

France: exports as a way out of stagnation into a solid recovery

I. Economic outlook

The French economy weathered the financial crisis relatively well compared to other European countries. The deepness of the recession has been fairly limited, but the recovery phases also brought much less comfort than in other countries. If French GDP caught up to its early 2008 level already by mid-2011, in 1Q15, it was only 1.9% above its early 2008 level (vs 4.2% in Germany for example). This rather prolonged period of stagnation is due to the fact that the main engine of French growth has always been consumption (private or public). Before the financial crisis, French consumption was also, together with German net exports, one of the main growth engines of the Eurozone. However, a prolonged period of unemployment and declining sentiment took its toll on private consumption, affecting growth in France and the Eurozone as a whole. Indeed, French consumption spending did not show strong enough growth to compensate for the decline in investments and net exports triggered by France's decline in competitiveness since 2008.

This report devotes a section to France's external trade (section II) and includes a special section on developments in the renewable energy sector (section III). The first section will focus on France's economic prospects.

a. Private consumption is recovering

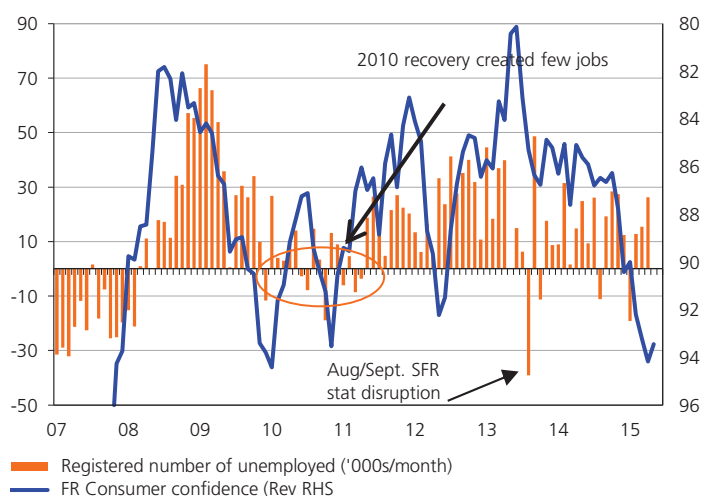
Since mid-2008, the unemployed population has been increasing by an average of 18,680 a month. This has caused the number of unemployed to nearly double (from 2 million people to 3.5 million now) over a relatively short period of time. The unemployment rate has jumped from a structurally high 7.3% in mid-2008 towards a record high of 10.4% in 1Q15. In particular, youth unemployment has jumped from 18.6% to 24% over the same period while the employment rate among older workers remained below the European average (47.1% and 52% respectively in 2014). A deteriorating labour market brought consumer confidence down much more than the Eurozone average as early as in 2010. While consumer confidence has been recovering slowly in the Eurozone since the end of 2012, it took until mid-2014 to see a similar movement in France. Despite this movement, May 2015 consumer confidence in France was still well below the Eurozone average and its own long-term average.

If private consumption has avoided a full-blown recession after the initial 2008 shock, this has been only due to a robust French welfare system. Private consumption has grown by an average 0.6% YoY since early 2008 while GDP has grown only by 0.3% YoY

on average since then. Public consumption grew 5 times as quickly as GDP (1.5% YoY) over the same period, contributing positively to domestic demand in recent years.

Despite an unemployment rate of 10.4%, consumer confidence started to recover from mid-2014 onwards thanks to tax rebates (especially for the poorest - the proportion of French households that actually pay taxes came down in 2014 from 53% to 48.5%) and falling oil prices. Consumers also became somewhat more positive on the labour market at the turn of this year, but it took time for all this to materialise in higher private consumption growth figures. Only in the first quarter of 2015 did private consumption rebound, by 0.7% QoQ.

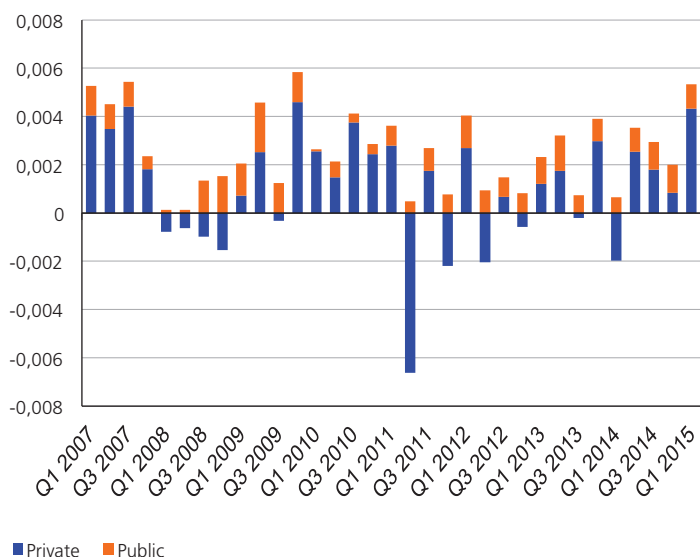
Figure 1. Unemployed growth affected consumer confidence



Data Source: Thomson Reuters Datastream

If we believe that private consumption will indeed continue to recover slowly, it is still not clear that such quarterly growth rates are to be repeated in 2015 and - in any case - before a clear downward trend in the number of unemployed is observed. At the current juncture we do not see any trend reversal before the end of the year, so private consumption growth should remain below recovery mode in 2015 before accelerating in 2016. On the contrary, if the French Government finally follows its plan to reduce its budget deficit in 2015-17, public consumption growth could slow and stop contributing significantly to GDP growth. Given the limited ambition for budget deficit reduction, we do not expect this to weigh much on GDP growth during this period.

Figure 2. Consumption contribution to GDP growth (pp)



Source: Thomson Reuters Datastream

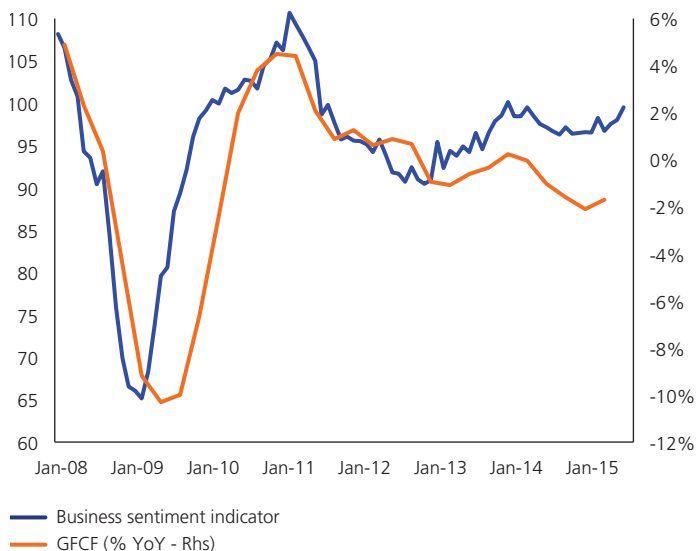
b. Investments are still lagging

France entered the financial crisis in 2008 in the midst of a period of strong corporate investment growth (7.3% YoY between mid-2006 and mid-2008). At the beginning of 2015, this was still 4% below its 2008 average. As French corporate investments had been stronger than in other Eurozone countries before the crisis, these declined strongly when the crisis erupted (-15%) and took time to stabilise. Only in 2013 did a recovery occur (at an average of +1.1% QoQ in the three last quarters), muted by another phase of declining growth prospects and fiscal uncertainties. The nascent recovery generated enough base effects for growth to reach 2.0% in 2014 but quarterly progression has been dismal since then (0.1% QoQ on average). Will it last?

