



## **ECG Academy**

### **Thesis**

#### **An automotive world in motion**

How to handle those changes

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## **B. Abbreviations**

OEM: Original Equipment Manufacturer

LSP: Logistics Services Provider

## **1. Introduction**

The automotive market has been evolving a lot since its beginnings always challenging its suppliers' potential, pushing them to overpass themselves or disappear. The 2000's in that way had a huge impact on both cars manufacturers and services providers' organizations. For both of them, radical decisions had to be taken in order to adapt to the new European economical situation but also to restore competitiveness and profitability. Especially in Finished Vehicles Logistics, a very specific sector by the means used dedicated to OEMs, changes were important but still, the biggest are yet to come.

Through that thesis, we will have a look at the evolution of the automotive sector over the past decades, with a strong focus on both European production and sales figures per country in order to define the present situation and the existing issues or challenges. Based on those statements from the past, we will study the impacts on Finished Vehicles Logistics sector and share my vision about the future and general automotive trend.

## **2. Goals of the project and steps to be taken**

The project aims to define the way we should re-think Finished Vehicles Logistics for the coming years. After confirming the trend, we will define recommendations how to handle the coming challenges in terms of transported volumes from a plant to the final customer in an unbalanced European market in terms of production versus sales.

## **3. AS-IS Analysis**

In order to get the current image of the automotive sector, it is more than necessary to look behind and check the economic situation, the key past events and figures.

We will focus on three main automotive indicators:

:

- 3.1. The car production in Europe through the years
- 3.2. The amount of vehicles produced per country
- 3.3. The amount of volumes sold per country

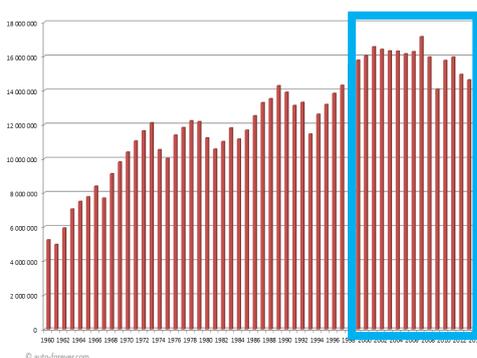
And we will conclude in chapter 3.4. by analysis the output of those indicators.

### *3.1. The car production through the years*

Last decades showed us key events such as various crises, mainly during the 20<sup>th</sup> century, slowing down the output of the European automotive industry, without stopping eventually its growth. But lately, since the 2008 crisis, we notice a total different situation in Europe.

For the past 8 years, European OEMs are struggling to get back to the previous volumes and this for a few reasons. One of the explanations is of course the decrease of European demand (to be seen in point 3.2.) due to economical reasons but also the change of European culture towards automobile, the research of always more competitive producer, therefore out of European Union and the development of new transport means.

The market seems therefore saturated with current OEM's capacity and far to get to the previous produced volumes. All of those reasons combined, we can expect a stabilisation of the produced volumes and even a decrease in the medium term.



**Figure 1 – cars production since 1960**

The graph is showing the evolution of European car production from 1960 to 2014. The aim of the graph is not to debate about the quantity but to show the global trend since 2000.

### 3.2. The car production per country

Having shown the production trend on the last decades, we will now detail it on a reduced timeframe but with a focus on the countries producing. Indeed, we will be able to see how the manufacturing barycentre has been evolving and then the impacts on our businesses.

Below is a reminder of the car production evolution since 2005 with the evolution year-to-year. The major point is that the crisis impacted the yearly production by -23% between 2007 and 2009. Even in 2015, the production level was about 9% lower than in 2007, the most productive year of European history.

