

# THE 2015 ENERGY PRODUCTIVITY AND ECONOMIC PROSPERITY INDEX

How Efficiency Will Drive Growth, Create Jobs and  
Spread Wellbeing Throughout Society



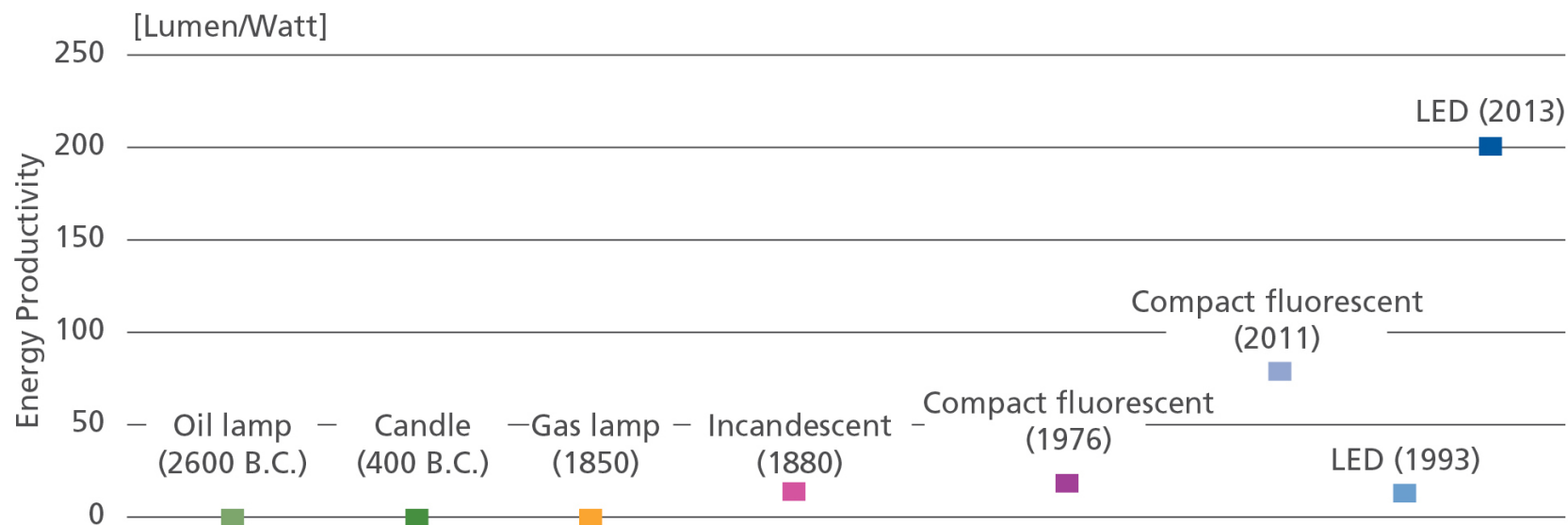
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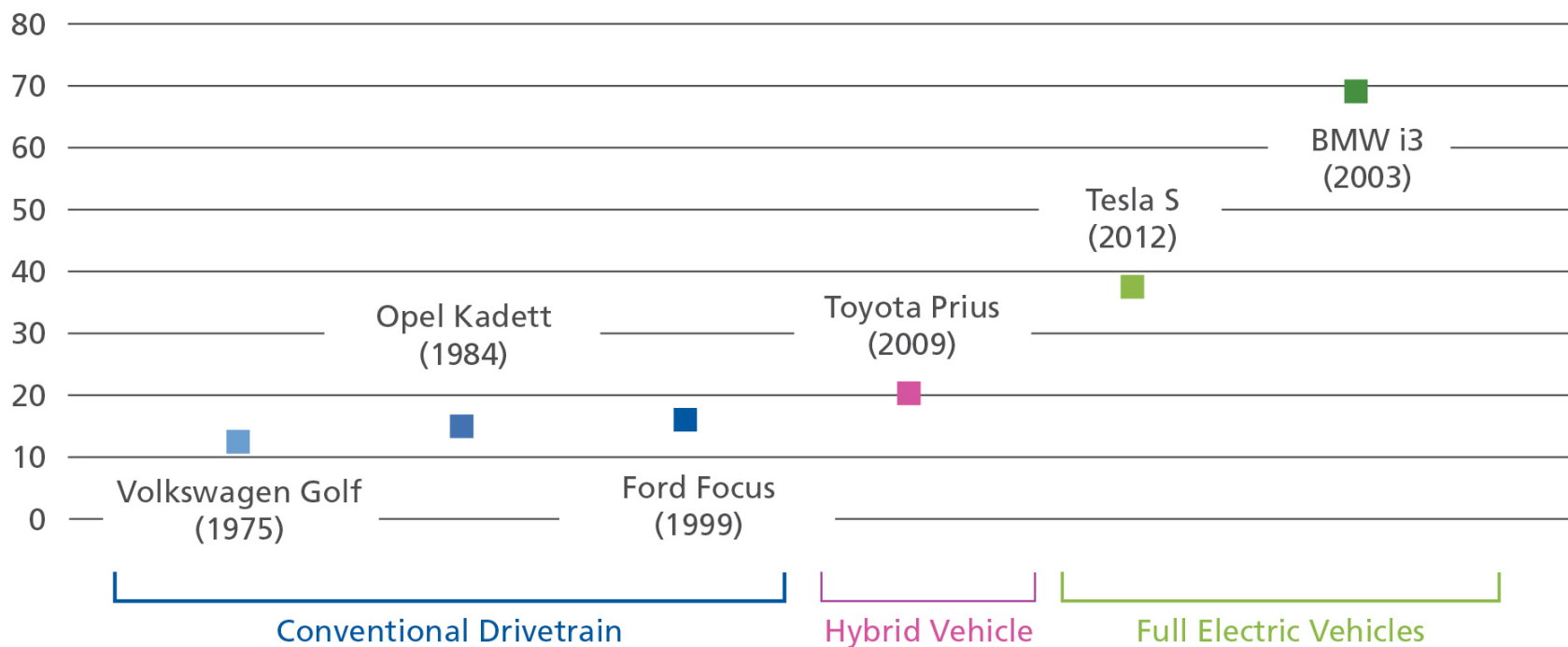
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## Lighting energy productivity



