



Co-funded by the Horizon 2020 programme
of the European Union

ODYSSEE-MURE

Second meeting of the project

“ODYSSEE-MURE, Monitoring EU Energy Efficiency First Principle and Policy Implementation”

12th November 2020

Session 2: WP2 - Monitoring energy efficiency progress in EU MS through TD indicators

Energy efficiency trends in Spain

Pilar de Arriba Segurado
Planning and Studies Department-IDAE

Table of contents

Energy consumption trends at an aggregate level in Spain

Energy intensity trends at an aggregate level in Spain

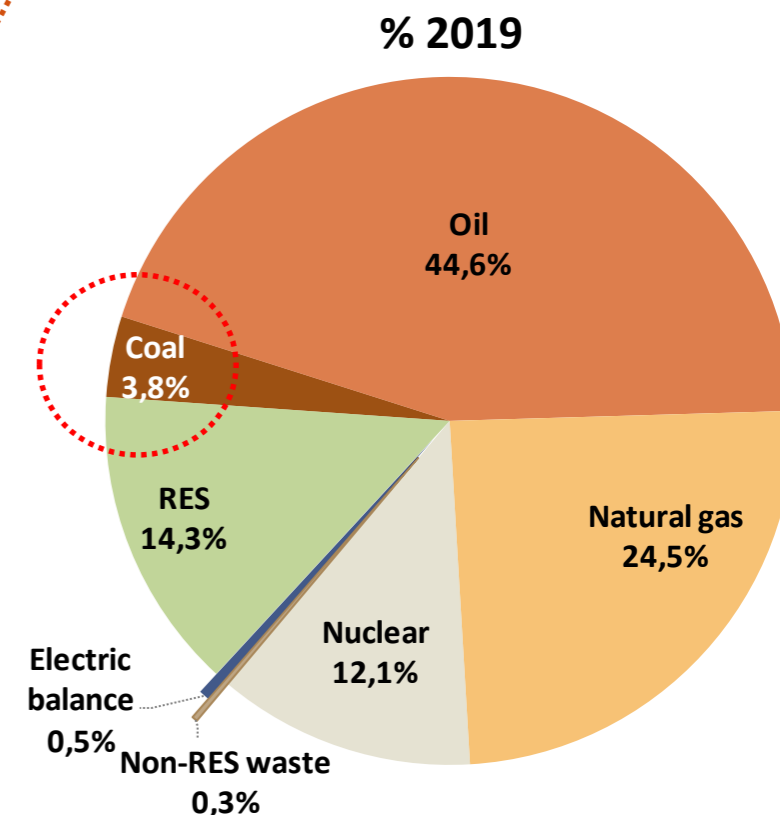
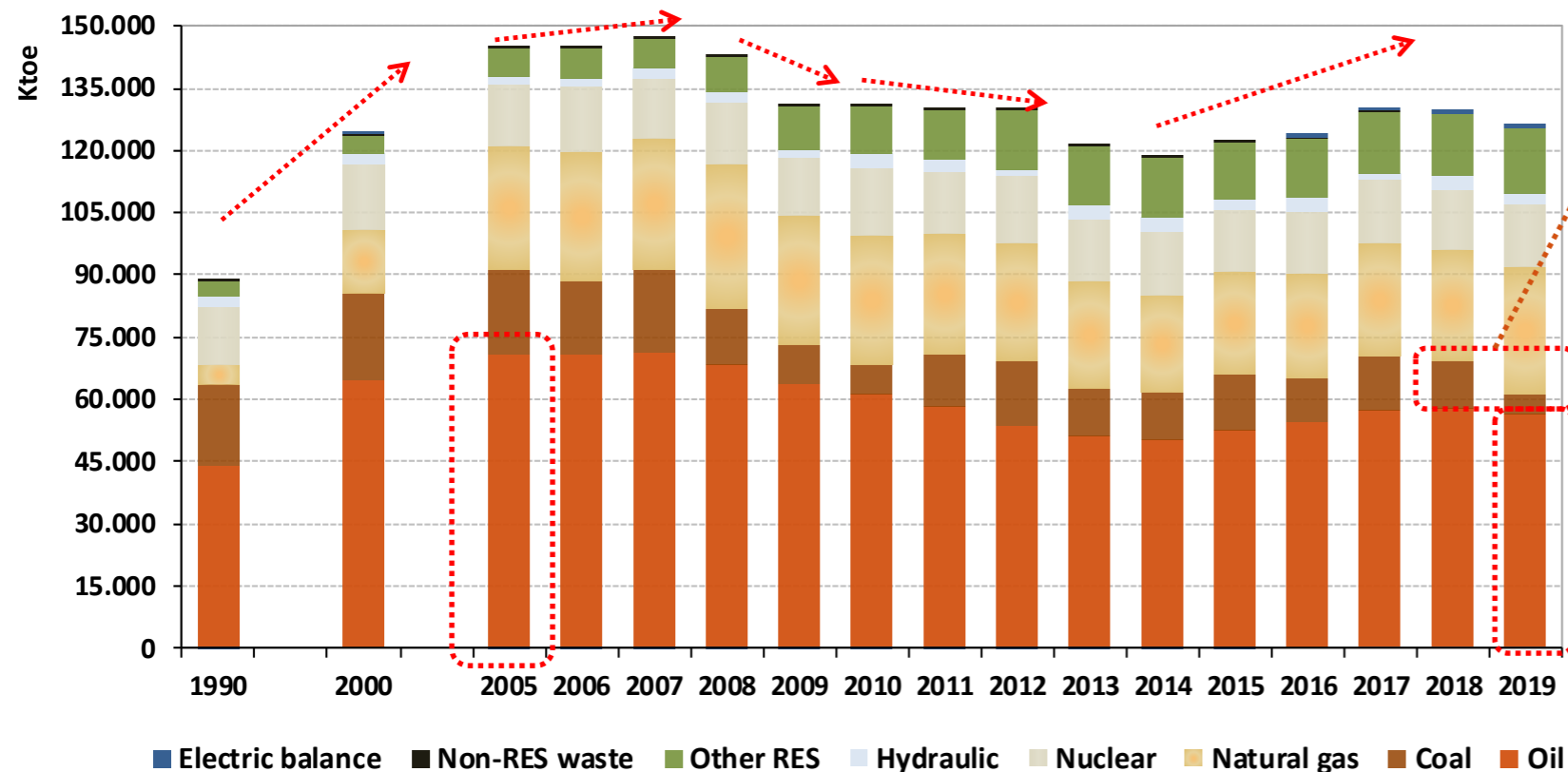
Energy intensity trends at sectoral level in Spain

Conclusions

Energy consumption trends at an aggregate level

Primary energy consumption

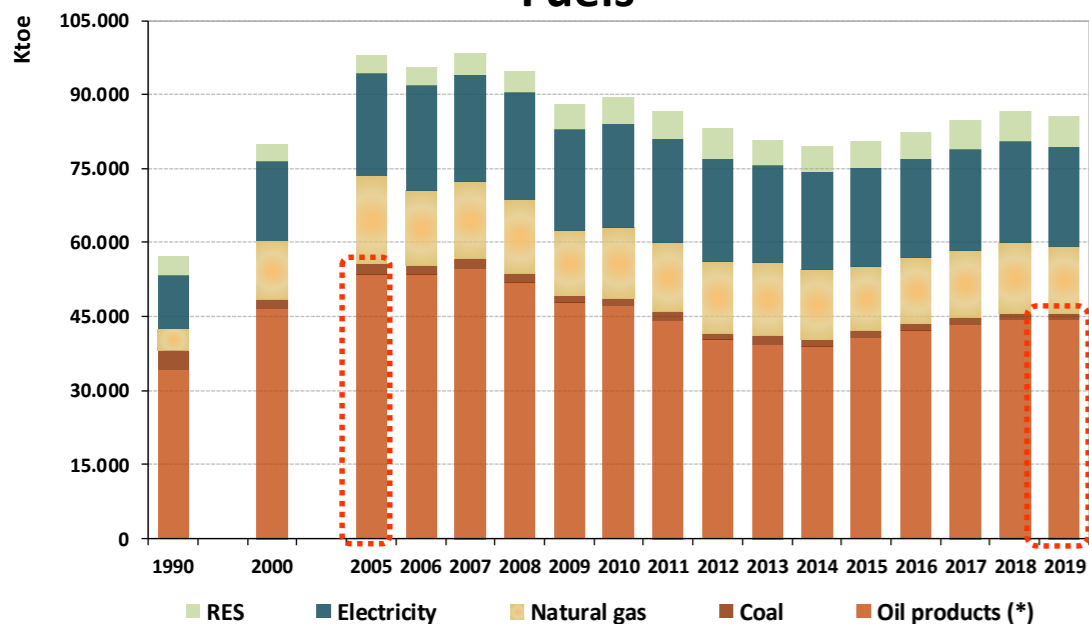
58.5% decrease of electricity production of coal-fired power stations in 2019, caused by the shut-down of one coal plant and the inactivity of other plants