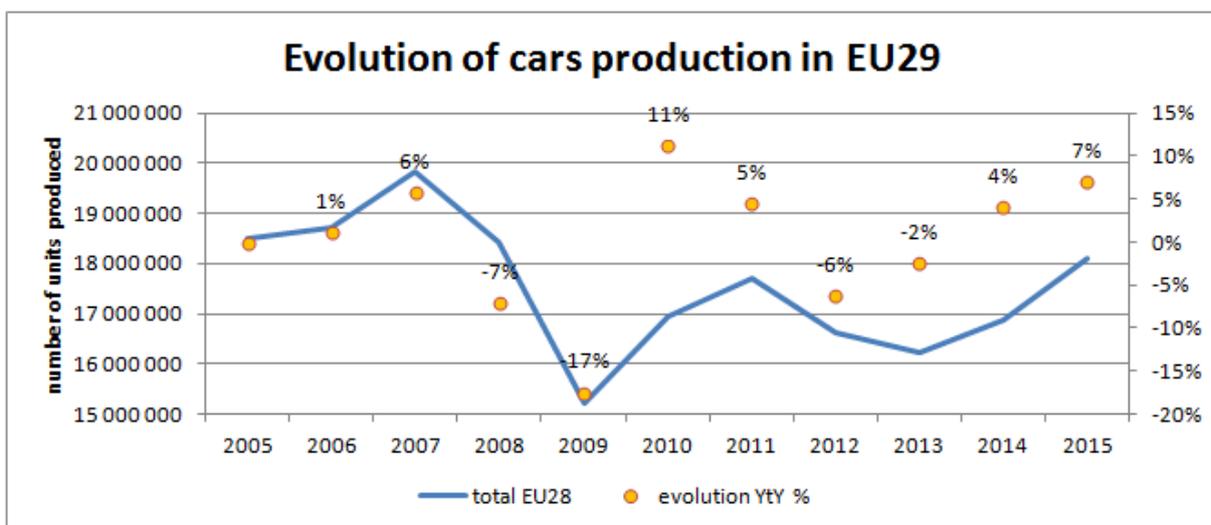


Figure 2 – evolution of cars production in EU29

To detail the figures presented upper, I decided to split the produced volumes into three geographical production zones: Western Europe, Central Europe, Eastern Europe. The only country considered in Central Europe is Germany as it is the only western country to have overcome its level of 2007, now producing more than before the crisis. Along with it, Germany is the biggest car producer in Europe.

In **Western Europe zone**, I considered the following countries:

