³⁷ JETRO, EU-Japan Centre for Industrial Cooperation, GBMC

| Company Names | Field/Country | Summary ³⁷ |
|--|-------------------------|---|
| Toshiba and Alstom Grid, Inc. | Green Energy (France) | Toshiba, an industry leader in areas such as smart meters and storage batteries, signed an agreement with Alstom Grid, strong in EMSs and other high-level systems for electrical systems, to complement each other's strengths |
| Toshiba Corp. and Westinghouse Electric Co., LLC | Nuclear Energy (UK) | Toshiba and the Westinghouse Group established Advance Uranium Asset Management Ltd, ³⁸ a joint-venture involving the handling of uranium products, in Preston (UK) (2010) |
| Kansai EPC and EDF | Nuclear Energy (France) | Partnership involving a comprehensive cooperation agreement concerning primarily the exchange of information in the field of nuclear energy (2010) |
| Kyushu EPC, Tohoku EPC and AREVA | Nuclear Energy (France) | Kyushu Electric Power and Tohoku Electric Power participated with AREVA in a new uranium enrichment project |
| MHI and Iberdrola Ingenieria y Construccion | Nuclear Energy (Spain) | MHI agreed to work with Iberinco, the engineering division of Iberdrola Ingenieria y Construccion, a bidding partner in the construction of nuclear power plants in Europe |
| Itochu Techno-Solutions and German Wind Energy Institute | Wind Energy (Germany) | Consulting work partnership (2012) with the German Wind Energy Institute |
| DKSH Japan and InnoLas Systems GmbH | Solar Energy (Germany) | Partnership between DKSH Japan and InnoLas Systems GmbH, a German industrial machinery manufacture, to import and sell photovoltaic battery manufacturing equipment (2012) |
| Solar Frontier KK | Solar Energy (Germany) | Solar Frontier KK and Germany's Belectric established a joint-venture involving solar power generation equipment construction (2012) |
| Japan Asia Group Ltd. | Solar Energy (Germany) | Japan Asia Group built a rooftop photovoltaic power plant in Hanover, Germany (2012) |
| AIST and Fraunhofer-ISE | Solar Energy (Germany) | Collaborative research into photovoltaic technologies between Japan's AIST (National Institute of Advanced Industrial Science and Technology) and German research organisation Fraunhofer-ISE (2012) |
| Sumitomo Corporation | Solar Energy (Italy) | Sumitomo participated in a 9.7MW solar power generation project in the Puglia region (Italy) and strengthened its business operations (2011) |
| Sharp Corp and ST-Microelectronics | Solar Energy (Italy) | Establishment of a JV with ST-Microelectronics for the production of thin-film solar cells in Italy and independent photovoltaic power generation business in the EMEA Region (2010) |
| NGK Insulators, Ltd. and EDF Energy | Energy (UK) | NGK Insulators, Ltd. and (UK-based) EDF Energy signed an agreement on a joint project to use high-capacity MAS (sodium-sulphur) batteries to provide ancillary services in the UK (2010) |
| Mitsui & Co, Ltd | Energy (UK) | Mitsui to participate in fabrication of large welded-structures, repair and provision of technical services for the oil and gas industry in Scotland (2012) |

³⁸ <http://www.advanceuam.com/page/78/About-us.htm>

| Company Names | Field/Country | Summary ³⁷ |
|-----------------------------------|------------------------------------|--|
| Japan Atomic Energy Agency (JAEA) | Nuclear energy (Belgium) | JAEA and SCK•CEN signed a 5-year nuclear energy R&D cooperation agreement including the development of accelerator driven systems such as MYRRHA and J-PARC/TEF and the performance testing of materials (2012) |
| Kaneka Corporation | Photovoltaics (Belgium) | Kaneka Corp. incorporated its European Photovoltaics Laboratory at IMEC in Leuven – the first lab of a Japanese solar cell manufacturer to be sited outside Japan (2009) |
| MHI | Wind turbines – offshore (Denmark) | MHI and Vestas established a 51:49 JV to combine their strengths and achieve synergies enabling the new JV to become a global leader in the offshore wind turbine market – a market expected to grow rapidly in the coming years. The new Danish JV will assume MHI’s and Vestas’ current offshore wind turbine operations handling all aspects from development, design, procurement and manufacturing to marketing and after-sale servicing (2013) |

2.1.4 Opportunities for further EU-Japan Cooperation and Investments

Offshore Wind Energy

Europe, with steady winds of appropriate strength, has a long history of harnessing the wind, as symbolised by Holland’s windmills. It has also the world’s most advanced wind power generation equipment manufacturers. Furthermore, the most vibrant markets for offshore wind turbines today are North Sea coastal countries (particularly the UK and Germany) – about 90% of the world’s offshore wind power is currently installed off Northern Europe and the UK. As a result, there are plenty of opportunities for Japanese companies looking for investment or technological partnerships with European companies.

Marine Energy

Given Japan’s considerable coastline and with Japan seeing Europe³⁹ (specifically the UK) as a model in marine energy having developed technology that is close to commercialisation, the opportunities for EU-Japan cooperation are considerable. Already, the Orkney-based EMEC and pioneer companies (e.g. Pelamis Wave Power) have installed commercial wave generators overseas. Moreover EMEC’s aforementioned agreements with Japanese entities (the OEAJ in 2012 and KHI in 2011) show a proven openness to EU-Japan cooperation projects.

Gas Turbine (GTCC) Power Generation

With a greater focus on renewable energy, and the wish for an alternative to nuclear power when replacing aged coal-fired thermal power plants, European demand for Gas Turbine Combined Cycle (GTCC) power generation systems is expected to rise over the medium and long-term. MHI has already taken steps⁴⁰ – establishing MHI Engineering Vienna GmbH to oversee engineering and procurement in the power systems business area. By placing engineers experienced and knowledgeable in the European power systems market, MHI plans to build up engineering, construction and procurement (EPC) know-how in the region and further secure orders and execution capabilities for new projects as well as strengthen its

³⁹ [Marine Energy: Japan’s Next Wave?](#) – *Today’s Close Up* broadcast by NHK on 10/05/2012

⁴⁰ <http://www.mhi-global.com/news/story/1106151440.html>

procurement function. The new company will procure material and equipment from European power plant equipment manufacturers for the projects of the company’s power systems business not only in Europe but throughout the world. There are plans for the new company to function as a procurement base for the entire spectrum of MHI’s business area in the future.

Geothermal Projects⁴¹

Today, about 80% of geothermal turbines in the world today use Japanese technology, mainly from MHI, Toshiba and Fuji Electric. Consequently, there are plenty of opportunities for EU-Japan industrial cooperation in the EU countries that are starting new geothermal projects. The (geothermal) heat pump market is the largest sector in terms of installed capacity for various EU countries including Sweden, Germany, France and Finland. Japanese heat pump / air-conditioning manufacturers might want to consider entering this business in the future.

Nuclear Energy

The 2011 Fukushima accident led to intensified cooperation between European and Japanese companies working in the nuclear energy sector, e.g. Franco-Japanese industrial cooperation involved key players – Japanese and French electrical power companies (EPCs) and Japanese and French key nuclear integrators (Toshiba, Hitachi, Mitsubishi and AREVA), as well as Japanese (trading) companies specialised in the nuclear energy sector. B-to-B meetings have led to business opportunities in measuring instruments, personal protective equipment, engineering services and safety systems (robotic, dismantling, decommissioning works, high voltage supplies, nuclear maintenance, and radioactive waste), infrastructures, building materials, cleaning up of polluted sites. Examples of JV opportunities include ATMEA⁴² (a JV between AREVA of France and MHI of Japan) and Advance Uranium Asset Management⁴³ (a JV between Westinghouse of the UK and Toshiba of Japan).

“Smart City” Demonstration Projects in Europe

For example, NEDO and Japanese companies are involved in such Projects in Lyon (France), in Malaga (Spain) and in Manchester (UK).

2.1.5 Summary – Potential for further EU-Japan industrial cooperation and/or investments in the EU

| | | |
|-------------------|--|--|
| Wind Energy | Participation and investments in on and offshore wind farm projects in the EU. | |
| | Fixed Offshore | JV agreements between key turbine manufacturers. |
| | Floating Offshore | Cooperation and Technology Transfer agreements with key players in Europe. |
| Solar Energy | Participation and investments in EU Solar Farm projects. Potential for JV agreements between key (solar power generation equipment) manufacturers. | |
| Marine Energy | Potential for Cooperation and Technology Transfer agreements with key players in Europe. | |
| Geothermal Energy | New geothermal projects in Europe | |

⁴¹ “Renewable Energy in Japan”, Philippe and Motoko Huysveld, Market Report (75 pages) for the EU-Japan Centre for Industrial Cooperation, December 2013 (<http://www.eubusinessinjapan.eu/>)

⁴² <http://www.atmea-sas.com/>, <http://www.mhi-global.com/news/story/200709030011.html>

⁴³ <http://www.advanceuam.com/page/78/About-us.htm>

| | |
|-------------------|--|
| Gas Energy | Potential for activities in response to the forecasted demand for Gas Turbine Combined Cycle power generation systems in Europe. |
| Nuclear Energy | Potential for JV and Cooperation agreements between key nuclear integrators and manufacturers. Business potential (together) for new installations in third countries |
| Energy Management | Potential for participation in Smart City and, Smart Community Projects in Europe, involving the implementation of Smart Meter, Electric Vehicle, Renewable Energy and EMS (Energy Management Systems) Technologies. |

2.2 EU Automotive Sector

2.2.1 Brief Market Overview

The EU is the world's largest producer of motor vehicles. The automotive industry is central to Europe's prosperity. As a huge employer of skilled workforce and a key driver of knowledge and innovation it is Europe's largest private investor in R&D and makes a major contribution to the EU's GDP.⁴⁴ While major Original Equipment Manufacturers (OEMs) are concentrated in Europe's large countries (e.g. Germany, France, Spain, Italy or the UK), there are car assembly operations in Belgium and in Central and Eastern Europe (the Czech Republic, Slovakia, Hungary, Romania) as well as important supplier bases in countries such as Luxembourg and Lithuania.

The Automobile Industry: The Engine of Europe⁴⁵

The turnover generated by the automotive sector represents 6.9% of EU's GDP. The industry has ripple effects throughout the economy, supporting a vast supply chain, generating an array of business services and creating skilled jobs (12.9m people – or 5.3% of the EU's workforce – are employed in the sector). The 3m high-skilled jobs in automotive manufacturing represent 10% of EU's manufacturing employment.

Vehicle manufacturing is a strategic industry in the EU, where 16.2m cars, vans, trucks and buses are manufactured. Close to a quarter of all cars in the world are manufactured in the EU (14.6m units). European automobile manufacturers export worldwide and operate some 290 vehicle assembly and production plants in 25 countries across Europe. Spurring innovation, the automotive industry in Europe invests over €32 billion (4% of turnover) in R&D and applying for 9,500 patents per year.

Europe is one of the world's largest producers of, and market for, passenger cars. In 2012, 12.1m passenger cars were registered in EU27, representing 18% of worldwide passenger car registrations (69.1m units in total). Exports of cars grew in value by 15%, resulting in a trade balance surplus of over €84 billion. The turnover for the manufacture of motor vehicles (in EU27) amounted to €840.5 billion, while the value added corresponded to €141.1 billion, that is, 9% of the total manufacturing sector.

European level industrial representation

The [European Automobile Manufacturers' Association](http://www.acea.be/automobile-industry/facts-about-the-industry) (ACEA) represents 15 Europe-based car, van, truck and bus makers: BMW Group, Daimler, DAF, Fiat, Ford of Europe, General Motors

⁴⁴ http://ec.europa.eu/enterprise/sectors/automotive/index_en.htm

⁴⁵ <http://www.acea.be/automobile-industry/facts-about-the-industry>

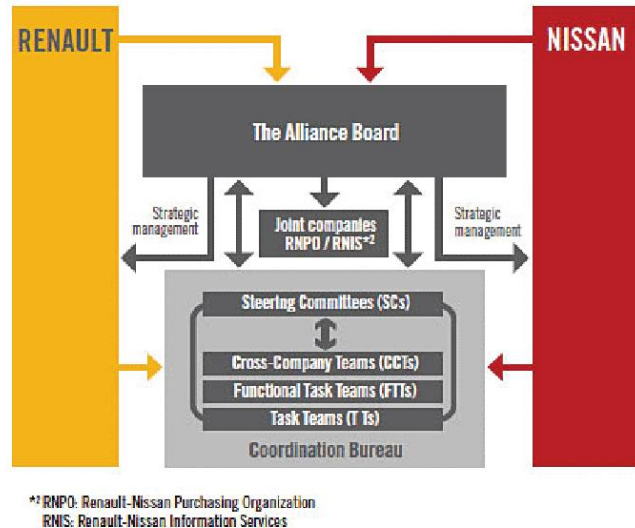
Europe, Hyundai Motor Europe, Iveco, Jaguar Land Rover, PSA Peugeot-Citroën, Renault, Toyota Motor Europe, Volkswagen Group, Volvo Cars and Volvo Group.

Example of EU-Japan Industrial Strategic Alliance: Renault & Nissan

French car manufacturer Renault bought 44% of the shares of the Japanese car manufacturer Nissan which was in financial trouble, with the objective of creating a strategic alliance and joining each other’s complementary strengths, working and managing the alliance as equal partners on a 50:50 basis.

Key factors:

- Keep the Japanese cultural touch of Nissan: car design remains Japanese, while other elements less visible were carried out together.
- International cooperation with a competitor can work: logistics, design & marketing can synergise, even if products remain in direct competition.
- Sharing markets, resources & efficiencies – examples: 1) shared R&D, 2) development of common platforms and parts, 3) sharing each other’s supply network, increasing competition between suppliers

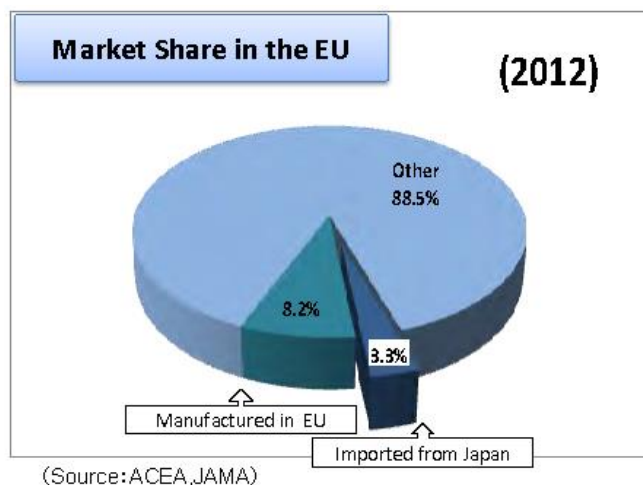


Source: “Investir au Japon maintenant”, CCE International #545, septembre 2009

Presence of Japanese Automotive Companies in Europe⁴⁶

The [Japan Automobile Manufacturers’ Association](http://www.jama-english.jp/about/profile.html) (JAMA) represents 14 Japan-based car, van, truck and bus makers in Europe: Daihatsu Motors, Fuji Heavy Industries, Hino Motors, Honda Motors, Isuzu Motors, Kawasaki Heavy Industries, Mazda Motors, Mitsubishi Motors, Mitsubishi Fuso Truck & Bus, Nissan Motors, Suzuki Motors, Toyota Motors, UD Trucks Corporation and Yamaha Motors.

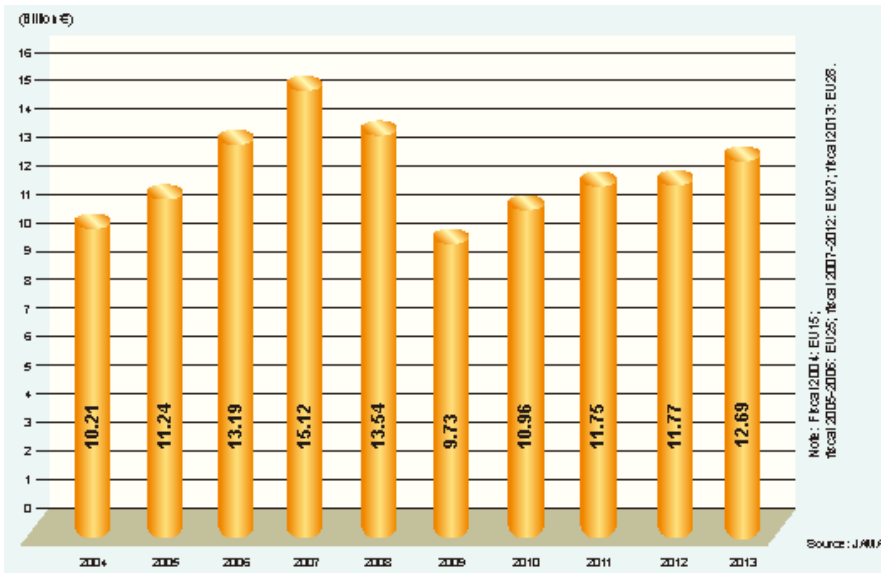
2012 statistics⁴⁷ suggest that there are investment and growth opportunities in the automotive sector in Europe: Japanese car production in Europe increased to 1.38m units in 2012 and around 161,000 people were employed through the activities of Japanese OEMs. Most new ‘Japanese’ cars sold in the EU were actually produced in the EU (8.2% of new cars registered in the EU were produced in Japanese EU plants, whilst only 3.3% were made in Japan).



⁴⁶ <http://www.jama-english.jp/about/profile.html>

⁴⁷ Pie-chart from page 9 of JETRO’s *Japan’s Market is Open to the World* publication (October 2013)

According to JAMA,⁴⁸ in 2013, 161,681 people in the EU were employed through the activities of Japanese automakers – 34,257 worked directly for the Japanese companies (2,173 or 6.3% worked in R&D with the rest in production) and 127,424 worked indirectly (in headquarters, parts distribution centres or in ancillary services).

