

# GSIBs CO2 Footprint Estimation

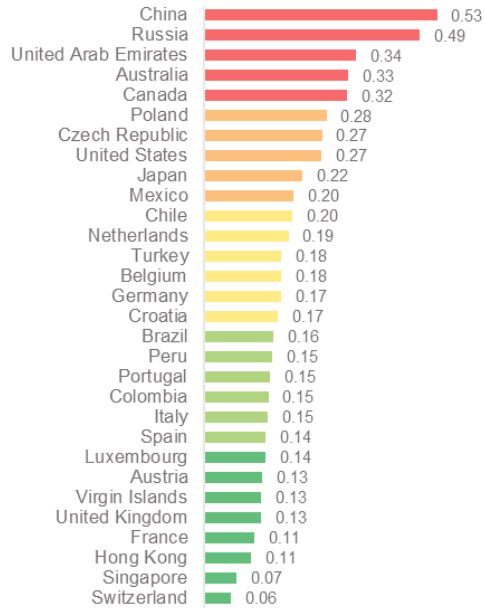
May 2021

ALVAREZ & MARSAL



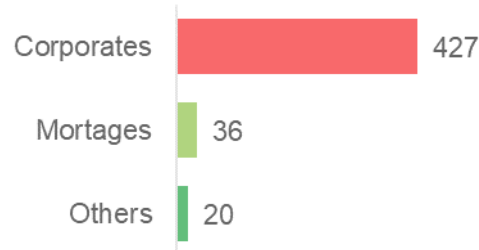
# Methodology and main conclusions

## 1 Geography CO2 per GDP MM

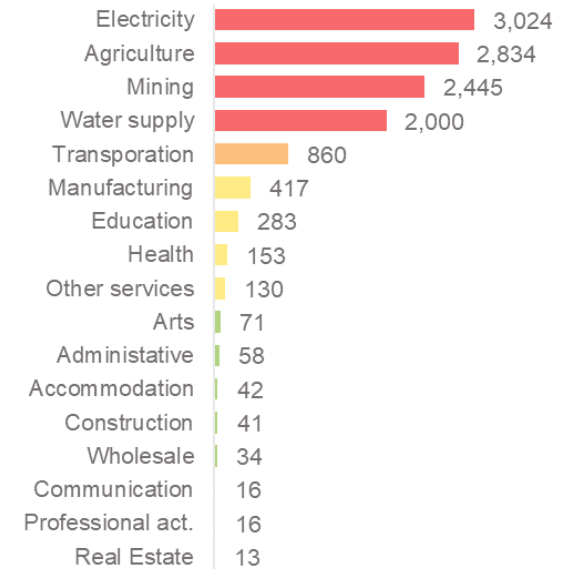


## 2 Asset class CO2 per Gross Exposure MM

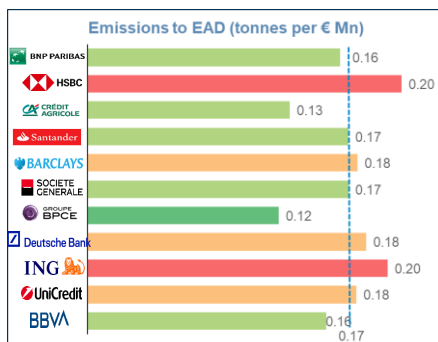
Asset Class	CO2/Gross Exposure
Corporates	427
Mortgages	36
Total	20



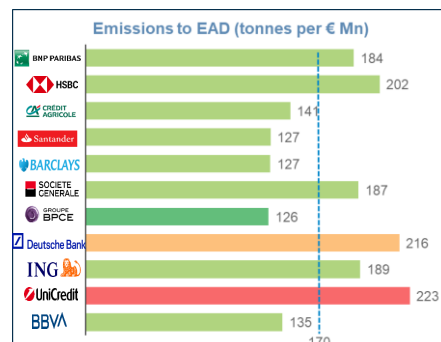
## 3 Industry CO2 per Gross Exposure MM



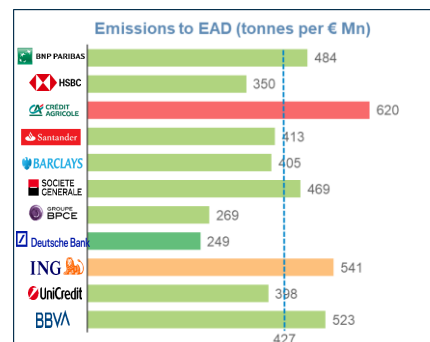
### Geographical ranking Average CO2 geographical weight