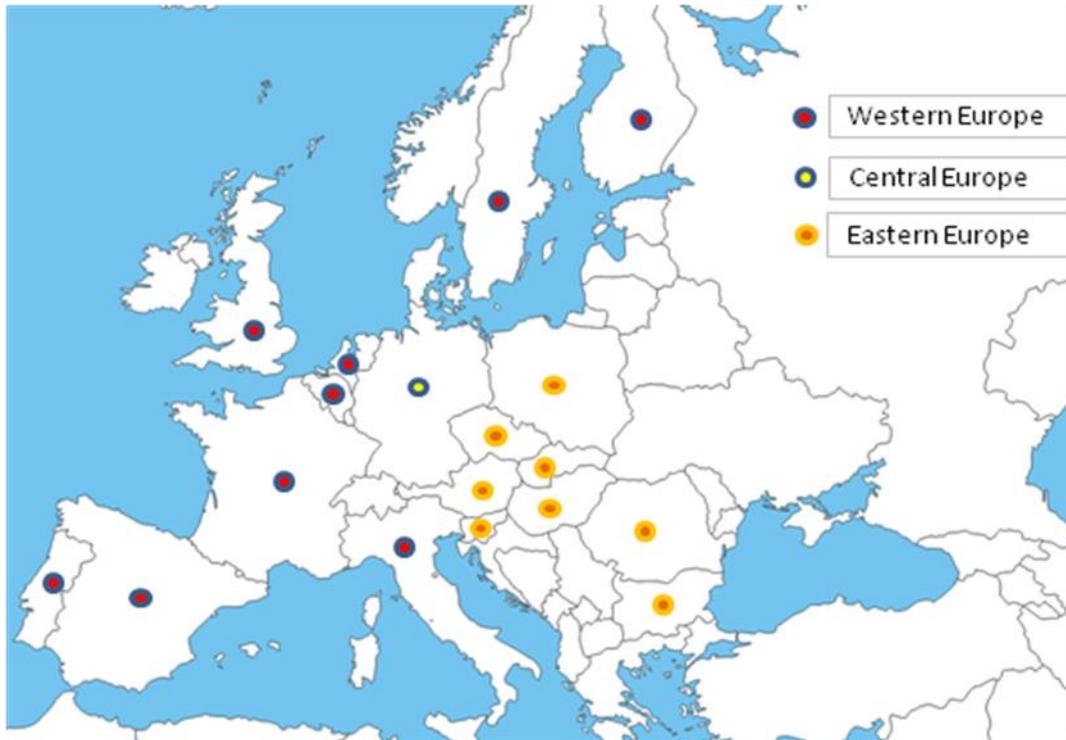
1. Belgium

2. Finland
3. France
4. Netherlands
5. Portugal
6. Spain
7. Sweden
8. United Kingdom

In **Eastern Europe zone**, I considered the following countries:

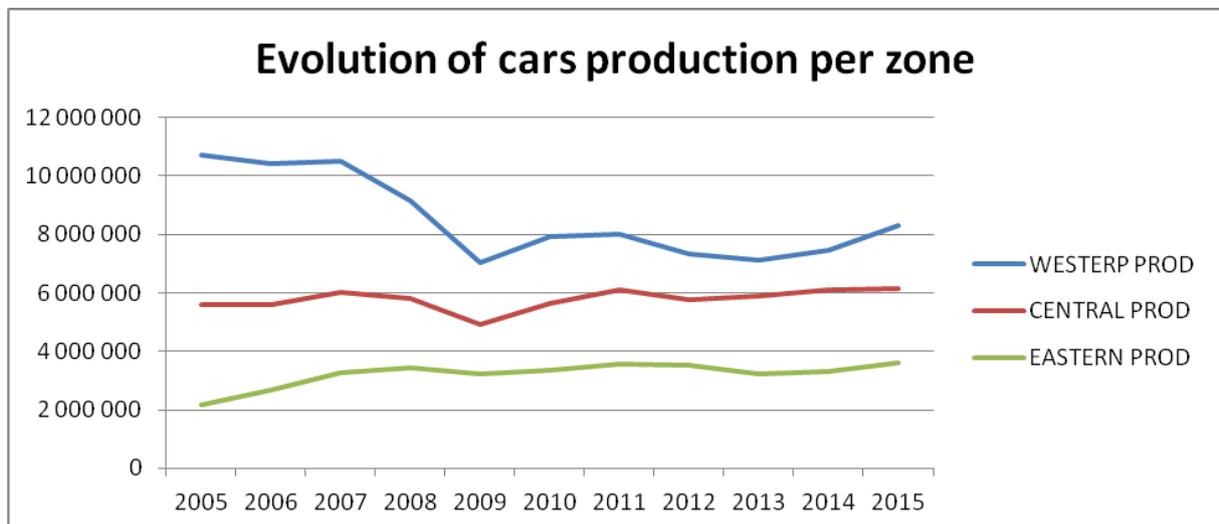
1. Austria
2. Bulgaria
3. Hungary
4. Poland
5. Romania
6. Slovakia
7. Slovenia
8. Czech Republic

Below is the map representing visually the split defined previously.



**Figure 3 – visualisation of producing countries split**

The next graph will show the evolution of production per zone defined previously in order to help us study the global trend in Automotive European Union.



**Figure 4 – evolution of cars production per zone**

We can therefore see the overall evolution bringing us important information. **Central Europe** (Germany) clearly got back on track and at the highest level ever with a 10% increase since 2005.