A weaker euro and lower energy prices, together with lower interest rates (thanks to ECB quantitative easing) and some net tax cuts, should help to restore French company profits in 2015. This will give companies room to create jobs if consumer spending acceleration keeps fuelling domestic demand and if a weaker euro is not offset (in terms of company profits and competitiveness) by wage increases. A sign that this might occur may be that the Bank of France business sentiment indicator reached 99.5 in May, its highest since 2011. Any claim that all this will also be enough to see a strong rebound in corporate investments may be optimistic as capacity utilisation (76.5% in May) looks unlikely to take off and remains far below pre-crisis standards (of 85%). Therefore, even if a stronger recovery was to materialise in the second half of 2015, corporate investment growth should remain limited to 1% in 2015. We will therefore see a lag to improving business confidence, especially with total investments being held back by household and public investment growth.

First, households' investments in housing are likely to see another year of decline. Declining house prices on the secondary market and uncertainties around the fiscal treatment of real estate investments have hampered the recovery of the French residential construction

Figure 3. Turnaround in total investment growth delayed



Source: Thomson Reuters Datastream

sector in recent years despite historically low mortgage interest rates. 2014 housing starts remained 30% below their early 2006 level and the figures for 2015 are not encouraging so far, with housing starts remaining low and house price growth remaining oriented downwards. Given the still anaemic housing market, households' investments should decrease by 3% in 2015 after a 5.3% drop in 2014. For 2016, as the Valls Government finally put an end to uncertainties around real estate investment by replacing the so-called Duflot Law with a new Pinel Law some months ago, we could see the start of a recovery in construction investments that has yet failed to materialise.

Second, contrary to public consumption, public investments appear to be the main victim of the first budget cuts. They declined by 7% in 2014 and are 10% below their early 2008 level. Given that a lot of budget cuts at the local level will probably result in further cuts in investments by regions and municipalities, we expect public investment to decline by another 5% in 2015.

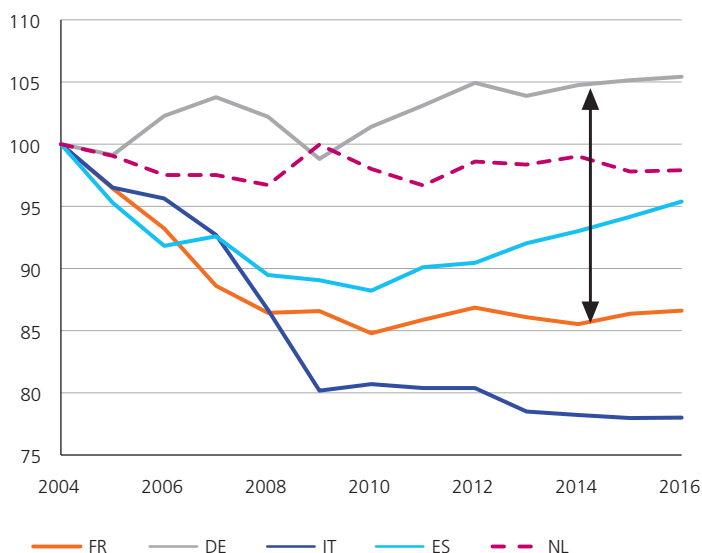
All in all, we therefore expect French investments to remain limited in 2015, with growth reaching 0.2% after -0.4% and -1.2% in 2013 and 2014 respectively. In 2016, a stronger recovery should emerge, helped by the better environment described above.

c. France failed to benefit from world trade growth

During the recent period of economic stagnation, external trade has been a missing growth engine for the French economy, contrary to what has been observed in Germany and in Spain, which at first saw their economies recovering thanks to better export growth. Because it failed to adjust in terms of competitiveness, France has lagged behind - and lost market share against - Germany and Spain (but not yet against Italy).¹

1 Note: Export performance refers to the ratio of good and service export volumes and export market growth (Data Source: OECD)

Figure 4. France - Export growth performance¹



Source: Thomson Reuters Datastream, OECD World Economic Outlook

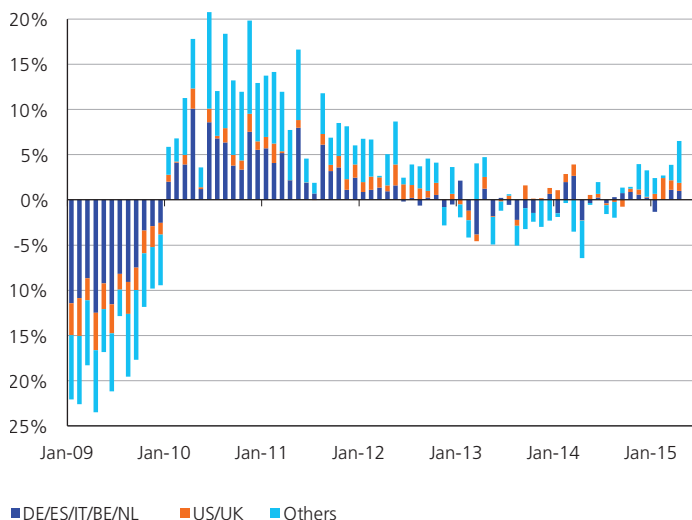
In the past, France failed to benefit from recoveries in Anglo-Saxon countries. With stagnating demand from its main Eurozone trading partners, together with weaker emerging markets, riding the UK/US recovery wave could have been a bonanza for French exporters already at the end of 2013 if their competitiveness had not been damaged by growing wages and a strong euro. Instead, they had to wait much longer to benefit from it: only on the first 4 months of 2015 did exports to the US and the UK increase, by 9.5% YoY on average.

Exports were therefore recovering in early 2015, mainly thanks to exports outside France's main trading countries (DE, ES, IT and Benelux): the average outside the main trade partners (to which exports grew by only 0.4% YoY on average) was 4.7% on the first 4 months of the year.

Until now, the CICE tax cuts decided in 2013 for 2014-2016 have failed to show results in terms of export growth. Of course, if these tax cuts are transferred to households (which could be the case as wages continued to rise despite very low inflation and very high unemployment), this will continue to be the case. Nevertheless, one can hope that the French competitiveness position stabilises before improving in the next two years, thanks to the different fiscal measures voted in the past two years.