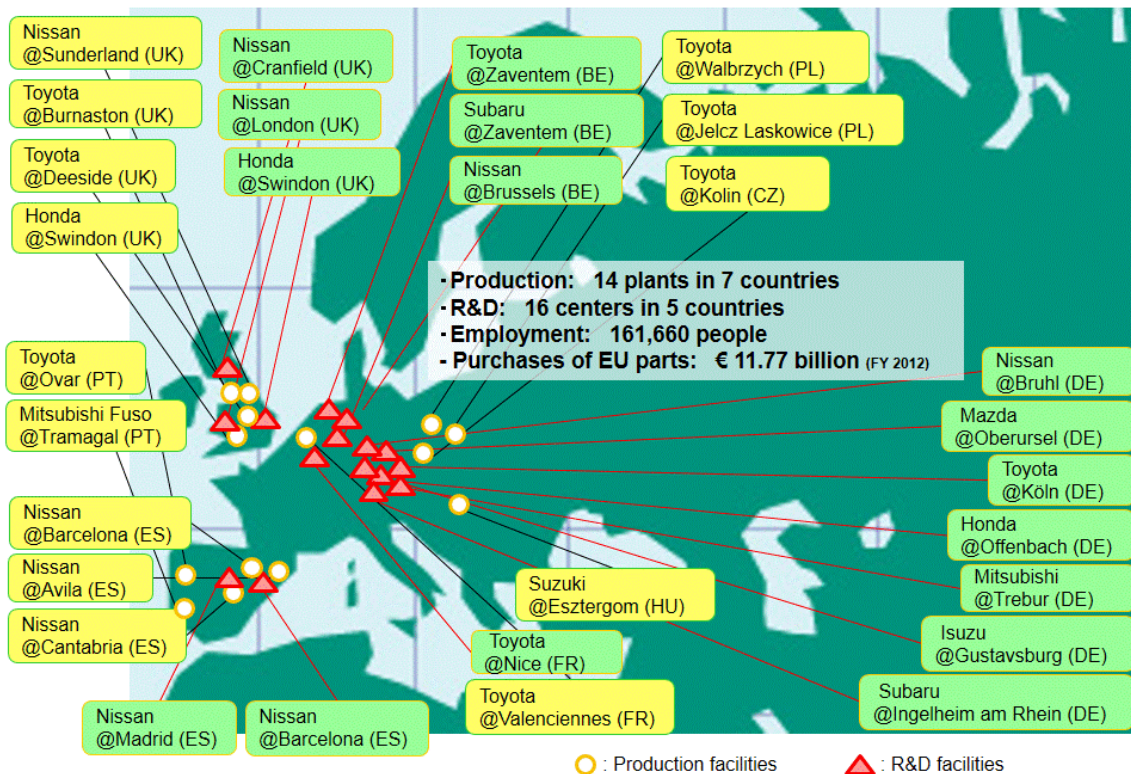


In 2013, Japanese automotive companies sourced €12.69 billion worth of parts from the EU – an increase of almost €1bn since 2011 when European suppliers delivered more than 80% of the value of the parts at European production sites. Local suppliers looking for a long-term relationship are considered as excellent partners for Japanese automakers.

2.2.2 Examples of Japanese Investments and Acquisitions in the EU

JAMA

Japanese Automakers in the EU – Production and R&D facilities



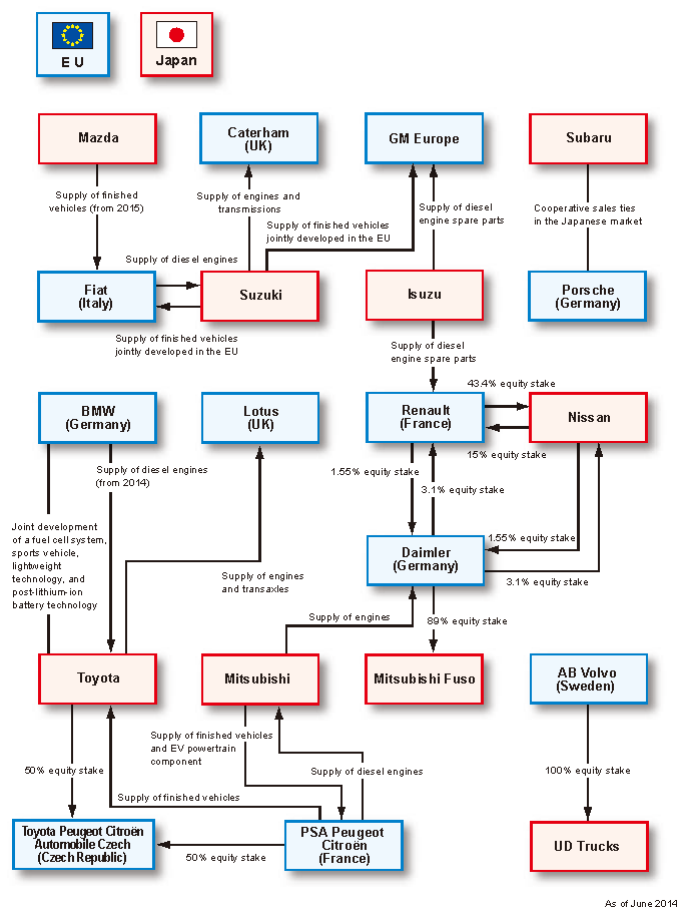
⁴⁸ *Common Challenges, Common Future: Japanese Auto Manufacturers Contribute to the Competitiveness of Europe's Motor Industry 2014*

Recent examples of Japanese automotive investments in the EU

| Company Names | Field/Country | Summary ⁴⁹ |
|--|---|--|
| Toyota Motor Manufacturing France (TMMF) | OEM (France) | To meet increased demand for the Yaris and Yaris Hybrid, TMMF Valenciennes added a 3rd production shift. With an extra 500 jobs, total employment at TMMF will be more than 4,000 (2014) |
| Nissan Motor Co., Ltd. | OEM (UK) | Nissan Sunderland will build Europe's first Infiniti plant, creating 1,000 jobs (280 on site) and in its UK suppliers. Nissan's Paddington Design Centre and Cranfield Technical Centre are also involved in the Q30's development (2013) |
| Suzuki Motor Corporation | OEM (Hungary) | Magyar Suzuki Corporation Ltd celebrated its production of the first brand new C-segment crossover SX4 S-CROSS. Expected first year production: 100,000 units. From the autumn, SX4 S-CROSS will be exported outside Europe to Oceania, Asia, the Middle East and Latin America (2013) |
| Suzuki and Intelligent Energy | JV creation (UK) | Establishment of joint venture to develop and manufacture a fuel cell system (2012) |
| Honda Motor Co., Ltd. | Motor racing – F1 (UK) | From the 2015 F1 season, Honda will base its European racing operation in Milton Keynes, participating under a joint project with McLaren, as the power unit supplier (including the engine and energy recovery system) (2013) |
| Honda, Toyota and European energy companies; global oil companies; global automakers; European R&D companies | Germany | This 'H2 Mobility' collaborative project aims to prepare for the planned launch of fuel cell electric vehicles (FCEVs) and establish a hydrogen refuelling station network (2009) |
| Honda, Nissan, Toyota, 3 UK government departments; industry participants from gas, utilities, infrastructure, global automotive manufacturing | Collaborative project (UK) | This 'H2 Mobility' collaborative project aims to evaluate the potential for FCEVs to provide environmental and economic benefits to the UK (2012) |
| Toyota, City of Grenoble; Grenoble-Alpes Métropole; Cité Lib; Electricité de France; Grenoble-Alpes Métropole, | Car-sharing project (France) | This collaborative zero-emission, ultra-compact urban electric vehicle car-sharing project aims to address 'last mile' transportation needs for those using public transportation (2013) |
| Honda, Toyota and BMW; Daimler; Hyundai; Hydrogen fuel supply companies; Others | Technological tests (Austria, Denmark, Germany, Italy and UK) | The HyFIVE (Hydrogen For Innovative Vehicles) project aims to demonstrate that hydrogen is a viable option by deploying a total of 110 hydrogen FCEVs and developing hydrogen refuelling stations at several European locations (2014) |

⁴⁹ JETRO, EU-Japan Centre for Industrial Cooperation, GBMC

2.2.3 Examples of EU-Japan joint R&D, Industrial Cooperation and Project Participation⁵⁰



Recent examples of Japanese automotive cooperation projects in the EU / other news

| Company Names | Type/Country | Summary ⁵¹ |
|--|---------------------------------|--|
| Toyota Motor Corporation and PSA Peugeot Citroën | Industrial Cooperation (France) | Peugeot Citroën begins supplying Toyota Motor Europe NV/SA with a light commercial medium-sized van (based on the Peugeot Expert and the Citroën Jumpy) for marketing as a Toyota (2013) |
| Toyota Motor Manufacturing France (TMMF) | OEM / Exports (France) | On 06/05/2013, following a €10m investment, TMMF began exporting the Yaris to the USA, Canada and Puerto Rico. The 25,000 units/year will be Toyota Motor Europe's first vehicle exports to North America (2013) |
| Nissan Motor Co., Ltd. | OEM (Europe) | The replacement for the current Nissan Micra compact car will be manufactured at a Renault plant in Europe for sale in Europe. Production of the left-hand drive car will start in 2016 (2013) |
| Mazda Motor Corporation, Fiat Group Automobiles SpA. | OEM (Japan) for Italy | From 2015, Mazda will produce an open-top, two-seater sports car for Fiat's Alfa Romeo brand at its Hiroshima plant (2013) |

⁵⁰ The flow-chart is from JAMA's *Common Challenges, Common Future: Japanese Auto Manufacturers Contribute to the Competitiveness of Europe's Motor Industry 2014* publication

⁵¹ JETRO, EU-Japan Centre for Industrial Cooperation, GBMC

Chapter 2 – Presentation of Selected Industrial Sectors in the EU

| Company Names | Type/Country | Summary ⁵¹ |
|---|---------------------------------|--|
| Toyota Peugeot Citroën Automobile Czech, s.r.o. | OEM (Czech Republic) | Joint production of passenger cars – creation of 1,400 jobs. Investment worth CZK 6,000 (2014) |
| Nissan Motor Manufacturing (UK) Ltd. | OEM (UK) | Sunderland – investment of GBP £192m for production of and R&D activities for Qashqai (2014) |
| Nissan Motor Iberica S.A. | OEM (Spain) | EUR €130m investment creating 4,000 jobs for the production of passenger cars |
| Nissan-Renault and Daimler | Industrial Cooperation (France) | Agreement on initiatives including joint development of a petrol engine and the licensing by Daimler of its new transmission technologies to Nissan |
| JNC – CEA | Joint R&D (France) | Agreement between JNC, an operating subsidiary of the Chisso Corporation, and the French Atomic Energy and Alternative Energies Commission (CEA) to conduct joint research into lithium ion battery material |
| Fiat Automobiles SpA and Mazda Motor Corp | Industrial Cooperation (Italy) | Partnership between Mazda and Fiat to develop and manufacture sports cars (2012) |
| Mitsubishi Motors Corporation and Peugeot | Industrial Cooperation (France) | OEM supply partnership between Mitsubishi Motors and the Peugeot Group for low-priced vehicles for emerging markets (2010) |
| Mitsubishi Motors Corporation and Peugeot | Partnership (France) | Partnership involving the provision of SUVs from Mitsubishi Motors Corporation to France's Peugeot (2010) |
| Mitsubishi Motors Corporation and PSA | Partnership (France) | Partnership between Mitsubishi Motors Corporation and France's PSA involving the development of a commercial electric vehicle (2010) |
| Toyota and BMW | Joint R&D (Germany) | Joint research into next-generation lithium-ion batteries (2012). Provision of HV technology from Toyota to BMW |
| Toyota and PSA Peugeot-Citroën | Industrial Cooperation (France) | <p>Production JV in the Czech Republic (for compact cars) and Russia (midsize cars). Also, an agreement between Toyota Motor Europe (TME) and PSA to set TME up as an OEM supplier for PSA compact cars in Europe beginning in 2013</p> <p>Under a 2012 agreement, PSA will supply medium-sized vans to Toyota from the second quarter of 2013. The agreement also includes collaboration on next-generation vehicles which are to be produced by PSA. The collaboration may last beyond 2020</p> <p>PSA decided to produce next-generation light commercial vehicles, including vehicles to be supplied to Toyota, at the Valenciennes-Hordain plant following their withdrawal from the joint venture with Fiat expiring in 2017, to contribute to maintaining jobs in the EU (2012)</p> |
| Mubea and Showa Corp | Partnership (Germany) | Partnership between Showa Corporation and Germany's Mubea, a manufacturer of automobile springs, involving the manufacture and sale of coil springs and shock absorbers (2012) |

| Company Names | Type/Country | Summary ⁵¹ |
|--|--------------------------------|--|
| Dürr AG and Nihon Parkerizing | Partnership (Germany) | Partnership between Nihon Parkerizing Co., Ltd. and Dürr AG involving automotive painting equipment (2012) |
| Renault-Nissan, Enel SpA and Endesa SA | Partnership (Spain & Italy) | Enel SpA and Endesa SA, Italian and Spanish power utilities, respectively, formed a partnership with Renault Nissan to grow the market for electric vehicles in Italy, Spain, and South America and further develop infrastructure |
| Ichikoh Industries, Ltd and Ficosa International | Partnership (Spain) | Ichikoh Industries formed a global partnership with Ficosa for an automotive mirrors business |
| Kasai Kogyo Co, Ltd and GRUPO ANTOLIN-IRAUSA | Partnership (Spain) | Kasai Kogyo strengthened a mutually complementary relationship in world-class auto-part production with auto part giant Antolin |
| Toray Industries and Gordon Murray Design, Ltd | Technology Partnership (UK) | Technology partnership between Toray Industries and UK-based Gordon Murray Design, a company involved in automotive design and other pursuits (2012) |

2.2.4 Opportunities for further EU-Japan Industrial Cooperation and/or Investments

A. Automotive Parts and Components: Trends in the EU Market relevant for potential investors or people potentially seeking industrial cooperation opportunities

Current and potential business partners should follow closely the following trends and market drivers of the EU automotive market.⁵²

a) Social Market Drivers:

- The particular needs of the ageing population (comfort, eyesight support, etc.).
- Increasing demand for smaller cars in congested urban areas.
- Growing income disparity among consumers.
- Focus on sustainable and environmentally-friendly products.
- Need for a more varied and customised offering in order to persuade European consumers to buy new cars (instead of second-hand cars).

b) Technological Market Drivers:

- Different companies are developing different carbon-free (e-vehicle) technologies.
- Increasing trend towards the incorporation of ICT in vehicles – connectivity in cars will be the strongest technological trend in the short/medium-term.
- A steady increase in the variety of (new) materials used in automotive design: hybrid materials, composites, biodegradable materials for interior parts, light-weight materials (aluminium, plastics and nano-materials).

⁵² http://www.cbi.eu/system/files/marketintel_platforms/CBI%20Trendmapping%20Automotive%20Parts%20and%20Components_0.pdf.
Source: The CBI (Centre for the Promotion of Imports from developing countries) – an Agency of the Netherlands Ministry of Foreign Affairs

- c) Economic Market Drivers:
- The creation of ‘after-market’ opportunities – as the demand for new cars continues to decline, the average age of the cars in service will continue to increase.
 - OEMs will increasingly outsource more responsibility to their tier one suppliers.

B. Potential Opportunities for Japanese OEMs (Original Equipment Manufacturers)

Japanese companies considering investing/establishing production units in the EU Single Market, should take the following elements into account:

- a) Target low-cost and premium sectors, as these will expand at the cost of the mid-price sector.
- b) Early entry in the EU carbon-free vehicle market will create advantages. The company which develops an efficient carbon-free car will be the winner in the automotive marketplace in the long-run.
- c) The development (R&D, industrial) of partnerships or production joint-ventures in different (carbon-free) technologies with innovative European OEM companies.

C. Potential Opportunities for Japanese Parts Suppliers and Subcontractors

Further suggestions for Japanese companies seeking opportunities in the EU Single Market:

- a) Specialise in niche components with higher margins and which are in demand by different segments of the EU population (e.g. parts related to safety, comfort, special needs, etc.).
- b) Develop products/parts for smaller and (ultra) low-cost cars.
- c) Focus on producing sustainable and environment-friendly products, especially those made from light-weight, sustainable or organic and biodegradable local materials (e.g. for use in traditional components such as dashboards and seats)
- d) If not already the case – enter the EU aftermarket as it is expected to see stable growth (given increased demand for replacement ‘wear and tear’ parts). Enter into partnership and subcontracting agreements with spare parts wholesalers.
- e) Specialise in components and technologies related to carbon-free vehicles.
- f) Develop parts which capitalise on connectivity and other ‘trendy’ ICT functions.
- g) Follow your (Japanese and European) OEM clients in their capacity build up in the emerging economies of Central and Eastern Europe.

Examples of EU-Japan industrial cooperation opportunities in the new EU Member States from Central and Eastern Europe

“Experiencing significant growth in the past, Central and Eastern Europe (CEE) has also been the recipient of major investments – to serve local markets and to establish a low-cost base for export to Western Europe”.

There has been strong demand for small, low-cost cars produced by OEMs in the EU Member States from Central and Eastern Europe, fuelled by increased demand for these cars in Western Europe, itself boosted by scrapping schemes (governmental subsidies).

Currently, the EU global market for passenger vehicles is being split between the mature markets, (e.g. Western Europe) and the emerging markets (e.g. CEE). While almost all the mature markets were slowing down in the context of the global economic crisis, the economic and automotive sector-specific stimulus has meant that Western Europe was not as badly affected as the other mature markets.

Some CEE countries — notably the Czech Republic and Slovakia — are exporting large numbers of vehicles while their domestic markets remain small. The plants in these countries operate almost entirely independently of the local market, relying on strong demand in the destination countries in Western Europe.

The CEE region is benefiting from investment in new plants committed some years ago: there is still capacity being added in CEE at a lower level. The most notable is the Mercedes-Benz small car plant in Hungary in 2012.