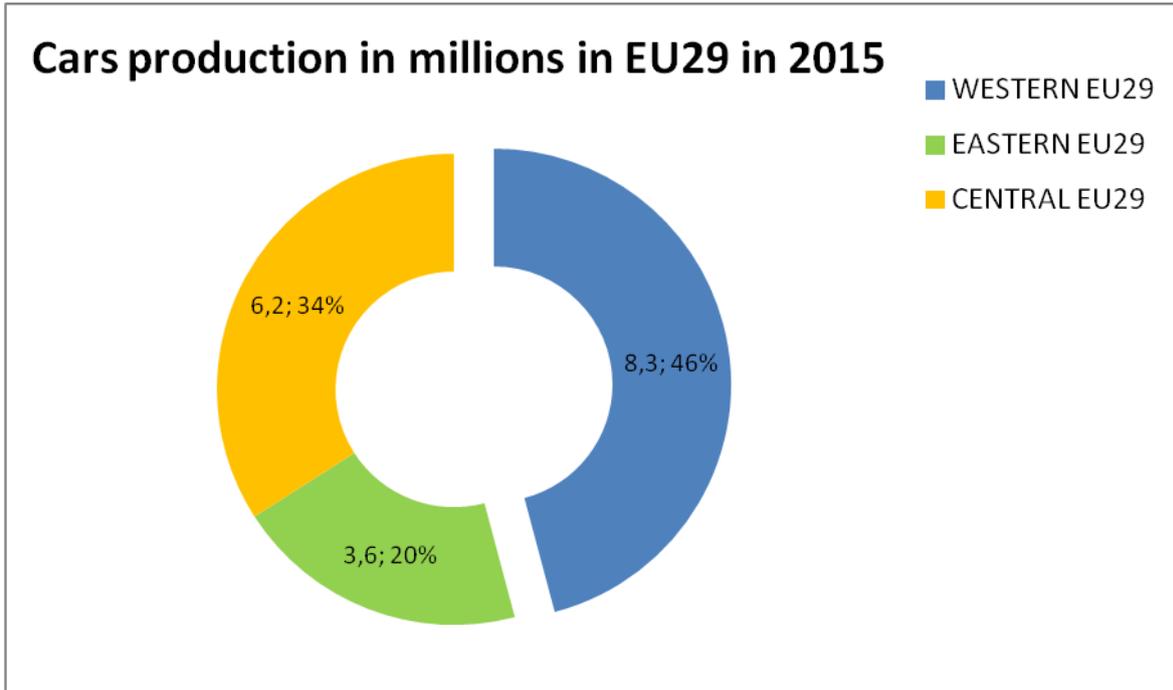
On the other hand, we see that **Western Countries** have lost extremely high production volumes with a 23% decrease since 2005. Out of the volumes lost and not recovered, France is the most impacted with a loss of 1 555 891 vehicles in 10 years (-44% of its national production) contributing for 64% to the overall decrease.

The real beneficiary of this evolution is therefore **Eastern Europe** which saw its production going 67% up on the last decade thanks to the two high runners being Slovakia (with + 610 473 vehicles and 313% up) and Czech Republic (with +522 180 vehicles and 87% up).

	2005	2015	Difference (qty)	Evolution (%)
WESTERN PROD	10 735 253	8 296 626	-2 438 627	-23%
CENTRAL PROD	5 593 662	6 164 231	+570 569	10%
EASTERN PROD	2 174 437	3 623 685	+1 449 248	67%
TOTAL	18 503 352	18 084 542	-418 810	-2%

**Figure 5 – comparison between 2005 and 2015 per zone**

The real image of that analysis is that within the last ten years, we have progressively moved from an exclusive Western European car sourcing to a more Eastern one. Western Europe is still obviously a huge cars producer but which moved to the Eastern part a noticeable part of its volumes (> 10%) in a very short time.



**Figure 6 – cars production split per zone**

*3.3. The car consumption per country*

The European Union is very important developed market of more than 500 millions of inhabitants. More than 60% of the population comes from 5 countries which are Germany (81 millions), France (66 millions), United Kingdom (65 millions), Italy (61 millions) and Spain (46 millions). The rest of the population (189 millions and 37%) coming from 23 others countries.