ECB quantitative easing should also help, and not only through cheaper credit. The French external position should also improve in 2015 as exports are likely to benefit strongly from a weaker euro. However, as revived domestic demand is also already leading to a jump in imports, net export contribution to growth should remain limited. In 1Q15, net exports contributed negatively to growth because the consumption-lead jump in imports offset the rebound in exports. In 2015 as a whole, we expect net export growth contributions to remain very limited, before increasing in 2016.

Figure 5. French exports are benefitting from stronger import growth outside its traditional partners



Source: Thomson Reuters Datastream, OECD World Economic Outlook

d. To conclude

As 2013 once seemed, 2015 could be the year of the recovery... Today's economic recovery is therefore primarily based on higher consumer spending which mainly relies on lower energy prices and a turning labour market. The former is temporary and the latter mainly depends upon a weaker euro through the export channel (at least if the current labour market reform discussions open it to more labour flexibility). As this reform is likely to be the fruit of a long, cautious and piecemeal approach, it is too soon to anticipate any short term effect on the labour market. For the time being, further tax rebates will continue to help French consumers. This will fuel domestic demand and, together with further tax rebates for corporate investments, should allow for a virtuous cycle to begin in 2015.

Table 1. The French economy in a nutshell (%YoY)

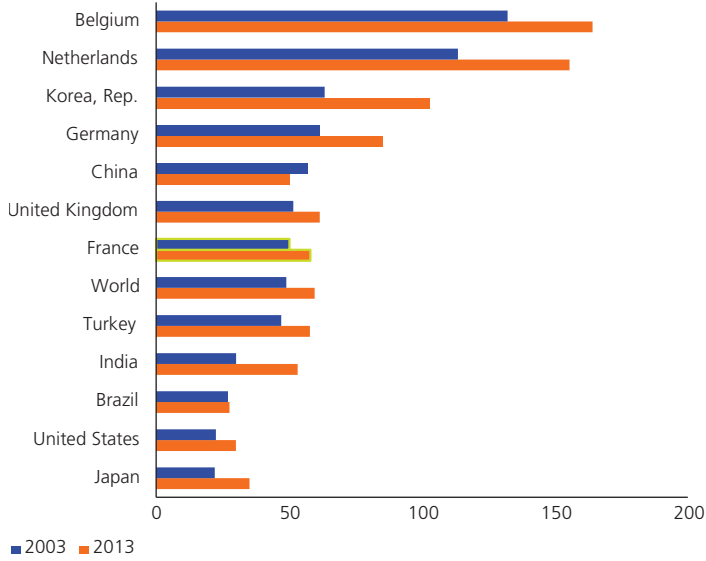
	2013	2014	2015	2016
GDP	0.7%	0.2%	1.3%	1.8%
Private consumption	0.5%	0.7%	1.5%	1.0%
Investment	-0.4%	-1.2%	0.2%	3.8%
Government consumption	1.7%	1.5%	1.1%	0.6%
Net trade contribution (pp)	0.0%	-0.5%	-0.2%	0.3%
Headline CPI	0.9%	0.5%	0.0%	1.4%
Unemployment rate (%)	10.3	10.2	10.2	9.5
Budget balance as % of GDP	-4.3	-4.0	-3.8	-3.4
Government debt as % of GDP	93.5	95.3	97.5	98.7

Data Source: Thomson Reuters Datastream, all forecasts ING estimates

...but only if the labour market can stabilise before improving in 2016

However, a key driver of the upturn will be the labour market. If the current recovery fails to create jobs, sentiment will fall again and investments will be held back, exactly as in 2013. As reflected in our

Figure 6. Merchandise trade as a share of GDP (2003-2013)*



Data Source: World Development Indicators

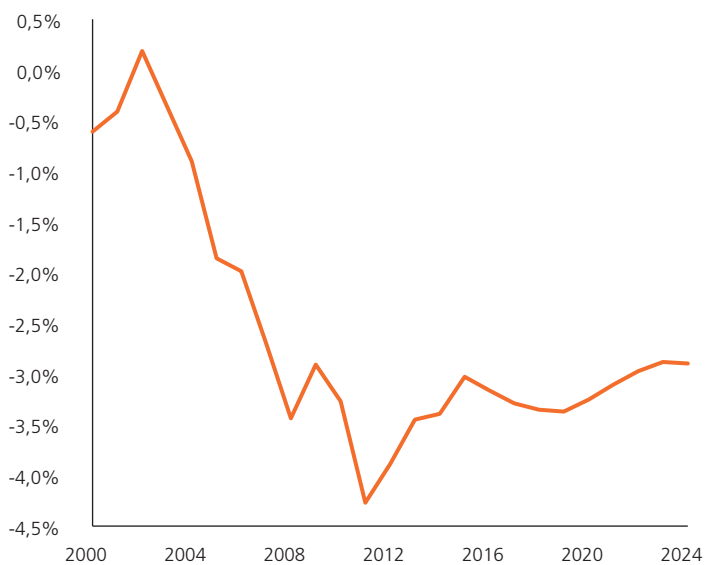
forecast table below, we still believe that this will not happen, but this shows how fragile the current recovery remains.

II. International trade

The openness of the French economy over the last decade, as measured by the trade to GDP ratio, has developed in line with the world average. The French ratio of trade in goods (exports plus imports) to GDP stood at approximately 58% in 2013, close to the world average of 59%. Nevertheless, French participation in international trade has grown less than that of other core EU countries like Germany, the Netherlands and Belgium (Figure 6).

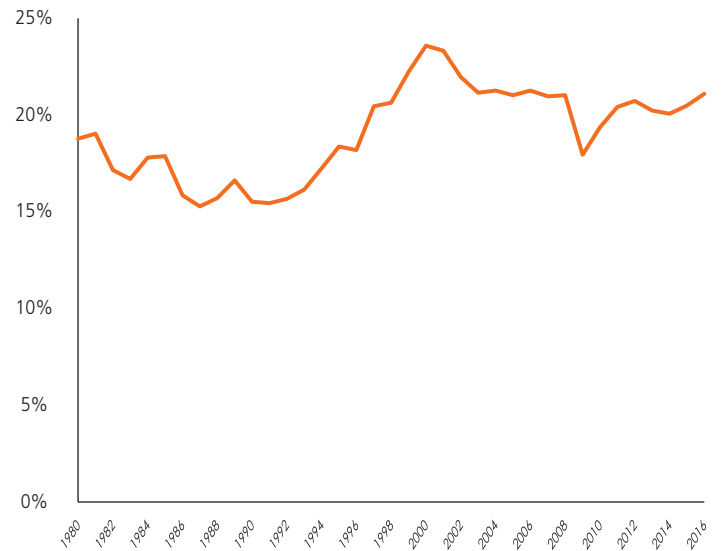
Moreover, the goods trade balance of France deteriorated significantly between 2003 and 2012 (Figure 7). The strength of the euro, the slow erosion of export-oriented industry and the high oil