Bulgaria: An example of large foreign investment in the automotive sector is represented by the Chinese manufacturer Great Wall Motors which became the first foreign passenger car manufacturer in Bulgaria, after forming a joint venture with the local Litex Motor Corporation. Local production started in the town of Lovech in 2011. The entry of Great Wall Motors is expected to be the cornerstone for Bulgaria in establishing a competitive domestic automotive industry. Bulgaria hosts a number of small to mid-sized component manufacturers with export-driven production activities. Following the entrance of Great Wall Motors in Bulgaria, the local component sector is expected to gain momentum, possibly attracting other foreign investors to the market.

Romania: “Romania symbolises the transition to a new dimension of low-budget cars under €7,000. The Dacia Logan together with its derivate the Sandero hatchback, produced by Renault in Pitesti, are the cheapest cars in Europe”.

2.2.5 Summary – Potential for further Japanese collaborations, investment and other activity in the EU

| | |
|--------------------------|--|
| Where | R&D investments in key technological markets in Western Europe. Production capacity build up in Central and Eastern Europe, showing a growing regional demand and lower labour costs. |
| Which Technologies | Potential for connectivity and ICT-related products in cars. Efficient carbon-free cars (e-vehicles). |
| OEMs | Potential demand in low-cost and premium car segments. Potential for early entry in EU carbon-free vehicle market. |
| Auto Parts & Aftermarket | Aftermarket in the EU, as the demand for new cars continues to decline and the average age of the cars in service will continue to increase. Niche components, parts for smaller and (ultra) low cost cars, as well as sustainable and environment-friendly products. |

2.3 EU Aerospace Sector

2.3.1 Brief Market Overview

The aerospace industry is one of the key, high-tech sectors in the EU. The industry is highly concentrated, both geographically in a few EU Member States and in terms of a few larger enterprises. Employment in the aerospace sector is particularly significant in the UK, France, Germany, Italy, Spain, Poland and Sweden.⁵³ There is also an important supplier base (sometimes carrying out maintenance or repair tasks) in other countries – e.g. Portugal, Belgium, Luxembourg or the Czech Republic.

Productivity is considerable and, even though average employment costs tend to be high, the sector is quite profitable. An appreciable share of added value is spent on R&D, which is reflected in the increasing number of patent applications originating from the sector. The EU has a trade surplus for aerospace products, which are exported all over the world.⁵⁴

Specialization of Bigger Member States in the Aerospace Industry

| | France | United Kingdom | Germany | Italy | Spain |
|--------------------|--|--|--|--|---|
| Major Competencies | Cockpit technologies and manufacture, engine manufacturing, broadest range, e.g final assembly of wide-body aircraft, helicopter, aircraft funding | Manufacturing of wings, strong in related composite applications, engine manufacturing, military products, MRO | Avionics, fuselages, complex cabin equipment, high-lift systems, vertical tails, manufacture of and technologies for engines, final assembly of large civil aircraft, helicopter | Electronics, Military aircraft, helicopter manufacturing, strong integrated in non-EU value chains | Tail, fin and pitch elevator, growing strength in composites, assemblage of military transport aircraft and helicopters |

Source: Bauhaus Luftfahrt, Ifo Institute.

European level industrial representation

The [Aerospace and Defence Industries Association of Europe](#) represents the aeronautics, space, defence and security industries in Europe in all matters of common interest with the objective of promoting and supporting the competitive development of the sector. ASD's membership is composed of 16 major European aerospace and defence companies and 27 member associations in 20 countries (17 of them in the EU).

Key Facts and Figures (2012)

- Over 2,000 aeronautics, space and defence companies in 20 countries generated a turnover of almost €186.8 billion.
- The turnover breaks down as follows: €81.3 billion in civil aeronautics, €46.2 billion in military aeronautics, €10.5 billion in space and €48.8 billion in land & naval defence. That is, civil activities amount to €90.8 billion (49%), while military activities amount to €96 billion (51%). Further, total aerospace business (civil & military aeronautics + space) amounts to €138 billion.

⁵³ JETRO, EU-Japan Centre for Industrial Cooperation, GBMC

⁵³ http://ec.europa.eu/enterprise/sectors/aerospace/files/aerospace_studies/summary_aerospace_study_en.pdf

⁵⁴ <http://ec.europa.eu/enterprise/sectors/aerospace/market-data/>. The subsequent table showing specialisations by bigger Member State is from the 2009 [Competitiveness of the EU Aerospace Industry with focus on: Aeronautics Industry](#) report

- The industry employed more than 752,000 people, 66% (about 500,000 people) worked in the aeronautics industry and 5% (about 35,000 people) worked in the space industry. R&D for civil and military aeronautics reached the level of €14.6 billion or 11.5% of the revenues.

About the European Space Industry

- The manufacturing industry is a strategic sector, embedded in the wider European Aerospace and Defence industrial complex. The industry is distributed across all of Europe, but with the main industrial sites located in France, Germany, Italy, the UK and Spain (most EU Member States have a tradition of aircraft manufacturing and most still retain production and research facilities).
- The core of space manufacturing activity lies in the design, development and manufacturing of satellites for operational applications such as telecommunications systems and parts, earth observation systems and parts, and finally navigation / localisation systems and parts.
- The second area of business is launchers. Launcher activities include operational launch systems sales (mainly by Ariespace) and development and consolidation activities in support of the Ariane and Vega systems.

2.3.2 The potential of EU-Japan industrial cooperation in Europe

To date, many activities have been conducted either from Japan or through contacts with subsidiaries/offices of European companies in Japan (e.g. Airbus Japan, Eurocopter Japan). The extent of Japanese investments in the EU in this sector is still limited and therefore there is still an as yet unexplored potential. There are already many examples of collaborative relations between companies and associations on both sides. One example of a long-term, EU-wide, investment strategy in the sector is represented by Toray which in 2012 announced it would expand its production capacities in the EU by investing more than €100 million in building a polyacrylonitrile production facility in Lacq (France). Polyacrylonitrile is a raw material for carbon fibres used in the aerospace sector. According to Toray, “This new facility will consolidate Toray Carbon Fibers Europe’s position in the European carbon fibre market and will help to improve the reliability of its supplies to clients on the continent. This was the first stage in Toray Group’s European strategy to become an integrated player serving the composite materials sector, and the aerospace sector in particular”.⁵⁵

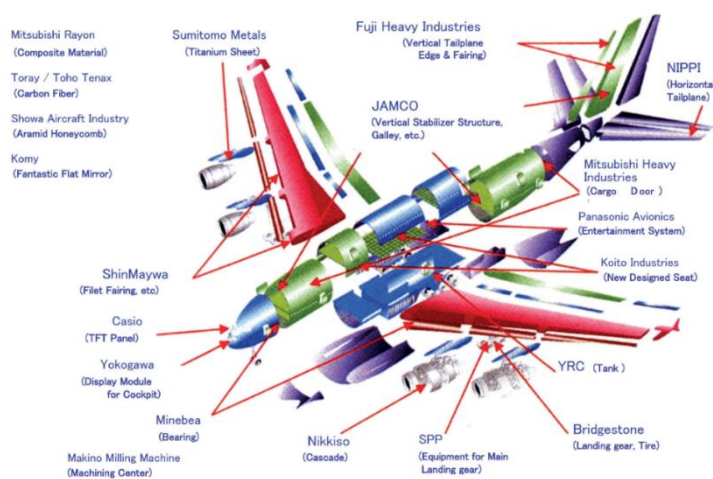
Other examples include: Nabtesco Corp which established (in 2012) an aftercare centre in Germany for equipment for aircraft-related applications and Mitsubishi Aircraft Corporation which opened a European sales and promotion office (subsidiary) in Amsterdam in 2011. In 2013, the company further established a Quality Assurance Department in Munich as a branch of its Amsterdam Head Office in Europe. Although at the moment the main purpose of the Amsterdam office is to increase sales activities, gather information and conduct public relations related to the MRJ (Mitsubishi Regional Jet) brand, this could become the initial step towards a concrete investment strategy in the region.

⁵⁵ <http://www.invest-in-france.org/us/investment-decisions/toray-boosts-its-production-capacity-in-france.html>

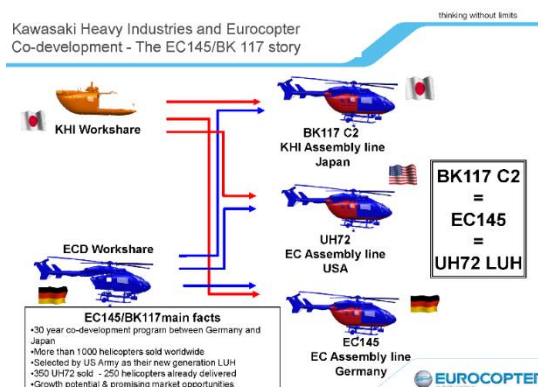
2.3.3 Examples of EU-Japan joint R&D, Industrial Cooperation and Project Participation

A. Civil Aircraft⁵⁶

- International tie-ups, programmes and cooperation have played a decisive role in the growth of Japan’s aircraft industry in the post-war period. For example, the total work share of Japanese firms accounts for approximately 35% of the Boeing 787 Dreamliner’s structures and systems.
- Regarding business ties with EU manufacturers, Japanese companies have been suppliers or subcontractors for the A300, 310, 320, 330 and 340 Airbus series. 21 Japanese companies took part⁵⁷ in the Airbus A380 programme – providing components and parts to the airframe, engines and equipment, including: MHI (supplying the front and aft lower cargo door); FHI (the vertical tailplane’s leading and trailing edges, tips and fairings); Nippi (the horizontal tailplane tips); Shinmaywa Industries (working on the wing root fillet fairing and the wing ramp surfaces); and Bridgestone (supplying tyres):



- Japanese aircraft manufacturers also individually participate in international collaborative programmes for business and corporate jet airplanes, and play an important role as risk-sharing partners: e.g. MHI (in the Bombardier’s Global Express), Shinmaywa (in the Gulfstream GV), FHI (in Eclipse Aviation’s Eclipse 500), KHI and FHI (in the BA609 programme developed by Bell/Agusta Aerospace).
- On another level, Japanese aircraft manufacturers have OEM ambitions and have plans for future Japanese civil aircraft (for example the MRJ⁵⁸ or HondaJet⁵⁹), which could create various industrial cooperation and business opportunities (technology transfers, joint R&D, supply agreements, etc.) for the EU aircraft industry.



⁵⁶ “Aerospace Industry in Japan 2011 – Aircraft Programs”, SJAC (The Society of Aerospace Companies)

⁵⁷ As of December 2008. Source: http://www.sjac.or.jp/common/pdf/hp_english/07.pdf

⁵⁸ <http://www.mrj-japan.com/index.html>

⁵⁹ <http://world.honda.com/HondaJet/>

EU-Japan Joint Research Projects

Examples of technologies inspired by EU-Japan research projects include:

- The EC145/BK117 mid-sized helicopter jointly developed by Kawasaki Heavy Industries and Eurocopter for sale worldwide.⁶⁰
- EADS’s 2011 unveiling of plans for [Zero Emission High Supersonic Transport](#) enabling Paris-Tokyo in 2½ hours ([ZEHST](#) is partly a result of a 2005 Supersonic Technologies Cooperation Agreement between the French and Japanese aerospace industry bodies to cooperate on a pre-feasibility research programme on basic supersonic technologies).

B. Engines:⁶¹

TRENT1000 (Rolls-Royce)



Image Source : Rolls-Royce
(Participation of Japanese Companies)
◇Kawasaki Heavy Industries (KHI)
intermediate pressure compressor module
◇Mitsubishi Heavy Industries (MHI)
combustor module
low pressure turbine blade

In addition to producing components, KHI and MHI were actively involved in the development programme for Rolls-Royce’s Trent 1000 engine.⁶² KHI designed and manufactures the intermediate pressure compressor module and is responsible for some of the testing and MHI is responsible for the combustor module and the low pressure turbine blades. Other Japanese companies also supply components. Airbus selected Rolls-Royce’s Trent 1000 and the Engine Alliance’s GP7200 as engines for the A380. IHI and KHI are also subcontractors for the development of Trent 900 and GP7200. KHI, MHI and Sumitomo Precision Products are involved in the Trent XWB engine which powers the Airbus A350 XWB.

C. Space: Commercial Launch Market:⁶³

In 2013, MHI and Arianespace SA agreed an MoU to implement joint proposals relating to commercial space rocket launches. Under the new MoU, as a follow-up to their previous cooperative achievements, they would probe collectively the creation of innovative new launch services and the standardisation of satellite preparation tasks at launch sites. The aims behind the latest initiative are further development of the commercial launch market and a sustained enhancement of both companies’ related services.

Cooperation between Japan’s space industry and Arianespace dates back to the early 1990s, when the two sides exchanged views in a quest to standardise rocket and payload interfaces. Out of those exchanges evolved a new cooperative relationship between MHI and Arianespace that led to the two companies’ formation of a ‘Launch Services Alliance’. The new MoU is designed to take their mutual partnership one step further.

According to Arianespace’s Jacques Breton, “this cooperative arrangement should enable both MHI and us to propose services to our clients that are more flexible and better suited to their needs. Japan has been a major partner for Arianespace for 30 years, and will continue to be so for many more years to come”.⁶⁴

⁶⁰ KHI-Eurocopter graphic taken from the [Examples of cooperation programs between Eurocopter and Japan aerospace industry](#) presentation given by Isabelle Hermite, EUROCOPTER, 17 December 2013 at a [JETRO-AFII-UBIFRANCE Joint Seminar](#) in Paris, France

⁶¹ “Aerospace Industry in Japan 2012 – Aircraft Programs”, SJAC (The Society of Aerospace Companies)

⁶² http://www.rolls-royce.com/japan/en/about/rolls_royce_japan.jsp

⁶³ <http://www.mhi-global.com/news/story/130607en.html>

⁶⁴ <http://www.mhi-global.com/news/story/130607en.html>

Case Study: French suppliers and the Japanese Aircraft Industry

The [ASTech Paris Region](#) is a world-class competitiveness cluster focused on the space and aircraft industries established in the Paris Region. The cluster aims to gather skills and encourage a culture of networking between:

- Top-level manufacturers (e.g. the Airbus Group, Dassault, SAGEM & Thales);
- Equipment manufacturers (e.g. Goodrich, Lisi Aerospace, Tyco, etc.);
- Local SMEs; and,
- Local universities/research centres.

The cluster brings together companies supplying manufacturers worldwide (e.g. engine manufacturers, flight computing specialists) with industrial players involved in markets which are quite distinct from Airbus. They are more involved in rockets, defence, business aviation, etc., although their origins are sometimes aviation-related. Local SMEs account for about 1/3 of the ASTech cluster's members. They have developed cutting-edge know-how in electricity, sheet metal work, mechanics and surface treatment technologies, which all have an important role to play in this industry. Many of them are located in business parks located in the Greater Paris area. c. 30 are gathered in the Business Parks of St-Ouen l'Aumône, in Val d'Oise Prefecture, and belong to an Association of common business interests – the "GIE des Parcs d'Activités de St-Ouen l'Aumône".

On the Japanese side, "The Greater Nagoya Initiative Centre" (GNIC) was established in 2006 as a joint organisation of national government, local governments, industries and academia to promote FDI and alliances between overseas and Japanese companies. Among these 500 organisations, the [Chubu Aerospace Industry and Technology Center](#) (C-ASTEC) comprises c. 30 companies (aircraft manufacturers – e.g. MHI, KHI, FHI and local SMEs) and 5 regional universities involved in the "Aerospace Dream Project" – the development of the local aerospace industry. Customers of these companies include Boeing, Airbus, Eurocopter, Mitsubishi (MRJ), JAXA, etc.

Since 2009, the CEEVO (Economic Agency of Val d'Oise Prefecture, in the Paris area) and the GNIC have been working together on developing ties between companies in the ASTech Paris Region and in the C-ASTEC clusters. Apparently, members of Toyota and Mitsubishi groups have also been involved. Over the years, there have been opportunities to meet and to exchange between both clusters, either in Europe (at the UK Farnborough Air Show or the Le Bourget Air Show in France) or in Japan (at the Messe Nagoya Show or during one of the yearly business visits organised by the CEEVO), but without concrete results or breakthrough so far. The most feasible collaboration potential is on the technical and academic side: common R&D projects, visits of researchers on both sides, technical meetings, etc.

Regarding the potential for future technological cooperation: a relevant area would be the use of composite materials for aircraft applications. The premises are already present since there is a new Composite Materials Test Centre in Chubu area (the "National Composite Centre" with state-of-the-art facilities for producing and evaluating manufacturing technology) and two R&D centres on Composite Materials fasteners/rivets in Val d'Oise Prefecture (ALCOA and LISI Aerospace). Another example would be cooperative research on technologies related to jet-engine noise to overcome difficulties unique to supersonic flight.

In the future, Japanese companies involved in the aerospace sector could potentially team up with European key manufacturers in order to develop and build full-sized aircrafts (private / regional / commercial jets, supersonic jets, etc.). They could also simply increase the share of

Japanese suppliers into Airbus projects. The European producers from their part could offer technology licensing opportunities or new business flows for Japanese integrators / manufacturers in the regional jet segment, for example.

2.3.4 Summary – Potential for further EU-Japan industrial cooperation in the EU

| | |
|-------------------------------|---|
| For SMEs | Potential for collaboration on the technical and academic side: common R&D projects, visits of researchers from both sides, technical meetings, etc. On the business side, it is more difficult to determine, but a first step would be to increase the share of Japanese suppliers into the activities of Airbus Group and other OEM projects. |
| For OEMs and larger companies | There is still a lot of EU-Japan R&D, business and industrial technological cooperation potential between the Airbus Group, Arianespace, Trent (engines), MRJ and HondaJet. There are also a lot of potential joint projects on other future aerospace programmes (e.g. ZEHST) or on relevant technological areas such as advanced composite materials, jet-engine noise reduction, carbon-fibre wings, composite helicopter blades and new engines. |
| Where | A reinforced Japanese presence in the EU would definitely make sense and increase the frequency, as well as the depth of these collaborative relationships. |

2.4 EU Electronics and ICT Sector

2.4.1 Brief Market Overview

The Information and Communication Technologies (ICT) sector accounts for a substantial part of EU GDP and employment. ICT investments are thought to be responsible for around half of the EU's productivity growth in recent years. It is a highly R&D-intensive sector, accounting for around 25% of the EU's R&D. As general purpose technologies, ICT goods and services are important drivers of productivity growth and economic performance across all sectors. They enable process and product innovation, and money spent on computing technology delivers gains in worker productivity which are many times higher than those of other investments.⁶⁵

From a geographical point of view, ICT-related markets and business activities are spread over several countries of the EU, usually featuring different kinds of applications such as, for example, data centres in Sweden; R&D for mobile solutions and games in Finland; wireless and mobile R&D in Denmark; cybersecurity systems in Estonia; cloud computing in Ireland and Belgium; and e-business in the UK.