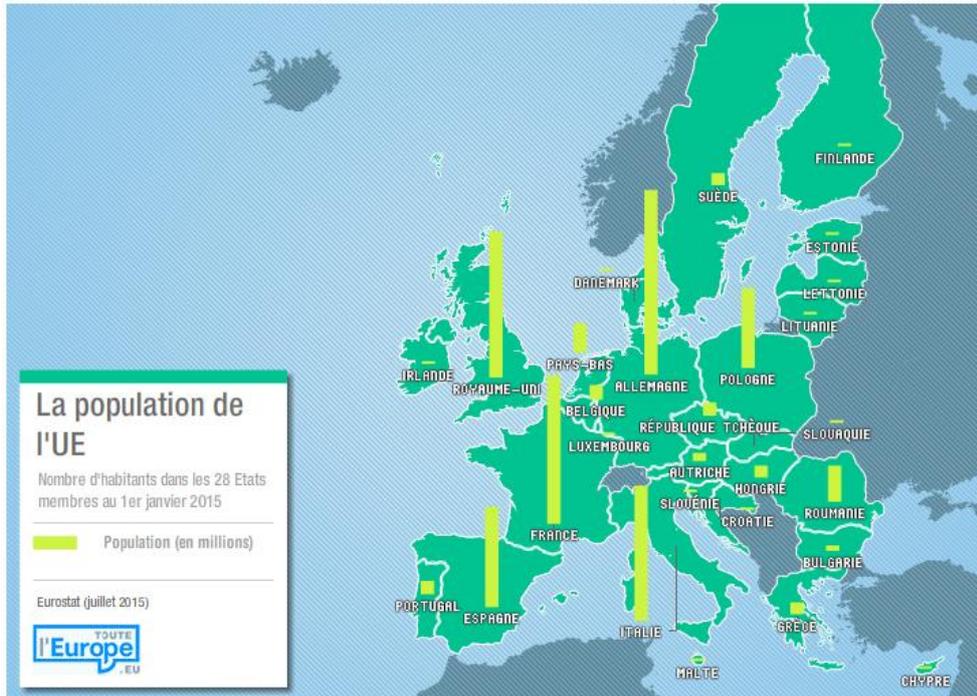


Figure 7 – overview of the market potential

We will see below that along with the population is the car market logically depending on the number of inhabitants.