Figure 7. Merchandise Trade Balance; % of GDP (2000-24)



Data Source: Oxford Economics

Figure 8. Exports France; % of GDP



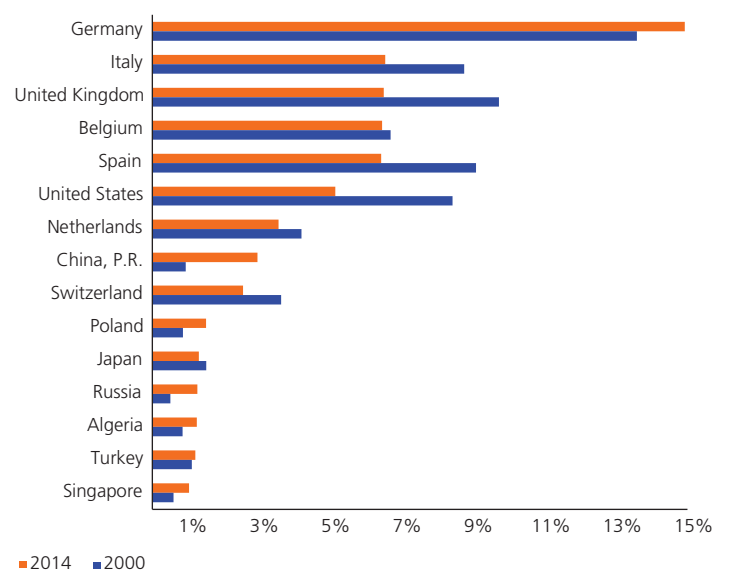
Data Source: Oxford Economics, Macrobond, ING Calculations.

price related to the increasing dependence on fuel imports (17% of total imports) are some of the explanations for this. There has been some improvement since 2012 but imports are projected to continue to clearly exceed exports over the next decade (fig 7). The current account position is more favorable. The deficit stood at 1.3% of GDP in 2013. The discrepancy between the trade balance and the balance on the current account can be attributed to France's strong international trade surplus in services.

a. Exports

French exports still haven't fully recovered from the sharp fall in 2009 (figure 8). As a percentage of GDP French exports have actually been stagnating for a longer time. After increasing steeply in the 1990s, the internationalization of the French economy

Figure 9. Top 15 export partners of France; % of total goods exports



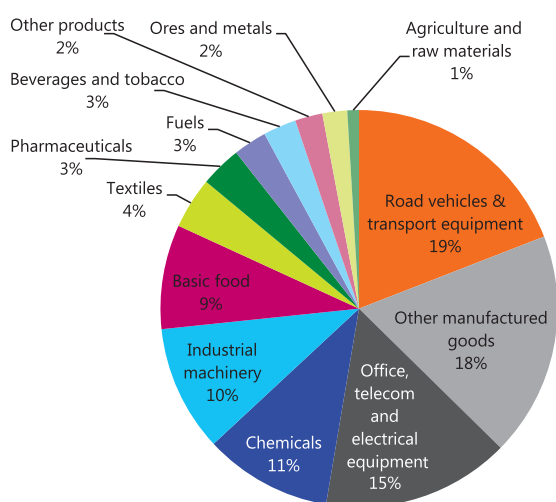
Data Source: Oxford Economics

went into reverse (figure 8). In 2000 the ratio peaked at 23.6%. Currently, exports stand at 20% of GDP.

France trades mostly with other EU economies. Nevertheless, the last 15 years have seen the increased relevance of emerging markets (figure 9). The share of trade with Italy, UK and Spain has declined significantly as a percent of total exports. China and other emerging markets such as Poland and Russia have gained in relevance.

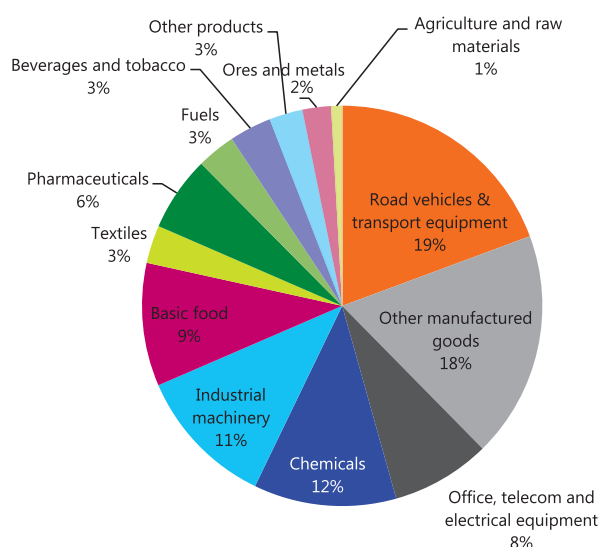
The French economy exports a wide range of product categories. The five largest export sectors in 2014 were: (1) Road vehicles and transport equipment, (2) Other manufactured goods, (3) Chemicals, (4) Industrial machinery, and (5) Basic food. Moreover, a comparison with 2000 indicates that exports of office, telecom and electrical equipment have strongly decreased in terms of share of total exports. The other categories, however, maintained fairly stable shares in total exports.

Figure 10. Exports from France; % of total 2000



Data Source: Oxford Economics, ING Calculations

Figure 11. Exports from France; % of total 2014



Data Source: Oxford Economics, ING Calculations

Table 2. Export categories of France; € billions, % change

France Exports	2000	2014	Change
Total	2112,7	4391,4	108%
Road vehicles & transport equipment	184,2	387,3	110%
Other manufactured goods	176,2	366,1	108%
Office, telecom and electrical equipment	147,7	160,5	9%
Chemicals	100,5	230,7	130%
Industrial machinery	99,1	227,1	129%
Basic food	82,0	199,1	143%
Textiles	40,3	61,4	52%
Pharmaceuticals	32,4	121,1	274%
Fuels	26,3	62,7	138%
Beverages and tobacco	26,0	68,1	162%
Other products	21,5	54,3	152%
Ores and metals	19,5	46,0	136%
Agriculture and raw materials	9,1	17,8	95%

Data Source: Oxford Economics, ING Calculations

On the other hand, exports in machinery and transport equipment and road vehicles have been able to keep up with the general rise in exports or show some increase in their share of exports (figure 10 and 11).