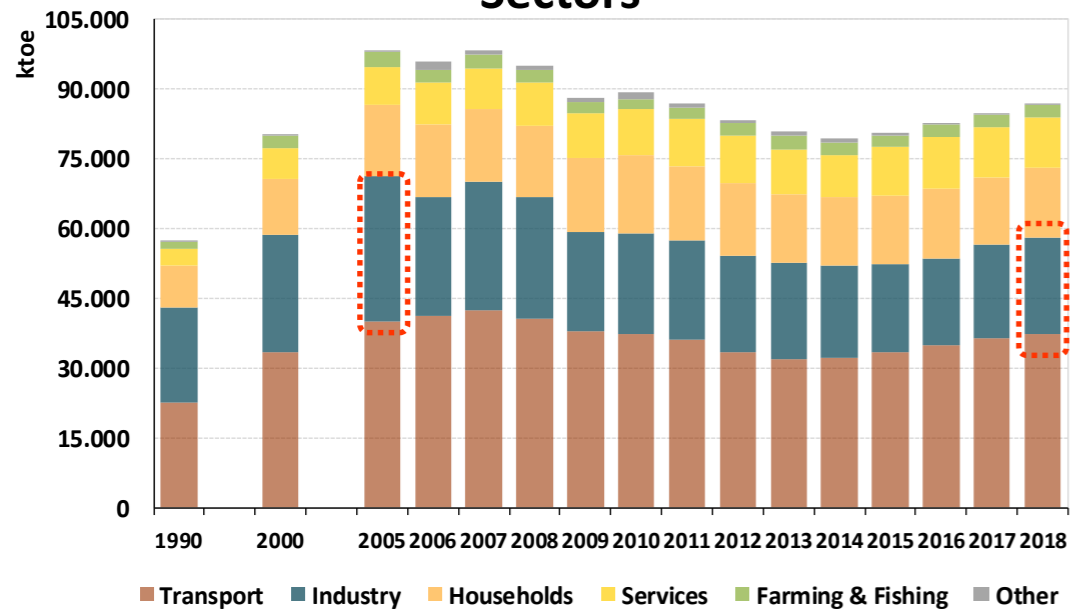
- Progressive diversification and decarbonisation of the energy supply, fostered by the energy and environmental policies (32% share of RES in gross final energy consumption by 2030)

Final energy consumption by fuels and sectors

Fuels

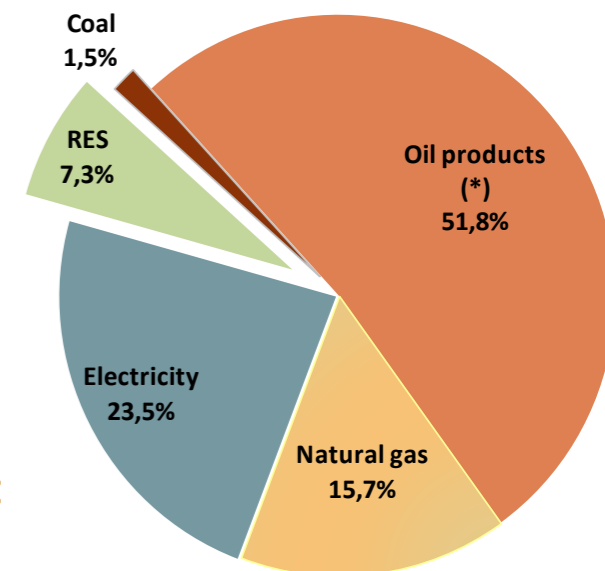


Sectors

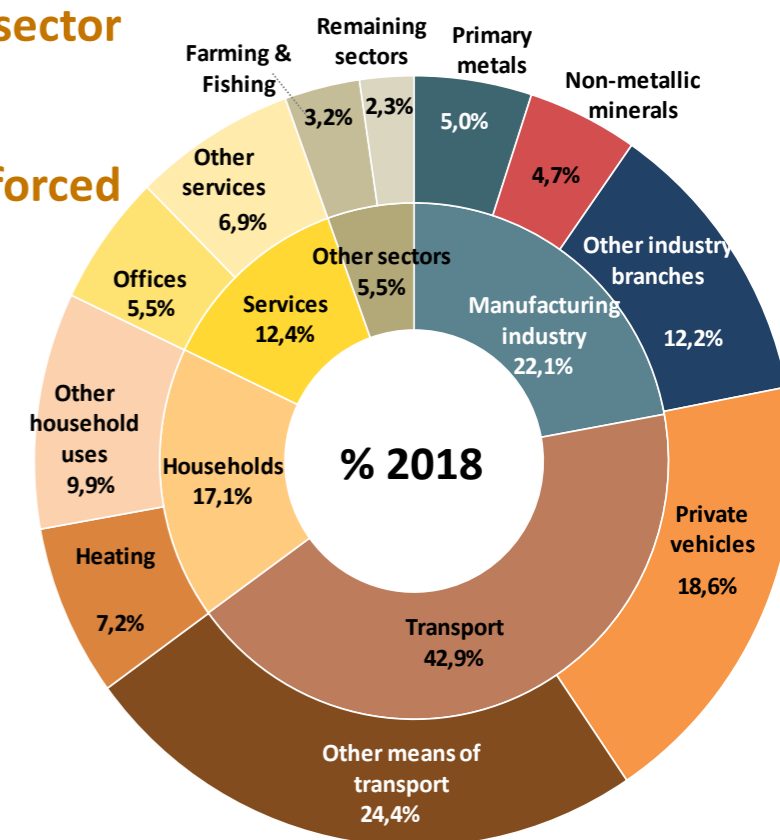


- Increasing share of RES and electricity in the FEC, together with a decline of oil products demand.
- Oil products still holds a dominant position (> 50% FEC), in accordance with the role played by the transport sector (>40% FEC).
- Tertiarisation of the economy, reinforced by the crisis.

% 2019



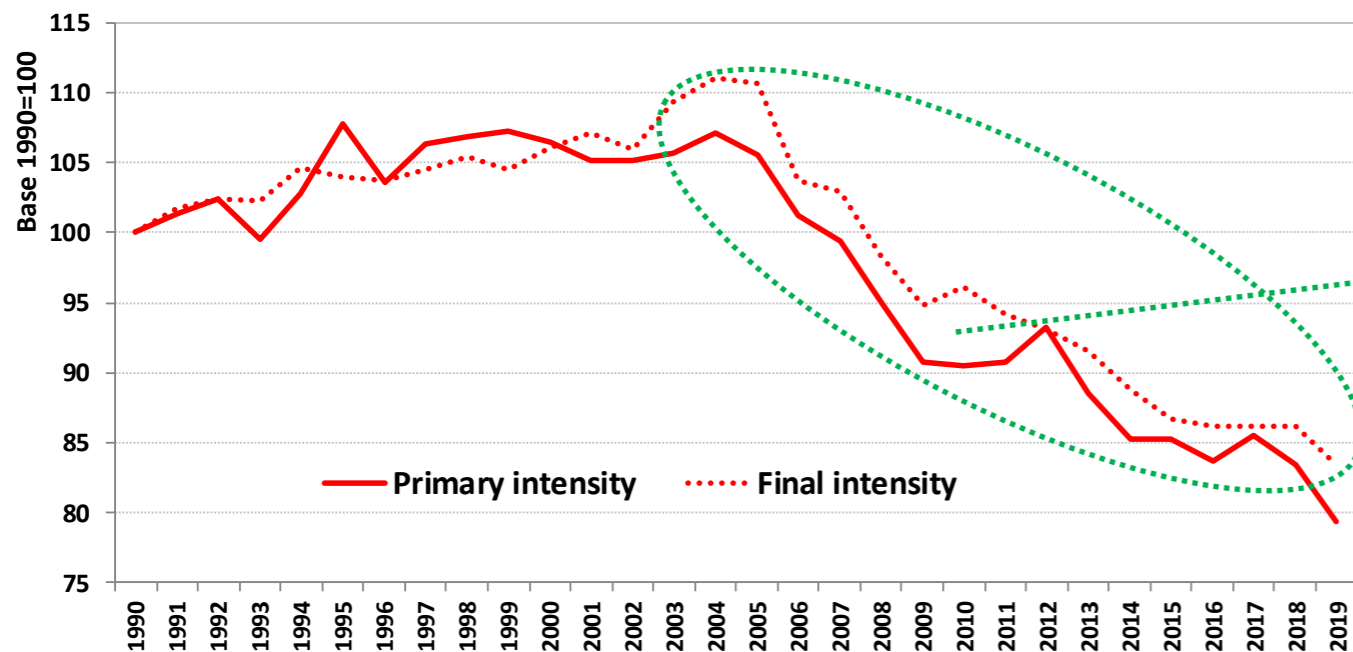
% 2018



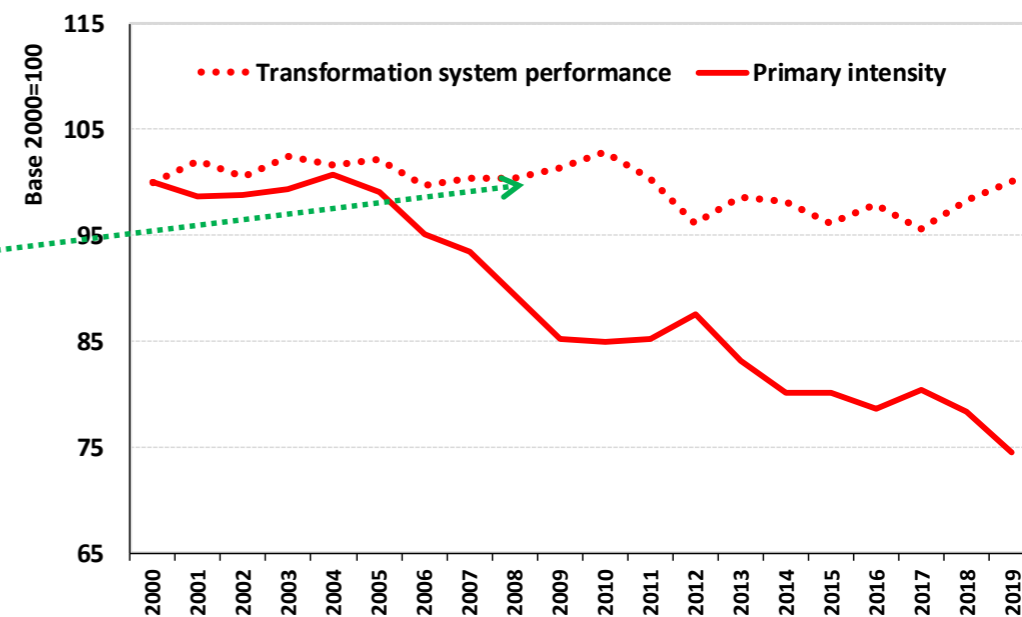
Energy intensity trends at an aggregate level