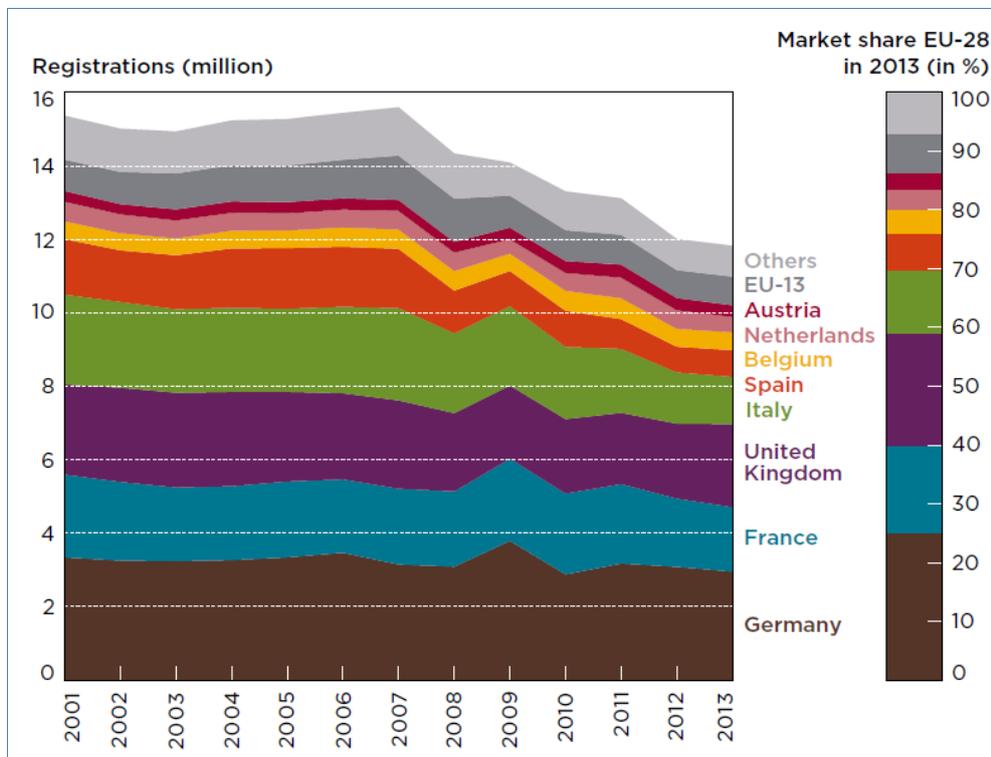


Figure 8 – evolution of sales and market shares in EU from 2001 to 2013

The map above (figure 7 and 8) shows us visually where the main cars markets are in Europe. We see that along with the loss of production presented in chapter 2., the sales went dramatically down.

We can also notice that still the biggest market considering number of inhabitants is in Western and Central Europe with the top four production countries being Germany, France, Spain and United Kingdom. This observation is confirmed by the graph below where we can find the split of 2015's cars sales in those three zones mentioned in the chapter 3.2.

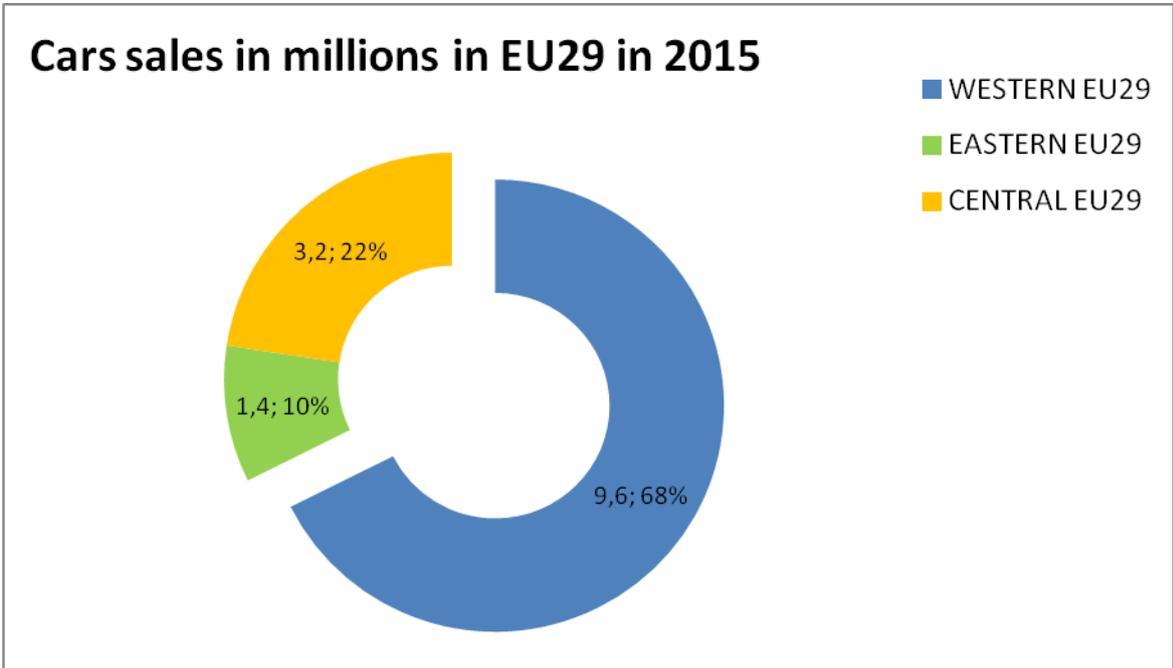


Figure 9 – cars sales per zone

3.4. Output of the market analysis.

As we have shown in the analysis before, we are there facing a real change of logistics schemes and logics since the year 2000. We can observe a moving of the car production to the eastern part of the European Union where labor costs are lower.