## Passenger cars energy productivity

kilometers / liter gasoline

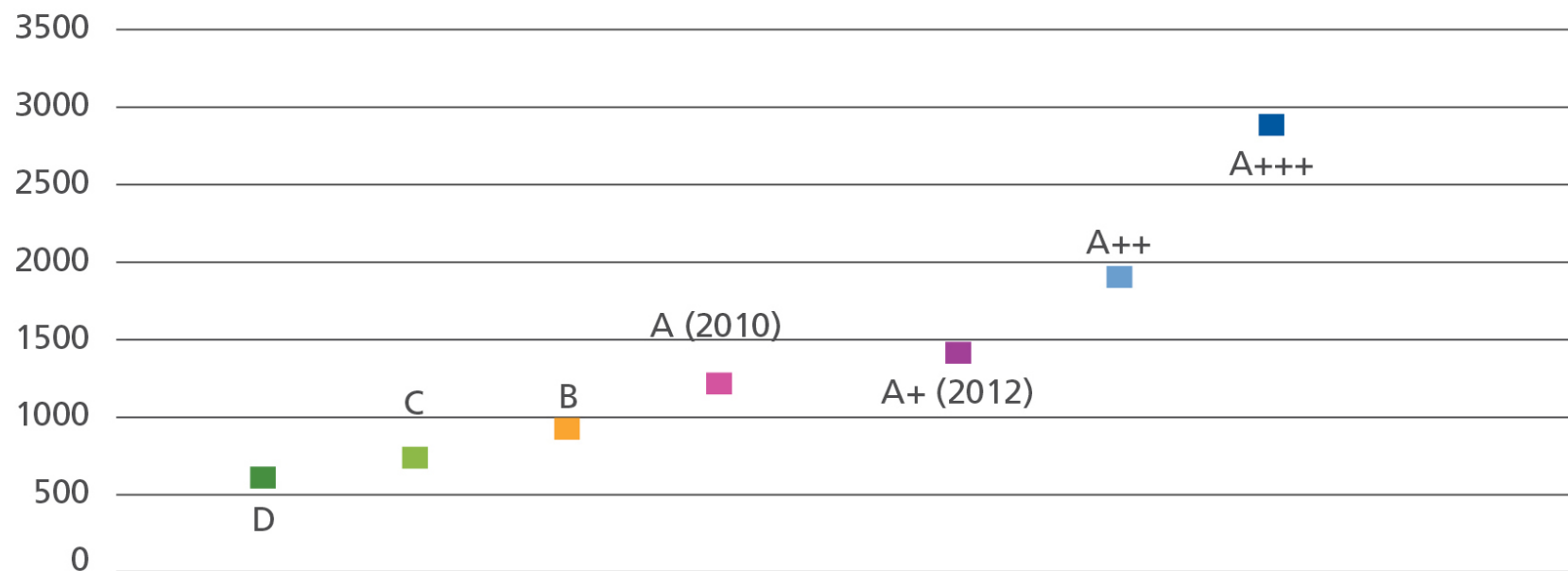


Improvement in fuel productivity of different car types. Electricity consumption by electric vehicles is converted to gasoline equivalents (final energy consumption) (Automobile-catalog, 2014) (US DOE, 2014) (BMW, 2014)



## Refrigerator energy productivity

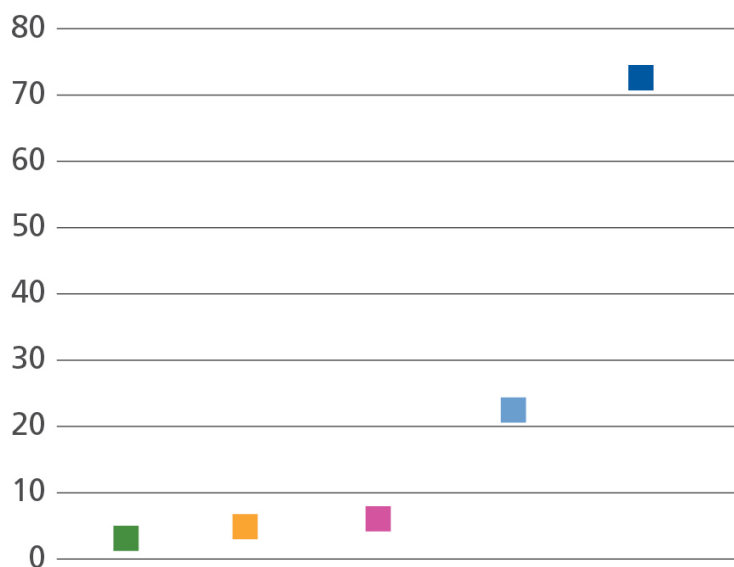
Liters cooled per 1000 kWh



Development of energy productivity of refrigerators<sup>1</sup> (Loy, 2013) (Energieweter.nl, 2014).

## Household energy productivity

Square metres heated with 1000 kWh



Adopted from Schleyer-Kohler (2006) and IWU (2011)  
The development of the energy productivity of new buildings in Germany in terms of m2 heated/MWh and days heated/MWh

■ No insulation

■ First German building code (1977)

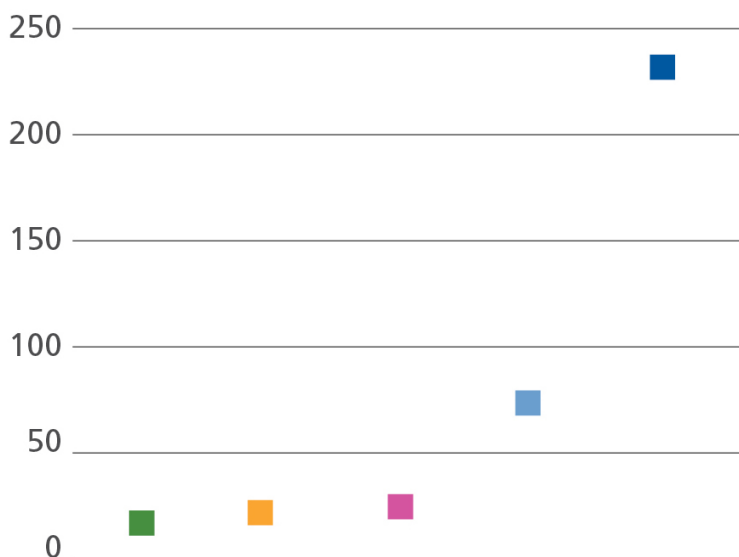
■ German building code anno 1995

■ Current German building code (2012)

■ Near zero energy house

## Household energy productivity

Number of days a house can be heated with 1000 kWh



Adopted from Schleyer-Kohler (2006) and IWU (2011)

## Higher energy productivity facilitated 18% higher economic growth in the world's six largest economies

**Table 3: Additional GDP Facilitated through increased energy productivity  
(The big six, OECD and the world)**

In 2012 euros

Rank	Country or Area	Percent of GDP gained from higher energy productivity growth	Annual Energy Consumption (in exajoules)		Energy Productivity (in billions of euros per exajoule of energy consumed)		Change	GDP (in billions of euros)
			2011	2001	2011	2001		2011
1	Russian Federation	29%	28	25	92	65	739	2555
2	India	23%	30	18	159	123	1079	4722
3	EU 27	17%	65	68	206	171	2287	13381
4	United States	16%	86	87	143	119	2028	12301
5	Japan	16%	18	20	196	164	555	3473
6	China	16%	109	48	98	82	1700	10687
	OECD	15%	207	205	171	145	5379	35393
	World	12%	515	399	143	125	9008	73416

Sources: Worldbank, International Energy Agency, Ecofys analysis

## Hong Kong leads the global energy productivity ranking; its economy is mostly services

**Table 1: The Energy Productivity Index (Top 50)**

in billions of euros of GDP per exojoule of energy consumed

Rank	Country	Productivity	Rank	Country	Productivity
1	Hong Kong SAR, China	456	27	France	186
2	Colombia	330	28	Saudi Arabia	181
3	Singapore	329	29	Pakistan	174
4	Switzerland	310	30	Malaysia	172
5	Peru	287		<i>OECD members</i>	171
6	Philippines	256	31	Poland	165
7	Italy	246	32	Thailand	163
8	Portugal	242	33	Belgium	162
9	Spain	236	34	India	159
10	Turkey	234	35	Sweden	158
11	United Kingdom	231	36	Australia	150
12	Bangladesh	228	37	United Arab Emirates	148
13	Algeria	225	38	United States	143
14	Egypt, Arab Rep.	224		<i>World</i>	143
15	Norway	224	39	Nigeria	138
16	Greece	220	40	Venezuela, RB	137
17	Germany	220	41	Vietnam	135
18	Austria	217	42	Korea, Rep.	134
19	Netherlands	215	43	Czech Republic	131
20	Brazil	210	44	Canada	118
21	Iraq	207	45	Iran, Islamic Rep.	117
	<i>European Union</i>	206	46	China	98
22	Mexico	201	47	Russian Federation	92
23	Chile	201	48	South Africa	85
24	Japan	196	49	Kazakhstan	85
25	Indonesia	195	50	Ukraine	60
26	Romania	192			

The 50 countries chosen are the world's 50 largest based on purchasing power parity adjusted GDP.  
The euros are taken at their 2012 rate, purchasing power parity adjusted.