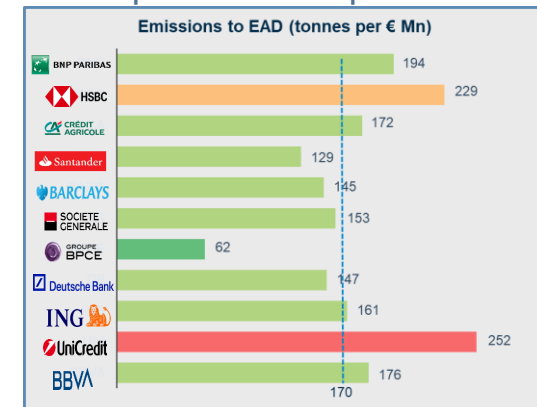
### Asset class ranking Average CO2 asset weight



### Industry ranking Average CO2 industry weight



### Global ranking CO2 per Gross Exposure MM



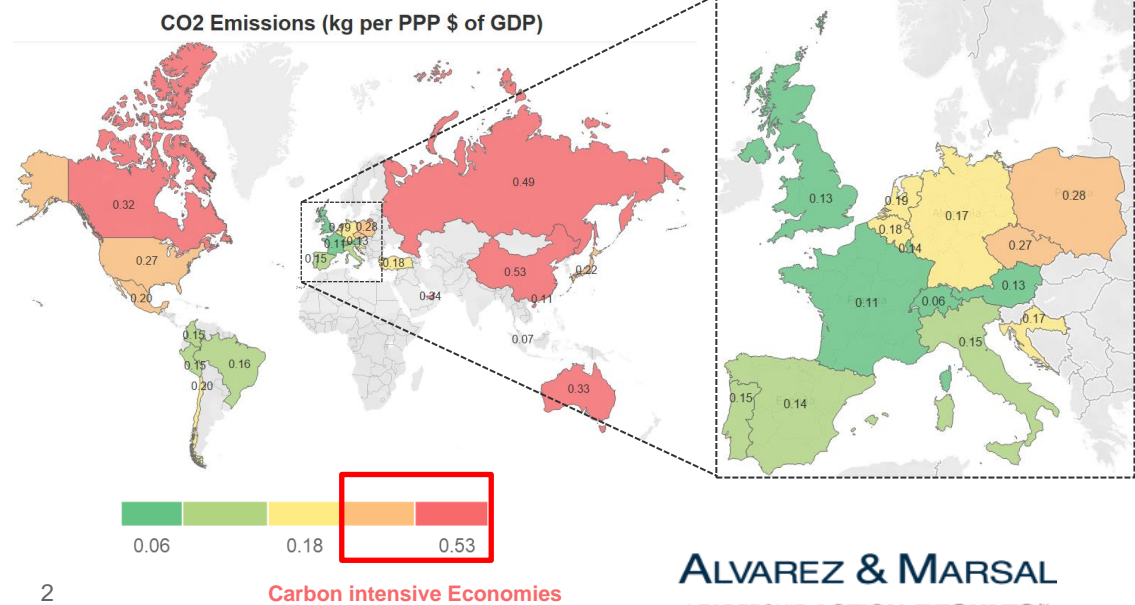
# Total Exposure by Country

## Total Exposure by Country (%<sup>1</sup> and € Bn)<sup>2</sup>

COUNTRIES	BNP PARIBAS		HSBC		CRÉDIT AGRICOLE		Santander		BARCLAYS		SOCIETE GENERALE		GROUPE BPCE	
	United States	14%	China	6%	United States	4%	United States	12%	Canada	1%	Russian Federation	2%	United States	4%
	Japan	3%	Canada	4%	Japan	3%	Mexico	4%	United States	27%	United States	13%	Japan	1%
	Belgium	10%	Australia	2%	Germany	2%	Poland	4%	Japan	3%	Czech Republic	5%	Germany	1%
	Germany	4%	United Arab Emirates	2%	Netherlands	1%	Chile	4%	Germany	5%	Japan	2%	Netherlands	1%
	Netherlands	2%	United States	13%	Italy	6%	Germany	3%	Netherlands	1%	Germany	4%	Italy	1%
	Italy	9%	Germany	3%	Spain	1%	Spain	26%	Italy	1%	Italy	2%	Spain	1%
	Spain	2%	United Kingdom	20%	France	68%	Brazil	9%	United Kingdom	48%	France	45%	France	84%
	France	27%	France	6%	United Kingdom	2%	Portugal	4%	France	3%	United Kingdom	4%	United Kingdom	1%
