In [1]:
```
import numpy as np
import pandas as pd
```

In [2]:
```
import matplotlib.pyplot as plt
import seaborn as sns
```

In [3]:
```
%matplotlib inline
```

In [4]:
```
data1 = pd.read_csv("Emission_Rate.csv")
```

In [5]:
```
data1.shape
```

Out[5]: (29, 14)

In [6]:
```
data1.head()
```

Out[6]:

	Year	Energy	Electricity/Heat	Agriculture	Manufacturing/Construction	Transportation	Industrial Processes	Other Fuel Combustion	Building	W
0	2018	2424.58	1241.34	718.70	571.38	305.33	148.54	133.28	118.84	1
1	2017	2307.82	1157.77	709.50	558.99	291.23	130.52	131.14	113.75	1
2	2016	2187.89	1097.81	703.83	525.10	269.40	130.61	128.45	111.86	1
3	2015	2153.56	1103.23	705.81	503.78	257.75	130.19	125.72	107.82	1
4	2014	2144.78	1123.44	699.71	500.41	235.75	125.52	125.33	103.75	1

In [7]:
```
data1.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 29 entries, 0 to 28
Data columns (total 14 columns):
 #   Column                          Non-Null Count  Dtype
---  ------                          --------------  -----
 0   Year                            29 non-null     int64
 1   Energy                          29 non-null     float64
 2   Electricity/Heat                29 non-null     float64
 3   Agriculture                     29 non-null     float64
 4   Manufacturing/Construction      29 non-null     float64
 5   Transportation                  29 non-null     float64
 6   Industrial Processes            29 non-null     float64
 7   Other Fuel Combustion           29 non-null     float64
 8   Building                        29 non-null     float64
 9   Waste                           29 non-null     float64
 10  Fugitive Emissions              29 non-null     float64
 11  Bunker Fuels                    29 non-null     float64
 12  Land-Use Change and Forestry    29 non-null     float64
 13  Total_Emission                  29 non-null     float64
dtypes: float64(13), int64(1)
memory usage: 3.3 KB
```

In [8]:
```
data1.describe()
```

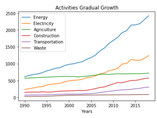
Out[8]:

	Year	Energy	Electricity/Heat	Agriculture	Manufacturing/Construction	Transportation	Industrial Processes	Other F Combust
count	29.000000	29.000000	29.000000	29.000000	29.000000	29.000000	29.000000	29.000
mean	2004.000000	1322.347586	652.068621	646.114828	292.728276	144.653448	76.999655	104.232
std	8.514693	572.389663	308.092928	48.159981	145.779803	76.374038	37.354860	20.257
min	1990.000000	608.930000	231.920000	566.530000	149.110000	64.360000	26.450000	70.590
25%	1997.000000	864.550000	402.100000	607.060000	173.130000	85.800000	46.360000	88.800
50%	2004.000000	1131.130000	584.730000	628.330000	208.250000	108.050000	68.610000	104.050
75%	2011.000000	1792.530000	860.230000	695.630000	431.780000	209.300000	111.410000	125.720
max	2018.000000	2424.580000	1241.340000	718.700000	571.380000	305.330000	148.540000	133.280

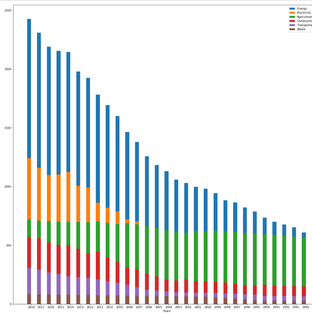
In [9]:
```
x = data1["Year"]
y1 = data1["Energy"]
y2 = data1["Electricity/Heat"]
y3 = data1["Agriculture"]
y4 = data1["Manufacturing/Construction"]
y5 = data1["Transportation"]
y6 = data1["Other Fuel Combustion"]
y7 = data1["Building"]
y8 = data1["Waste"]
y9 = data1["Fugitive Emissions"]
y10 = data1["Bunker Fuels"]
y11 = data1["Land-Use Change and Forestry"]
```

In [10]:
```
plt.plot(x,y1,label="Energy")
plt.plot(x,y2,label="Electricity")
plt.plot(x,y3,label="Agriculture")
plt.plot(x,y4,label="Construction")
plt.plot(x,y5,label = "Transportation")
plt.plot(x,y8,label="Waste")
plt.legend()
plt.xlabel("Years")
plt.title("Activities Gradual Growth")
```

Out[10]: Text(0.5, 1.0, 'Activities Gradual Growth')

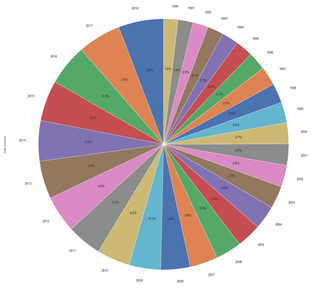


In [11]:
```
f = plt.figure()
f.set_figwidth(20)
f.set_figheight(20)
N=29
width=0.4
ind = np.arange(N)
plt.bar(ind,height=y1,label ="Energy",width=width)
plt.bar(ind,height=y2,label="Electricity",width=width)
plt.bar(ind,height=y3,label="Agriculture",width=width)
plt.bar(ind,height=y4,label="Construction",width=width)
plt.bar(ind,height=y5,label = "Transportation",width=width)
plt.bar(ind,height=y8,label="Waste",width=width)
plt.xticks(ind + width / 2,x)
plt.xlabel("Years")
plt.legend()
plt.legend(loc='best')
plt.show()
```



In [129]:
```
plt.figure(figsize=(50,30))
# plot chart
ax1 = plt.subplot(121, aspect='equal')
data1.plot(kind='pie', y = 'Total_Emission', ax=ax1, autopct='%3.1f%%',
   startangle=90, shadow=False, labels=data1['Year'], legend = False, fontsize=14)
```

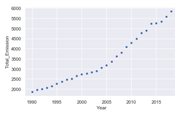
Out[129]: <matplotlib.axes._subplots.AxesSubplot at 0x19511d96dc8>



In [ ]:
```
```

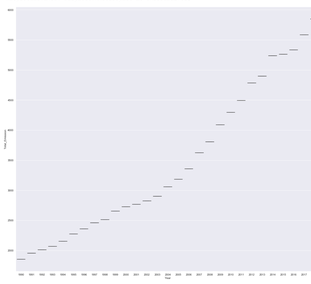
In [130]:
```
sns.scatterplot(x=data1["Year"],y=data1["Total_Emission"])
```

Out[130]: <matplotlib.axes._subplots.AxesSubplot at 0x19512457a48>



In [132]:
```
f = plt.figure()
f.set_figwidth(20)
f.set_figheight(20)
sns.boxplot(x=data1["Year"],y=data1["Total_Emission"])
```

Out[132]: <matplotlib.axes._subplots.AxesSubplot at 0x19512d17688>



In [ ]:
```
```