This is just the beginning as many OEM are increasing their production capacities in the easter part of Europe. For instance, speaking of those major ones, SKODA producing in Czech Republic getting more and more market shares around,

KIA (Slovakia) and HYUNDAI (Czech Republic) increasing production capacities, VW and PSA planning to extend their production in Slovakia. On the other hand, sales are not supposed to follow the production trend and will stay in the main market identified today as Western Europe.

As we have seen in the past years, due to the huge decrease of sales and production in European Union, logistics providers have been enforced to change their way of doing and organisation in order to minimize the economical impacts on their incomes. It means cancelling contracts with subcontractors and decreasing quantity of trucks running or changing transport means from trucking capacities to rail and sea ones. As a consequence, very often empties kilometers were increased, impossibilities to meet contracts' requirements and decrease of quality performances. Logistics services providers had to pay even fines for not respecting their commitments. This brought at the end a contraction of the whole market, letting in place the biggest players to resist and killing the other, decreasing at the end drastically the trucking capacity.

All this will bring in the very next future more produced volumes in Eastern Europe in a stable or decreasing European automotive sales market. Sales will stay stable based on population living in those different parts of Europe. In another word, in opposition to what was done before the 2000's, we will produce more cars far from their consumption point. All this will as a consequence increase distance run from the production center to the final client and therefore transport means needed to handle those. The issue is either or not if those transport means will come back to market or not and in which form.

#### **4. Design of the TO-BE state**

As relevant as it might be, the previous chapter shows us the trend and let us imagine how will be the situation in the coming ten years. As we cannot be spectators that those changes, we have to define the way we will provide further our services.

As proven, the truth which was before the following: to produce the closest to the markets you want to reach isn't true anymore and we can see more and more

unbalanced situations with a big concentration of production capability in a limited amount of countries not being final consumers ones.

Question is therefore: how to transport those vehicles from the production site to the final consumer in an environment where the trucking capacity is not getting higher and roads constraints are being more and more complicated and limiting.

To this you can add also the cars dimensions and models wanted by the clients, always bigger and bigger (precise example of SUV), requesting more and more transport means. Along with this, we know well that we are now facing and will face more and more a lack of trucks drivers. All this together show us that we are going in a very soon future to face big lack of transport capacities which will impact our daily work and penalize us towards our clients.

Below is presented the forecast of PwC concerning European production till 2021 where we can see a 7% growth compared to 2015. Considering the changes of cultures in countries from European Unions and development of alternative means of transport, I believe the growth will be slower than what we have lived so far.