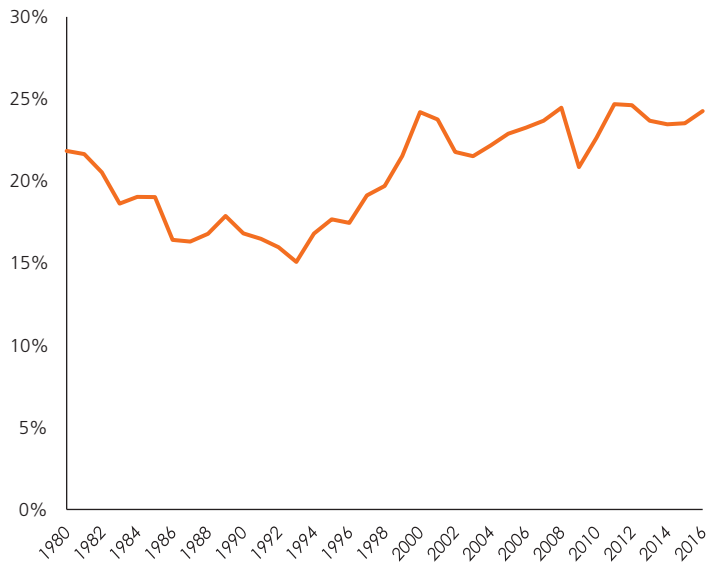
Looking at growth rates we see an increase across the board. Pharmaceuticals and Beverages and Tobacco have shown very strong export growth over the last 14 years (Table 1). On the other hand, exports in Office, telecom and electrical equipment and Textiles have been disappointing.

French export growth increased in the first four months of 2015. This could continue if the euro exchange rate remains subdued over the next few years and if real wages don't rise too much.

Exports of cars and other motor vehicles are expected to recover modestly on the back of an economic recovery in most European countries which increases demand for consumer durables like cars and for investment goods like busses and motor vehicles for agriculture. The French car industry, being the third-largest in Europe after Germany and Spain, will benefit from this.

Industrial machinery is another large French export sector. It will also benefit from the forecasted (cautious) economic upswing in Europe. France has been very active in developing power-generating equipment, with expertise in both nuclear technology as well as renewable sectors and power station technology (France is the main industrial base for Alstom, for example, which specialises in non-nuclear technology for power stations).

Figure 12. France imports; % of GDP



Data Source: Oxford Economics, ING Calculations

b. Imports

French imports are currently exceeding French exports. Imports currently stand at 23.4% of GDP, down from the peak in 2000 at 24.2% (Figure 12). Just like exports, imports have not returned to pre-2009 levels (in terms of value) but the import ratio is projected to increase in the medium term. One of the reasons for this is the turnaround in the economic cycle. History shows that in an economic upturn, which is forecast for France in the coming years, the demand for durable goods rises disproportionately and the share of these goods in imports is higher than its share in GDP. This makes the import ratio rise.

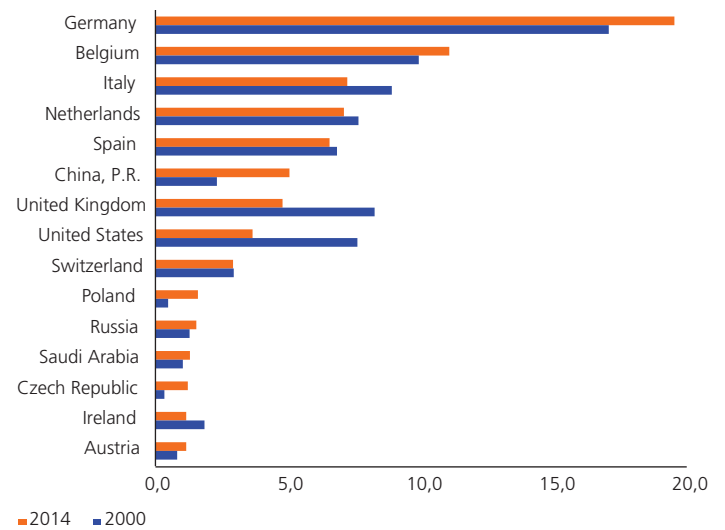
Most imports originate from the major EU economies. Unlike exports, imports from the various EU countries, like Germany, Belgium and Austria, have gained in importance. On the other hand there has been a drop in imports as a percentage of total imports from Italy, Netherlands, Spain and especially the UK (Figure 13). Imports from the US have also lost ground significantly since the start of the millennium. Imports from emerging markets such as China, Poland and the Czech Republic have increased their share of total French imports.

Bilateral trade with the Netherlands

When it comes to bilateral trade with the Netherlands, France is a net importer of Dutch goods in most product groups. It has a negative overall trade balance with the Netherlands (Figure 9). For example, in the market for road vehicles and transport equipment the Netherlands is a player in the truck industry (DAF, VDL group and Scania) and to a lesser extent in personal cars (Mini). In aerospace components Fokker is well established and in certain niche markets like chip industry suppliers Dutch companies like ASML play a prominent role. The Netherlands also exports a lot of chemicals and office machines to France and, of course, food and live animals (figure 14).

In its turn, France is among other things, a large car exporter to the Netherlands, with Peugeot, Citroën and Renault as eye-catchers.

Figure 13. Top 15 import partners of France, % of total goods imports

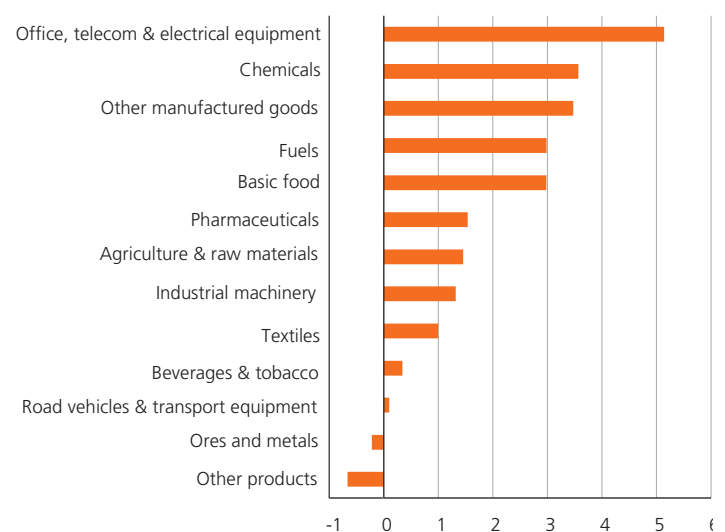


Data Source: Oxford Economics

Regarding the French trade deficit with the Netherlands it should be borne in mind that Dutch exports are strongly influenced by the Port of Rotterdam as a trading hub for Europe. The Netherlands is home to more distribution centres than anywhere else in Europe and has the largest inland shipping fleet in Europe.

Building on existing market positions and competitiveness developments, Dutch exports of investment goods benefit strongly from the cyclical upturn. Exports to France are projected to increase significantly in road vehicles & transportation equipment and in industrial machinery. Pharmaceutical companies also see a strong increase, as they are returning from a patent cliff where several blockbuster patents expired in recent years. (Table 3). Exports in textiles and fuels are projected to fall over the next five years due to the falling oil price and the expected offshoring of the textile industry.