Primary energy intensity vs Final energy intensity

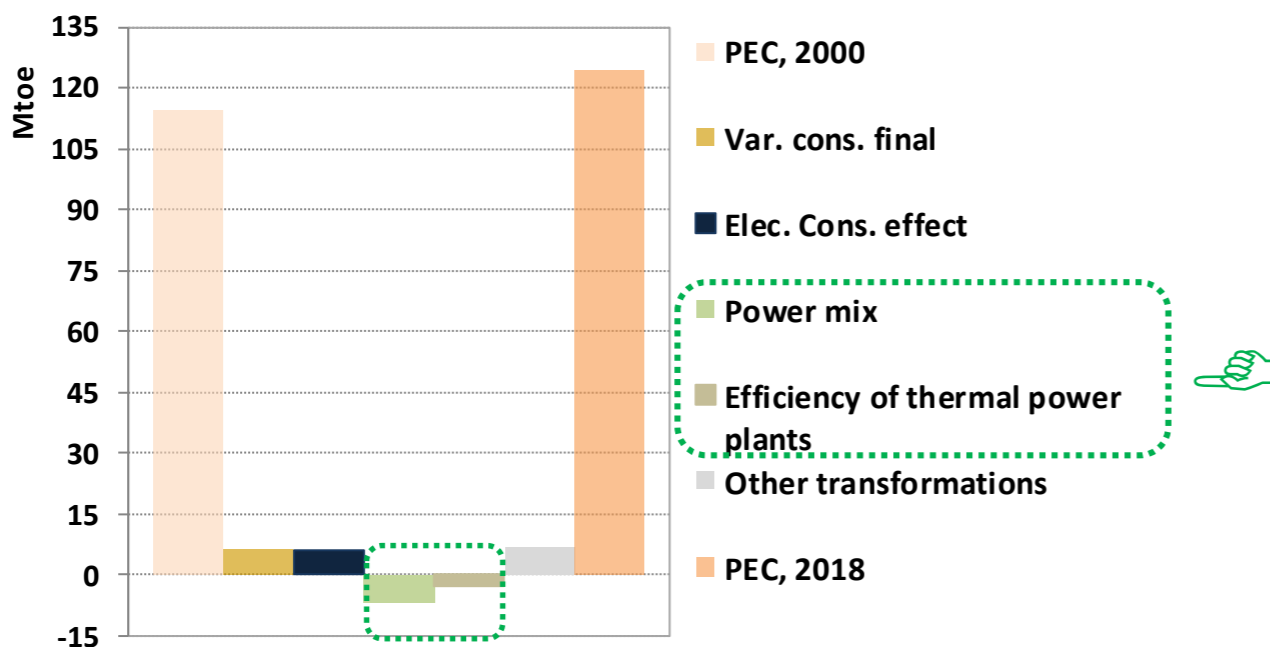
Positive effect of changes in the power mix



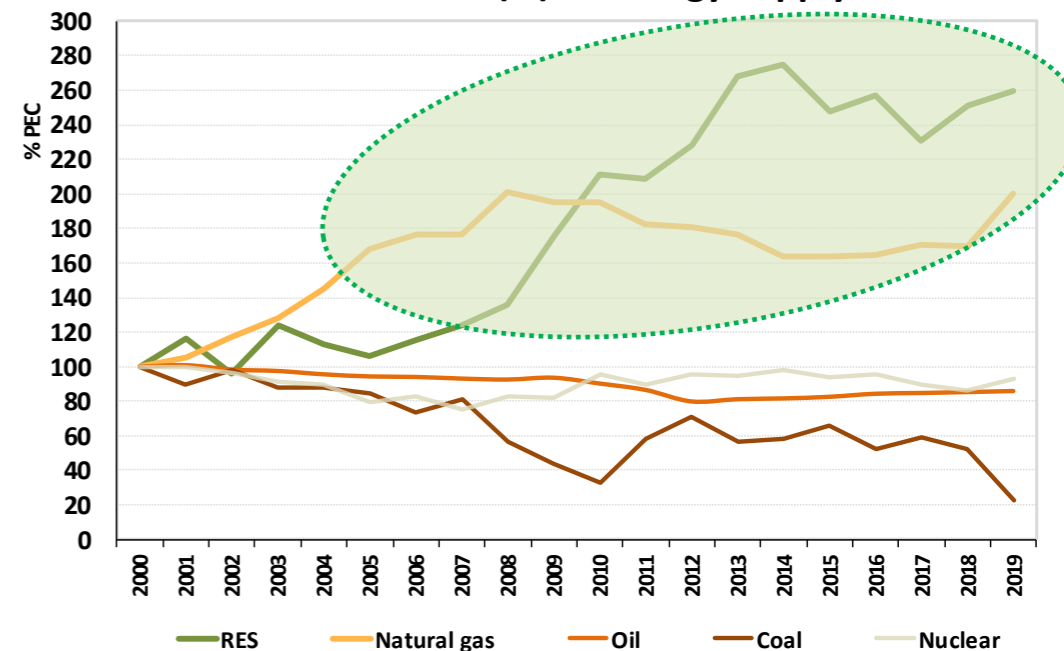
PE intensity vs Energy transformation performance



Decomposition of the PEC, 2000-2018 (*)



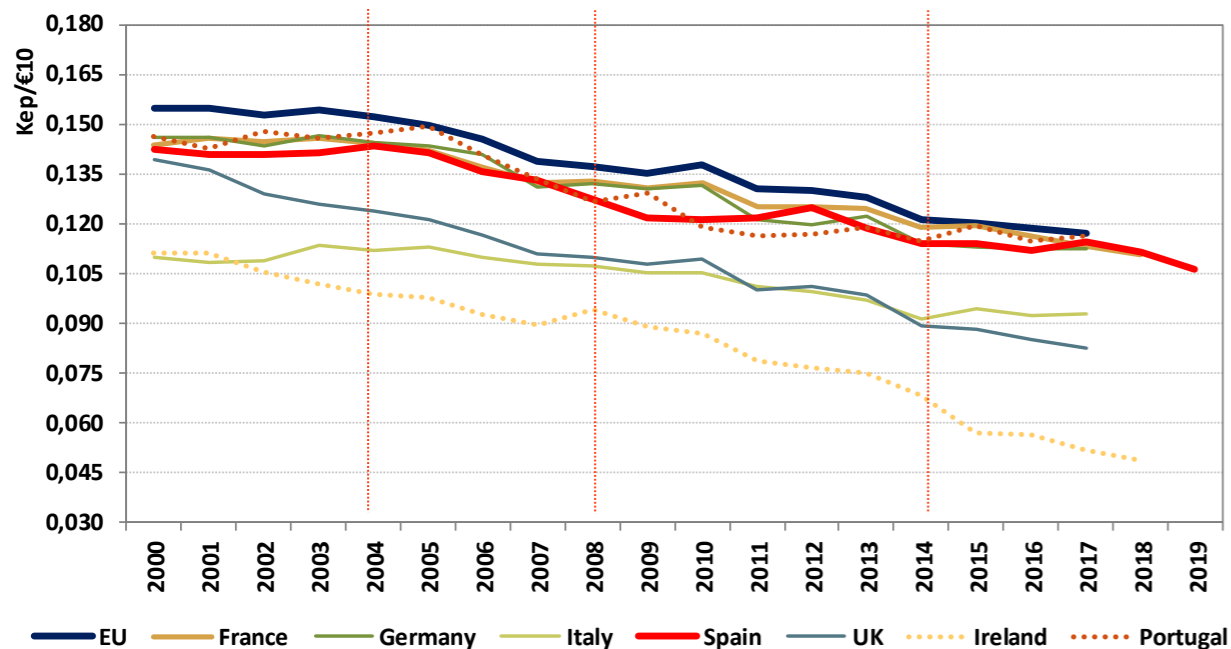
Structure (%) of energy supply



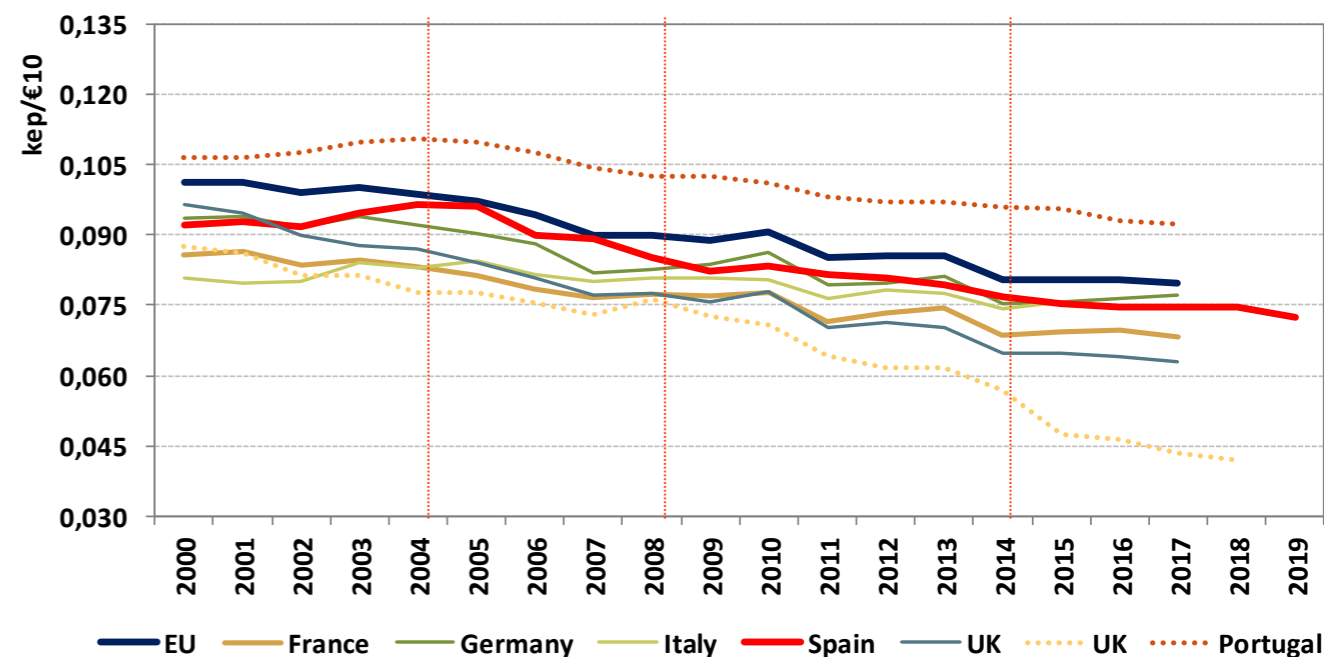
Source: MITERD/IDAIE; (*) ODYSSEE. Decomposition facility