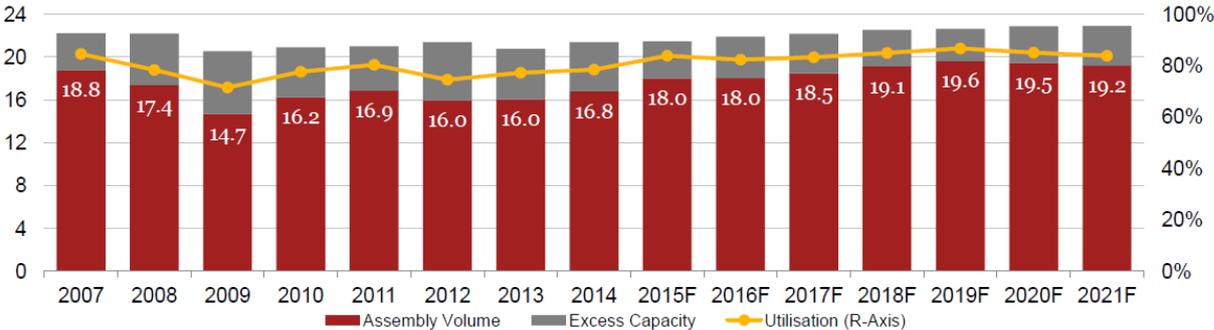


Figure 10 – PwC European production forecast till 2021

### 5. Measures

Based on the previous statements, we can estimate a need of transport capacities in the future based on the assumption that the rail means will be more and more required and shorter trucking loops wanted in order to decrease the need of truck transporters at least until there will be a clear view on what is coming next.

I consider that the trucks capacity will not significantly increase in the future compared to what we have got at disposal in year 2015 due to the following factors:

- The fleet age is getting high and sooner or later capacity will go down
- There is a clear drivers shortage in Eastern Europe limiting capacity growth
- Regulations will tend to limit more and more trucking carriage
- European Union priorities and Lobbying are clearly toward rail transport

Based on the unbalanced flows between production and sales, Western Europe and Eastern Europe, we can define a need of multi-modal transport within Europe. We have shown that there is roughly a 2 million cars difference between what is produced and consumed in Eastern Europe and what is shipped and consumed in Western Europe.

That is why I would define our transport need at between 60% and 70% of rail transport directed to bigger ports and compound within the top 5 European markets and this from Eastern Europe.

Looking at what are the forecast and what might be coming, my gross assumption is that 80% of the biggest Eastern European volumes (including ports) should be covered mainly by train capacities within the next 10 years if we want to be able to cover the demand without increasing the trucks capacities.

Trucking capacity should be mainly used on short distances in order to optimize rotation of drivers and efficiency having the main impact of decreasing the number of transport means on the road.

## **6. Evaluation**

On my domain of activity, I see therefore a potential of multi-modal development of further 10% in order to reach a capacity offer answering the final market needs. This will be especially needed knowing the coming investment in Eastern Europe meant to increase export capacities.

## 7. Conclusion and future developments

We can therefore see that we will face big challenges in the coming years, changing the face of Finished Vehicles Logistics and if we aren't prepared, we will have big problems.

In order to give a few more example about the situation, we know for example that a few OEM are going to implement new production capacities in Central Europe such as Jaguar Land Rover already validated in Nitra, Slovakia and Graz, Austria and BMW still in negotiation.

As far is concerned the Jaguar Land Rover plant, there will be at the end a plant producing up to 360 000 cars per years mostly directed to overseas market (more than 50%) but also to Western Europe (more than 40%). Those volumes, being considered dimensions, will contribute to increase the unbalanced flows between production and sales.

We will be facing a few main issues:

- The lack of drivers support to run the trucking capacities
- The increase of export from Easter Europe to Western one
- The new dimensions of trendy cars (bigger) increasing transport needs
- The transport regulations in Europe in favour of train capacities

Therefore, if we want to survive the coming period, we will need to adapt our transport means to the main requested market located in Western Europe. We will need to do this by being both financially competitive and environmentally friendly along finding solution the driver's shortage.

I don't believe that the trucking capacity will come back to what it was in the past, and that is why without innovating and forcing rail operators to more flexibility and reactivity, we will not be able to face what is coming.

## 8. Literature

Inovev, powering automotive knowledge <http://www.inovev.com/index.php/en/>

PwC, presentation from ECG conference, 2015

Wikipedia, [https://fr.wikipedia.org/wiki/Construction\\_automobile](https://fr.wikipedia.org/wiki/Construction_automobile)

NPA, <https://npa2009.org/content/la-mondialisation-de-lindustrie-automobile>

## **Word of honour statement**

I declare that I have written the thesis with the title

### **An automotive world in motion**

on my own. Information from other sources or ideas from other persons are marked.

Bratislava, 15/03/2016

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Signature of writer