Overview of the importance of the EU ICT Sector and its R&D⁶⁶

The [2012 Predict Report](http://ec.europa.eu/enterprise/sectors/ict/index_en.htm), produced by the Information Society Unit at the European Commission's Joint Research Centre, provides an analysis of the state of the ICT sector and R&D in the EU (as of 2009). The major trends observed in the report are the following:

- The importance of the ICT sector for the EU economy as a whole and of ICT services (telecommunications and computer programming services) in particular.
- The ICT sector is one of the most R&D-intensive sectors of the EU economy, with a share of 5.3%.

⁶⁵ http://ec.europa.eu/enterprise/sectors/ict/index_en.htm

⁶⁶ <http://is.jrc.ec.europa.eu/pages/ISG/PREDICT/2da/index.html>

- The important contribution of the largest EU economies (Germany, France, the UK, Italy) to the performance of the EU ICT sector and the leadership of Nordic countries (Finland, Sweden, Denmark) in terms of R&D intensity.

Size of the EU ICT Sector (Value Added)

- The ICT sector's added value (VA) in the EU amounted to €470 billion. This represented a share of 4.0% of EU GDP, a share that has remained stable over the last few years.
- ICT Services represented by far the largest share of ICT VA (91.9% or €432 billion), and amounted to 3.7% of EU GDP, while ICT Manufacturing VA represented 8.1% of ICT VA (€38 billion), amounting to 0.3% of GDP.

ICT Sector Employment and Labour Productivity

- Over 6.1m people worked in the EU ICT sector – equivalent to 2.7% of EU employment.
- ICT employment is highly concentrated in ICT services: 5.1m people worked in ICT Services (85%) whereas 0.9m worked in ICT manufacturing (15%).
- Labour productivity per person in ICT manufacturing in the EU was €41,170 while in ICT Services it was €84,170.

ICT Sector Business Expenditures in R&D (ICT BERD)

- ICT BERD was €25 billion, 7.4% less than it was in 2008 (€27 billion). €11.3 billion of it came from manufacturing; whilst services accounted for €13.7 billion.
- The ICT sector is one of the most R&D-intensive sectors in the EU economy. ICT BERD made up 17% of total BERD, while ICT VA represented only 4% of GDP. Also in 2009, ICT R&D intensity, measured by the ratio of ICT BERD over ICT VA, was 5.3%.

Public Funding of ICT R&D (ICT GBAORD)

- Public ICT R&D funding in the EU was estimated at €5.3 billion which represented almost 6% of the total EU public funding of R&D.

ICT R&D Personnel

- ICT R&D personnel (including both researchers and R&D supporting staff) made up 4.7% of total ICT employment in the EU.
- 10% of employees in the EU ICT manufacturing sub-sectors were R&D personnel, whereas only 3.7% were in ICT Services.

European level industrial representation

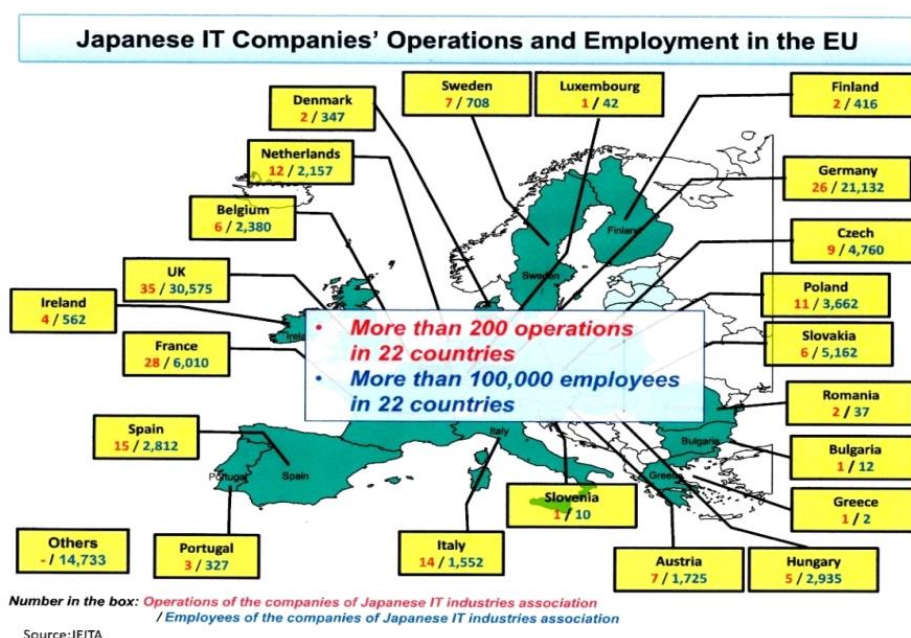
[DIGITALEUROPE](http://www.digitaleurope.org) is the voice of the European Digital Technology Industry, which includes large and small companies in the ICT and Consumer Electronics industry sectors. It is composed of major multinational companies and national associations from European countries. The digital industry is fuelling jobs and economic growth, especially amongst European SMEs. In all, DIGITALEUROPE represents more than 10,000 companies all over Europe and over €1,000 billion in revenues.⁶⁷

⁶⁷ <http://www.digitaleurope.org/AboutUs.aspx>

2.4.2 EU Strategy: ‘Digital Agenda’ – Towards a European Digital Single Market

The [Digital Agenda for Europe](#) (DAE) is the EU strategy to help its citizens and businesses to get the most out of digital technologies. It is the first of seven flagships initiatives under the Europe 2020 Strategic Agenda. Launched in May 2010, the DAE contains 101 actions, grouped around seven priority areas. It is estimated that the full implementation of the Digital Agenda would increase European GDP by 5% over the next eight years. Part of the ‘Digital Agenda’ is the ambition to complete an integrated European Digital Single Market (DSM) by 2015, in particular by adopting measures to boost confidence in on-line trade and by providing better broadband coverage. Potential Japanese investors or companies seeking industrial cooperation should follow closely the evolutions in the implementation of DSM, since it will certainly create further growth and investment opportunities in the EU (ICT) sector and beyond (improving the productivity and competitiveness for companies operating in Europe).

2.4.3 Examples of Japanese Investments and Acquisitions in Europe



A. Example – Rakuten’s Success Story in Europe

Rakuten’s presence in Europe began with its takeover of several French firms: PriceMinister (France’s leading e-commerce site, in 2010); Aquafadas (a digital publishing systems firm acquired, in 2012, through Kobo Inc.⁶⁸) and Alpha Direct Services (a French logistics firm, in 2013) and involved the retention of the senior management teams in each of these acquisitions. Rakuten’s CEO, Hiroshi Mikitani also decided to open the group’s third global R&D centre (the Rakuten Institute of Technology) in France in order to capitalise on Europe’s rich digital research and development ecosystem.⁶⁹ In 2014, Mr Mikitani was decorated with the rank of Chevalier in the Légion d’Honneur (an award made for significant contributions to French culture and business).⁷⁰

⁶⁸ <http://blog.aquafadas.com/events-news/kobo-acquiert-aquafadas-press-release/>

⁶⁹ <http://www.priceminister.com/blog/rakuten-institute-of-technology-paris-10828>

⁷⁰ <http://www.invest-in-france.org/us/news/rakuten-s-ceo-awarded-legion-of-honor.html>

B. Other Examples of Japanese ICT/Electronics investments in Europe

| Company Names | Field/Country | Summary ⁷¹ |
|--|------------------------------|--|
| Rakuten Group | IT / Software (France) | Rakuten acquired French e-commerce giant PriceMinister SA for €200m (2010) |
| | IT / Software (Germany) | Rakuten acquired an 80% stake in Tradoria GmbH, one of Germany's leading online e-commerce platforms and thus entered the German online shopping market (2011) |
| | IT / Software (UK) | Rakuten acquired Play.com, a UK-based e-commerce business, for £25m (2011) |
| Konica Minolta Business Technologies, Inc. | IT / Software (France) | In 2012, Konica Minolta Business Technologies purchased the IT service provider Serians through a French sales company |
| Ricoh Company, Ltd | IT / Software (Germany) | Ricoh acquired Aqua Design Amano Deutschland GmbH, expanding its IT solutions business (2012) |
| Elecom Co, Ltd | IT / Software (Germany) | Elecom established a wholly-owned subsidiary to sell computers and products related to computers and digital devices in Germany (2012) |
| Marvelous AQL, Inc. | IT / Software (UK) | Marvelous AQL established a wholly-owned subsidiary in the UK engaged in the management of online games (2012) |
| Pole to Win Co, Ltd | IT / Software (UK) | Pole to Win established a European branch for its game software translation business in the UK (2012) |
| Sony Computer Entertainment (SCE) | IT / Software (UK) | Sony Computer Entertainment (SCE) acquired Media Molecule, the British company that developed the Little Big Planet software title exclusively for the PlayStation 3 (2010) |
| NTT DoCoMo, Inc. | Communications (Italy) | NTT DoCoMo acquired an Italy-based European mobile services giant, Buorngiorno SpA, that provides access to some two billion people across 57 countries (2012) |
| NTT Communications Corp | Communications (UK) | NTT Communications acquired Gyron Internet Limited, a UK-based provider of data centre services (2012) |
| Sony Corporation | Communications (UK) | Sony bought out Ericsson's 50% stake in UK-based Sony Ericsson (2011) |
| NTT Data Corporation | IT Consulting (Italy) | NTT acquired 100% ownership of Value Team SpA through its subsidiary NTT Data EUROPE GmbH (2011) |
| DISCO Corporation | Semicon (Germany) | Semiconductor fabrication service provider Disco built a facility in Germany, provided prototype manufacturing services, and aims to get business in the manufacturing of devices (2012) |
| Sharp Corporation | Electronics (UK) | Sharp established a European headquarters in London (2012) |
| Eizo Nanao Corp | Electronics (Germany) | Eizo Nanao established a wholly-owned subsidiary to sell electronic equipment in Germany and the UK (2011) |
| Softbank | ICT / Mobile games (Finland) | SoftBank and GungHo announced strategic investment of USD \$1.5 billion in Finnish mobile game company Supercell (2013) |

⁷¹ JETRO, EU-Japan Centre for Industrial Cooperation, GBMC

| Company Names | Field/Country | Summary ⁷¹ |
|---------------|--------------------------|---|
| ClassNK | ICT / Software (Finland) | ClassNK acquires NAPA, maritime software house in Finland (2014) |
| Canon | IT / Software (Belgium) | Canon acquired I.R.I.S. S.A. – a developer of technologies and products for Intelligent Document Recognition (2012) |

Japanese industrial representation in Europe

The membership of the [Japan Electronics and Information Technology Industries Association](#) consists of Japanese ICT companies, making up one of the largest industry associations in Japan. JEITA's member companies, operating in the electronics and IT industries, account for about ¥40 trillion globally. The EU Office is located in Brussels, Belgium. It is the Japanese equivalent of DIGITALEUROPE. Further details in Chapter 3, with [JEITA Europe's testimonial](#).

2.4.4 Examples of EU-Japan joint R&D, Industrial Cooperation and Project Participation

Japan and the EU share many of the same challenges in the ICT field (e.g. internet governance, cybersecurity) which could be addressed by collaborative policies and R&D.

In 2013, with the volume of 'big data' increasing faster than the capacity of networks to carry it, the [European Commission and Japan announced six joint research projects](#) to redefine internet architectures to increase networks' data-carrying efficiency: [STRAUSS](#) (optical communications), [MiWEBA](#) (wireless communications), [NECOMA](#) (cybersecurity for improved resilience against cyber threats), [GreenICN](#) (green & content centric networks), [ClouT](#) (extending the cloud paradigm to the internet of things) and [FELIX](#) (global scale experiments over federated test-beds). The projects, will receive around €18 million in funding, and touch on challenges such as cyber-security, network capacity, storage, high density data traffic and energy efficiency.

Examples of already established cooperation in the field of ICT/electronics

| Company Names | Field/Country | Summary ⁷² |
|---------------------------------------|------------------------|---|
| Rakuten | IT / Software (France) | Partnership between Rakuten and French companies involving measures to combat counterfeit products in e-auctions (2010) |
| Miyake Inc. | IT / Software (France) | Partnership between Miyake and French companies involving the cross-selling of security tags (2010) |
| Sumitomo Computer Systems Corporation | IT / Software (France) | Partnership involving the distribution of casting analysis software among Sumitomo and French companies (2010) |
| BT Group | IT / Software (UK) | Partnership between Hitachi and British companies to collaborate on an Id-management system for financial institutions (2012) |
| Sumitomo Electric and Soitec | Electronics (France) | Partnership to mass produce gallium nitride (GaN) substrates. |

⁷² JETRO, EU-Japan Centre for Industrial Cooperation, GBMC

| Company Names | Field/Country | Summary ⁷² |
|---------------|---------------------|---|
| Lumiotec Inc. | Electronics (Italy) | Partnership between Lumiotec and two Italian companies to develop jointly lighting using organic EL panels (2011) |
| ICOM Inc. | Electronics (UK) | Partnership between ICOM and British companies to develop digital radios (2011) |

2.4.5 Opportunities for further EU-Japan industrial cooperation and investments

Examples of further opportunities for potential Japanese investments and technological cooperation in Europe:

- Participation in FP7/Horizon 2020 related ICT Projects such as [STRAUSS](#), [MiWEBA](#), [NECOMA](#), [GreenICN](#), [ClouT](#) or [FELIX](#).
- [Participation in ICT Projects/Tenders](#) from the ‘EIT ICT Labs’ European network’ – one of the first ‘Knowledge and Innovation Communities’ created by the European Institute of Innovation and Technology as an initiative of the European Union. Since 2010, its mission has been to encourage European leadership in ICT innovation. The EIT ICT Labs build upon nodes in Berlin, Eindhoven, Helsinki, London, Paris, Stockholm and Trento and their partners representing global companies, leading research centres, and top universities.
- Participation in Big Data projects in ICT clusters in Finland (e.g. The Cloud Software Finland cluster, focused on new cloud business models, lean software enterprise models and open cloud software infrastructures, as well as The Data to Intelligence cluster, focused on Big Data). The [national IoT project of Finland](#) is identified as one of the strategically important R&D projects of national interest.
- Joint R&D cooperation with EU ICT companies on common research themes e.g. big data, cybersecurity, network capacity, storage, high density data traffic and energy efficiency.
- Setting up of research facilities in some of the EU’s ICT Clusters: E.g. in Ireland (9:10 of the world’s top US ICT companies – SAP, HP, Google, eBay, Oracle, IBM, Microsoft, Apple, Dell and Intel – have operations there along with many other leading names in the sector. Over 200 ICT companies, directly employ c. 36,000 people), Estonia (a small and dynamic EU country where ‘SKYPE’ originates from and where the use of e-services, digital signatures and id-cards has been widely adopted, in public offices as well as in private banks. Due to high-tech solutions for preventing fraud and cyber-attacks, the usage of e-banking in Estonia has become very trustworthy), France (where Rakuten opened its third global R&D centre and where there is also an “EIT ICTS Labs” node) or in Finland (where the IoT consortium consists of more than 250 scientists and international experts).

2.4.6 Summary – Potential for further EU-Japan industrial cooperation or investments

| | |
|---------------------|---|
| Which ICT segments | Big data, cyber security, network capacity, storage, high density data traffic and energy efficiency. |
| Where | ICT-related markets and business activities are well spread over several countries of the EU, usually featuring different kinds of applications – e.g. data centres in Sweden, R&D for mobile solutions and games in Finland, wireless and mobile R&D in Denmark, cybersecurity systems in Estonia, cloud computing in Ireland and Belgium and e-business in the UK |
| R&D / Collaboration | Potential for participation in various ICT Projects from Horizon 2020, from the ‘EIT ICT Labs’ European network and from various ICT clusters in the EU. Large potential, as ICT is one of the most R&D intensive sector in the EU economy |

| | |
|--------------------------|---|
| Investment Opportunities | Potential for acquisitions in various ICT segments: <ul style="list-style-type: none"> – E-commerce platforms (e.g. emulating Rakuten M&A operations in the EU) – Gaming and other types of software companies (for business consolidation) – IT services providers (for after sales service consolidation) – Data centre services or mobile services companies (for EU (online) customer base expansion) |
|--------------------------|---|

2.5 Other EU Sectors with high potential for investment or industrial cooperation activities⁷³

2.5.1 KETs (Key Enabling Technologies)

It is believed that the main driving force behind the development of future goods and services will be Key Enabling Technologies (KETs) such as (a) advanced materials, (b) nanotechnology, (c) micro- and nano-electronics including semiconductors, (d) industrial biotechnology, (e) photonics and (f) advanced manufacturing technologies.

A. Advanced materials

Advanced materials technologies lead both to new reduced cost substitutes for existing materials and to new higher added-value products and services.

Material innovations can be used in practically all manufacturing industries and form an important element in the supply chain of many high value manufacturing businesses. There is considerable potential in the area of energy (e.g. catalysts and batteries), environment (e.g. polymers and smart packaging), health (e.g. tissue engineering), transport (e.g. lightweight materials) and ICT (e.g. optical fibres and semiconductors).

With a world-class research base and major strengths in both producer and user industries, the EU is a world leader in advanced materials. In 2009, R&D in the key materials producing/using sectors was over €44 billion per year in the EU compared to €25 billion in the US and €23.5 billion in Japan.