Comparison of energy intensity trends at EU level

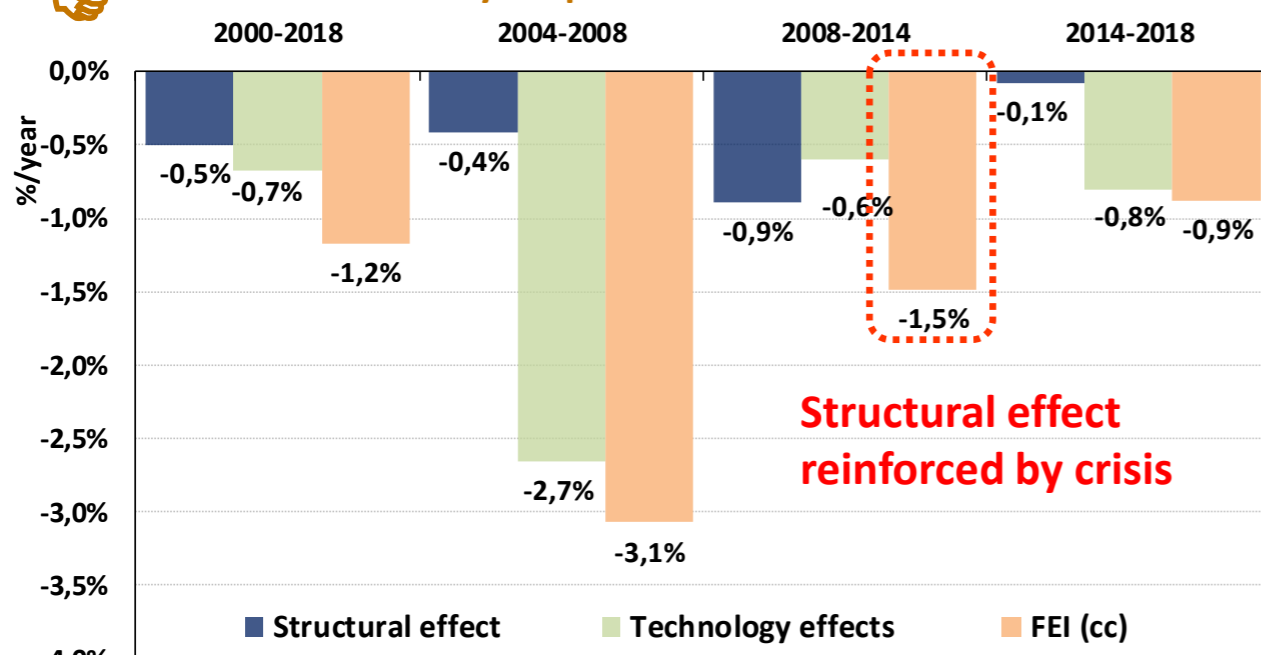
Primary intensity



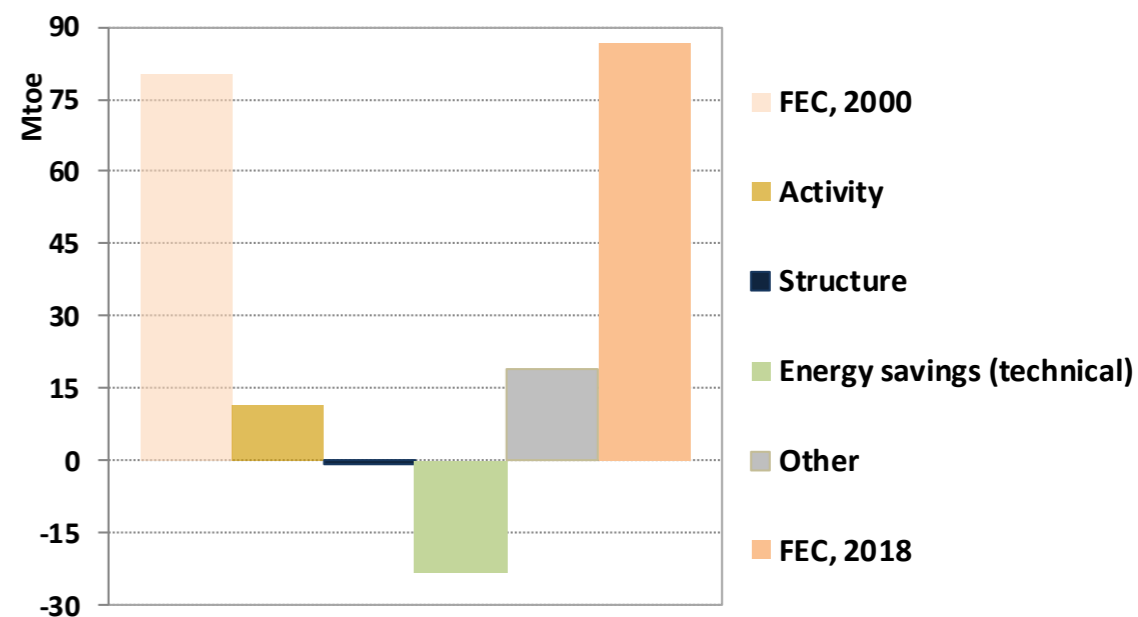
Final intensity



Final intensity: Impact of structural effects

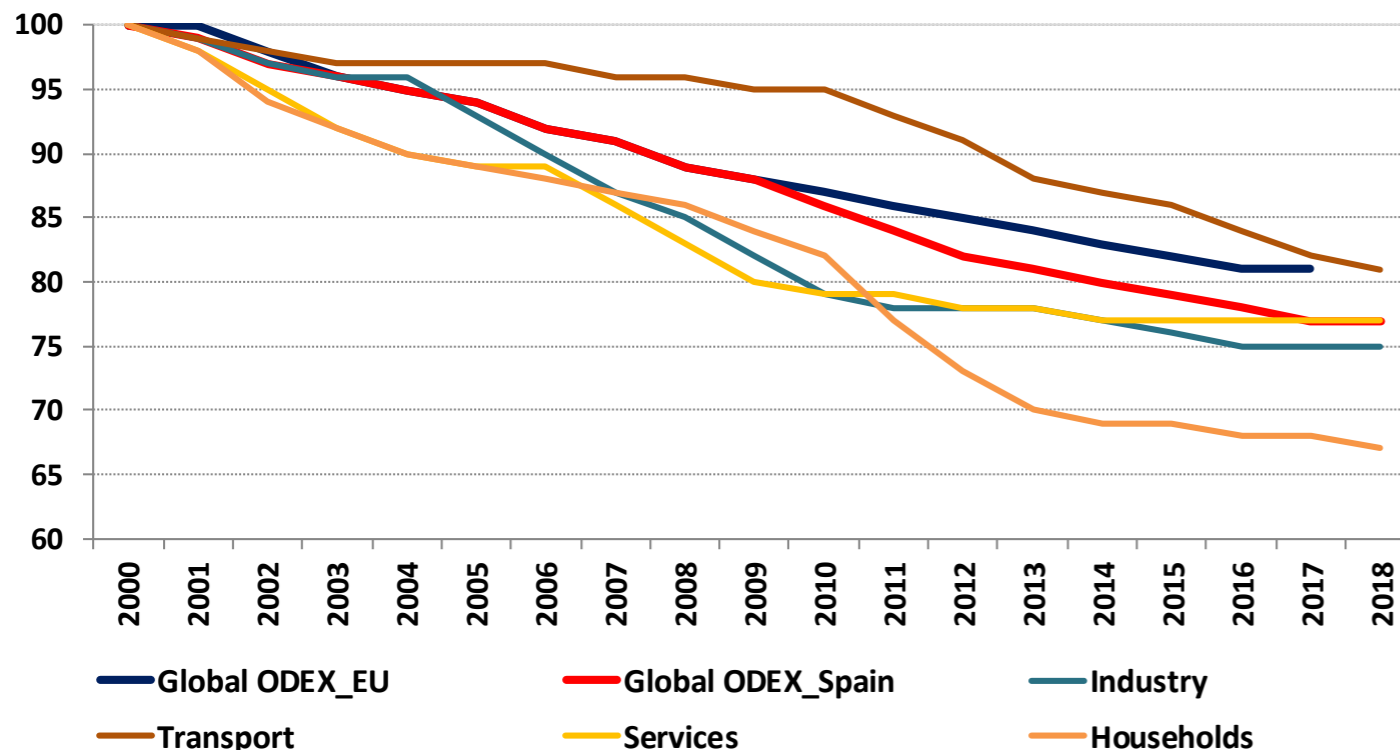


Decomposition of the FEC, 2000-2018 (*)