	United Kingdom	6%	Hong Kong	20%	Luxembourg	2%	United Kingdom	22%	Switzerland	2%	Luxembourg	2%	Luxembourg	1%
	Luxembourg	3%	Singapore	3%	Switzerland	1%	France	2%	Luxembourg	1%	Switzerland	2%	Switzerland	1%
	Others	19%	Others	20%	Others	10%	Others	9%	Others	8%	Others	19%	Others	5%
<b>TOTAL</b>	<b>2,017</b>	<b>0.16<sup>4</sup></b>	<b>2,528</b>	<b>0.20</b>	<b>1,862</b>	<b>0.13</b>	<b>1,566</b>	<b>0.17</b>	<b>1,226</b>	<b>0.18</b>	<b>1,082</b>	<b>0.17</b>	<b>1,308</b>	<b>0.12</b>

COUNTRIES	Deutsche Bank		ING		UniCredit		BBVA <sup>3</sup>	
	United States	21%	Australia	4%	Russian Federation	3%	United States	0%
	Germany	40%	United States	10%	Czech Republic	4%	Mexico	15%
	Netherlands	2%	Poland	3%	United States	3%	Turkey	10%
	Italy	4%	Netherlands	22%	Germany	19%	Germany	2%
	Spain	3%	Germany	14%	Croatia	2%	Spain	45%
	United Kingdom	3%	Belgium	11%	Italy	38%	Peru	4%
	Luxembourg	2%	Spain	3%	Spain	2%	Italy	3%
	Switzerland	2%	United Kingdom	5%	Austria	10%	Colombia	2%
	France	2%	France	3%	France	2%	France	6%
	Virgin Islands	2%	Luxembourg	3%	United Kingdom	2%	United Kingdom	3%
	Others	18%	Others	23%	Others	16%	Others	10%
<b>TOTAL</b>	<b>1,050</b>	<b>0.18</b>	<b>1,470</b>	<b>0.20</b>	<b>1,067</b>	<b>0.18</b>	<b>774</b>	<b>0.16</b>