Figure 14. Dutch-French trade balance 2014, € billions



Data Source: Oxford Economics, ING Calculations

Table 3. French export and import growth to the Netherlands 2015-'20

French Trade with the Netherlands Expected Average growth rate over 2015-2020	Exports to the Netherlands	Imports from the Netherlands
Total	2.8%	2.8%
Industrial machinery	7.3%	7.0%
Road vehicles & transport equipment	7.1%	8.3%
Pharmaceuticals	5.5%	6.1%
Office, telecom and electrical equipment	5.4%	2.1%
Other products	4.7%	2.7%
Chemicals	4.3%	2.7%
Other manufactured goods	3.1%	3.9%
Beverages and tobacco	2.7%	0.4%
Basic food	2.3%	3.1%
Agriculture and raw materials	1.7%	2.9%
Ores and metals	1.3%	0.7%
Textiles	-3.0%	-0.8%
Fuels	-4.6%	-2.0%

Data Source: Oxford Economics, ING Calculations

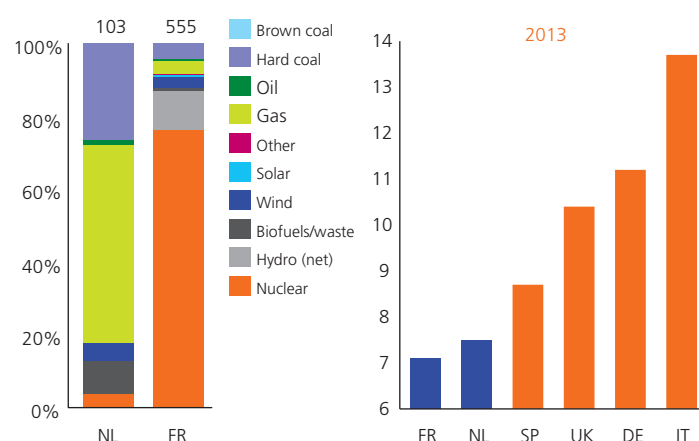
In a similar manner, French entrepreneurs try to benefit from the expected growth in (intra-sectoral) trade with the Netherlands in (1) industrial machinery and (2) road vehicles & transportation equipment. French exports of fuels and textiles to the Netherlands are expected to contract significantly in the next five years, as is the reverse case.

III. Developments in renewables and France's national energy plan

The Energy transition of Europe was hit hard by the financial crisis. Energy prices were pushed downward by the contraction in output, low coal prices and the rise of renewables. Moreover, energy demand fell sharply and could be in structural decline. After all, the energy intensity of GDP has been falling for some time. In addition to depressed energy demand, disappointing EU post crisis economic development has had an additional impact on renewables markets. For some European governments, sluggish growth, high unemployment and burdensome debt have drawn attention away from the development of renewables. Government subsidies for the production of clean energy were cut in Spain and could flatten in other debt-stricken countries.

The crisis has also presented some unique opportunities for investments in renewables. Historically low interest rates have made long term investment projects attractive and efficiency and technology improvements in some renewable energy sources have enabled significant cost reductions. In some countries, renewables have reached similar levels of competitiveness as traditional sources of energy. This is good news for enterprises considering entering (or expanding in) the renewables market. Going forward, they may make progress without government subsidies after all.

Figures 15/16. Power generation mix 2012 (% of total; terra watt hours) LHS; Power prices for industry (20-70 giga watt Hours) RHS

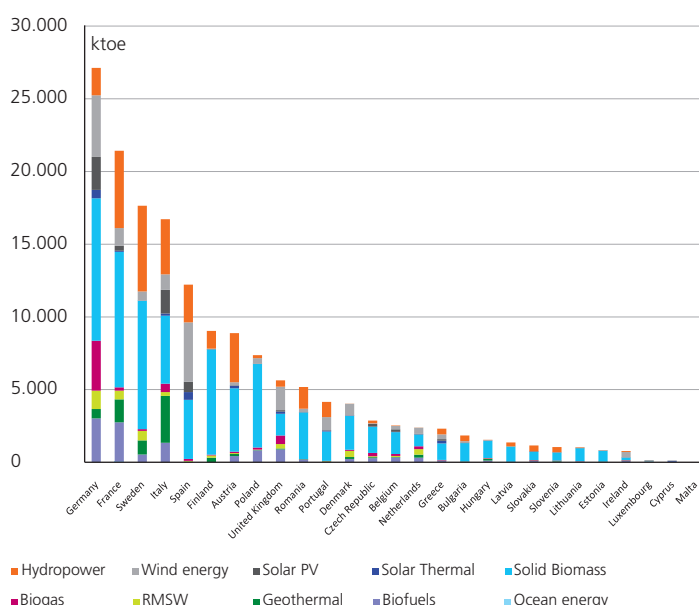


Source: IEA Electricity Information (LHS) and BMWi Energiedaten 21.05.2014 (RHS)

France and Netherlands have markedly different power generation mixes (Figure 15). Netherlands relies on fossil fuels (most notably gas). France on the other hand, relies extensively on nuclear power for electricity production.

France's national plan for energy development, above and beyond the targets set by the EU, is focused on reducing the share of nuclear energy. More specifically, France aims to diversify its energy mix and reduce the nuclear share from 75% to 50% by 2025. This is to be partly achieved by the closure of the oldest nuclear plant, Fessenheim. Extensive reliance on nuclear energy has made electricity in France much cheaper than elsewhere in Europe (Figure 16). This has reduced any urgency to implement the national plan and transform the country's energy mix.

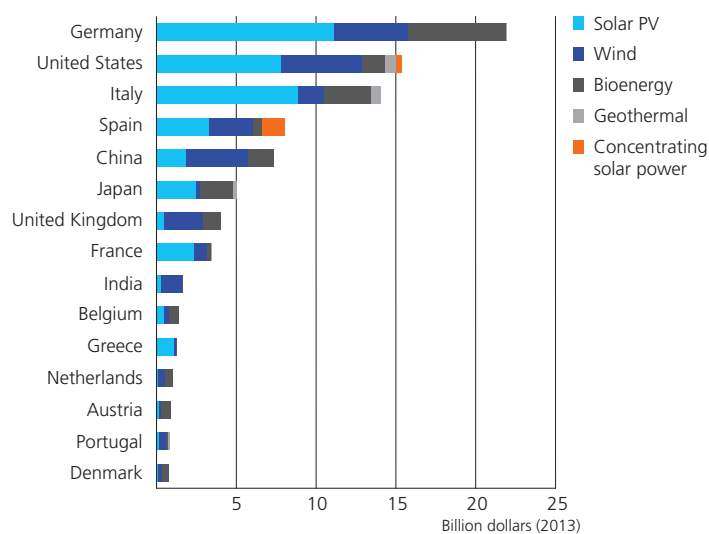
Figures 17. Renewables production in EU (2012; KTOE*)



Source: EurOservER 2014

* KTOE = unit of energy defined by the amount of energy released by burning one kilo tonne of oil.