As part of the FP7, an annual average of €120m of EU funding (excluding support at national level) has been allocated for materials research with increasing synergy thanks to FP7 and increasing EU-wide networking.

B. Nanotechnology

The nanotechnology research base is well-established in Europe (particularly in nano-materials, nano-photonics and nano-biotechnology). In 2008, EU research spending on nanotechnology from public sources was USD \$2.6 billion (some 30% of the world total) compared with \$1.9 billion in the US and some \$2.8 billion in Asia. In Europe, over 240 research centres and 800 companies dedicated to the R&D of nanotechnology were identified in 2009, many in various Member States including France, Germany and Belgium.

European SMEs using nano-materials are mostly present in the automotive, medical/healthcare and energy sectors. Within the medical/healthcare sector, implants, molecular diagnostics and drug delivery are the most important fields of application.

⁷³ JETRO, METI, EU-Japan Centre for Industrial Cooperation, European Commission, GBMC

Applications in the energy field are mostly related to energy conversion or production, followed by energy saving and energy storage.

C. Micro- and nano-electronics

Europe has a number of dedicated regions with a critical mass and particular semiconductor competencies which are recognised world-wide. These clusters, which address all application fields and have access to the most advanced technologies, are key EU assets. Electronic data processing and the telecom sector are the largest markets for microelectronics, followed by automotive, medical, industrial and consumer markets.

D. Industrial biotechnology

Europe is the world leader in key industrial biotechnologies. The world's most important enzyme producers are headquartered in Europe. The most mature applications are related to enzymes used in the food, feed and detergents sectors. More recent applications include the production of bio-chemicals, biopolymers and biofuels from agricultural or forest wastes.

E. Photonics

The EU has strong positions in many photonics applications such as solid state lighting (including LEDs), solar cells, and laser assisted manufacturing. Photonics is a good example of enabling technology, as (in 2009) the c. 5,000 European photonics manufacturers employed c. 246,000 people directly.

F. Advanced manufacturing technologies⁷⁴

Typical applications include: advanced metrology and testing, advanced bio-chemical processes, micro-electronics and photonics manufacturing technologies, modelling-design-simulation, high-performance manufacturing (e.g. high precision machine tools, advanced sensors, 3D printers), ICT-enabled intelligent manufacturing (e.g. smart factories), sustainable manufacturing technologies, etc. The EU accounts for 35% of the global market for industrial automation solutions. There are certain advanced manufacturing segments with particularly high growth, such as 3D printing.

2.5.2 MEDICAL, PHARMACEUTICALS, HEALTHCARE and BIOTECHNOLOGY Sectors

In Europe the medical industry employs more than 575,000 people, with a market size that is estimated at roughly €100 billion and encompasses more than 500,000 different medical technologies from sticking plasters and wheel-chairs through to pacemakers and replacement joints. The pharmaceutical industry employs c. 700,000 people in the EU and directly generates 3 to 4 times more related jobs – 1:6 are highly skilled R&D positions. The production value of the industry in 2012 was estimated as being €210 billion.

⁷⁴ http://ec.europa.eu/enterprise/policies/industrial-competitiveness/amt/index_en.htm

European level industrial representation

[EUCOMED](#) represents the medical technology industry in Europe. Its mission is to make modern, innovative and reliable medical technology available to more people. Members include both national and pan-European trade and product associations as well as medical technology manufacturers. In total they represent around 25,000 designers, manufacturers and suppliers of medical technology used in the diagnosis, prevention, treatment and amelioration of disease and disability.

The [European Federation of Pharmaceutical Industries and Associations](#) represents the pharmaceutical industry in Europe. Through its direct membership of 33 national associations and 40 leading pharmaceutical companies, EFPIA is the voice of 1,900 companies.

[EuropaBio](#) is the European Association for Bioindustries. Its members include corporate members, bio regions, and 17 national biotech associations in turn representing 1,800 biotech SMEs in Europe. Its members are involved in R&D, testing, manufacturing and commercialisation of biotech products and processes in Healthcare (Red Biotech), Industrial (White Biotech) and Agri-Food (Green Biotech).

European industrial representation in Japan

[EFPIA Japan](#) (established in 2002) represents 23 R&D-based European pharmaceutical companies operating in Japan. EFPIA member companies are also promoting their R&D activities and generated nearly 1/3 of all new drugs approved in Japan in the past years.

Examples of Japanese Investments, Acquisitions, Partnerships, R&D and Industrial Cooperation in Europe

| Company Names | Type/Country | Summary ⁷⁵ |
|---|---------------------|---|
| iPS Academia Japan, Inc. and Collectis | R&D (France) | Partnership between iPS Academia Japan and Collectis concerning therapeutic drugs part of regenerative medicine (2010) |
| Ono Pharmaceutical Co, Ltd and Scil Proteins GmbH | R&D (Germany) | Development of protein pharmaceuticals, a market expected to grow (2012) |
| Chiome Bioscience Inc. and GlaxoSmithKline Plc. | R&D (UK) | Partnership between Chiome Bioscience Inc. and the GlaxoSmithKline group for R&D into antibody drug development (2012) |
| 3-D Matrix, Ltd | Investment (France) | 3-D Matrix established in France a wholly-owned subsidiary dealing in medical supplies (2012) |
| Onco Therapy Science, Inc. | Investment (France) | Onco Therapy Science established a wholly-owned subsidiary to develop drugs to treat cancer (2010) |
| JCR Pharmaceuticals Co, Ltd | Investment (UK) | JCI Pharmaceuticals expanded its equipment for manufacturing biomedicines and strengthened its business operations (2012) |
| Shionogi & Co, Ltd | Investment (UK) | Shionogi established a wholly-owned subsidiary engaged in product development in the UK (2012) |
| Maruho Co, Ltd | Investment (UK) | Skin medicine manufacturer Maruho established a local UK subsidiary (2012) |

⁷⁵ JETRO, EU-Japan Centre for Industrial Cooperation, GBMC

Chapter 2 – Presentation of Selected Industrial Sectors in the EU

| Company Names | Type/Country | Summary ⁷⁵ |
|--|-----------------------|--|
| Santen Pharmaceutical Co, Ltd | Acquisition (France) | Santen Pharmaceutical acquired French pharmaceuticals company (2011) |
| HOYA | Acquisition (Germany) | Acquired Digital Endoscopy, a German endoscope maker (2012) |
| Otsuka Medical Devices (OMD) and Era Endoscopy S.r.l | Acquisition (Italy) | OMD acquired a 24.73% stake in Era Endoscopy and concluded a partnership involving Era Endoscopy systems |
| Kyowa Hakko Kirin Co, Ltd | Acquisition (UK) | Kyowa Hakko Kirin acquired ProStrakan Group PLC, a UK-based pharmaceuticals company (2011) |
| Sekisui Chemical Co, Ltd | Acquisition (UK) | Sekisui Chemical established in the UK a wholly-owned subsidiary engaged in the test drugs business (2011) |
| Naigai Glass Industry Co, Ltd and Schott AG | JV (Germany) | Naigai Glass and Schott established a JV to manufacture and sell ampules for injections (2010) |
| NanoCarrier Co, Ltd | Partnership (France) | Partnership with an option agreement between NanoCarrier and French companies concerning extended release pharmaceuticals (2010) |
| Kaken Pharmaceutical Co, Ltd and Sanofi-Aventis KK | Partnership (France) | Partnership between France's Sanofi-Aventis and Kaken Pharmaceutical involving the distribution in Japan of anticoagulants (2010) |
| Takara Bio, Inc. and Qiagen | Partnership (Germany) | Partnership whereby Takara Bio provides DNA amplification techniques to Germany's Qiagen (2010) |
| Altech Co, Ltd and Optima Co, Ltd | Partnership (Germany) | Partnership among Altech, Optima, and industrial equipment manufacturers for the German medical industry to distribute injectable solution filling machines (2010) |
| iPS Academia Japan, Inc. | Partnership (Germany) | Partnership between iPS Academia Japan and Germany's VB involving iPS cell patents (2010) |
| Mitsubishi Chemical Medience Corp and Qiagen | Partnership (Germany) | Partnership involving Germany's Qiagen acquiring approval from Mitsubishi Chemical Medience for three pharmaceuticals for extracorporeal diagnosis (2010) |
| KNC Laboratories | Partnership (Germany) | Partnership among KNC Laboratories and two German companies to distribute protein research reagents and devices (2010) |
| Medical Expert | Partnership (Germany) | Partnership between Medical Expert and Germany's LAP after concluding a sole agency agreement for medical equipment made by ELP (2012) |
| ASKA Pharmaceutical Co, Ltd | Partnership (Italy) | Partnership involving ASKA acquiring from an Italian company the rights to develop and distribute antibiotics (2010) |
| Mitsui Global Investments | Investment (Belgium) | Investment in Promethera Biosciences, a Université Catholique de Louvain spin-off for innovative treatments based on allogeneic adult stem cell technology (2012) |
| Kaneka | Acquisition (Belgium) | Acquisition of Eurogentec – which specialises in the manufacture and sales of re-agents, kits and other specialised life-sciences products (2010) |

2.5.3 TEXTILES and FIBRES Industries

Textile and Clothing (T&C) is a diverse and heterogeneous industry which covers an important number of activities from the transformation of fibres to yarns and fabrics to the production of a wide variety of products such as hi-tech synthetic yarns, wool, bed-linen, industrial filters, geo-textiles, clothing, etc.⁷⁶

A [2007 report by the Japan Chemical Fibers Association](#) (JCFA) states very well the relevance of cooperating with the European T&C Industries:⁷⁷

- “Enterprises in mid-stream sectors of the European T&C industry have strong willingness to develop technical textiles, and they have energetically been working on technological development focusing on their specialty, namely process technologies. Consequently, they have been producing and marketing new technical textiles with their own marketing/developing powers, and Porcher industries in France and Royal Ten Cate in the Netherlands are two good examples of such mid-stream companies in Europe”.
- “The Japanese chemical fiber manufacturers ... are in complementary relationships with mid-stream sectors in the European T&D industry and also with the European R&D institutes and universities with excellent facilities and equipments. Therefore, we believe that the above three have a base that can establish win-win partnerships”.
- “Enterprises in Japan, where cost is high and market is shrinking with decreasing population, cannot survive without selling high value-added products to the world. In order for the Japanese T&C industry to expand its sales of high value-added and functional products in years to come, Europe is important as a market and also from R&D point of view”.
- “In EU, they have systems of basic research such as bio- and nano-technologies. The Japanese chemical fiber manufacturers whose corporate profitability largely depends on high value-added products should aggressively pursue collaboration with the European T&C industry”.

European level industrial representation

[EURATEX](#) is the European confederation representing the interests at the level of the EU institutions of the European textile and clothing industries as a whole. Its member federations directly or indirectly represent, in the EU, some 181,000 companies in an industry employing 1.7m workers. The companies which are mainly small and medium-sized enterprises cover a broad industry cross-section in terms of product, market segment and geographical spread. In 2012, the overall size of the Textile & Clothing industry in the EU27 represented a turnover of €165 billion.

Examples of Japanese of Investments, Acquisitions, Partnerships, R&D and Industrial Cooperation in Europe

| Company Names | Type/Country | Summary ⁷⁸ |
|--|--------------|--|
| Howa Textile Industry Co, Ltd and Faurecia | JV (France) | Howa Textile Industry and Faurecia established a JV to develop interior systems (2012) |

⁷⁶ http://ec.europa.eu/enterprise/sectors/textiles/index_en.htm

⁷⁷ http://www.jcfa.gr.jp/english/index_e.html

⁷⁸ JETRO, EU-Japan Centre for Industrial Cooperation, GBMC

| Company Names | Type/Country | Summary ⁷⁸ |
|-----------------------------------|-----------------------|---|
| Howa Textile Industry Co, Ltd | Acquisition (UK) | Howa Textile Industry acquired businesses and acquired a sealing materials production facility in Europe from a UK company (2012) |
| ITOCHU Corporation | Acquisition (UK) | ITOCHU Europe (London) acquired Bramhope Group Holdings Ltd, a major apparel manufacturer based in the UK (2012) |
| Wacoal Holdings Corp | Acquisition (UK) | Wacoal acquired the UK-based undergarment manufacturer Eveden (2012) |
| Mitsubishi Rayon Co, Ltd | JV (Germany) | Mitsubishi Rayon and German companies established a JV to distribute raw materials for making carbon-fibre (2010) |
| Toyobo | Partnership (Germany) | Partnership among Toyobo and German companies to provide contracted manufacturing work producing foundation fabric for airbags (2012) |
| Toray Industries Inc. | Investment (France) | Toray Industries built new facilities for manufacturing carbon-fibre in the US, Korea, and France, while also expanding its operations (2012) |
| Toray Industries Inc. and Daimler | JV (Germany) | JV involving the manufacture of carbon-fibre material (2011) |
| Nisseki Plasto Co, Ltd | Investment (France) | Nisseki Plasto established a wholly-owned subsidiary to handle the sales of a special flame-retardant fabric in France (2010) |
| Nippon Electric Glass Co, Ltd | Investment (Germany) | Nippon Electric Glass established a wholly-owned subsidiary to sell glass-fibre for textile reinforcement in Germany (2011) |

2.5.4 CHEMICALS, PLASTICS and RUBBER Industries

The chemicals, plastics and rubber industries are among the largest and the most dynamic sectors in the EU. The industry directly provides 1.2m jobs, contributes €558 billion to the EU economy and accounts for 20% of world chemical production. Chemical industry capital spending in the EU reached the level of €19 billion in 2012. Finally, the EU chemical industry provides a significant contribution to EU net exports with a trade surplus of €49.1 billion in the chemicals (consumer chemicals, specialty chemicals, petrochemicals, and basic inorganics) sector in 2012.

Examples of Japanese Investments, Acquisitions, Partnerships, R&D and Industrial Cooperation in Europe

| Company Names | Type/Country | Summary |
|--------------------------------|-----------------------|---|
| RIKEN | R&D (Germany) | RIKEN and German organisations signed an agreement for collaborative research (2011) |
| JNC | R&D (Germany) | JNC, a subsidiary of the Chisso Corporation, agreed to work with German companies to develop detergents (2011) |
| Toyobo Co, Ltd and Arkema Inc. | Cooperation (France) | Partnership between Toyobo and Arkema, a French chemicals manufacturer, to produce advanced plant-derived resins (2010) |
| Hitachi Chemical Co, Ltd | Cooperation (Germany) | Partnership among Hitachi Chemical and German companies to manufacture anode material for lithium ion batteries (2010) |

| Company Names | Type/Country | Summary |
|----------------------------------|----------------------|--|
| Sumitomo Corporation | Cooperation (Italy) | Strategic capital partnership between Sumitomo Corporation and Sipcam SpA (2012) in agricultural chemicals sector |
| Sumitomo Chemical Co, Ltd | Acquisition (Italy) | Sumitomo Chemical acquired Italy-based Isagro Italia S.r.l (2011) |
| Sumitomo Seika Chemicals Co, Ltd | Investment (France) | Sumitomo Seika Chemicals build a production facility in France to make superabsorbent polymers (2011) |
| Kuraray Co, Ltd | Investment (Germany) | Kuraray Expanded its production line for Poval resin production at a German plant and upgraded its operations (2011) |
| Rigaku Corp | Investment (Germany) | Rigaku Corporation established in Germany a wholly-owned subsidiary handling product sales (2010) |
| Kaneka Corporation | Investment (Germany) | Kaneka established a wholly-owned subsidiary in Germany through a Belgian subsidiary (2011) |

European level industrial representation

The [European Chemical Industry Council](#) (CEFIC) is the forum and the voice of the chemical industry in Europe, representing 29,000 large, medium and small chemical companies.

2.5.5 THE AGRI-FOOD Industry

Europe's food industry is made up of about 310,000 companies, and 4.8m employees. 99% of all enterprises in the food sector are SMEs. The food industry sector is the second largest (after metal) in the EU manufacturing industry, with 14.5% of total manufacturing turnover and €917 billion for the EU-27. The employment represents about 14% of the total manufacturing sector. Therefore the size of the EU Single Market could potentially offer many opportunities for Japanese companies wishing to invest in this sector, or seeking cooperation on projects.

Examples of Japanese Investments, Acquisitions, Partnerships, R&D and Industrial Cooperation in Europe

| Company Names | Type/Country | Summary |
|---|-----------------------|---|
| Satonoyuki Co, Ltd and JFC International GmbH | Partnership (Germany) | Partnership among Satonoyuki, Pacific Trading Co, Ltd and Germany's JFC International to develop tofu for Europe (2010) |
| Meiji Seika Kaisha, Ltd | Partnership (Germany) | Partnership between Meiji Seika Kaisha and Fresenius Kabi AG (2011) |
| Marubeni and Ebro Foods, SA | Partnership (Spain) | Partnership between Marubeni and Ebro Foods for a rice milling project spanning three countries |
| Nippon Suisan Kaisha, Ltd and Leuchtturm Beteiligungs- und Holding Germany AG | Acquisition (Germany) | Frozen foods manufacturing and market growth (2012) |
| Suntory | Acquisition (France) | In 2009, Suntory acquired the Orangina Schweppes Group, a soft drink manufacturer |
| Nichirei Corporation | Acquisition (France) | In 2010, Nichirei acquired a low-temperature distribution business (acquiring 100% ownership) |

| Company Names | Type/Country | Summary |
|--------------------------|----------------------|---|
| Doutor Coffee Co, Ltd | Acquisition (France) | Doutor Coffee acquired cafe businesses and other enterprises from the Unimat Group (2010) |
| Mizkan Group Corporation | Acquisition (UK) | Acquired UK-based vinegar brand Sarson's for ¥5 billion (2012) |

European level industrial representation

The [European Liaison Committee for the Agricultural and Agri-Food Trade](#) was founded in 1979 by major European sectoral trade associations that are involved in retail and wholesale of agricultural and agri-food products. They ensure the advocacy of agricultural and agri-food traders by its presence in various consultative groups of the European institutions.