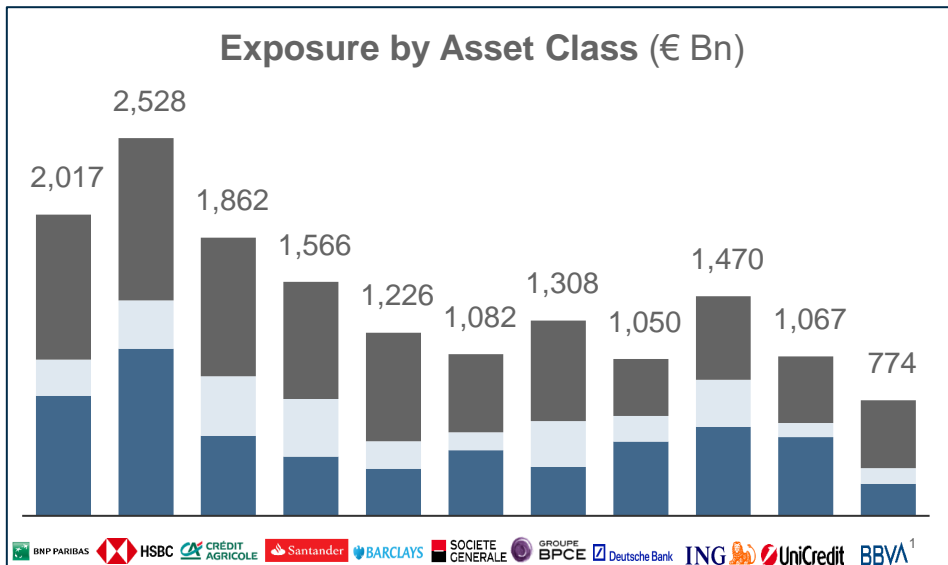
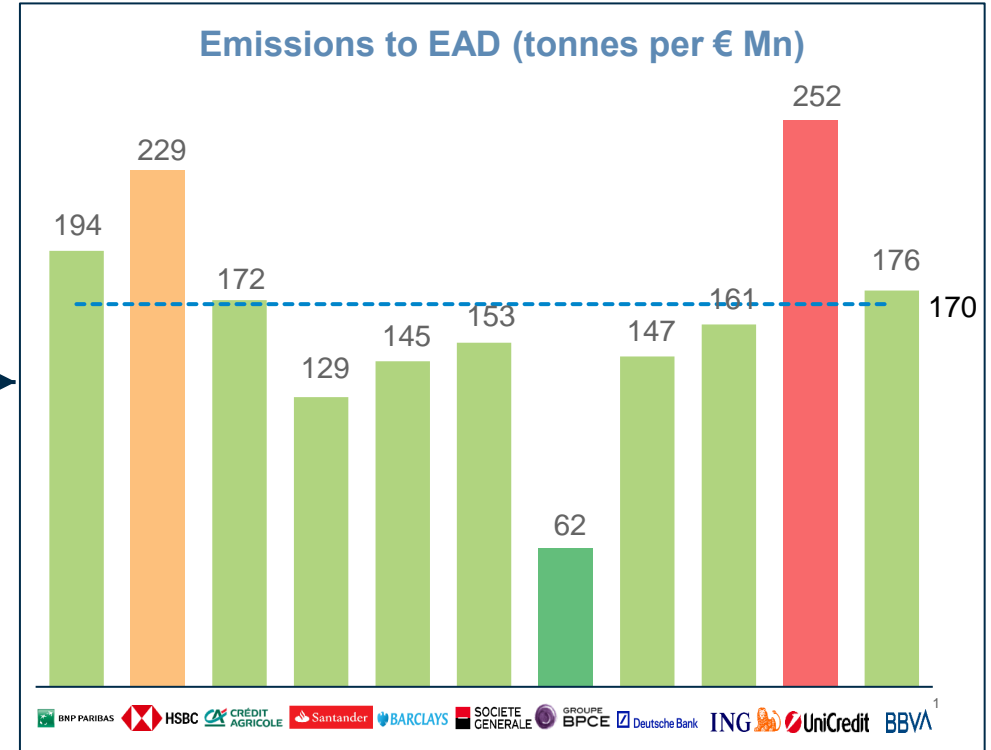
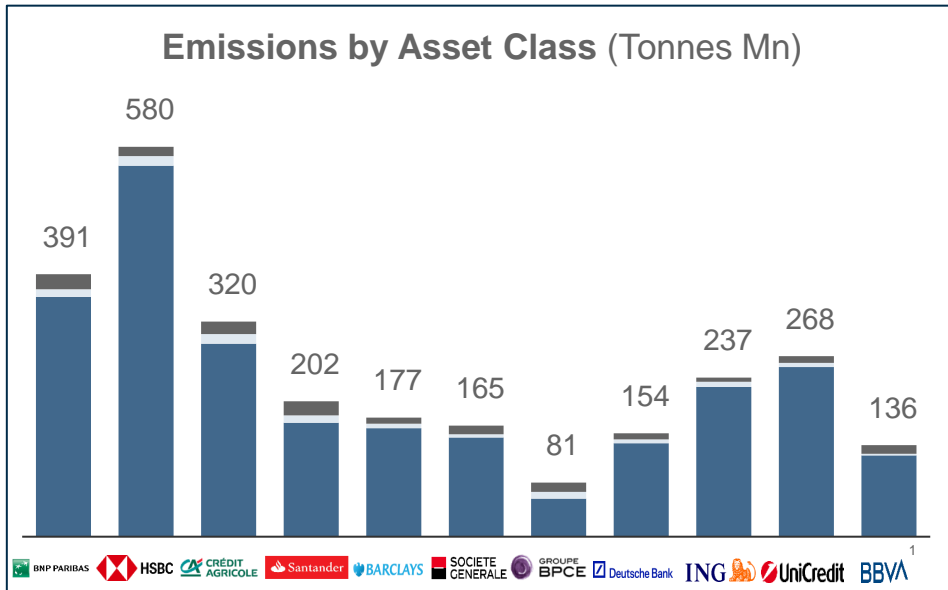
- The localization of exposure is key when measuring footprint.
- Asian geographies tends to have more CO2 emission per \$ of GDP as well as Canada and Australia.
- In Europe there are significant differences in the carbon intensiveness of countries.
- HSBC is the bank with higher exposure in carbon intensive economies the average CO2 per \$ of GDP is 0.20, while BPCE has the lowest exposure (average 0.12)