## Starting points matter: Catch-up countries are doing most to 'catch up'

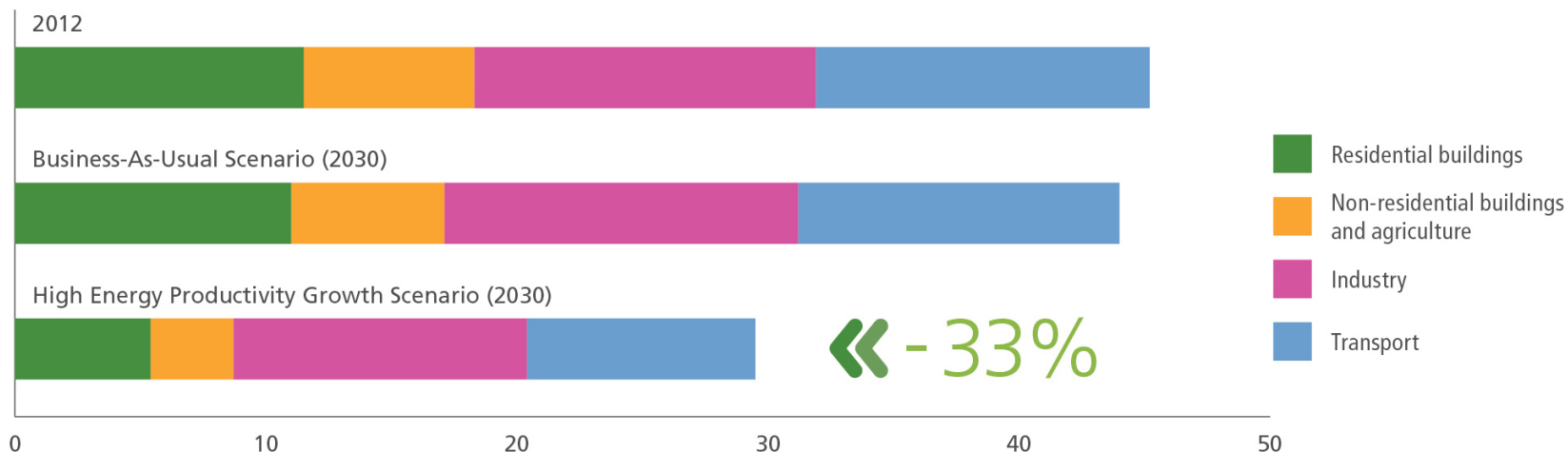
**Table 2: Improvement in Energy Productivity Index (Top 50)**

Underlying figures in billions of euros of GDP per exajoule of energy consumed (2001-2011)

Rank	Country	Growth per year	Rank	Country	Growth per year
1	Nigeria	6,45%	26	Greece	1,43%
2	Ukraine	4,87%	27	Spain	1,39%
3	Romania	4,31%	28	Korea, Rep.	1,38%
4	Singapore	4,29%		World	1,32%
5	Philippines	4,24%	29	France	1,31%
6	Hong Kong SAR, China	4,01%	30	South Africa	1,14%
7	Russian Federation	3,47%	31	Bangladesh	1,03%
8	United Kingdom	3,28%	32	Venezuela, RB	1,00%
9	Poland	3,06%	33	Portugal	0,96%
10	Czech Republic	3,00%	34	Saudi Arabia	0,94%
11	India	2,63%	35	Norway	0,80%
12	Sweden	2,59%	36	Iran, Islamic Rep.	0,74%
13	Indonesia	2,54%	37	Austria	0,69%
14	Germany	2,27%	38	Turkey	0,60%
15	Switzerland	2,26%	39	Italy	0,50%
16	Colombia	2,08%	40	Peru	0,49%
17	Canada	2,04%	41	Thailand	0,27%
	European Union	1,89%	42	Chile	0,15%
18	United States	1,82%	43	Brazil	0,14%
19	Japan	1,76%	44	Vietnam	-0,05%
20	China	1,75%	45	Iraq	-0,25%
	OECD members	1,66%	46	Egypt, Arab Rep.	-0,38%
21	Belgium	1,53%	47	Mexico	-0,39%
22	Australia	1,52%	48	Kazakhstan	-0,82%
23	Pakistan	1,51%	49	Algeria	-0,90%
24	Netherlands	1,47%	50	United Arab Emirates	-1,56%
25	Malaysia	1,46%			

