

# COUNTRY EXPOSURE MODEL

Review main statistic of a exposure model and create summaries for a given Country.

```
/home/risk/venvs/py38w/lib/python3.8/site-packages/geopandas/_compat.py:111: UserWarning: The Shapely GEOS version (3.9.1-CAPI-1.14.2) is incompatible with the GEOS version PyGEOS was compiled with (3.10.1-CAPI-1.16.0). Conversions between both will be slow.
  warnings.warn(
```

```
# Parameters
country = "Chad"
```

Exposure files:  
Exposure\_Com\_Chad.csv  
Exposure\_Ind\_Chad.csv  
Exposure\_Res\_Chad.csv

## Sanity checks and formats

Chad  
Exposure/Exposure/Exposure\_Com\_Chad.csv  
Exposure/Exposure/Exposure\_Ind\_Chad.csv  
Exposure/Exposure/Exposure\_Res\_Chad.csv  
Occupants / Dwellings = 5.8  
Reference avg household size (2019) = 5.79  
Population (exposure / UN\_2021) = 0.97  
Exposure models OK

## Exposure at National level

### Summary by occupancy type

	OCCUPANTS	BUILDINGS	COST_USD	BUILDINGS_%	COST_USD_%
OCCUPANCY					
Res	16.4M	2,724,381	\$32,302.0M	98.12%	92.65%
Ind	0.0M	3,347	\$219.2M	0.12%	0.63%
Com	0.0M	48,972	\$2,342.8M	1.76%	6.72%

### Other metrics to consider

	AREA_SQM	COST_BUILDING_USD	AVG_BUILDING_AREA_SQM	AVG_COST_PER_AREA_USD
OCCUPANCY				
Total	210,589.0K	\$28,489.3M	76	\$166
Res	200,631.4K	\$26,594.6M	74	\$161
Ind	899.8K	\$143.5M	269	\$244
Com	9,057.8K	\$1,751.2M	185	\$259

## Exposure summary at Admin level 1

	COST_USD	BUILDINGS	OCCUPANTS	COST_USD_%	BUILDINGS_%	OCCUPANTS_%
NAME_1						
N'Djamena Region	\$2,921.0M	230.1K	1,362.9K	8.38%	8.29%	8.30%
Ouaddaï	\$2,484.8M	197.9K	1,169.7K	7.13%	7.13%	7.13%
Logone Oriental	\$2,472.9M	196.9K	1,164.1K	7.09%	7.09%	7.09%
Wadi Fira	\$2,281.5M	181.7K	1,074.2K	6.54%	6.55%	6.54%
Mayo-Kebbi Est	\$2,265.5M	180.5K	1,066.7K	6.50%	6.50%	6.50%
Logone Occidental	\$1,925.0M	153.4K	906.5K	5.52%	5.52%	5.52%
Mandoul	\$1,846.8M	147.2K	869.9K	5.30%	5.30%	5.30%
Chari-Baguirmi	\$1,794.5M	143.0K	845.3K	5.15%	5.15%	5.15%
Tandjilï	\$1,788.1M	142.5K	842.3K	5.13%	5.13%	5.13%
Moyen-Chari	\$1,737.9M	138.5K	818.6K	4.98%	4.99%	4.99%
Goum	\$1,666.4M	132.8K	785.0K	4.78%	4.78%	4.78%
Mayo-Kebbi Ouest	\$1,629.4M	129.9K	767.6K	4.67%	4.68%	4.68%
Hadjer-Lamis	\$1,603.9M	127.8K	755.6K	4.60%	4.60%	4.60%
Batha	\$1,472.7M	117.4K	694.0K	4.22%	4.23%	4.23%
Sila	\$1,320.2M	105.3K	622.3K	3.79%	3.79%	3.79%
Lac	\$1,319.0M	105.2K	621.7K	3.78%	3.79%	3.79%
Kanem	\$1,167.4M	93.1K	550.6K	3.35%	3.35%	3.35%
Bahr el Gazel	\$902.7M	72.1K	426.0K	2.59%	2.60%	2.60%
Salamat	\$875.9M	69.9K	413.4K	2.51%	2.52%	2.52%
Borkou	\$507.3M	40.6K	240.1K	1.45%	1.46%	1.46%
Ennedi-Est	\$469.4M	37.6K	222.3K	1.35%	1.35%	1.35%
Ennedi-Ouest	\$276.9M	22.3K	131.5K	0.79%	0.80%	0.80%
Tibesti	\$134.7M	10.9K	64.3K	0.39%	0.39%	0.39%