Note1: Percentage in comparison to total exposure  
 Note 2: Colors represents CO2 Emissions per GDP,  
 Note 3: BBVA exposure excludes USA.  
 Note 4: Weighted average CO2 per \$ of GDP of the bank (weighted by Geography)  
 Source: CO2 Emissions (kg per PP \$ of GDP): World Bank and EDGAR (JRC).  
 Exposure Amount by Asset class: Transparency exercise EBA

# Total Exposure and CO2 Emissions by Asset Class

■ Corporates ■ Mortgages ■ Others

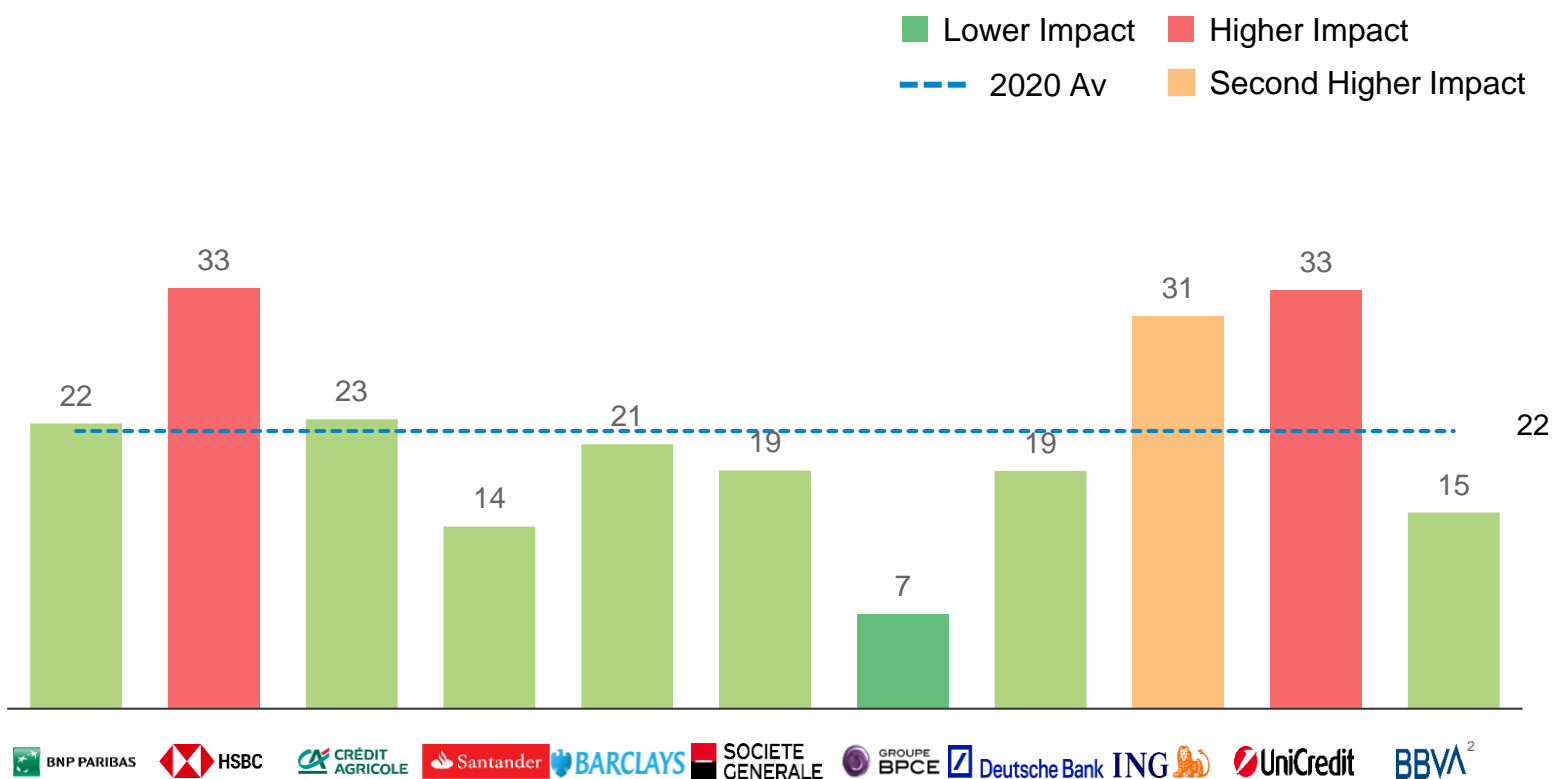


- By Asset Classes Corporates represents 91% of total emissions and 36% of total exposure.
- HSBC is the bank with higher CO2 total emissions, followed by BNP.
- UniCredit is the bank with higher CO2 emissions per million euros of EAD followed by HSBC.