Figure 18. Subsidies for renewables energy by source in the top-15 countries, 2013 (in billion \$)



Source: World Energy Outlook 2014

France's national plan also aims to increase the share of renewables from 13.7% in 2012 to 32% by 2030. According to 2012 estimates, France is the second largest producer of renewable energy in the EU (Figure 17). Hydropower is one of France's advantages. Solar and wind energy on the other hand, are two areas which France can grow to diversify its energy mix. Both sectors are relatively underdeveloped. A key advantage of solar and wind energy over more traditional energy sources is that while coal and gas prices can increase substantially and experience extended periods of volatility, the price of producing wind and solar energy has almost uniformly gone down over time.

Subsidies in renewable energy

Renewable energy is a relatively subsidised sector. The rationale for subsidies is straightforward; renewables are environmentally friendly and are consequently responsible for positive externalities that are not captured by market prices. While France and Netherlands are not as generous as some other European countries, opportunities to utilise government resources do exist. France has devoted a significant fraction of its subsidies on solar PV and wind. The Dutch government, on the other hand, has favoured wind and bio-energy (Figure 18).

When it comes to long term investments, entrepreneurs should be aware that solar PV is projected to remain the largest worldwide recipient of government subsidies in the foreseeable future. In the very long term (2035-40), PV government subsidies are projected to decline and to eventually be overtaken by bio-energy subsidies (World Energy Outlook 2014).

The substantial cost reductions in the PV market have been strongly influenced by global PV subsidies. For example, Chinese public banks provided 13 billion euro in subsidised loans to solar panel manufacturers that financed a tenfold increase in production capacity and a cost reduction of 75% between 2008 and 2012. The associated price reductions made many manufacturers go bankrupt.

Enterprises considering operations in the renewable energy business should beware of massive government subsidies could be price distorting in the positive sense for (industrial) consumers but also competition distorting in the negative sense for 'independent' non-subsidised private PV manufacturers.

The European Commission believes that renewables markets should be exposed to more market forces as they mature and recommends limited assistance to renewables in the medium term. This marks a major turnaround in EU energy strategy as it will put renewables on the same footing with high greenhouse gas emitting technologies. Nevertheless, this may not be the major setback for wind and PV that many believe. As we will see, both sectors are becoming cost competitive relative to traditional sources of energy.

Wind energy

Wind energy has been developing as one of the most popular technologies over the past two decades. Nevertheless, while the expansion of wind energy production has been rapid in absolute terms, the growth of cumulative capacity has been slowly decreasing over the past 15 years (Figure 19). The Great Financial Crisis was especially harmful for the wind market; world production growth fell from 31% in 2009 to 16% in 2014. The wind energy market is simply not growing as fast as it used to. Having said that, a growth rate of 16% is still very impressive.

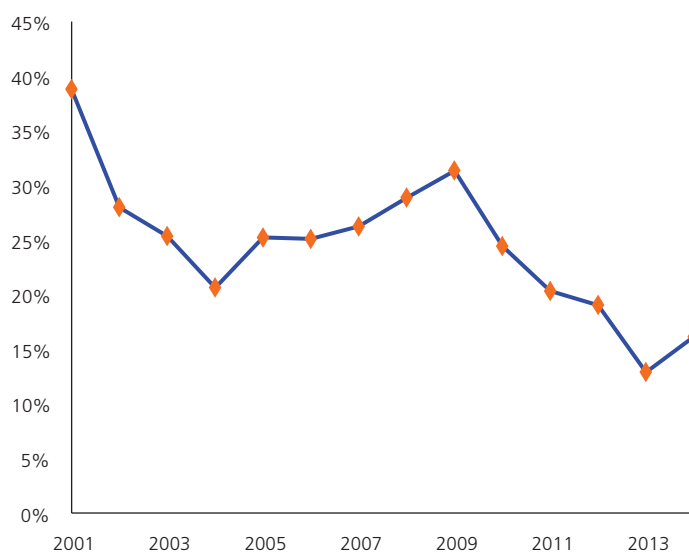
A significant proportion of the slowdown in worldwide wind production over the last couple of years has come from the EU. EU wind production growth in 2014 (10.4%) lagged the world average (16%). The general view is that the majority of EU member states are not willing to subsidise costly renewable energy in the face of budget deficits. Most notably, countries such as Germany, Netherlands and the UK have already announced reductions in incentive programmes.

Reductions in subsidies need not be a disaster for the on-shore wind energy market. Twenty years of R&D, supported extensively by massive government subsidies worldwide, have developed the onshore wind power market into a mature and competitive sector. Research commissioned by the European Commission concluded that the wind energy market is the cheapest source of energy once environmental externalities are incorporated in the price (meaning that the social price is lower than the current market price). The approximated externality inclusive price for wind energy is 105 euro/MWh, lower than gas (165 euro/MWh), coal (163-233 euro/MWh) and nuclear energy (133 euro/MWh).

A similar development is currently supporting progress in offshore wind energy. Currently though, offshore wind energy is still lagging other renewable energy forms in terms of cost competitiveness at 186 euro/MWh. Calculations done by Siemens that consider society's cost of electricity which include additional pricing factors such as grid infrastructure requirements, geopolitical effects and other social aspects have ranked offshore wind energy as one of the most competitive energy sources, at 61 euro/MWh.

Needless to say, the social and environmental aspects of wind energy are not captured by market prices. Consequently, non-

Figure 19. Growth in total cumulative wind power capacity installed worldwide since 2000 (MW)



Source: EurObserv'ER 2015

subsidised offshore wind producers will find it difficult to compete with traditional sources. On-shore wind energy producers on the other hand, will soon be ready for non-subsidised competition. If past innovation is any predictor of future innovation, on-shore wind energy production should become more competitive than traditional sources without government subsidies in the medium term.

Both Netherlands and France are lagging the EU average and consequently have a lot of room for expansion in the wind energy market (Figure 20). Not all countries are endowed with equal opportunities to utilise wind as an renewable source of energy. Nevertheless, the broad consensus is that both France and the Netherlands have ample room to explore the opportunities within this industry.

Netherlands and France are the 4th and 11th largest producers of wind energy in the EU respectively (Table 4). Dutch wind energy production growth in 2014 was not encouraging. In France on the other hand, after four consecutive years in decline, we have seen an increase in the connected capacity.