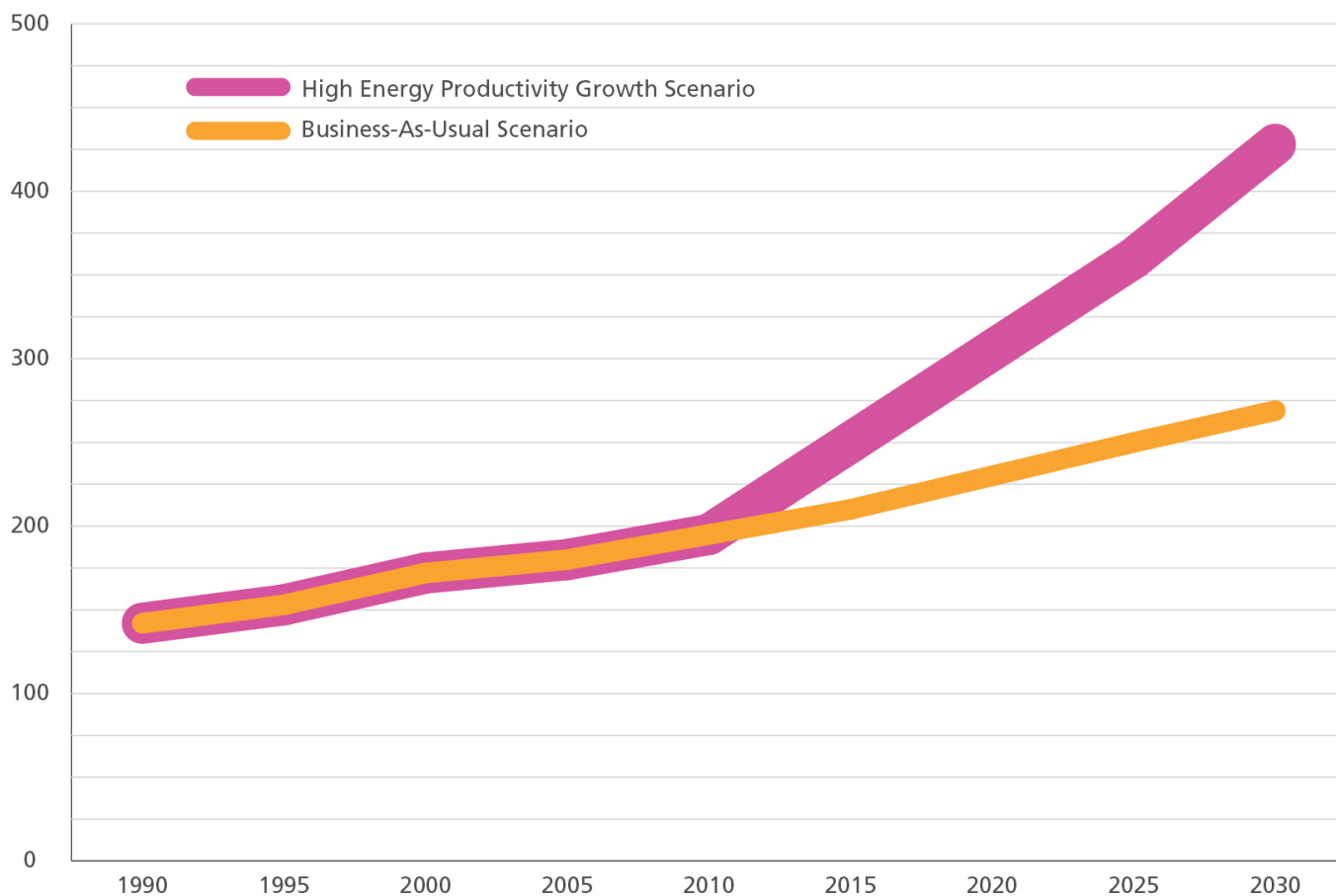
## European Union

### Final energy consumption in the European Union in two scenarios (in exajoules)



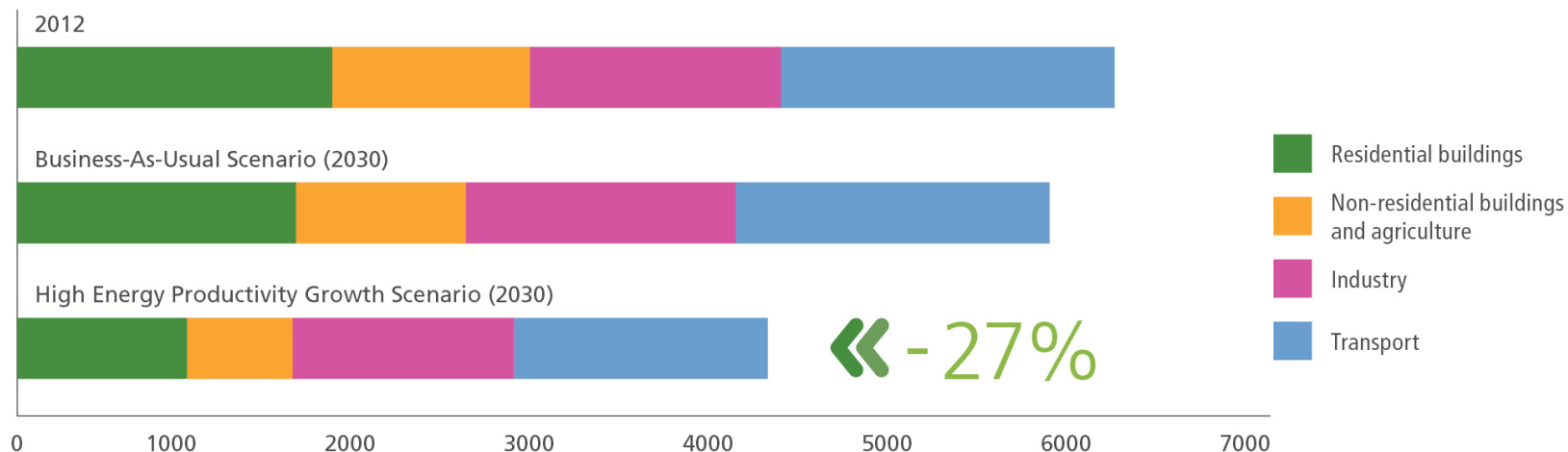
## European Union

### The impact of energy productivity on GDP (in billions of euros per exajoule)



## France

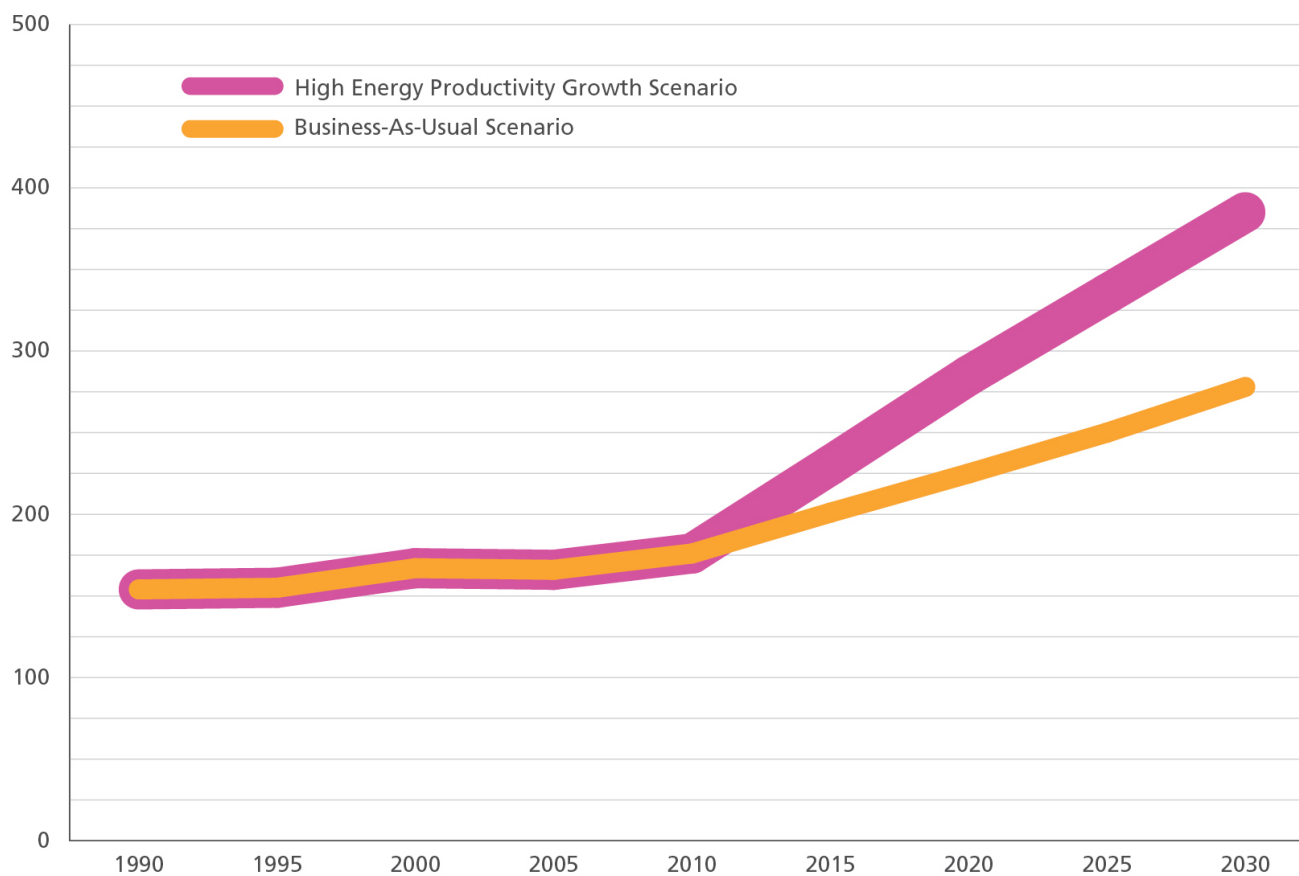
### Final energy consumption in France in two scenarios (in petajoules)