Note1: BBVA exposures and Emissions excludes USA  
 Source: CO2 Emissions: Eurostat and A&M Analysis.  
 Exposure by Asset class: Transparency exercise EBA

# Impact of CO2 Compensation Costs on CET1 Ratio

Impact of Compensation Costs<sup>1</sup> on CET1 ratio (bps.) per year



Assuming compensation costs of 4 € per ton and comparing these costs with CET1:

- HSBC and UniCredit are the banks with higher impact on their CET1 due to compensation costs, a reduction of 33 bps on their FL CET1.
- BPCE is the bank with the lower impact, with a decrease of 7bps of its CET1.

Compensation Costs (€ Mn)										
1,563	2,320	1,280	807	709	661	322	616	946	1,074	545

Note1: Assuming €4 compensation cost per ton  
 Note 2:BBVA exposures and Emissions excludes USA  
 Source: SNL

# Corporate Exposure by Country

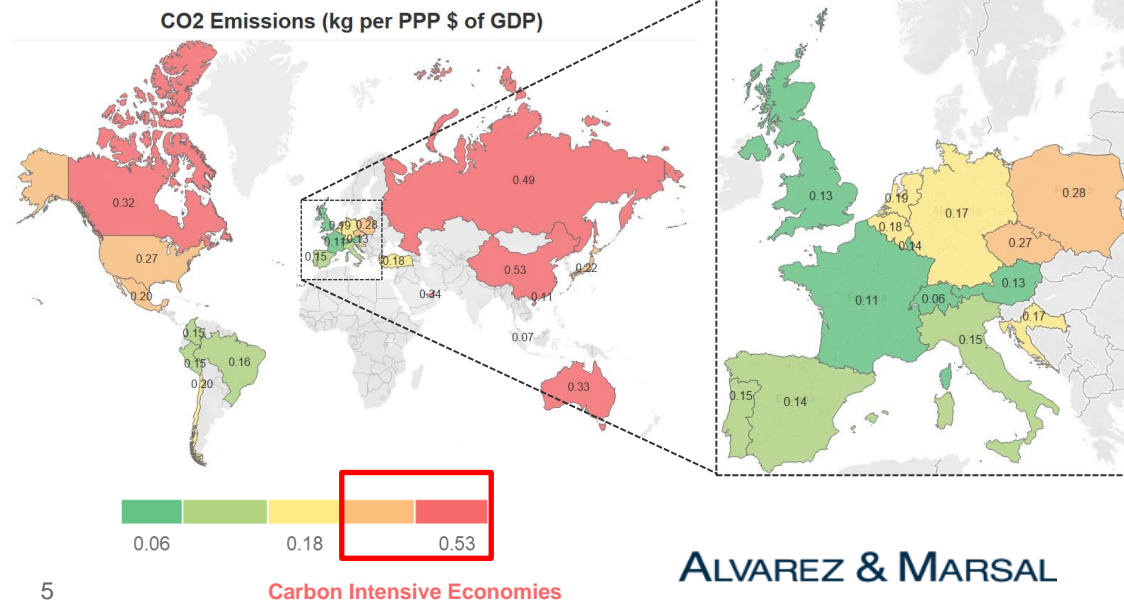
## Corporate Exposure by Country (%<sup>1</sup> and € Bn)<sup>2</sup>