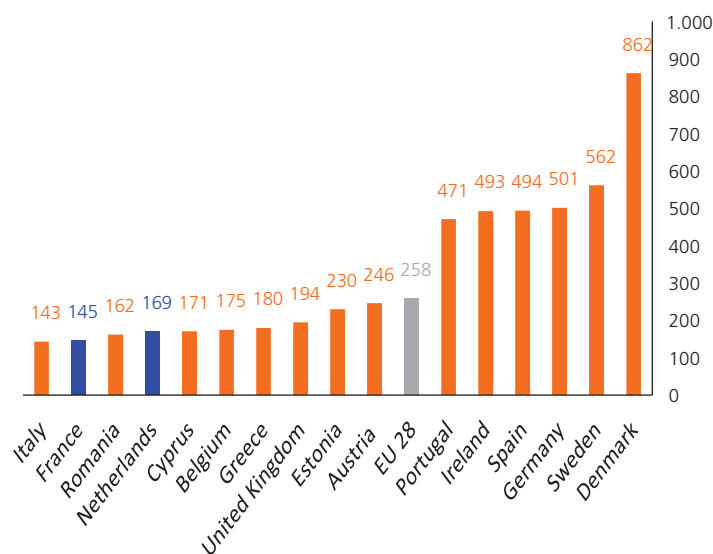
Many attribute the recent turnaround in French production to 'feed-in tariffs' and policies aimed at simplifying the legal framework. The basic idea behind feed-in tariffs is to enable higher prices for electricity generated via costlier, albeit environmentally friendlier, renewable sources. Nevertheless, the market remains cautious about large investments, given the government's plan to switch from a feed-in tariff system to a market clearing mechanism by the beginning of 2016. Énergie Éolienne, the agency responsible for representing French wind energy interest, claims that the continuation and stability of feed-in tariffs is necessary for investor confidence. Uncertainty in feed-in tariffs raises the riskiness of wind energy projects. If France is to achieve its ambitious wind energy targets, it is likely that the government will have to commit on maintaining subsidies in the sector for the medium term.

Table 4. Wind power production in EU

Top ten wind power producers in EU	Installed capacity to date at the end of 2014	Capacity installed in 2014	Increase in 2014	Capacity as % of world total
Germany	40456	6187	18,1%	10,9%
Spain	22985	55	0,2%	6,2%
UK	12474	1265	11,3%	3,4%
France	9285	1042	12,6%	2,5%
Italy	8662	307	3,7%	2,3%
Sweden	5425	1050	24,0%	1,5%
Portugal	4914	183	3,9%	1,3%
Denmark	4849	68	1,4%	1,3%
Poland	3834	444	13,1%	1,0%
Romania	3221	438	15,7%	0,9%
Netherlands	2852	139	5,1%	0,8%
Total EU	130389	12442	10,5%	35,1%

Source: EurObserv'ER 2015

Figure 20. Wind power capacity per 1000 inhabitants (kw/1000 inhabitants in 2014)



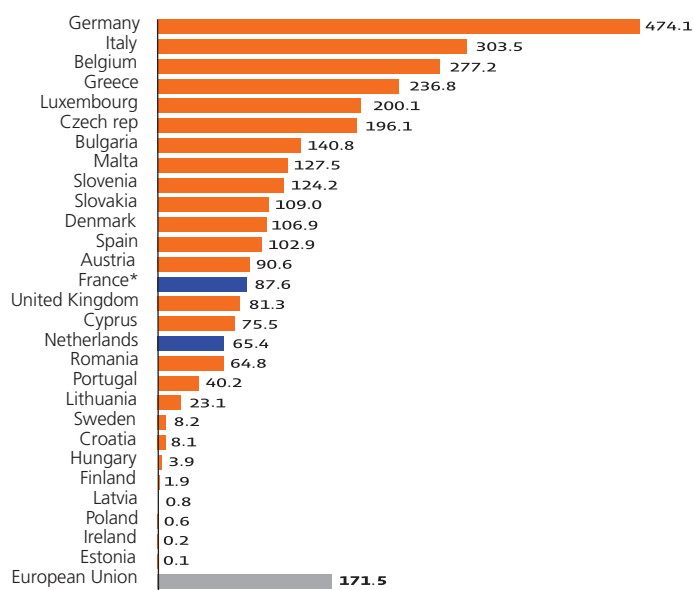
Source: EurObserv'ER 2015

Photovoltaic

While the world photovoltaic market has been accelerating in the past two years, EU production and sales have underperformed. Similar to the wind energy market, Asia-Pacific markets have eclipsed the European market.

EU photovoltaic market development seems to be at odds with technological and efficiency improvements in the industry. European surveys conducted last year show that the cost of photovoltaic energy production for many EU member states has fallen below

Figure 21. Photovoltaic power in the EU 2014 per inhabitant



Source: Photovoltaic barometer 2014

100 euro per MWh since 2012. The EuroObsevER notes that over the last three years, module manufacturing costs have more than halved. In terms of costs, these developments make the technology as competitive as nuclear and power gas sources. With electricity generation dependent on the irradiation index, costs are much lower in Southern European economies. Nevertheless, the Fraunhofer institute has found that photovoltaic costs based on sunshine levels in southern Germany have fallen to 79-98 euro per MWh for large scale production.

Investor confidence in PV has been reinforced by favourable price developments. Financial risks are perceived as being lower given the current (and potential) competitive position of the sector, making financing PV investments cheaper. Strong worldwide growth in the sector will also help with cost reductions. Mass production of PV technology is extremely sensitive to economies of scale. Worldwide PV market growth should help manufacturers to cut costs and make large R&D commitments in the technology. In short, PV is in a virtuous spiral of risk and cost reductions. Moreover, global demand for photovoltaic energy is expected to expand by 30% in 2015, according to photovoltaic consultancy IHS. Market expansion and cost reductions suggest that there will be ample opportunities for entrepreneurs in the solar energy market.

Both in absolute and per capita terms (Figure 21), France and the Netherlands are lagging their peers in PV production. Nevertheless, things are improving. French PV growth was solid in the past two years. Newly installed capacity in France for 2014 was estimated at 5600 MW. At the moment PV accounts for only 1.2% of French electricity production, still below the EU average of 2.4% (Italy 7%, Germany 5%).

Similarly to the wind energy market, feed-in tariffs are also central to the development of the PV market in France. While payments are predetermined for small installations, support for production

above 100 kWp is based on tenders. Local companies complain that the tenders are often haphazard, are for inadequate quantities and are subject to serious delays. Some of the criticism has been well-founded and the new tender offers for capacities ranging from 100-250 kWp have used simplified procedures that enable faster responses.

The European Commission's anti-dumping legislation bans Chinese manufacturers from selling PV modules below a certain price threshold. Among other things, this has hindered incentives for cost reduction of foreign PV developers. One of the effects of the policy is already evident: pvXchange estimates that modules sold in China and South East Asia in 2013 were 18-25% lower than in Europe. Subsidy-distorted low solar module prices might improve the general competitiveness of European industry by helping enterprises save on the electricity bill. Moreover, Chinese PV subsidies might also have a positive effect on the EU energy mix and therefore the environment. On the other hand, the legislation gives some breathing space for European manufacturers. Given the recent divergence in subsidies between EU and China, it seems that "independent" EU manufacturers face an uphill battle in taking international market share from heavily subsidised Chinese enterprises.

Another key issue arising from PV market growth is energy demand during the night or cloudy days. Such instances require the purchase of power from other energy sources (or other areas) transferred from the grid. To conclude, if solar power is to significantly replace traditional sources, it will require breakthrough innovation in power storage or a big and flexible grid network that is both economical and able to accommodate electricity production from intermittent power sources.

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