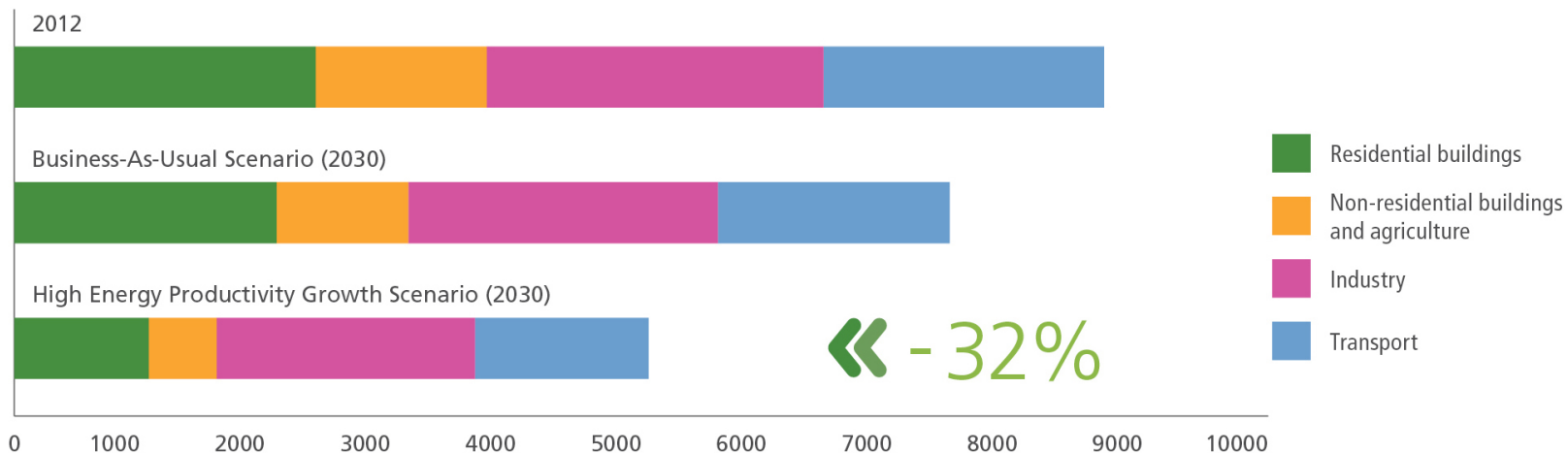
## France

### The impact of energy productivity on GDP (in billions of euros per exajoule)



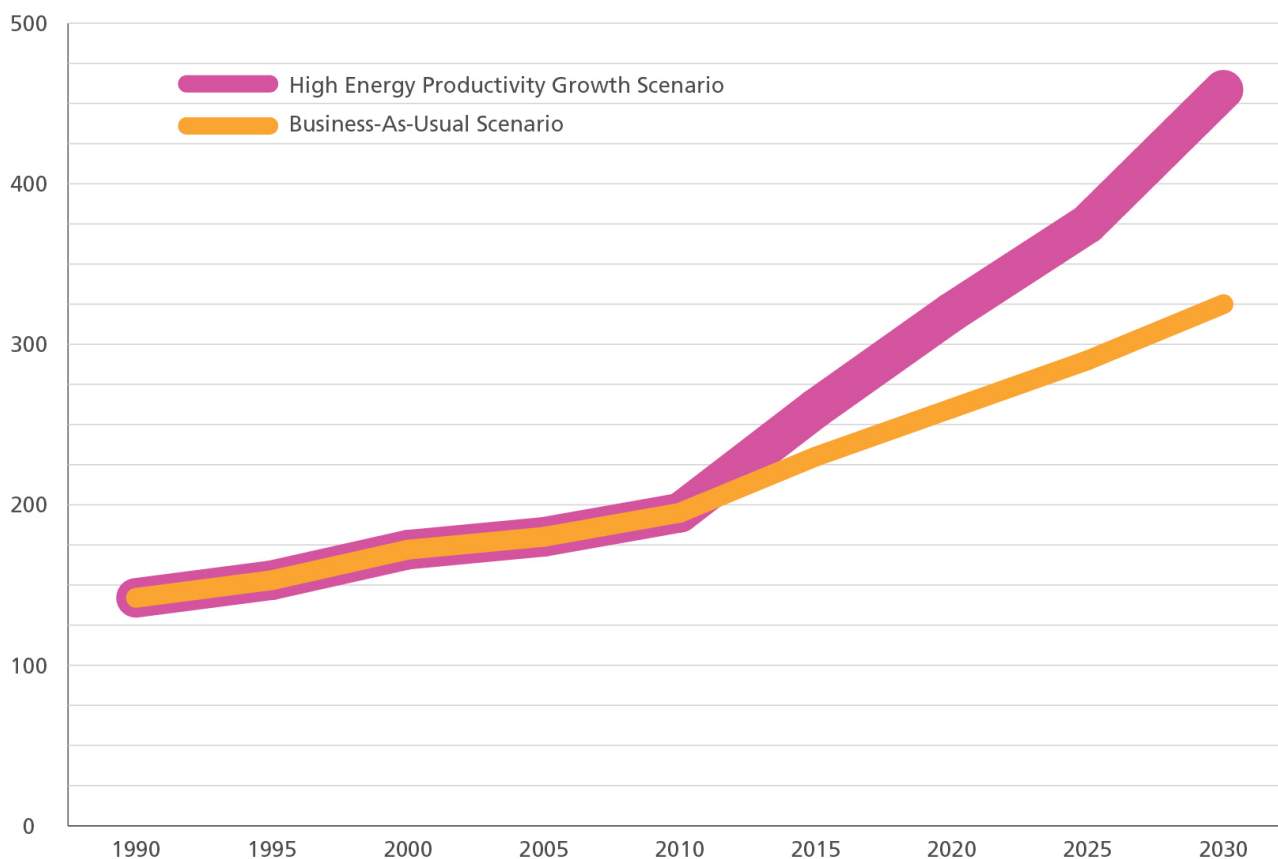
## Germany

### Final energy consumption in Germany in two scenarios (in petajoules)



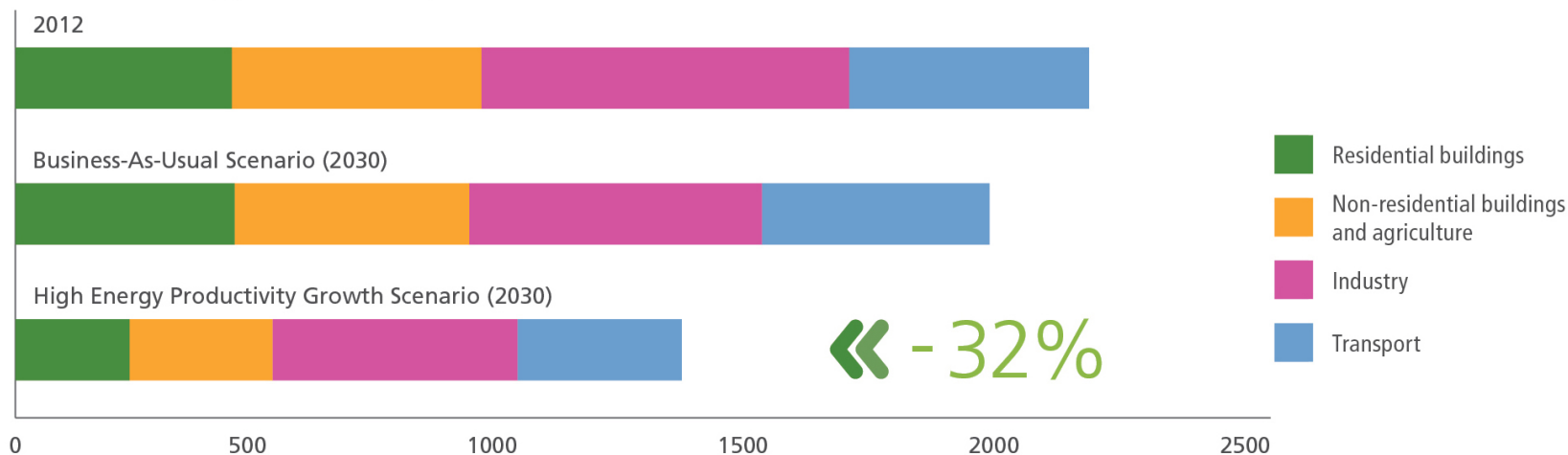