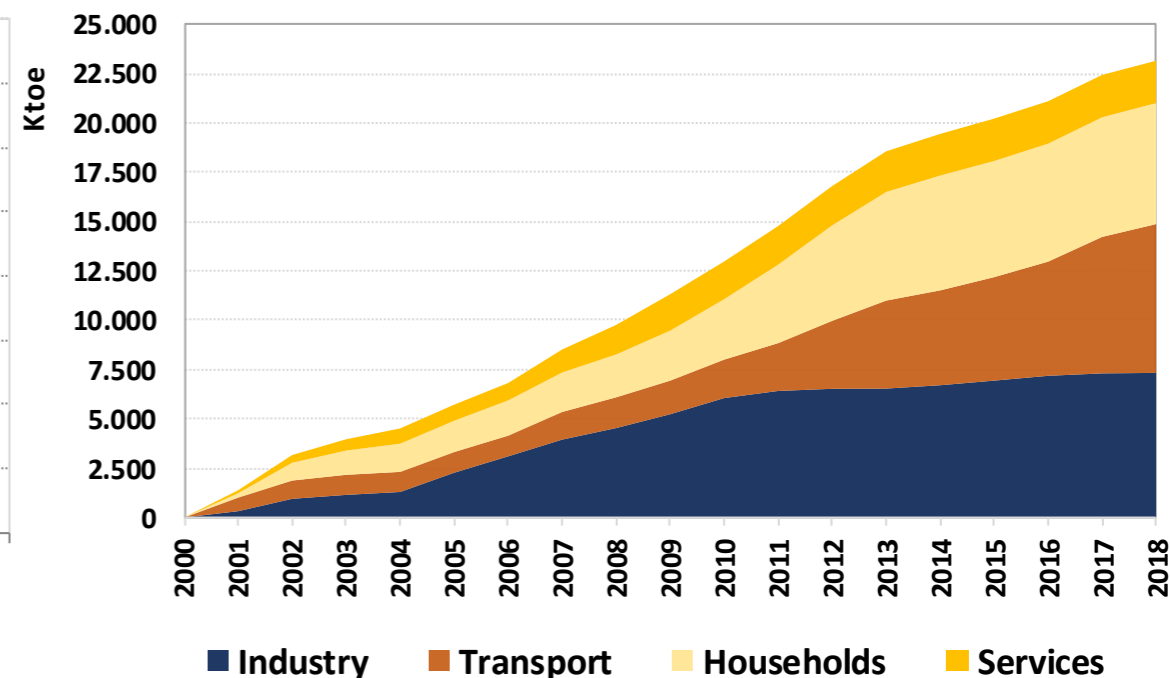


Energy efficiency trends

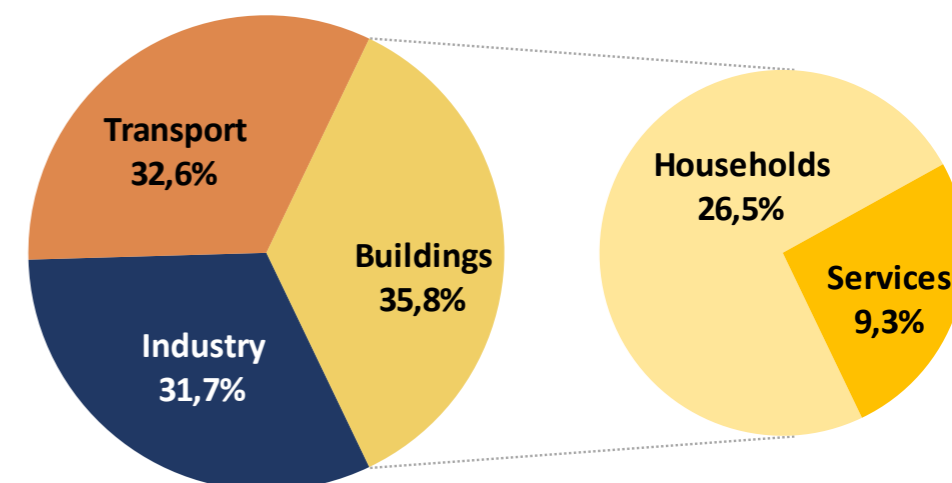
EE trends based on technical ODEX



Energy savings (ES)



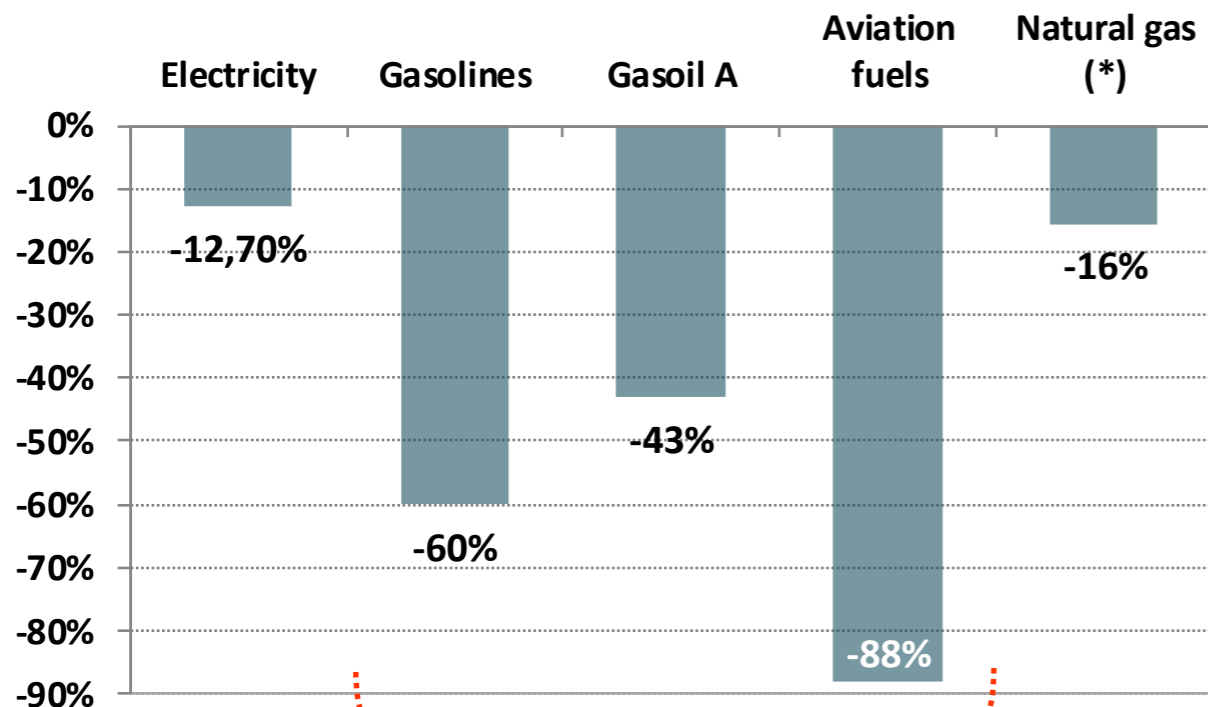
% ES by sectors, 2000-2018



- EE improvement: 1.4%/year in Spain (2000-18); EU: 1.2%/year (2000-17)
- Largest EE improvement in households (2.2%/year) followed by industry (1.6%/year). Most of industry improvement happened before crisis
- Households and transport main contributors to the overall ES in 2010-2018.

Impact of COVID on energy demand and economy

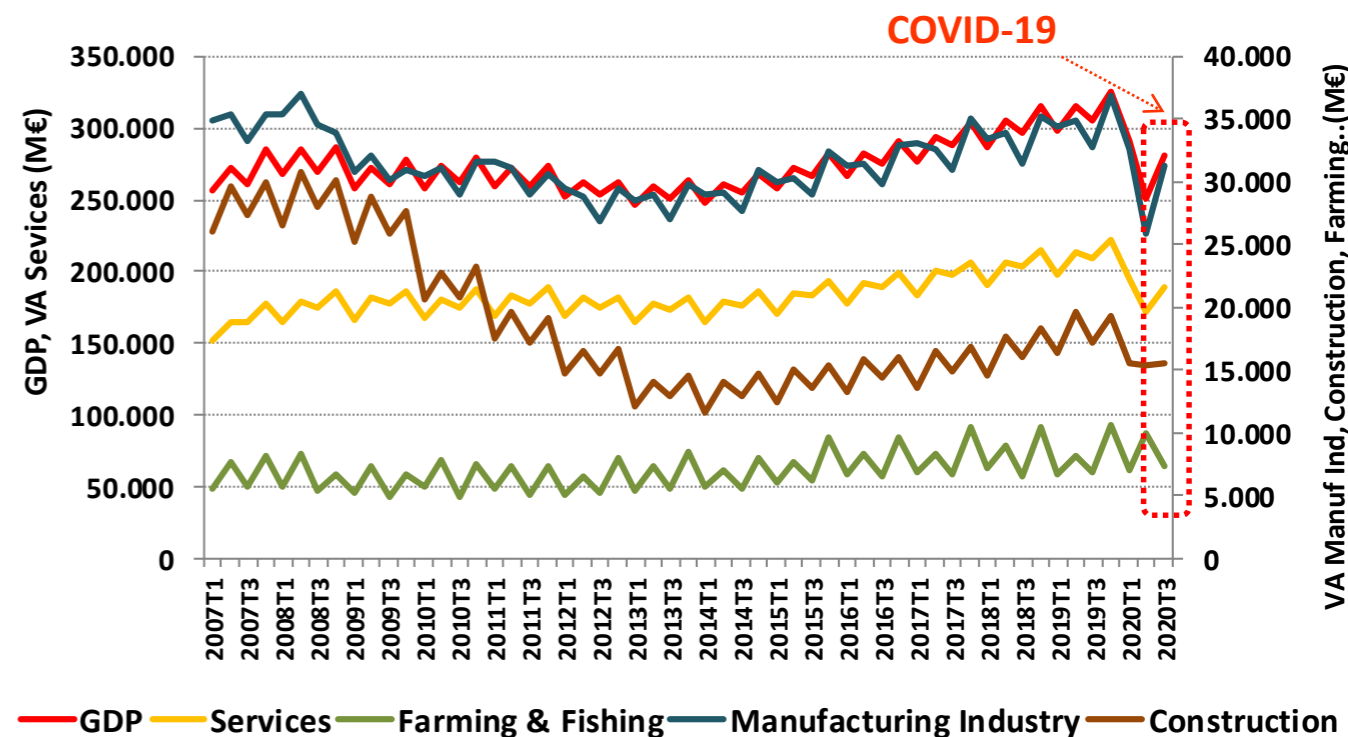
Strong decrease of energy demand during the lockdown (2020 II)



👉 High impact on oil products demand (52.8% of FEC)

- High uncertainty after the COVID-19 disruption.
- Expected an impact on energy and intensity trends, even worse than during the previous crisis.