2.5.6 GLASS

The European glass industry is made up of a number of distinct sectors, manufacturing products for a wide range of uses. In 2012, the total glass production in the EU reached a volume of more than 33m tonnes, making the EU the largest glass producer in the world. The production value amounted to approximately €35 billion. Germany is the EU's biggest producer with about one fifth of the volume, closely followed by France, Italy, Spain and the UK.

Examples of Japanese Investments, Acquisitions, Partnerships, R&D and Industrial Cooperation in Europe

| Company Names | Type/Country | Summary |
|---------------------------------|----------------------------------|---|
| JFE Steel Corporation and GMH | Technology Partnership (Germany) | Technology partnership between JFE and Germany's GMH involving steel bar products for energy equipment (2010) |
| Nippon Sheet Glass Company, Ltd | Investment (UK) | Built a new spinning furnace in the UK for high tensile strength glass cords (2012) |
| Kobe Steel Ltd | Investment (Germany) | Kobe Steel established its wholly-owned facilities to sell compressors and is expanding its repair services (2012) |
| Asahi Glass Co, Ltd | Acquisition (Germany) | Asahi Glass acquired a German glass manufacturer, Interpane Glas Industrie, a company in the same industry, through Asahi Glass's Belgian subsidiary (2012) |
| Nippon Yakin Kogyo Co, Ltd | Investment (UK) | Nippon Yakin Kogyo established a wholly-owned subsidiary in London engaged in the sale of highly-functional materials (2012) |

European level industrial representation

[Glass Alliance Europe](#) is the European Alliance of Glass Industries. It is composed of 19 national glass associations and of the main sectors of the glass industries: container glass, flat glass, special glass, domestic glass and continuous filament glass fibres.

2.5.7 (ELECTRICAL) MACHINERY and MACHINE TOOLS Industries

These industries account for almost 150,000 employees and a turnover of over €22 billion in 2012. More than three-quarters of the production in the CECIMO countries is shipped abroad, whereas half of it is exported outside Europe. European producers are focused on high-end, customised machines with relatively longer production cycles, as opposed to standard machines with short lead times. The European machine tool industry is one of the leaders on the global market with a highly innovative, diversified and precise offer. 2011 global machine tools production shares were: 31% for CECIMO, 30% for China and 20% for Japan.

Japanese industrial representation in Europe

The [Japan Machinery Centre for Trade and Investment](#) is a non-profit organisation established in 1952 by the major electronics and machinery manufacturers and trading companies. The JMC has an EU representative office in Brussels.

Examples of Japanese Investments, Acquisitions, Partnerships, R&D and Industrial Cooperation in Europe

| Company Names | Type/Country | Summary |
|-------------------------------|--------------------------------------|--|
| Yasukawa Electric Corporation | Investment Elec. Machinery (Germany) | Development of a new facility for robot-related business. Plans for strengthening relations with SI (2012) |
| RIX Europe GmbH | Investment Machine tools (Germany) | In October 2012, Fukuoka-based Machinery Trading Company RIX opened a subsidiary company, in Stuttgart, RIX Europe GmbH, in order to increase sales of rotary joints for machine tool manufacturers. |
| Amada Machine Tools Co, Ltd | Investment Machine tools (Germany) | Amada Machine Tools built a new company building and training centre in Germany and strengthened its business (2010) |
| Amada Co., Ltd | Investment Machine tools (Italy) | Amada Built a technical centre in Italy and strengthened its business operations (2010) |
| OSG | Investment Machine tools (Germany) | OSG built a production facility for cutting tools (2012) |
| Yamazaki Mazak Corp | Investment Machine tools (Germany) | Yamazaki Mazak open a technology centre in Europe and strengthened its business operations (2011) |
| Yamazaki Mazak Corp | Investment Machine tools (UK) | Yamazaki Mazak expanded its large MC production equipment layout at a plant in the UK and strengthened its business operations (2012) |
| MUTOHHD | Investment Machines (Italy) | MUTOHHD established a wholly-owned sales subsidiary in Italy (2011) |
| Kataoka Corp | Investment Machines (Italy) | Kataoka opened a sales facility in Italy and strengthened its business operations (2010) |
| TDK Corporation | Investment Mach (Spain) | TDK established a new plant in Spain for power condensers (2011) |

| Company Names | Type/Country | Summary |
|--|---------------------------------------|--|
| Optex Co, Ltd | Acquisition Sensors (UK) | Optex Co., Ltd., a sensors manufacturer, acquired Raytec, Ltd, a UK subsidiary of a German company (2012) |
| Elmo Co., Ltd | Investment Precision machine (France) | Elmo established a wholly-owned subsidiary to handle functions such as the sale of document cameras in France (2010) |
| Mori Seiki Co, Ltd and Gildemeister AG | OEM Machine tools (Germany) | OEM partnership of Mori Seiki to procure MCs and low-cost lathes from Gildemeister AG (2010) |
| Sumitomo Electric Industries Co, Ltd and Sumitomo Wiring Systems | Partnership (Germany) | Establishment of an EV connector design company with Germany's REMA Lipprandt GmbH & Co. KG (2012) |
| Tsudakoma Corp and ITEMA Group | Partnership Machinery (Italy) | Partnership involving Tsudakoma contracting out the production of machinery for making clothing in China to ITEMA Group (2010) |
| Nikkiso Co, Ltd and Bayer AG | Precision Machinery (Germany) | Agreement to manufacture and distribute pumps for drug development (2012) |

European level industrial representation

The [European Association of the Machine Tool Industries](#) brings together 15 national associations of machine tool builders, which represent approximately 1,100 industrial enterprises in Europe, over 80% of which are SMEs. CECIMO members cover 30% of the total machine tool production worldwide.

2.5.8 A summary of other EU industrial sectors with high investment potential for Japanese companies⁷⁹

| | | |
|----------------------------------|--|--|
| Key Enabling Technologies (KETS) | Advanced materials | With a world-class research base and major strengths in both producer and user industries, the EU is a world leader, with an annual average of €120m of EU funding allocated as part of the FP7 Programme. |
| | Nanotechnology | The nanotechnology research base is well established in Europe, with over 240 research centres and 800 companies dedicated to the R&D in 2009. |
| | Micro- and Nano-Electronics | The EU has a number of dedicated clusters with critical mass and particular semiconductor competencies which are recognised worldwide. |
| | Industrial biotechnology | Europe is the world leader in key industrial biotechnologies such as enzyme technologies and fermentation. |
| | Photonics | The EU has strong positions in many photonics applications such as solid state lighting (including LEDs), solar cells, and laser-assisted manufacturing. |
| | Advanced Manufacturing | Europe holds 35% of the global market for industrial automation solutions, estimated at \$155 billion in 2011. |
| Medical and Pharmaceuticals | The pharmaceutical industry employs directly over 700,000 people in the EU and its 2012 production value is estimated to €210 billion. | |
| Textiles and Fibres | <p>The overall size of the textile & clothing (T&C) industry in the EU27 in 2012 was €165 billion (turnover), with some 181,000 companies employing 1.7m workers.</p> <p>The potential of the European fibre industry has been acknowledged by the JCFA (Japan Chemical Fiber Association): “In the EU, there are research systems for bio- and nano-technologies. Therefore, the Japanese chemical fiber manufacturers whose corporate profitability largely depends on high value-added products should firmly pursue collaboration with the European T&C industry”.</p> | |
| Chemicals, Plastics and Rubber | Chemical companies in Europe, which directly provide 1.2m jobs, contribute €558 billion to the EU economy and account for 20% of world chemical production. | |
| Agri-Food | The food industry sector is the second largest (after metal) in the EU manufacturing industry, with 14.5% of total manufacturing turnover and €917 billion for the EU27. Therefore the size of the EU Single Market could potentially offer many opportunities for investors. | |
| Glass and Metals | Total glass production in EU27 in 2007 is estimated to have reached 37.55m tons (worth €39 billion) and represented about 30% of total world glass production, with several large EU based companies. | |
| Machinery and Machine Tools | The EU machine tool industry covers 30% of the total machine tool production worldwide and accounts for almost 150,000 employees, with a turnover of over €22 billion in 2012. It is one of the leaders on the global market with a highly innovative and diversified offer. | |

⁷⁹ JETRO, METI, EU-Japan Centre for Industrial Cooperation, European Commission, GBMC

Chapter 3. Testimonials

3.1 TESTIMONIAL 1: The view of a Japanese industry organisation in Europe

“[The] EU is still one of the biggest markets with a population of over 500m people. Japanese companies need to realise [the] EU’s power to set the global rules and standards. [The] EU’s regulatory standardisation efforts often set the standard worldwide. That is the reason why multinational companies of Japanese parentage should follow more closely the EU policy development, which would support and facilitate the conduct of Japanese business operations around the globe.”



*Interview: Mr Yukihiro Kawaguchi, Secretary General, JBCE, Brussels, Belgium
JBCE (Japan Business Council in Europe)
www.jbce.org*

Mr Kawaguchi identified common challenges facing Japan and the EU such as energy and resource efficiency and the fact that R&D cooperation between the EU and Japanese companies could be one of the key factors in addressing these challenges.

In terms of Japanese FDI in Europe, statistics provided by the Association show that Japan is one of the major investors in the EU with a total investment stock reaching €200 billion and having created more than 437,000 jobs.

The conclusion of a comprehensive Free Trade Agreement (FTA) or Economic Partnership Agreement (EPA) is a long aspiration for this association. According to them, an FTA/EPA could trigger further collaboration between European and Japanese industries.

About JBCE (Japan Business Council in Europe)

Established in 1999, it is a European organisation representing the interest of around 70 multinational Japanese companies operating in the EU. It has contributed to EU public policy by sharing members’ expertise with decision-makers across sectors and has played a role as a bridge between the EU and Japan. The President of the association is Mr Noriaki Hashimoto, who is also the Corporate Vice President and Corporate Representative of EMEA Toshiba Corporation. Its members cover a wide range of industry sectors including information and communication technologies, electronics, chemicals, automotive, machinery, wholesale trade, precision instruments, pharmaceutical, railway, textiles and glass products.

3.2 TESTIMONIAL 2: Promotion of Japanese industrial technologies in the EU

“All of our projects in Europe are currently ongoing, but we do hope that their outcomes will be recognised as R&D Success Stories in the future. We believe that the more promising trends in Europe in terms of R&D investment and technological development in the fields covered by NEDO are: Smart Grid, Smart Community related technologies, Renewable Energies and Energy Efficiency.”

Questionnaire: Mr Yumoto, Chief Representative, NEDO Europe, Paris, France.
NEDO (New Energy and Industrial Technology Development Organization)
www.nedo.go.jp/english

NEDO is involved in, and is supporting, **Smart Community Demonstration Projects in France, Spain, UK and Germany**. According to Mr Yumoto, “In these demo projects, NEDO is in charge not only of funding but also of project management. These demonstration projects are established based on partnership agreements with each municipalities. In order to implement these projects, we entrust Japanese companies working in close cooperation with local partners, under the monitoring of NEDO”.

Ongoing Projects within the EU:

- United Kingdom (March 2014): Agreement to carry out a Smart Community demonstration project in Manchester with GMCA and the UK Government.
- Spain (May 2012): Agreement to carry out a Smart Community demo project in Malaga
- France (December 2011): Agreement to start a Smart Community demonstration project in a redevelopment area of Lyon.
- Germany (October 2013): Agreement to start a project on a life assistive robotic device system in Bochum.

Regarding its activities related to **Robot Technology Development** in the EU, Mr Yumoto emphasised that *“NEDO is implementing a robot demonstration project in Germany, focussed on testing the medical effects and benefits of this robot, in order to collect the necessary data for the future authorisation / recognition by European medical insurance authorities of that technology as medical equipment. This project however is not related to standardisation activities, safety included, nevertheless NEDO has some interest in the standardisation aspects of that segment”*.

NEDO is also **taking part in EU cross-border R&D projects in multiple European countries**, *“We have launched, with the European Commission in March 2011, a project to develop concentrator photovoltaic cells. This is the first joint project under the EU-Japan Energy Technology Cooperation Agreement”*.⁸⁰

Mr Yumoto outlined his view on the **potential in the EU for energy-related technologies, pointing out the huge potential of the Smart Cities and Smart Communities segments:**

- The European Energy Market is already rather deregulated and therefore can give us a practical field to demonstrate new technologies related to Smart Cities and Smart Communities;
- There are many municipalities with a strong interest in transforming their cities into ‘smart’ ones;

⁸⁰ http://ec.europa.eu/research/energy/eu/news/news_en.cfm?news=31-05-2011

- The European Union has already set up strict energy and environmental targets, such as ‘EU 20-20-20’. The broad introduction of these new technologies is expected in the near future in order to reach these targets.

On the advantages Japanese companies can get from taking part in EU-funded **FP7 or Horizon 2020 (research) projects**, and the possible reasons why they apply for these projects, he stated that: *“Companies’ selection criteria for participating in these projects would basically depend on their business strategy/decision. We guess that Japanese companies taking part in EU-funded FP7 or Horizon 2020 Research Projects could access additional research resources in Europe through these frameworks”*.

About NEDO (New Energy and Industrial Technology Development Organization)

The principal roles of the European Representative Office located in Paris are to represent NEDO at major events in the region, to disseminate information about NEDO’s activities and to coordinate NEDO’s demonstration projects with partners, in order to strengthen relationships in Europe with key participants, in energy, industrial technology and environmental areas. Lastly, also to monitor European technological development and relative policy in the fields covered by NEDO. NEDO has received the “World Investment Conference Europe 2013 Award” for its high-tech innovation projects in Europe.

NEDO projects include: foundational support for Rechargeable Batteries (Rising Project), demonstration research on Japan’s first offshore wind turbines, robot technology development, medical engineering development, international cooperation through smart community demonstration projects and life assistive robotic device system projects. NEDO is supporting international expansion by developing knowledge-based international networks.

3.3 TESTIMONIAL 3: Japanese ICT manufacturers in the EU

“It is of importance to be aware and to follow the new developments in industrial regulations and standardisation in Europe in order to avoid the ‘Galapagos Effects’ characteristic of the Japanese consumer market. For example, Japanese consumer electronics have many market specific advanced functions not suitable for other markets, so they often need to be adapted to other standards.”

JEITA

*Interview: Mr Hidehiro Yajima, Representative of JEITA Brussels Office, Brussels, Belgium
JEITA (Japan Electronics and Information Technology Industries Association)
www.jeita.or.jp*

According to Mr Yajima, there are **200 Japanese ICT companies spread over 22 EU countries, accounting for as many as 100,000 employees in this sector alone**. Globally, Japanese major production sites are located in China (No 1) and in other parts of Asia (No 2), the EU and US follow with approximately the same production levels.

Major operations of ICT companies in EU are often based in the UK (HQ) and Western Europe. In the EU, the R&D research centres and the production factories are ideally close to each other: investments are usually made where the market needs them: **“manufacture in the EU, what has been designed or developed in the EU”**.

One of the EU sectors with high potential, mentioned by Mr Yajima, was the **Smart Energy sector** (EMS, batteries, power semiconductor applications, smart community projects). According to him, there are opportunities for collaboration here due to the fact that the EMS technology is not at the commercial level yet. Other sectors mentioned were **industrial cybersecurity systems, big data, silver ICT (including robotics and telemedicine) and bio-electronics**.

Other potential investment locations mentioned by him, although usually not well known for Japanese companies, would be ‘Silicon Valley’ type areas or technological research parks in the EU, like Sophia Antipolis in Nice, France. According to him, **a greater presence of Japanese R&D centres in Europe may increase the probability of participation in EU funded projects. The Single Patent process in the EU Single Market was welcomed as a great improvement.** As to the newer EU Member States, each JEITA member has different decision criteria and, therefore, no particular common trend can be mentioned. However, **the EU Member States from Central and Eastern Europe are often regarded as gateways to the Russian and Turkish markets**.

Regarding the EU **FP7 Programme**, the total number of projects in which Japanese companies have participated amounts to around 25. According to Mr Yajima there are already many domestic R&D projects within Japan to cooperate with. It all depends upon the subjects of the projects, that is, if they are of interest or not to the JEITA members. Cooperative relationships especially in R&D projects with EU companies or **technological joint ventures** hold interest as far as they will be of mutual benefit for the participants.

About JEITA (Japan Electronics and Information Technology Industries Association)

JEITA has Japanese ICT companies as its members, and makes up one of the largest industry associations in Japan. Its member companies, operating in the Electronics and IT industries, account for about ¥40 trillion globally. The EU Office is located in Brussels, Belgium, and headed by Mr Yajima.

3.4 TESTIMONIAL 4: The Toshiba Group in Europe

“Both Japan and the EU share similar social concerns regarding healthcare (due to the increasingly aging population) and energy resources. Furthermore, our cities share similar demands, which is in line with our business scope.”

*Interview: Mr Koshi Noguchi, VP – Corporate Government & External Relations,
Toshiba of Europe, London area, UK.
www.toshiba.co.jp/worldwide/about/index.html*

Within the EU, Toshiba has **R&D facilities in the UK**. One of Toshiba’s UK laboratories, the Telecommunications Research Laboratory (TRL), has been participating in six FP7 projects as a project partner. Among them, the ICeWater project (R&D for water distribution network improvement in terms of efficient operation and maintenance by ICT technology). Mr Noguchi explains that, *“we are often invited by university professors to provide our specific technological contribution to the project. One important aspect for TRL to join FP7 projects is that it provides a very good opportunity for us to carry out basic research on a new technology. By working together with excellent partners within the project, R&D can be done efficiently. Other merits are: having a good experience of a new technology, having a good network of academia / research entities in Europe. So as to the project selection, we investigate how the project goals meet our corporate strategy. Then, we also check the strength of the planning and of the R&D”*.

Toshiba is interested in **ICT-related infrastructure projects**, as well as topics related to the followings segments: smart community projects, data storage systems, energy efficiency control, renewable grid, energy management system, smart network, smart meters, etc. Worldwide, Toshiba has joined 36 Smart Community projects. In the EU, for example, Toshiba is an industrial partner in a **Smart Community project** in Lyon (Lyon Confluence, France).