## Exposure by simplified taxonomy

Adding `MACRO\_TAXO` column

	COST_USD	BUILDINGS	OCCUPANTS	COST_USD_%	BUILDINGS_%	OCCUPANTS_%
MACRO_TAXO						
ADO/E	\$22,675.0M	2,065,941	12,083.7K	65.04%	74.40%	73.62%
MUR	\$7,246.7M	451,412	2,694.4K	20.79%	16.26%	16.41%
RC	\$2,195.7M	54,003	418.3K	6.30%	1.94%	2.55%
MCF	\$1,760.4M	64,834	405.1K	5.05%	2.33%	2.47%
W	\$551.7M	55,234	322.2K	1.58%	1.99%	1.96%
OT	\$354.9M	84,400	490.8K	1.02%	3.04%	2.99%
S	\$79.5M	876	0.0K	0.23%	0.03%	0.00%

## Exposure by taxonomy

Showing only taxonomies that represent 90% of the total `COST\_USD`

	COST_USD	BUILDINGS	COST_USD_%	BUILDINGS_%
MACRO_TAXO	TAXONOMY			
	E+ETO/LWAL+CDN/H:1/RES	\$7,445.7M	885,285	23.83%
ADO/E	MUR+ADO/LWAL+CDN/H:2/RES	\$7,107.6M	416,937	22.75%
	MUR+ADO/LWAL+CDN/H:1/RES	\$4,315.9M	427,625	13.81%
MUR	MUR+CL/LWAL+CDN/H:2/RES	\$1,670.9M	88,218	5.35%
ADO/E	EWV/LN+CDN/H:1/RES	\$1,234.1M	293,464	3.95%
MUR	MUR+CL/LWAL+CDN/H:1/RES	\$1,014.6M	90,476	3.25%
ADO/E	MUR+ADO/LWAL+CDN/HBET:3-6/RES	\$939.7M	5,622	3.01%
MUR	MUR+STRUB/LWAL+CDN/H:2/RES	\$901.6M	59,496	2.89%
RC	CR/LFINF+CDL/H:3/RES	\$786.1M	19,123	2.52%
ADO/E	MUR+ADO/LWAL+CDN/H:2/COM	\$767.9M	12,170	2.46%
	MUR+ADO/LWAL+CDN/H:1/COM	\$747.9M	24,338	2.39%
MCF	MCF+CL/LWAL+CDL/H:2/RES	\$715.5M	25,188	2.29%
RC	CR/LFINF+CDL/H:2/RES	\$639.9M	23,933	2.05%
MUR	MUR+STDRE/LWAL+CDN/H:2/RES	\$604.2M	31,902	1.93%
	MUR+STRUB/LWAL+CDN/H:1/RES	\$547.4M	61,022	1.75%
MCF	MCF+CL/LWAL+CDL/H:1/RES	\$434.5M	25,831	1.39%
MUR	MUR+STDRE/LWAL+CDN/H:1/RES	\$366.9M	32,720	1.17%
RC	CR/LFINF+CDL/HBET:4-7/RES	\$350.8M	878	1.12%
OT	MATO/RES	\$329.2M	78,278	1.05%
MUR	MUR+CB/LWAL+CDN/H:2/RES	\$326.1M	17,220	1.04%

--