Economic parameters



Sharp decrease of the economic activity in Spain, mainly in 2020-II, even worse than at the beginning of 2008 crisis

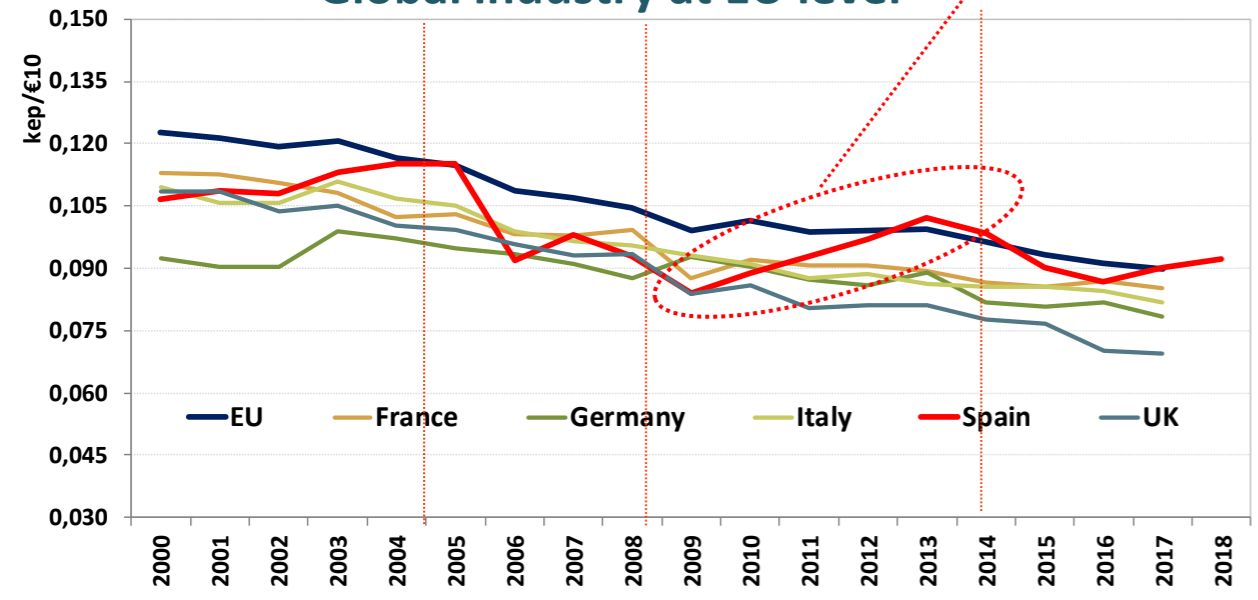
• GDP	-20,6%	-4,56% (2009-II)
• VA- Manufacturing industry	-25,8%	-13,3% (2009-II)
• VA- Construction	-21,9 %	-8,1% (2009-III)
• VA- Services	-19,8%	+0,6% (2009-IV)

Energy intensity trends at sectoral level

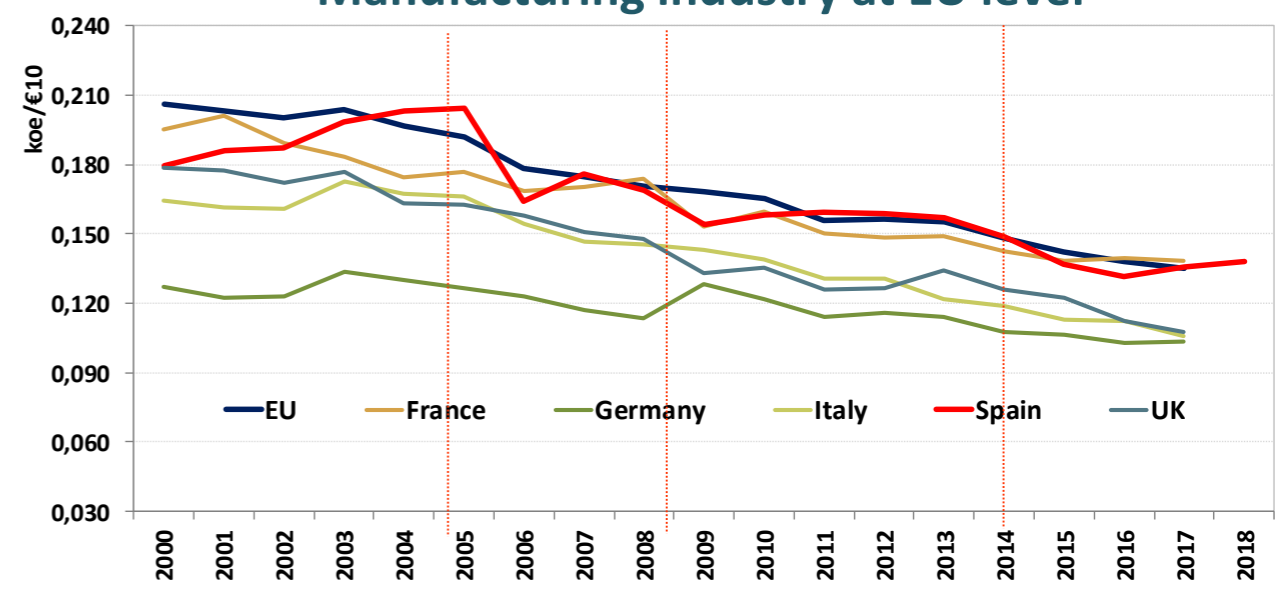
Industry

Worsening caused by the construction sector (*)

Global industry at EU level

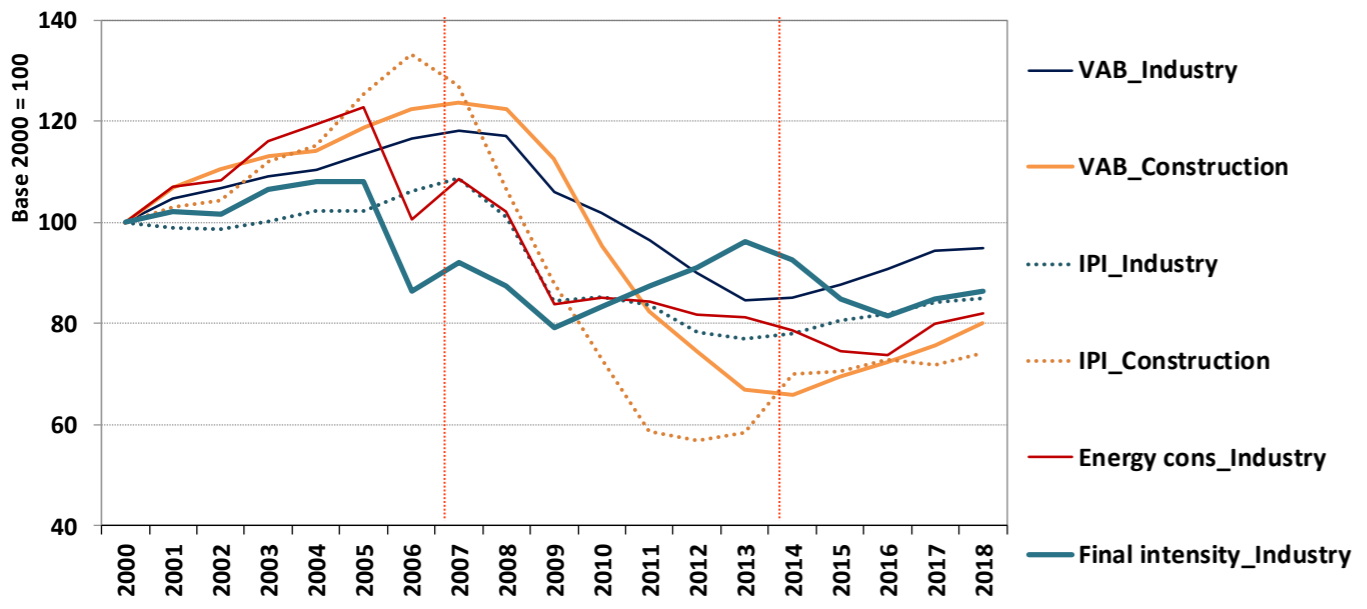


Manufacturing industry at EU level

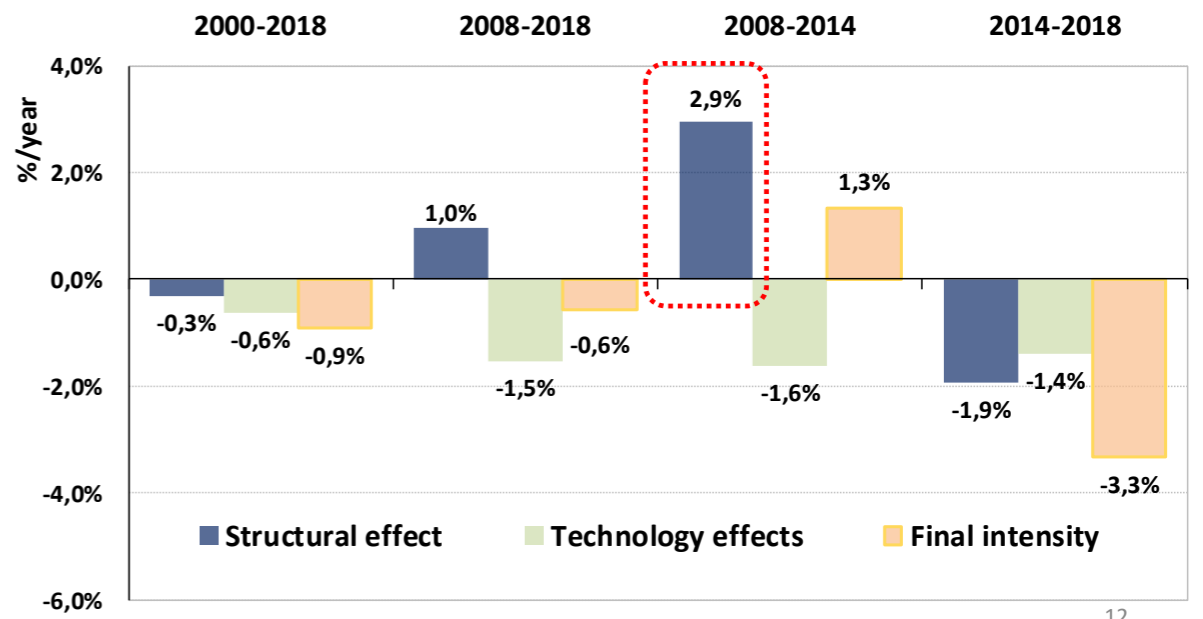


Impact of crisis on the industry intensity, leading to a worsening, intensified by the loss of dynamism of the construction sector. In contrast, the manufacturing industry has recovered its downward tendency before.