COUNTRIES	BNP PARIBAS		HSBC		CRÉDIT AGRICOLE		Santander		BARCLAYS		SOCIETE GENERALE		GROUPE BPCE	
	Country	%	Country	%	Country	%	Country	%	Country	%	Country	%	Country	%
United States	17%	China	7%	United States	10%	United States	11%	Canada	1%	Russian Federation	2%	United States	7%	
Japan	1%	Canada	4%	Japan	1%	Mexico	5%	United States	36%	United States	16%	Japan	1%	
Belgium	8%	Australia	2%	Germany	3%	Poland	3%	Japan	1%	Czech Republic	4%	Germany	1%	
Germany	4%	United Arab Emirates	2%	Netherlands	2%	Chile	3%	Germany	2%	Japan	1%	Netherlands	2%	
Netherlands	3%	United States	14%	Italy	6%	Germany	3%	Netherlands	2%	Germany	4%	Italy	2%	
Italy	8%	Germany	2%	Spain	2%	Spain	32%	Italy	1%	Italy	3%	Spain	1%	
Spain	2%	United Kingdom	14%	France	49%	Brazil	9%	United Kingdom	34%	France	36%	France	68%	
France	20%	France	5%	United Kingdom	3%	Portugal	4%	France	3%	United Kingdom	5%	United Kingdom	2%	
United Kingdom	8%	Hong Kong	20%	Luxembourg	3%	United Kingdom	13%	Switzerland	1%	Luxembourg	3%	Luxembourg	2%	
Luxembourg	4%	Singapore	3%	Switzerland	1%	France	4%	Luxembourg	2%	Switzerland	2%	Switzerland	2%	
Others	24%	Others	25%	Others	19%	Others	13%	Others	16%	Others	26%	Others	13%	
<b>TOTAL</b>	<b>804</b>	<b>0.17<sup>4</sup></b>	<b>1,118</b>	<b>0.22</b>	<b>536</b>	<b>0.15</b>	<b>397</b>	<b>0.17</b>	<b>315</b>	<b>0.19</b>	<b>440</b>	<b>0.18</b>	<b>328</b>	<b>0.13</b>

COUNTRIES	Deutsche Bank		ING		UniCredit		BBVA <sup>3</sup>	
	Country	%	Country	%	Country	%	Country	%
United States	27%	Australia	1%	Russian Federation	4%	United States	0%	
Germany	20%	United States	19%	Czech Republic	2%	Mexico	14%	
Netherlands	5%	Poland	3%	United States	4%	Turkey	13%	
Italy	4%	Netherlands	15%	Germany	23%	Germany	3%	
Spain	3%	Germany	4%	Croatia	1%	Spain	36%	
United Kingdom	4%	Belgium	9%	Italy	34%	Peru	6%	
Luxembourg	3%	Spain	1%	Spain	1%	Italy	3%	
Switzerland	3%	United Kingdom	5%	Austria	9%	Colombia	2%	
France	3%	France	4%	France	2%	France	4%	
Virgin Islands	3%	Luxembourg	3%	United Kingdom	2%	United Kingdom	3%	
Others	25%	Others	35%	Others	18%	Others	15%	
<b>TOTAL</b>	<b>498</b>	<b>0.18</b>	<b>596</b>	<b>0.20</b>	<b>527</b>	<b>0.18</b>	<b>215</b>	<b>0.16</b>

Note 1: Percentage in comparison to total exposure  
 Note 2: Colors represents CO2 Emissions per GDP,  
 Note 3: BBVA exposures excludes USA  
 Note 4: Weighted average CO2 per \$ of GDP of the bank (weighted by Geography)  
 Source: CO2 Emissions (kg per PP \$ of GDP): World Bank and EDGAR (JRC).  
 Exposure Amount by Asset class: Transparency exercise EBA

- The localization of corporate exposures is key when measuring footprint
- Some countries can be defined as Low-Carbon Economies while others are Carbon Intensive.
- HSBC is the bank with higher exposure in carbon intensive economies the average CO2 per \$ of GDP is 0.22.
- BPCE has the lowest exposure to carbon intensive economies (0.13 average CO2 per \$ of GDP).