## Germany

### The impact of energy productivity on GDP (in billions of euros per exajoule)



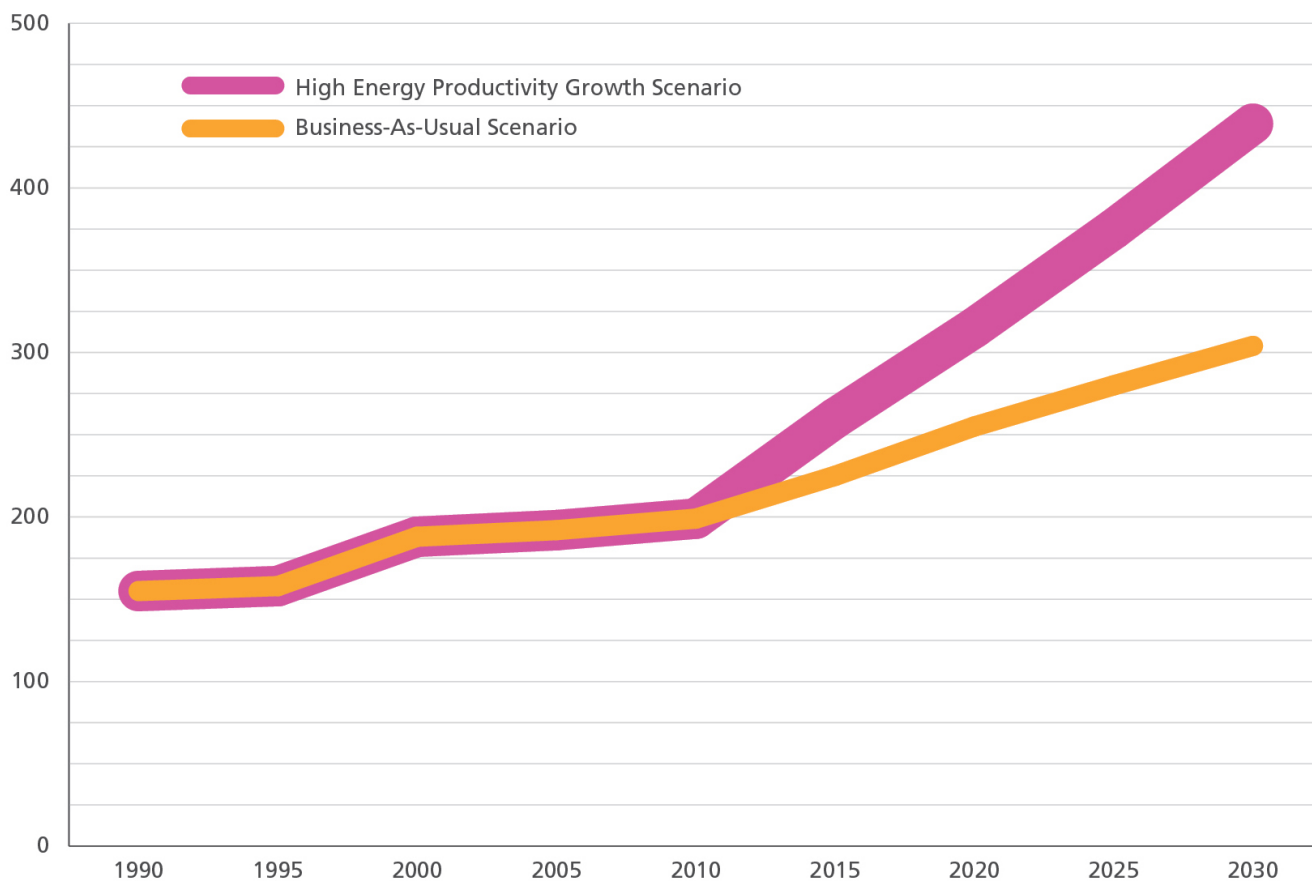
## Netherlands

### Final energy consumption in the Netherlands in two scenarios (in petajoules)



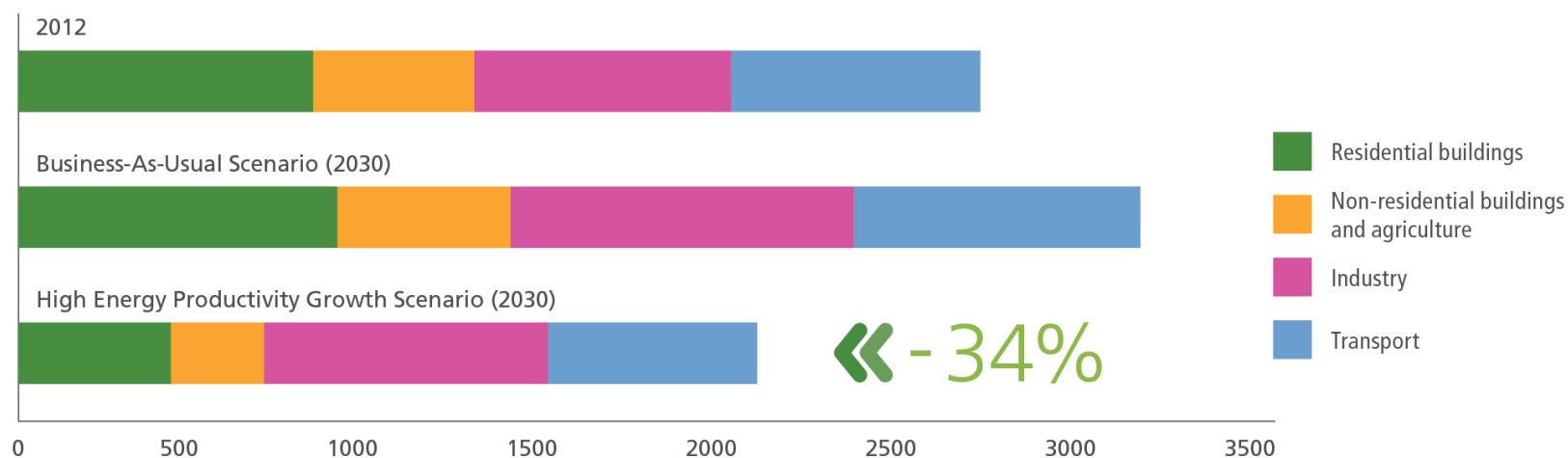
## Netherlands

### The impact of energy productivity on GDP (in billions of euros per exajoule)



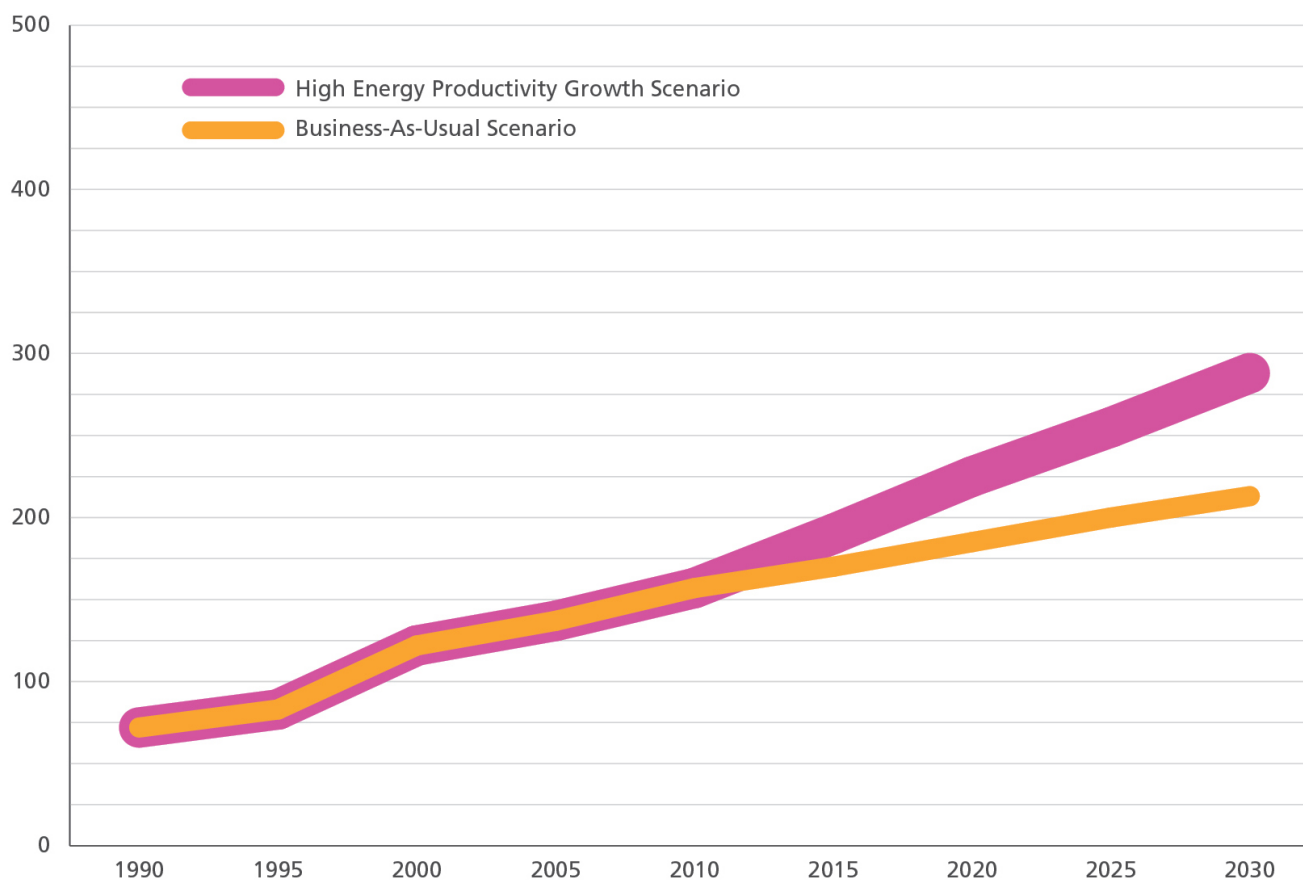