(*) Drag effect of the construction sector on the industry



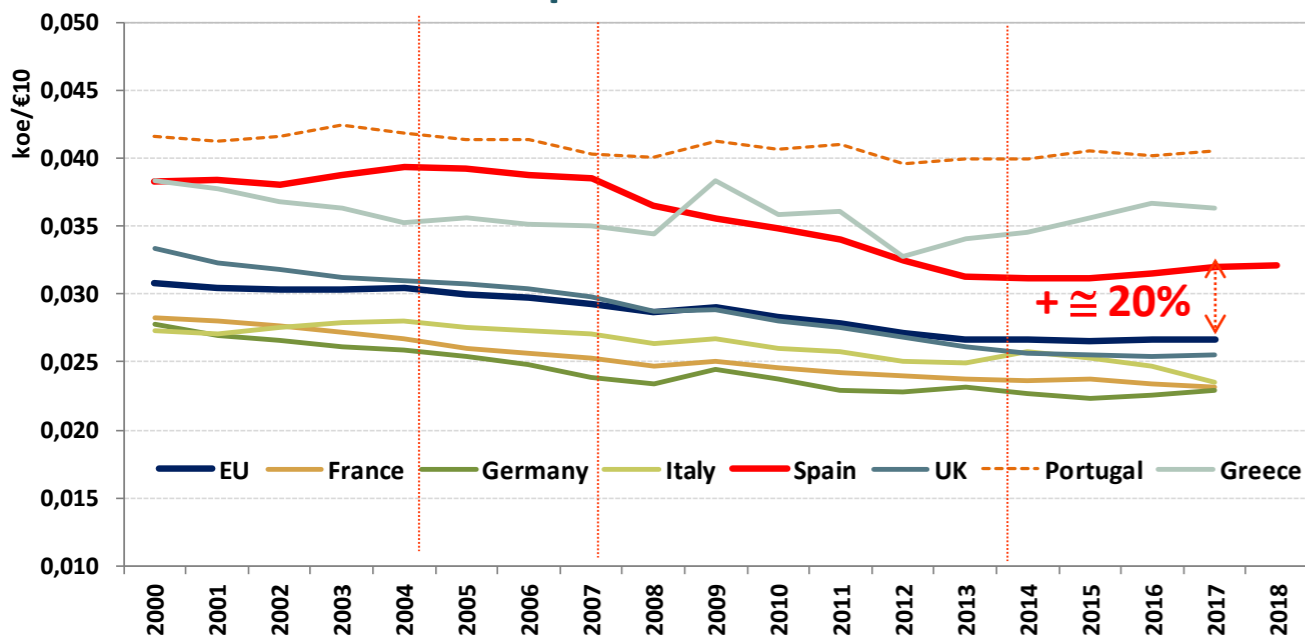
Impact of structural effects on the industry intensity



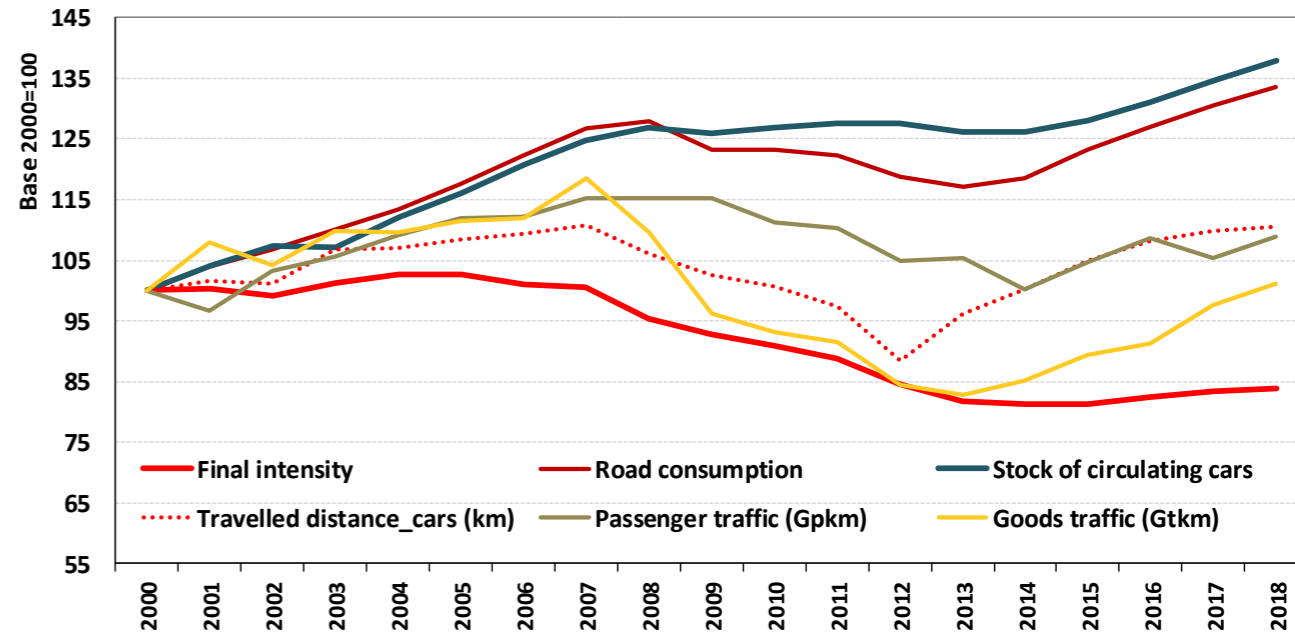
Source: MITERD/INE/IDAE/ ODYSSEE.

Transport

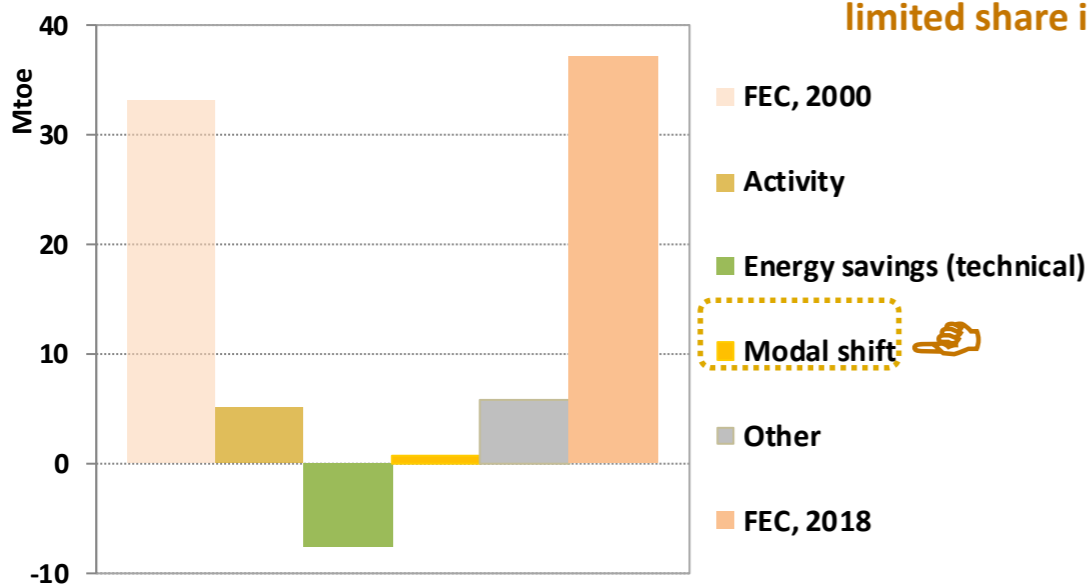
Comparison at EU level



Explanatory factors of the EC and EI of transport in Spain

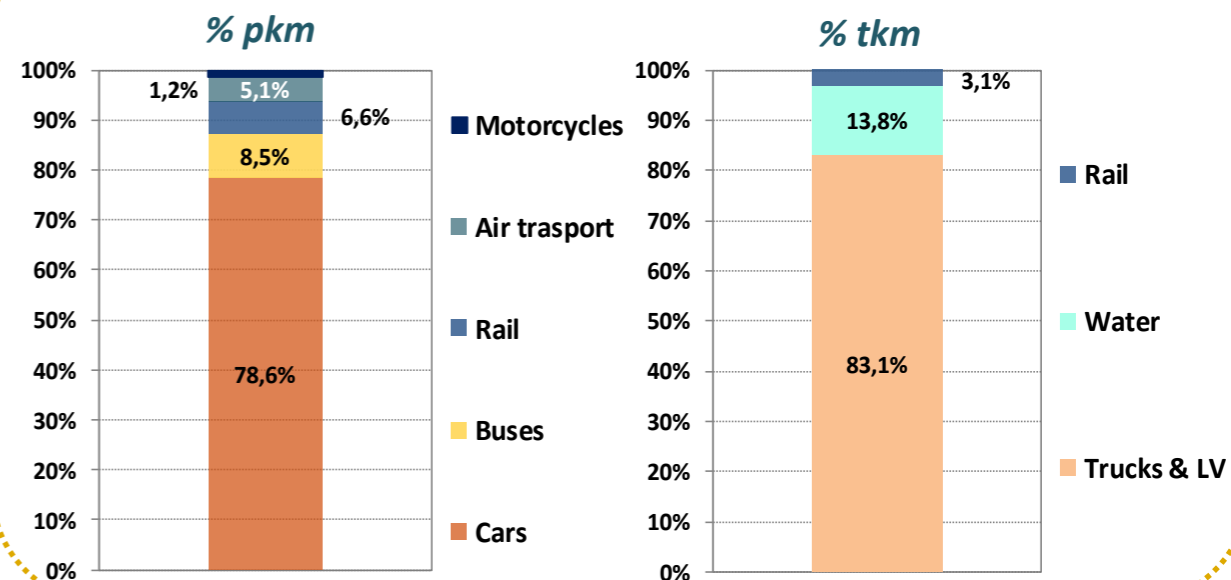


Decomposition of the EC, 2000-2018 (*)