# Corporate Exposure by Industry

## Corporate Exposure by Activity (%<sup>1</sup>)<sup>2</sup>

	2020Q2	BNP PARIBAS	HSBC	CRÉDIT AGRICOLE	Santander	BARCLAYS	SOCIETE GENERALE	GRUPE BPCE	Deutsche Bank	ING	UniCredit	BBVA	EU BANKS
Electricity, gas, steam and air conditioning supply		6%	3%	4%	4%	2%	5%	3%	2%	5%	4%	7%	4%
Water supply; sewerage, waste management and remediation		0%	1%	1%	1%	1%	1%	0%	0%	1%	1%	1%	1%
Mining and quarrying		1%	3%	3%	2%	3%	5%	2%	2%	5%	1%	3%	3%
Agriculture, forestry and fishing		3%	1%	9%	3%	4%	1%	2%	0%	1%	2%	2%	3%
Manufacturing		17%	20%	17%	17%	12%	14%	7%	17%	20%	25%	23%	17%
Construction		5%	3%	4%	6%	4%	3%	6%	2%	4%	7%	6%	5%
Transportation and storage		8%	5%	7%	6%	4%	8%	3%	3%	10%	6%	5%	6%
Real estate activities		16%	23%	18%	15%	28%	11%	34%	23%	16%	17%	11%	19%
Wholesale and retail trade; repair of motor vehicles and motorcycles		15%	18%	13%	21%	8%	11%	11%	11%	16%	15%	15%	15%
Accommodation and food service activities		2%	5%	3%	4%	4%	1%	3%	2%	1%	2%	5%	3%
Human health and social work activities		2%	1%	1%	2%	4%	1%	3%	2%	3%	1%	3%	2%
Financial and insurance activities		4%	0%	5%	0%	0%	0%	11%	15%	0%	1%	4%	3%
Information and communication		4%	4%	3%	4%	6%	3%	1%	3%	5%	3%	4%	3%
Professional, scientific and technical activities		3%	5%	6%	5%	5%	3%	7%	6%	5%	6%	3%	5%
Administrative and support service activities		10%	5%	3%	3%	6%	3%	4%	3%	5%	2%	3%	5%
Public administration and defence; compulsory social security		0%	0%	0%	0%	0%	6%	0%	0%	0%	0%	0%	1%
Education		0%	1%	0%	1%	4%	0%	1%	0%	0%	0%	1%	0%
Arts, entertainment and recreation		1%	1%	0%	1%	2%	0%	1%	1%	0%	1%	1%	1%
Other service activities		3%	3%	2%	7%	1%	25%	2%	6%	1%	6%	4%	5%
<b>TOTAL Emissions per EAD</b>		<b>484</b>	<b>350</b>	<b>620</b>	<b>413</b>	<b>405</b>	<b>469</b>	<b>269</b>	<b>249</b>	<b>541</b>	<b>398</b>	<b>523</b>	<b>427</b>

- Some industries are more carbon intensive than others, becoming relevant the split of the corporate portfolio between them.
- On average, analysed banks have 32% of their exposures on carbon intensive activities, and the average emissions of industries per EAD are 427 tonnes/€ Mn.
- Credit Agricole and ING are the top banks in the ranking CO2 emissions per EAD when analysing the industry component.

Note1: Percentage in comparison to total corporate exposure  
 Note 2: Colors represents the A&M score that measure the carbon intensity of activities,  
 Note 3: BBVA exposures excludes USA  
 Source: Gross Amount by Activity class: Transparency exercise EBA

Carbon Intensive Activities

A&M Score		A&M Score	
Electricity, gas, steam and air conditioning supply	20	Human health and social work activities	11
Water supply; sewerage, waste management and remediation activities	19	Financial and insurance activities	10
Mining and quarrying	18	Information and communication	7
Agriculture, forestry and fishing	16	Professional, scientific and technical activities	7
Manufacturing	15	Administrative and support service activities	7
Construction	15	Education	7
Transportation and storage	14	Arts, entertainment and recreation	7
Real estate activities	13	Other service activities	7
Wholesale and retail trade; repair of motor vehicles and motorcycles	12		
Accommodation and food service activities	12		

“The information contained in this document is of a general nature and has been obtained from publicly available information plus market insights. The information is not intended to address the specific circumstances of an individual or institution. There is no guarantee that the information is accurate at the date received by the recipient or that it will be accurate in the future. All parties should seek appropriate professional advice to analyze their particular situation before acting on any of the information contained herein.”

#### Alvarez & Marsal

Companies, investors and government entities around the world turn to Alvarez & Marsal (A&M) when conventional approaches are not enough to activate change. Privately-held since 1983, A&M is a leading global professional services firm that delivers business performance improvement, turnaround management and advisory services to organizations seeking to transform operations, catapult growth and accelerate results through decisive action. Our senior professionals are experienced operators, world-class consultants and industry veterans who leverage the firm's restructuring heritage to help leaders turn change into a strategic business asset, manage risk and unlock value at every stage