## Poland

### Final energy consumption in Poland in two scenarios (in petajoules)



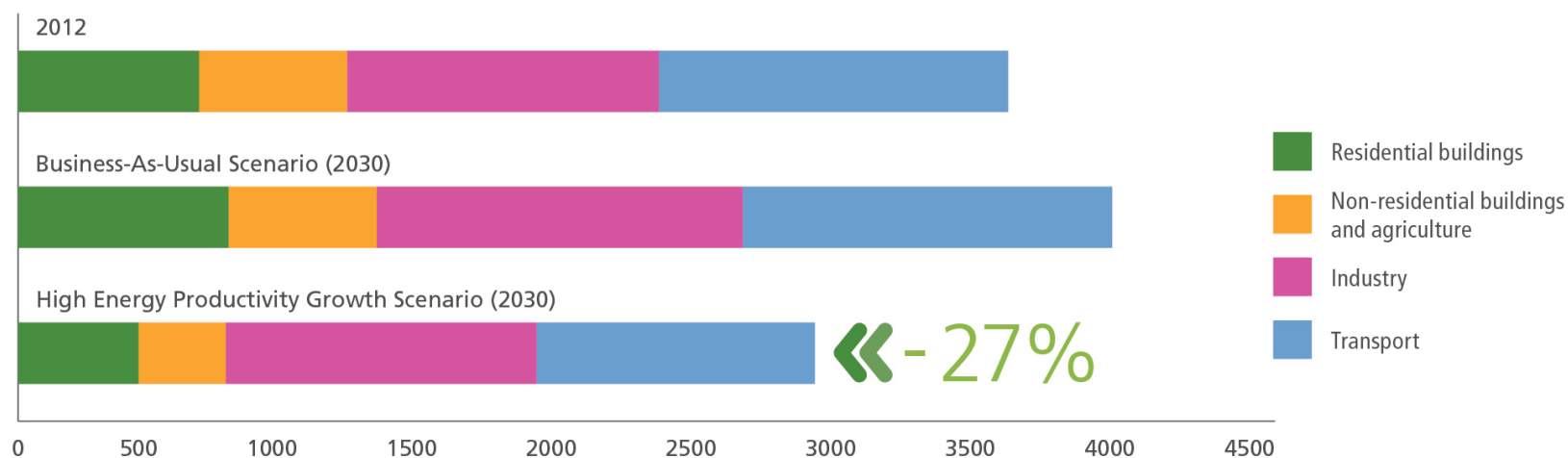
## Poland

### The impact of energy productivity on GDP (in billions of euros per exajoule)



## Spain

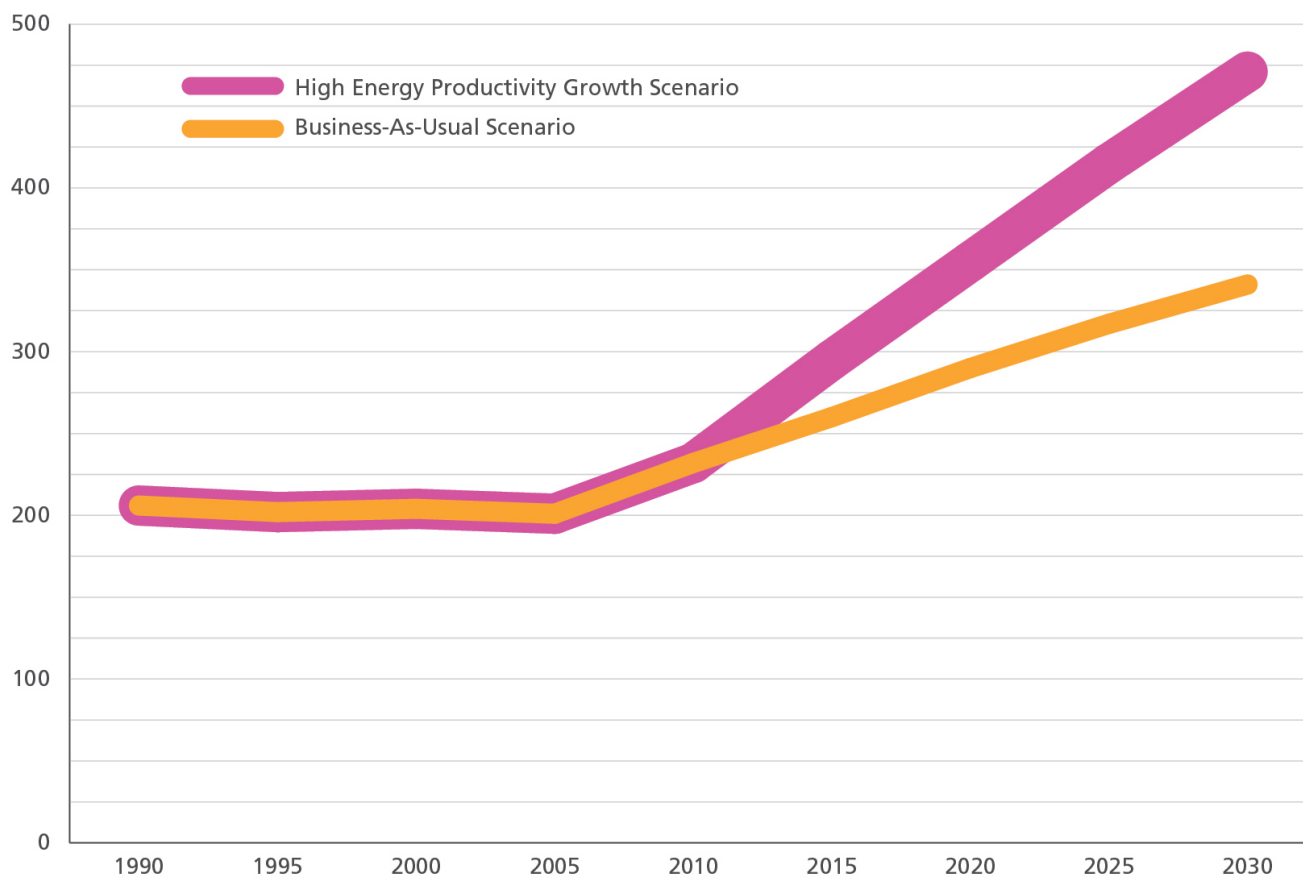
### Final energy consumption in Spain in two scenarios (in petajoules)