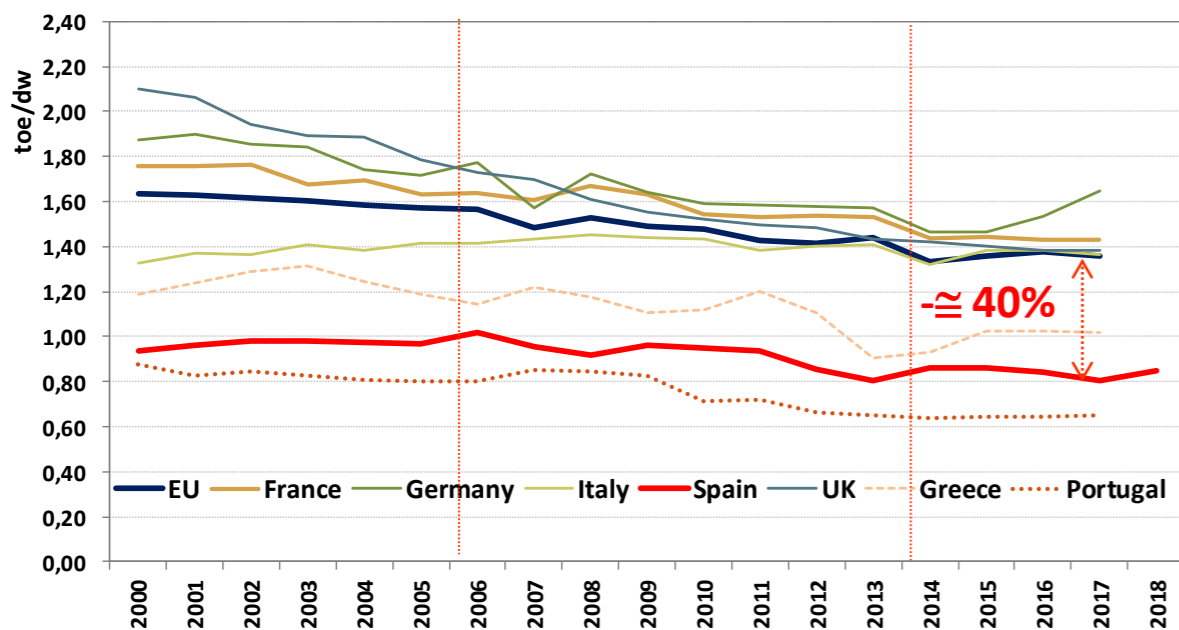
Public transport and rail, limited share in the traffic

% Passenger and Goods traffic by transport modes

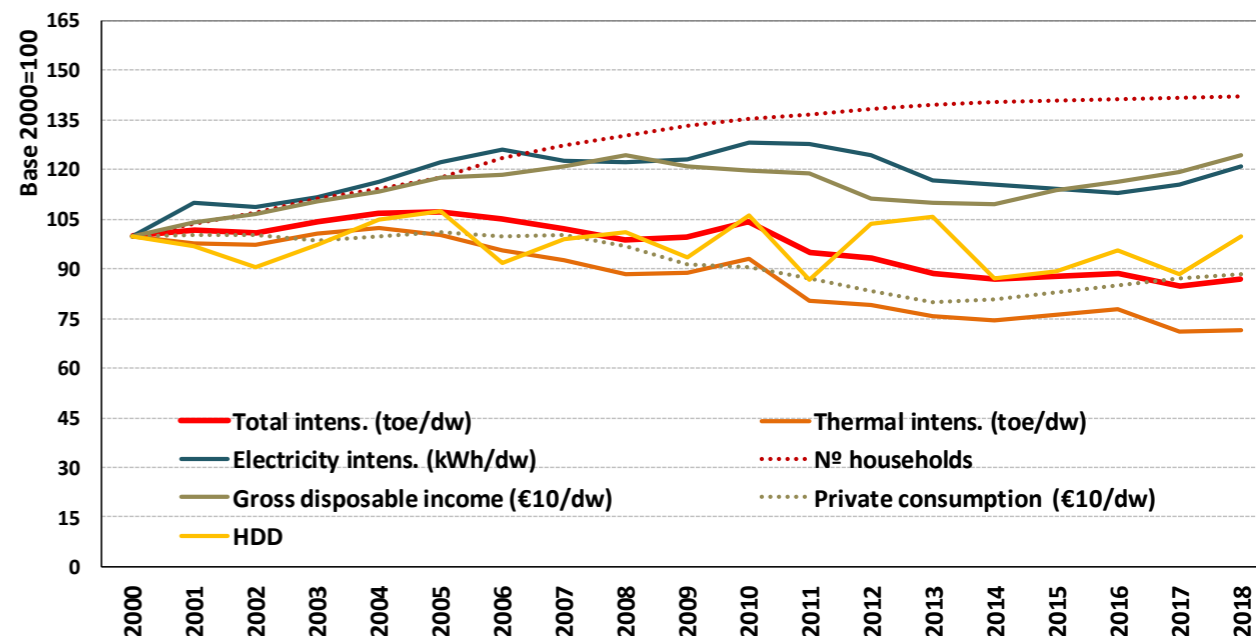


Households

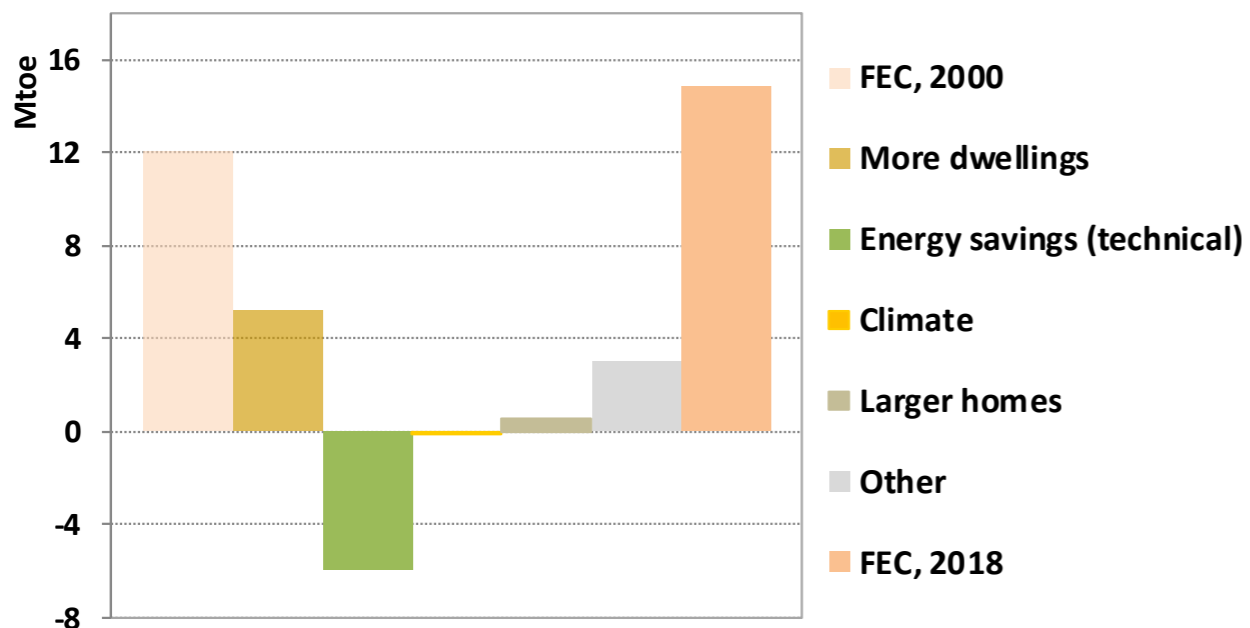
Unit Consumption with CC at EU level



Explanatory factors of the EI of households in Spain



Decomposition of the EC, 2000-2018 (*)



- Positive contribution of technological developments, regulation on buildings (TBC, certification...) and equipment, financial programmes addressed to the energy renovation of buildings.
- Negative effect of behaviour, number of occupied dwellings, size of dwellings, ..on the energy demand

□ To conclude...

- Positive contribution of RES to the primary energy consumption and intensity decrease. This improvement comes from the hand of Renewable energy plans and more recently, under the stimulus of NCEP.
- Sensitivity of the more energy-intensive sectors (manufacturing, road transport..) to the changes of the economic situation.
- Relevance of technology effects in the energy intensity after 2014.
- Increasing trend of energy consumption in the economic recovery context in most of end use sectors, leading to a erratic behaviour of intensities.
- High uncertainty linked to the disruptive impact of COVID-19 outbreak on economy and energy system, with a possible improvement of intensities due to structural effects..
- Energy efficiency, important role to play in the energy transition and in the economic recovery after COVID-19 crisis.
- Need for statistical development to improve the data behind the indicators in order to get a better insight of the energy efficiency trends.



www.idae.es

pdearriba@idaes.es