About Toshiba

Toshiba is a world leader and innovator in pioneering high technology, a diversified manufacturer and marketer of advanced electronics and electrical products spanning digital consumer products; electronics devices and components; power systems; industrial and social infrastructure systems; and home appliances. Toshiba was founded in 1875, and today operates a global network of more than 590 companies, with 200,000 employees worldwide (5.5% of which are in Europe) and annual sales of 6.5 trillion yen (US\$63.1billion, 13% of which are in Europe).

3.5 TESTIMONIAL 5: The Hitachi Group in Europe

“The EU as a market provides both growth potential and easier access since its total GDP is as large as the one of the USA... it is also a suitable market for social innovation business since it has a matured social system and strict environmental norms. Moreover, it is a most suitable region to conduct R&D since the IPR are respected and enforced and there are less threats of technological imitation.... Performing R&D operations locally is ideal for adapting company products to the EU standards. [The] EU is a good location to introduce new products to the world market.”

HITACHI
Inspire the Next

*Interview: Dr. Kazuyoshi Torii, Corporate CTO and General Manager of the European R&D Centre, Hitachi Europe Ltd, London area, UK
www.hitachi.eu*

A Success Story in the Transportation sector:

Hitachi Rail Europe Ltd is a wholly owned subsidiary of Hitachi Europe, Ltd and is headquartered in London. It is a total railways system supplier offering rolling stock, traction equipment, signalling, traffic management systems, and maintenance depots. Hitachi built the **high speed Javelin trains** whose service started in 2009. In 2005, the Department for Transport started the Intercity Express Programme (IEP) to replace the aging High Speed Trains (HSTs). Hitachi is part of the Agility Trains Consortium, together with the UK company John Laing, which has been awarded a GBP £4.5 billion contract to build and maintain new Intercity Trains.

Hitachi has set up an assembly work site for passenger wagons in the UK. The facility is expected to be operational from 2015. It is estimated that more than 900 jobs will be created in Newton Aycliffe, County Durham. The deal will also **secure thousands of jobs in the supply chain.**

As well as building the new state-of-the-art assembly facility, the company has constructed **maintenance depots** in Ashford. It employs over 100 staff, principally permanent employees, providing day to day support across Kent. **Of the 332 registered suppliers, 167 are UK-based.** Further, there are plans to increase depots in Bristol, Swansea, West London and Doncaster, as well as to upgrade existing depots throughout Britain.

Hitachi Rail Europe will carry out the maintenance for the next 27.5 years and run an apprenticeship scheme to continuously train the workforce. The company has also located its **European Rail Research Centre** and development capabilities onsite: it will enhance the factory's ability to win rail contracts across Europe. It has been estimated that the whole facility would see **£600m pumped into the regional economy over the next 20 years.**

In the Energy/Power Sector, following the Energy Saving Law, Hitachi has developed **B-Chop** (Energy Storage for Transaction Power Supply Systems) in order to utilise re-generative power. The company is also taking part in **Smart Community Projects** in Manchester, UK, and Malaga, Spain, together with NEDO, providing ICT equipment for these projects.

The Healthcare Sector is another core focus area of the company's Social Innovation Business. Here, Hitachi is working on two concept projects, together with Greater Manchester NHS (the National Health System in the UK), leveraging IT in order to improve the quality of healthcare.

Regarding the Automotive Sector, Dr. Torii considers that the **“EU leads the next generation technologies and is a good place for exchanging ideas”**. There are similar concerns and needs, including CSR.

R&D Operations and Investments in Europe:

Research & Development is conducted in Germany, France and the UK. Hitachi has participated in many FP7 projects. In Sophia Antipolis (Nice, France), the group has designed communication protocols and platforms for vehicular ad-hoc networks or C2X (Car-to-any) networks, which are a key for ‘smart mobility’ and autonomous driving.

Hitachi also operates R&D at Cambridge University. **Local R&D is ideal for adapting company products to the EU standards.** Dr Torii also views the **EU as a good location to introduce new products to the world market.** Another comment was that the Single Patent System is expected to improve and facilitate the research process for the better.

When discussing country preferences for future investments, the focus was more on the quality of staff available locally.

About HITACHI

Hitachi Ltd, is a leading global electronics company with 326,240 employees worldwide. The 2012 fiscal year (ended March 31, 2013) consolidated revenues totalled ¥9,041 billion (\$117.8 billion). In Europe, the group has many sales offices, as well as production sites for automotive components in Germany, the UK and in the Czech Republic. Air conditioning production is located in Spain.

Hitachi has many years of experience as a leading supplier of high-speed trains such as the **Shinkansen (bullet train)** for the Japanese and international markets. It manufactures trains, as well as offers maintenance services, ICT expertise for transport operating systems and consulting services on energy efficient operation. Hitachi has an 80% market share of traffic management systems in Japan. For their domestic transport business in Japan, the group works closely with JR-East, one of the major players in this sector, and with other JR group affiliated companies.

3.6 TESTIMONIAL 6: Aircraft business potential in Europe

“In order to become successful in the EU market, Mitsubishi Aircraft Corporation believes it is necessary to have a base here to understand the local market conditions and to reach out better to the local industry. The EU is an extremely attractive region, full of vitality, and being present here allows us to have access to the biggest economic bloc in the world.”



*Interview: Mr Akinori Kojima, President, MITSUBISHI AIRCRAFT CORPORATION EUROPE BV, Amsterdam, The Netherlands
www.mrj-japan.com*

Mitsubishi Aircraft Corporation Europe BV, established in May 2011, is a locally incorporated, wholly-owned subsidiary based in Amsterdam, The Netherlands. ***The main purpose of the European office is to understand market needs, increase sales, and foster public relations throughout Europe***, Middle East and Africa. Moreover, the office (4 employees) considers promoting the Mitsubishi Aircraft brand of key importance in order to enhance awareness of the game-changing Mitsubishi Regional Jet (MRJ).

According to Mr Kojima, *“The Netherlands was selected due to its central location, proximity to potential airline customers, as well as its favourable business climate. Mitsubishi Aircraft Corporation Europe B.V. is one of many Japanese companies that have decided on The Netherlands as their EU base. However, as the MRJ programme expanded, Mitsubishi Aircraft also realised the necessity of being in close proximity to business partners based elsewhere in Europe. Therefore, a supplier quality assurance oversight office was established in Munich”*.

He is positive regarding the EU market, emphasising that the most appreciated characteristic of ***the EU Single Market*** is its ***“favourable climate for businesses to grow over borders”***. Mr Kojima also sees ***Europe as one of the major markets for regional jets***. Over the next 20 years, Mitsubishi Aircraft forecasts a demand for 5,000 regional aircraft with Europe accounting for 30% of these.

Mr Hideo Egawa, CEO of Mitsubishi Aircraft Corporation, notes: *“We have a wide spectrum of potential customers in Europe showing strong interest in the MRJ. Mitsubishi Aircraft expects the Amsterdam office to grow its presence in the region and drive new orders”*.

In October 2013, Mitsubishi Aircraft Corporation established a ***Quality Assurance Department*** in Munich. A branch of the Amsterdam Head office in Europe, the Munich office is staffed by two employees in charge of overseeing ongoing work of Mitsubishi Aircraft and its European partners. With an increase in aircraft systems QT (Qualification Test) and inspections as the programme evolves, the company concluded that a QCD (Quality, Cost, Delivery) site located near partners would facilitate the business and strengthen working relationships.

Dr Johann Niggel, Executive Director of Invest in Bavaria, the Business Promotion Agency of the Free State of Bavaria welcomed the establishment of this Quality Assurance Department saying, *“We are happy to welcome Mitsubishi Aircraft Corporation to Bavaria. The presence of such a global aerospace player shows once more the relevance of Bavaria as a leading aerospace region”*.

MRJ programme suppliers in Europe include 2 in Germany (Airbus-Helicopter, formerly Eurocopter, supplies the MRJ passenger, service, and cargo doors), 3 in France and 2 in the UK.

Mitsubishi Aircraft Corporation has already entered into a number of successful **partnerships with EU companies** with their roles as invaluable and experienced systems suppliers or aviation industry consultants. **“Mitsubishi Aircraft Europe has nurtured wide-ranging and deep relationships not only with major and regional airlines, but with our programme partners and experts based throughout the EU. Having a business base in the EU allows us to meet our customers’ needs quickly and efficiently”.**

*“We like to say that EU-based airlines that select the MRJ are investing not only in themselves and the aviation industry, but also in locally-based suppliers of Mitsubishi Aircraft Corporation. In other words, it can be said that the **MRJ programme’s EU-based suppliers and partners are investing in the future of the EU and its aviation industry”.***

Finally, Mr Kojima commented on the EU-Japan FTA negotiations: *“While we cannot comment on direct sector benefits of an EU-Japan FTA because we have already worked with companies here in the EU and have leveraged the advantages of being EU-based for a good number of years, we believe that an FTA bodes well for Japanese and EU companies that become MRJ programme partners down the road”.*

About Mitsubishi Aircraft Corporation

Mitsubishi Aircraft Corporation commenced operations on 1 April 2008 for the purpose of development, production, sales and customer support of the Mitsubishi Regional Jet (MRJ). The company is capitalised at ¥100 billion and is headquartered in Nagoya with offices in Tokyo, Dallas, and Amsterdam. The company employs approximately 1,400 people and has commissioned manufacturing of the MRJ to MHI.

Mitsubishi Regional Jet (MRJ) is a family of 70 to 90-seat next-generation regional jets that will offer top-class operational efficiency and outstanding cabin comfort. Featuring a game-changing engine and state-of-the-art aerodynamic design, the MRJ will significantly cut fuel consumption, noise and emissions, meeting the latest noise regulations (ICAO Chapter 4) and emission requirements (ICAO CAEP6), as well as exceeding future environmental standards. The aircraft will be the quietest and cleanest regional jet in its class.

3.7 TESTIMONIAL 7: Japanese air-conditioning business in Europe

“The EU is a huge market of more than 500 million people, without borders – meaning easier trading, with a strong single currency, the euro – meaning no exchange risk – and a gradually harmonised economic policy. Solidarity and [the] priority given [to] education and infrastructure helps to create a promising single market, with strong environmental awareness and energy related legislation which, for companies like Daikin, means strong business opportunities.”



Interview: Mr Frans Hoorelbeke, Chairman, DAIKIN Europe NV, Oostende, Belgium
www.daikin.eu

DAIKIN sees future growth and potential in the EU market, as markets are gradually changing to more environment friendly and energy friendly solutions, but also towards total comfort solutions. The company considers the whole of its long-term investments (in time and assets) as an EU SUCCESS STORY, as the company grew from a small business to a market leader in Europe.

Daikin Europe N.V. (DENV) is a fully owned subsidiary of Daikin Industries Limited, a multinational corporation. In 1972, Daikin Europe N.V. (DENV) was set up in Ostend, Belgium. It is now the **headquarters for Daikin’s European development, production, administration, sales and marketing activities throughout the Europe, Middle East and Africa region, with a strategic office** located in Brussels.

In 2004, Daikin’s production capacity expanded with the establishment of Daikin Industries in the Czech Republic with a production plant in Plzeň, followed in 2006 by a second factory established in Brno.

Among the investment opportunities offered by the Czech Republic, Mr Hoorelbeke mentioned the following: **“Availability of a good workforce at low labour cost compared to other parts of the EU, combined with attractive investment incentives.** From its side, Daikin offers multiple training for its staff, in order to improve their skills, which opens better career opportunities and creates a higher loyalty to the company”.

Daikin has also **many subcontractors in the Czech Republic, Slovakia, Poland and Romania**, where costs are lower.

Regarding **the EU-Japan FTA**, Mr Hoorelbeke considers that: **“It can only be good, especially reaching those common shared goals. The key area of interest for us is renewable and eco-related businesses”.**

More about Daikin Operations and Investments in Europe:

- Daikin’s presence in Belgium: 1,700 employees in Ostend and Brussels. Daikin Europe NV’s production site in Ostend is the most advanced plant of its kind in Europe with over 135,000m² of production and administrative space dedicated to manufacturing heat pumps, air conditioning, heating and refrigeration solutions. The factory in Ostend was the first production facility of the Daikin Europe Group and opened almost four decades ago.
- Daikin’s presence in the Czech Republic: 1,800 employees in Plzeň and Brno. In 2004, Daikin’s production capacity expanded with the establishment of Daikin Industries Czech Republic sro (DICz), a production plant at Plzeň. In 2006, a strategic decision was made to set up a second factory in the Czech Republic: Daikin Device Czech Republic sro (DDCz) at Brno, to produce compressors for the European factories.

- Daikin's presence in Italy: 420 employees in Checchina. Located in the South of Rome, on a site with substantial government incentives, the Daikin Applied Italy (factory) is specialised in innovative equipment options and system solutions to reduce energy consumption in large buildings.
- Daikin's presence in Germany: 330 employees in GÜglingen. The expansion of Daikin Europe's production facilities continued in 2008 with the acquisition of the German heating manufacturer, Rotex Heating Systems GmbH (Güglingen). The Rotex factory produces gas/oil condensing boilers, solar panels, underfloor heating and heating system components. The reason behind the acquisition was in the technical know-how in heating applications and the manufacturing experience of Rotex staff combined with the engineering know-how of Daikin Europe creates synergies for the Daikin group to be more successful in the heating market and the Renewable Energy solutions.

Daikin's R&D Investments in the EU:

The European Development Centre was built in 2013 to develop products specifically suitable for the European market. This provides the company with a significant competitive advantage in the region, by producing and selling "***Products from Europe, for Europe***", and to ensure that they could respond effectively to European market needs. High added-value production facilities are located close to end-user markets (80% is produced in the market). Their belief is that only by being in the market, they can better understand what the market demand is and in this way ensure optimised lead times to all markets.

It has invested c. €13m, mainly in technology and infrastructure. It began with building high-tech testing rooms including a test chamber where DENV engineers can simulate all of the climatic conditions which may occur in any of the 28 EU countries. This allows them to address the demands of a complex and diverse European market. The Centre has satellite locations in the Czech Republic and Germany (ROTEX). Renowned for its heat pump expertise, the company has the technologies that can offer environment-conscious and energy-efficient alternatives to traditional heating solutions. As heat pumps rapidly gain a greater share of the heating market, the European Development Centre will help to drive product innovation. Daikin's HVAC business is now expanding more towards heating business.

Product Success Stories: Emura, designed in Italy, has won a Design Award in 2010, and Nexura designed in Germany (both for residential markets). Recently the Altherma HYBRID was launched, which is a combination of a gas boiler and a heat pump.

Daikin's Environment Research Centre:

Growing international concern for the environment has resulted in a ***steady increase in regulations and standards*** tackling environmental issues, which could add to the risks and costs of doing business but could also create opportunities. Therefore, Daikin Europe NV's Environment Research Centre was particularly established to make full use of these opportunities.

3.8 TESTIMONIAL 8: Japanese manufacturing in Europe

“The EU is definitely a key market for the company, which sees future potential in environment equipment eco-business.



Business is stable in a region, which, after several decades of massive investments, is still a place to invest.”

Interview: Mr Olivier Campy, President, SANDEN Manufacturing Europe, Brittany, France
www.sanden-europe.fr

Located in Brittany (France), SANDEN Manufacturing Europe was founded in 1996. **The company represents the most important investment of the SANDEN Group outside of Japan.** Consisting of three production units and one technical centre, the site develops and produces compressors for major car manufacturers: the Renault Group, Peugeot-Citroën, Daimler, BMW, Volvo, the Volkswagen Group and the Fiat Group.

SANDEN Manufacturing Europe has developed a **major position in the automotive air-conditioning market but has started diversifying its activities**, using environmental technologies as main growth engine. Concretely, new compressors were developed and industrialised in the field of low consumption, hybrid & electric vehicles, and in the household sector, through an innovative heat pump using CO₂ as refrigerant.

The company has been conducting business and has invested massively in the EU since its arrival in the seventies. SANDEN considers **its long stay and investment in the EU as a success story.** As the company’s share grew, the Group now has a 40% market share in automotive air-conditioners and in vending machines in Europe.

SANDEN Operations and Investments in Europe: 1,860 employees in the EU.

Sales offices: in Basingstoke (UK), Bad Nauheim & Dusseldorf (150 employees in Germany), including several regional liaison offices.

Factories:

- In France (950 employees) for automotive business, environmental households, eco-cute and water heating systems.
- In Poland (560 employees) for automotive related business.
- In Italy (150 people) for vending machine business. Engineering conducted on site.

R&D: 2 Technical Centres:

- In France (Brittany, 60 people) for applied research on air-conditioning compressors, for automotive related research on conventional combustion, hybrid and electric vehicles, and for advanced engineering related to CO₂ heat pumps technology.
- In Germany (near Frankfurt, 30 people) for automotive related, more advanced engineering and customer support service also.

In the future, the Group might further invest in assembly sites and warehouses for some key applications close to its customers’ plants, as well as expand its distribution network in Russia.

SANDEN Research Activities in Europe

Eco-Markets are key growing markets for SANDEN. Therefore, key research subjects for the group are: Eco-Innovation, Household, Domestic Hot Water, Space Heating and Commercial Cooling. They are newcomers with a new technology. As a pioneer of environmental technologies from its foundation, the Group continues its efforts in sustainable development.

Interested in expanding on heat pump business, **SANDEN took part in the “CIP Eco Innovation 2030” FP7 Project.** According to Mr Campy, **the advantages of participating in FP7 projects are: PR for SANDEN’s new technology, opportunity to give advice as an industry specialist and to share information with key players, as well as to gain recognition.** Indeed, for the company, it is important, first, to be known in Europe for its technology, and then, to be considered for its application, as well as to start regulatory talks.

A success story for cross-cultural management:

Regular participation in training programmes provided in Japan by the EU-Japan Centre for Industrial Cooperation demonstrates the efforts made by SANDEN in internationalising its management. Mr Campy, current President of SANDEN Manufacturing Europe, joined the company in 1996, and was the first SANDEN employee to take part in the HRTP programme in 2004. Since then more than 10 members of staff have been sent on the programme.