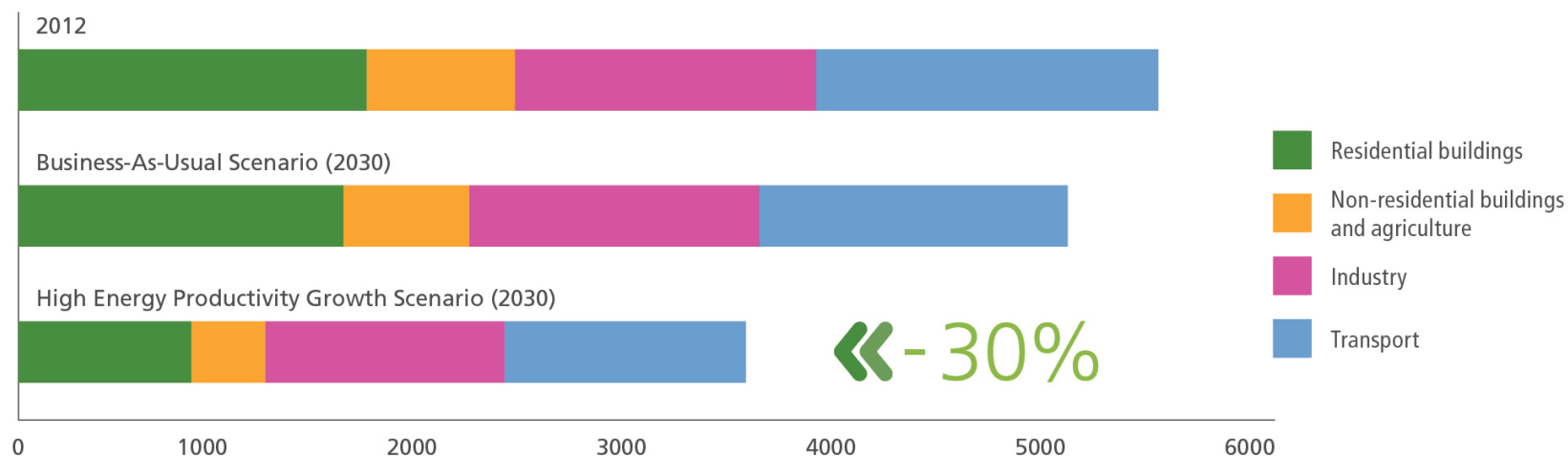
## Spain

### The impact of energy productivity on GDP (in billions of euros per exajoule)



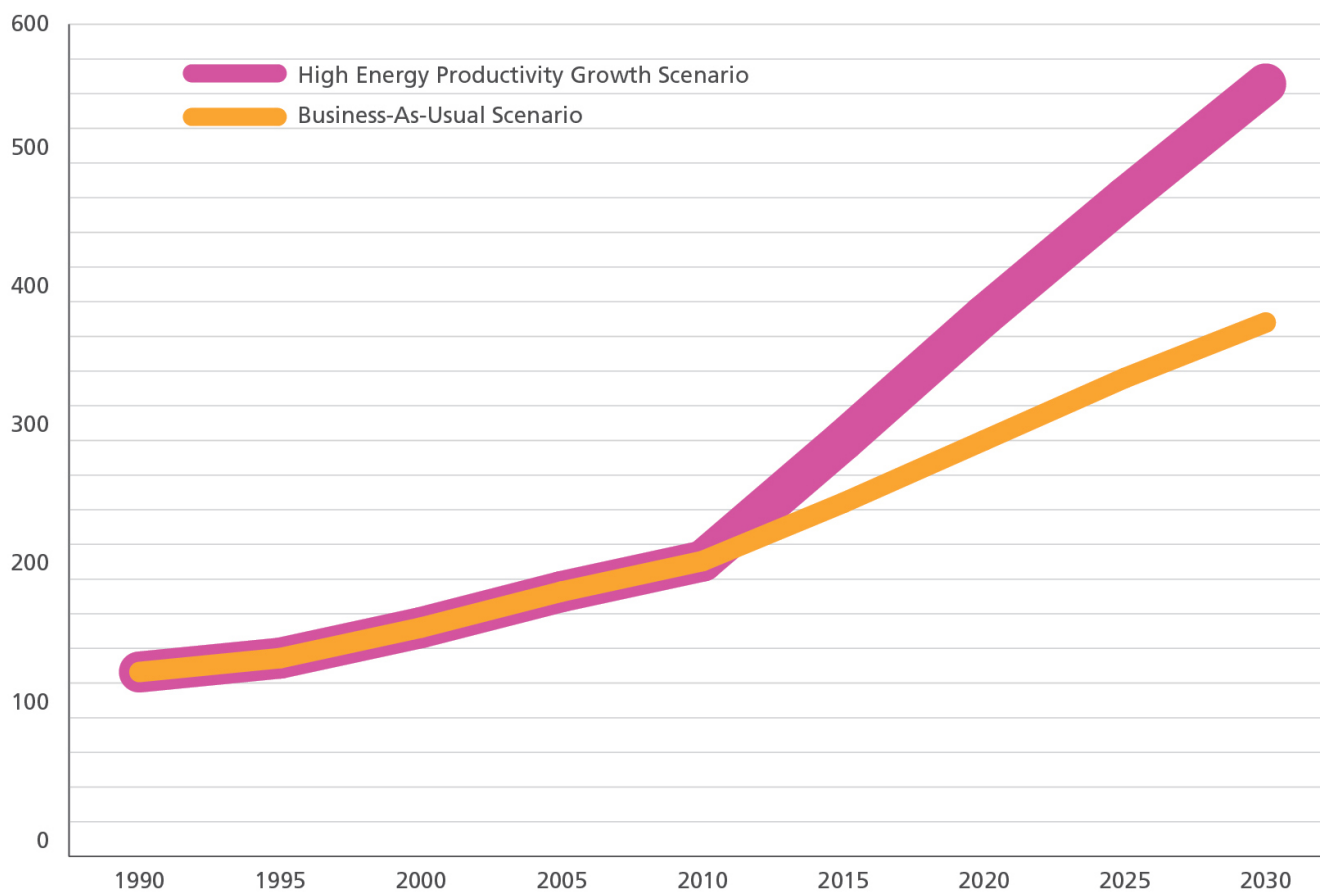
## United Kingdom

### Final energy consumption in the United Kingdom in two scenarios (in petajoules)



## United Kingdom

### The impact of energy productivity on GDP (in billions of euros per exajoule)

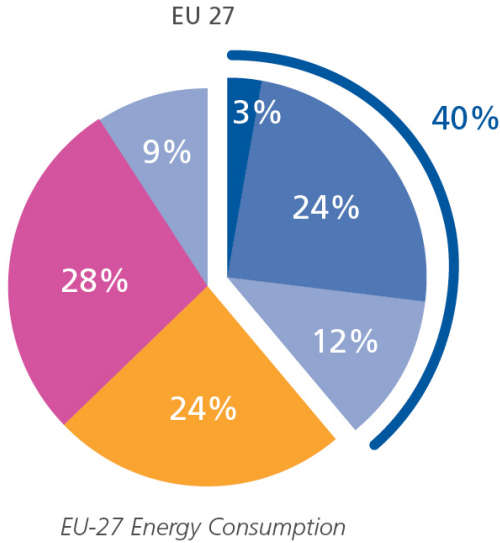
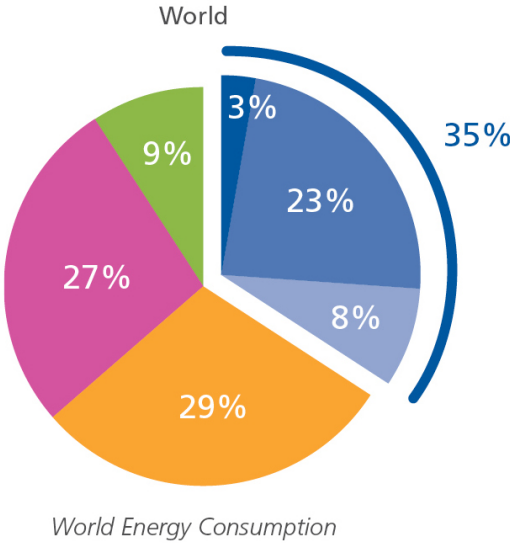


**Thank you for your attention!**

theLisboncouncil

Chart 1: Final energy consumption by sector

	WORLD	EUROPEAN UNION
Industry	107	11
Transport	102	13
Non-energy use	34	4
Other, of which:	130	19
Fishing and agriculture	13	2
Buildings, of which:	117	18
Residential buildings	87	12
Commercial buildings and public services	30	6
All sectors	373	48



Source: International Energy Agency