About SANDEN

The SANDEN Group, present across 23 countries with 10,194 employees worldwide, was founded in 1943 in Japan. Beginning as a manufacturer of bicycle dynamos, the Group undertook a major diversification process into heating & cooling activities, starting in 1959. SANDEN gradually grew as a key player in the sectors of home comfort (appliance and renewable energy for heating & cooling), then commercial refrigeration and automotive air-conditioning. Nowadays, the Group is a worldwide leader in cooling and heating technology: Number 1 in vending machines, Number 2 in automobile air conditioning compressors.

3.9 TESTIMONIAL 9: HORIBA and HORIBA Jobin Yvon SAS

“HORIBA is very positive and active in taking part in various FP7 projects across the EU. The company views it as an opportunity for technical solutions finding as well as for business match-making.... The advantage for us is the possibility to deepen the working relationship with our customers in the EU.”



Interview: Mr Akihito Nakai, Manager, HORIBA – Brussels Office, Belgium
www.horiba.com

“With its long history, Europe is a powerhouse of science, springing from talented people in many international calibre academic institutions.... Horizon 2020, this ambitious EU innovation drive, creates a favourable environment for the R&D efforts of HORIBA companies in Europe....”

Interview: Dr Masayuki Adachi, President & CEO, HORIBA Jobin Yvon SAS, Paris area, France
www.jobinyvon.fr, www.horiba.com

According to Mr Nakai, HORIBA’s business is closely linked to Corporate Social Responsibility, in that the company helps businesses to make sure their products meet regulatory requirements. ***It is indeed necessary for companies to be aware of any changes and developments in EU regulatory standards in order to conduct their business according to these changes.*** Due to the sensitivity of the tools necessary to conduct their business, HORIBA has to be located close to its clients.

Importance of R&D:

Mr Nakai underlined that, *“in general, the skills and the quality of the R&D workforce are key factors in HORIBA’s investment decisions, more than the costs”*. The Group’s R&D expenditure is 7.8% of net sales. The ***new R&D centre*** in Saclay-Paris was opened in October 2012 as a core product development facility in Europe (for optical analysis instruments). The new facility serves as HORIBA European Research Centre, building on the local teams of HORIBA Jobin Yvon, a world leader in optical spectroscopy.

For Dr Adachi, President & CEO, HORIBA Jobin Yvon SAS, Paris area, France, *“R&D is excellent in Europe – France in our case, offering great investment facilities, within a mature market of continental size”*. He emphasised that ***the advantages of an acquisition***, as was the case with the acquisition of Jobin Yvon company by HORIBA group in 1997, ***is to benefit from the local experience and from the links with the EU academic network.*** He also thinks that ***there is some future expansion to be expected in the EU life science sector.***

Operations and Investments (acquisitions) in the EU:

The HORIBA Group employs worldwide over 5,500 people, of which 1,700 are based in the EU. It is obviously according to the Group’s global Human Resources Management policy. HORIBA is the world market leader in automotive exhaust analysis and HORIBA Europe Holdings has a turnover of €400m. In Europe, the company has made several acquisitions: in 1996, the company acquired ABX in Montpellier (France, 600 employees) in the life science business; in 1997, Jobin Yvon became part of the HORIBA Group in Longjumeau and Lille (France, 260 employees); in 2004, acquisition of the mechatronics division of Schenck in Darmstadt (Germany, 500 employees) in the auto equipment testing business.

In the case of Jobin Yvon (manufactured the lens invented by Prof. Fresnel and was a spin-off of the “Ecole Polytechnique”), President Horiba was familiar with Jobin Yvon’s products from his academic studies. The LBO sellers favoured HORIBA due to their shared value in business

goal, strong team spirit and long term vision for the company. The respect for Jobin Yvon is evident, as shown in the current company name.

Nowadays, HORIBA has factories in the Czech Republic (50 employees), in Germany (500 employees) and in the UK (180 employees). There are also sales and after-sales service offices in Sweden, Italy and Spain as well as a sales office in Romania. Finally, there are plans to develop the factory in the Czech Republic which will be assigned for the production expansion.

EU located R&D centres:

HORIBA research facilities are located in Paris (Saclay campus), Montpellier (South of France) and Longjumeau (in the heart of the French optics valley). Actively involved in EU-funded FP7 research (various) projects, the company is usually invited to join as industrial partner by its own clients or academic contacts. Worldwide, HORIBA Jobin Yvon R&D teams are granted more than 10 patents each year. The study and manufacture of diffraction gratings remains their domain of excellence, with only a few competitors worldwide.

In 2010, the President of HORIBA, Mr Atsushi Horiba was awarded the 'Légion d'Honneur' by the French Government.

About HORIBA

Dr Masao Horiba founded HORIBA Ltd, as a pioneering venture, in 1953 in Kyoto (Japan). In 1945, he had set up the HORIBA Radio Laboratory in Kyoto while he was a student at Kyoto University. He built the capacitor needed for the high-speed calculator (computer in today's terms) for nuclear physics experiments. This capacitor became known for its functions and quality, and HORIBA decided to start manufacturing it commercially. The company was established and took its first steps as a manufacturer of measurement instruments. HORIBA is also famous as a maker of pH meters. Nowadays, HORIBA is a global group of companies providing an extensive array of instruments and systems covering various applications. Worldwide, it employs over 5,500 people of which 31% are in the EU (December 2013). The 2013 Group turnover was ¥138.1 billion, distributed almost equally among EU, US and Asia. The company's global market shares are: Automotive Emission Measurement Systems: 80%, Stack Gas Analyzers: 20%, Mass Flow Controllers: 48%, Raman Spectrophotometers: 30% and Gratings: 35%.

3.10 TESTIMONIAL 10: TOYOTA Motors Manufacturing France

“Approximately 2.5m units of the Yaris model were built in the Valenciennes facilities, North of France, since 2001. The Toyota Yaris became the first vehicle ever produced in France to be certified with the new ‘French Origin Guaranteed’ label, with more than 50% of its value manufactured in France....”

Interview: Ms Pascale Duverne, Public Relations Department,
TOYOTA Motor Manufacturing France, Valenciennes, France
www.toyota.fr

TOYOTA Motor Manufacturing France (TMMF) was established in Valenciennes in 1998 and currently employs 3,600 people (3,100 permanent members of staff and 500 temporary workers). The car production site belongs to a new generation of TOYOTA plants: very compact, with 30% less area compared to other factories, and more energy efficient. Other Toyota operations in France are located in Vaucresson (sales), Le Pouzin (logistics) and Sophia Antipolis (design studio, near Nice).

Why a factory in Valenciennes?

According to Ms Duverne, *“before deciding on the new site, other candidates for the location were Alsace and Lorraine regions. The Chamber of Commerce of Valenciennes was very active and had prior relationships with TOYOTA, so that the process was faster and it gave the region an extra advantage. The key selection factor was, however, location at the heart of the market (110 million of inhabitants within a radius of 300km).*

Other factors were:

- *Good transport infrastructures (road, airport, river ...)*
- *Close to Brussels where the European HQ and R&D centre are located,*
- *Convenient facilities for Japanese expatriates.*
- *Quality and quantity of the local workforce.*
- *Good stakeholders and suppliers.*
- *Easy access to 4 key markets: Germany, Belgium, the UK and France.*

All of the above resulting in the success of the production site”.

Yaris: a “Best Seller” made in EU

The Toyota Yaris became the first vehicle ever produced in France to be certified with the new ***‘French Origin Guaranteed’*** (“Origine France Garantie”) label. This certificate was created in order to help customers identify products that have more than 50% of their value manufactured in France.

Production started in 2001 and the first Yaris model, with a ‘French touch’, was designed in a design centre located in Sophia Antipolis, Nice. ***The total investment since the beginning amounts to €1.1 billion.*** The current, third-generation Toyota Yaris was launched in Europe in the summer of 2011, followed by the Toyota Yaris Hybrid in June 2012. The Yaris model accounted for nearly 22% of Toyota’s total European sales in 2012. In June 2014, a restyled third-generation Yaris was shipped.

In May 2013, TMMF started production of Yaris compact cars for exports to the US and Canada. The model produced is the conventional petrol-fuelled Yaris and annual export volume will be around 25,000 units on a full-year basis. An additional €10m has been invested by TMMF in order to build the Yaris to the specific requirements of the new export market.

Ms Duverne believes that, *“the growing popularity in the US is due to a greater awareness and more demand for environmentally friendly cars”*.

The Yaris made in Japan (called Vitz in Japan’s domestic market) is exported to Asia, while the Yaris made in Valenciennes is exported to EMEA, US and Canadian markets. TMMF will now export its vehicles to more than 40 countries.

3.11 TESTIMONIAL 11: Japanese auto parts investment in Central & Eastern Europe

“Europe is still at the heart of automotive innovation. With World Class OEMs (such as BMW, Mercedes-Benz, VW-AUDI, etc.), you can take part in the development of future technologies. Whether you are an R&D or a production company, you can find a well-qualified workforce to fit your needs.”



Questionnaire: Mr Andras Nagy, Plant Manager, Musashi Hungary Manufacturing Ltd, Hungary
www.musashi.hu

Mr Nagy felt that the main EU strengths and comparative advantages were:

- The available state-of-the-art-technology, combined with a qualified workforce,
- The constant interaction with World Market leaders in an innovative environment,
- The specific investment support incentives provided by the EU Member States’ national governments, particularly in Central and Eastern Europe.

Concerning the advantages of the Single Market, he stated that the ***“free movement of people”*** is the most important from an investment and business development perspective as it creates logistic and administrative flexibilities in terms of work force supply.

According to him, Musashi Hungary’s ***most recent success story in the EU is the company’s recognition and appreciation of JLR (Jaguar Land Rover, UK)*** acquired in a very short term by exceeding quality expectations and by supplying parts in a reliable way: “The fruitful partnership and the created mutual trust result in new business for our company. We can be proud to add our expertise and competence to JLR models’ global success”.

When asked about some ***specific EU market segment potential*** for his company, Mr Nagy underlined that, ***“being an automotive part producer, we still focus on our core competences: pinpoint machining of various metal parts (engine shafts, transmission parts, steering components) and their assembly. We collaborate with our existing and potential clients in order to introduce our successful products in this market and adapt them to the special requirements of European car makers”***.

He summarised his company’s ***EU business strategy*** as follows:

- Having a relatively narrow range of Musashi’s products represented in Musashi Hungary’s portfolio, and extending locally the variety of products on offer.
- Strengthened local engineering and development, instead of utilising the Group’s (headquarters’) related resources.
- Specific solutions to special needs or challenges, instead of ‘standardised’ responses delivered from Japan.

Moreover, ***“these directions can extend our flexibility and attractiveness since our clients’ expectations are for proactive participation in projects from the early stage, as well as a quick response to problems”***.

Mr Nagy’s personal opinion about the ***EU-Japan FTA Agreement***: ***“it will hopefully further strengthen Japanese companies’ competitiveness in Europe. Both the Japanese and European economies need to cooperate more actively in order to be able to compete with the USA, China and India as well. Utilisation of comparative advantages is fundamental for both parties’ success”***.

About Musashi Hungary

Musashi Hungary Manufacturing Ltd was established in March 2000 as the subsidiary of MUSASHI Seimitsu Industry Co and was the second European manufacturing unit of the group (after MUSASHI Auto Parts UK in 1986). The company is specialised in design and production of high precision car parts. Musashi is a strategic worldwide business partner of Honda.

3.12 TESTIMONIAL 12: A Japanese trading company's perspective

“The strength of the EU lays in its big and dynamic market, advanced technology and good manpower. There are signs that logistics and production are being relocated back to the EU for quality reasons.”



*Interview: Ms Catherine Watremet, Regional Senior Manager, HR Department,
TOYOTA Tsusho Europe, Head Office, Brussels, Belgium
www.ttesa.net*

TOYOTA Tsusho Europe SA was established in 1968 and is part of TOYOTA Tsusho Corporation. Its Brussels Office is its **European Headquarters, with 9 branches** in Belgium, France, Germany, Italy, Poland, the Czech Republic, Hungary and Turkey. The trading company is a recognised market leader in automotive business trading (originally for Toyota Motors). Toyota Tsusho is currently expanding its business to non-automotive sectors, such as engineering consulting and the insurance business. The company views Mobility, Earth & Resources and Life & Community, as key areas for future growth.

As part of that expansion strategy, outside of the EU, TOYOTA Tsusho Corporation merged in 2006 with Tomen Trading Corporation in order to speed up its expansion towards non-automotive business. In 2012, in the EU, the company took a major capital participation in CFAO SA, in order to increase trading with Africa.

In France, the Paris office deals with import and export for machinery and food products, especially wines from France to Japan. There is also an office in Valenciennes (near the Toyota factory) providing engineering consulting services, as well as building prototypes for the railway and aircraft industries.

TOYOTA Tsusho has **many working sites spread all over Europe, including in Central and Eastern Europe** (Poland, Hungary and the Czech Republic). For example:

- In 2012, TOYOTA Tsusho invested and **opened a new branch office** in Hungary to take care of the ELECTROLUX logistic business, one of their key accounts. It was justified by the need to be close to the client and the market needs.
- Besides Hungary, there are three more ELECTROLUX logistic centres located in the Czech Republic, Germany and Italy.
- There is also a logistics site, in the Czech Republic, for the TPCA (TOYOTA-Peugeot- Citroën) business.
- Heavy steel operations are operated in Turkey (effective and stable delivery of steel sheets and coils)
- There are steel processing and logistics centres in the Czech Republic and in France.
- TOYOTA Tsusho also has a logistic centre in Belgium, to take care of its DAIKIN business.

3.13 TESTIMONIAL 13: Japanese textile investment in Central and Eastern Europe

“Since our main market is Europe, there are several advantages to having a factory here: short lead times for delivery, direct communication with the market, easy travelling, no time difference, as well as the free movement of services assured by the EU internal market.”

Questionnaire: Mr Mitsunori Hayashi, Sales Manager, Toray Textiles Central Europe, Czech Republic
www.toray.com

A new facility in the Czech Republic

Thanks to tremendous sales growth (up to 5 times) in the EU market over the last years, the company was able to build a new line in Prostějov, in the Czech Republic in 2013. The production of plates for more ecological waterless offset printing is the first operation of its kind in Europe. Mr Hayashi explains, “As a company trend, we are focusing on the Asian and US markets, however for the printing industry, we are much more focused on Europe. The EU market is huge and we are expecting growth in Central and Eastern Europe in the near future”.

He also adds that ***Germany is Toray’s core market and that it makes sense to have a factory in the Czech Republic, with easy access to other EU countries and high labour skills.*** The output of the new production line is intended not only for the European market, as Toray Textiles Central Europe will also supply its products to North and South American and the Middle East.

On the EU-Japan FTA Agreement, Mr Hayashi felt, *“Our product is very unique and we are a single source supplier in the market. Some of our raw materials are produced only in Japan and have to be sent to Europe, and therefore, once the FTA is concluded, we could expect lower production costs”.*

“Japanese investors have long ranked among the most active foreign investors in the Czech Republic. Since 2000, with our support, they have invested more than CZK 106 billion here and have thus helped to create more than 22,000 jobs.” (Marian Piecha, CEO of CzechInvest)

About the Toray Group

Toray is an integrated chemical industry group developing its business in 23 countries and regions worldwide. The Toray Group fuses nanotechnology into its operations, using organic synthetic chemistry, polymer chemistry and biotechnology as its core technologies. In addition to its core business on fibres & textiles and plastics & chemicals, Toray promotes the global development of IT-related products, carbon-fibre composite materials, pharmaceuticals and medical products, environment & engineering including water treatment and progress in other pivotal business fields.

3.14 TESTIMONIAL 14: Railways Business Potential in Europe

“JR East is looking for collaborative business opportunities with railway transport suppliers in the EU, where the railway industry is well developed.”



*Interview: Mr Yasushi Takeuchi, Deputy Director, JR East – Brussels Branch, Brussels, Belgium
www.jreast.co.jp, www.j-trec.co.jp*

In the EU, JR East had previously shared offices in Paris. A branch office, which is also a sales office, was opened in Brussels, Belgium, in 2013. The location was chosen due to the fact that both the UITP and CER international railways associations were based in Brussels. The selection was also favourable due to its ideal location to gather information and because the visa procedure only took 1 month.

The Belgian office is for the moment collecting data in an attempt to globalise business; its territory covers the EMEA region (EU, Middle East and Africa).

The JR East group actively conducts R&D projects in Japan and hold patents for many of the parts used. The company has their own Research Development Centre, often working alongside with other companies that have the know-how in Railways Industry Technologies.

The technologies and products developed are used within JR East Railway, but are also sold to other railways companies as well. JR East Railways is always looking for new suppliers with technological know-how to work with. There is a real potential for joint research and to co-develop new products with railway companies in the EU.

In Japan, JR East uses parts from EU manufacturers for its domestic trains. For example, a German brake system manufactured by Knorr-Bremse is used for the new generation series E5, E6 and E7 rolling stocks. JR East also uses rail fastening systems made by Pandrol, UK. The company is looking (in Europe) for any new technology or product not available in Japan.

In 2012, JR East bought (M&A) Tokyu Rolling Stock Corporation, a train manufacturer. It has been renamed as Japan Transport Engineering Company (J-TREC). In 2013, Alstom and J-TREC signed a Memorandum of Understanding (MoU) to jointly assess the light rail transit and tramway markets. This agreement will lead both companies to jointly contribute to the modernisation of existing tramway lines and the development of new lines in Japan. The study is expected to be completed within a year.

About JR East (East Japan Railways Company)

JR East was incorporated in 1987 after Japanese National Railways (JNR) was divided into 6 regional passenger transport companies: 1 freight company, several other small companies in the information, telecommunications and R&D fields. JR East run the operations on former JNR lines in the Greater Tokyo Area, the Tohoku region and the surrounding areas. JR East operates all of the Shinkansen (Bullet train) high speed rail lines, North of Tokyo.

JR East aims to reduce its carbon emissions by half, as measured over the period 1990-2030. This would be achieved by increasing the efficiency of trains and company-owned thermal power stations, as well as by developing hybrid trains.

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