



Country Analysis Ranking & Profile

ABDAN

*Nuclear Energy and Nuclear
Medicine*

Market Analysis Division
Market Intelligence Department

About Apex-Brasil



The Brazilian Trade and Investment Promotion Agency (Apex-Brasil) works to promote Brazilian products and services abroad and to attract foreign investment to strategic sectors of the Brazilian economy.

Scope of Activities



Market Intelligence



Entrepreneurial Training



Internationalization Strategies



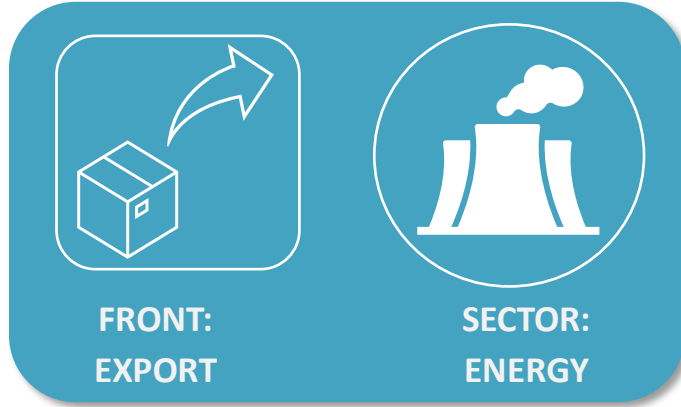
Business and Image Promotion



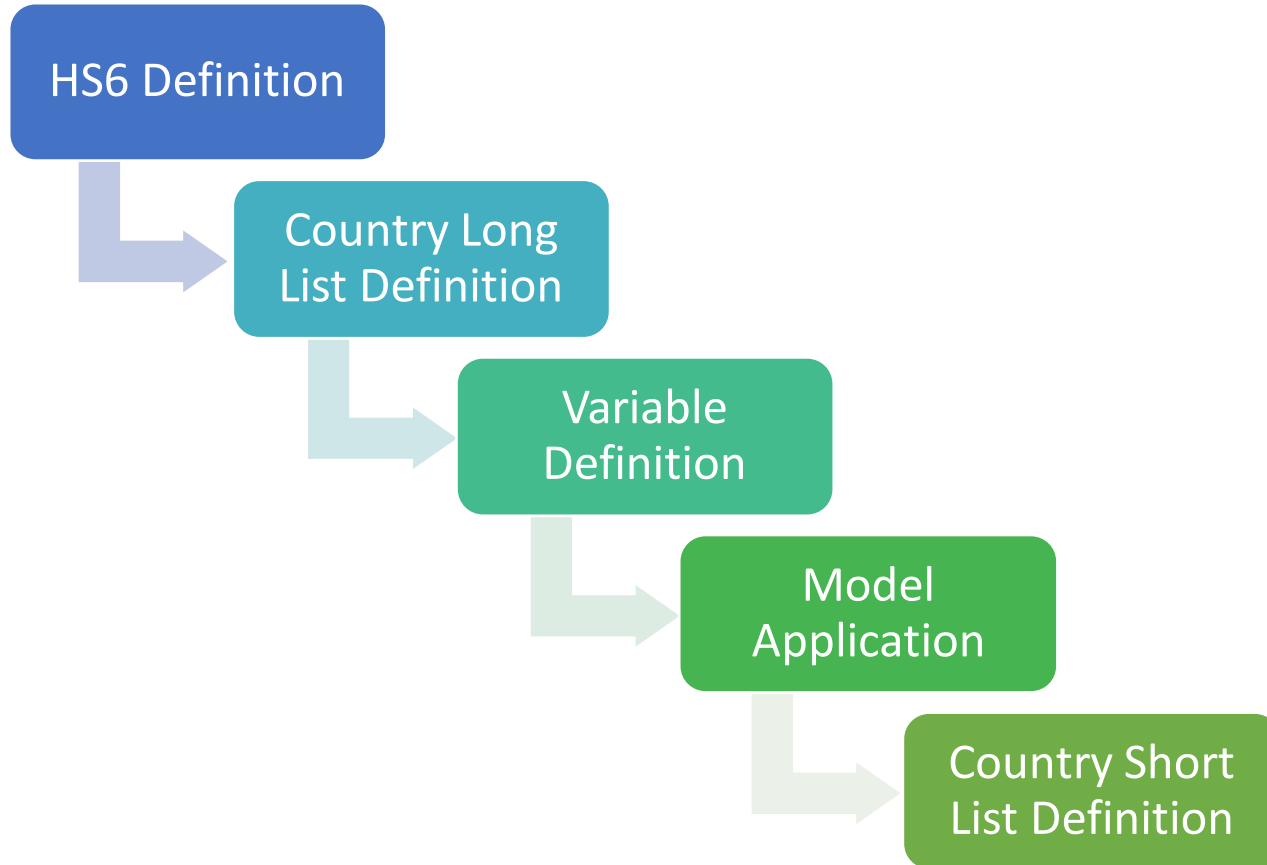
Investment Attraction

Country Ranking & Profile - Work Fronts

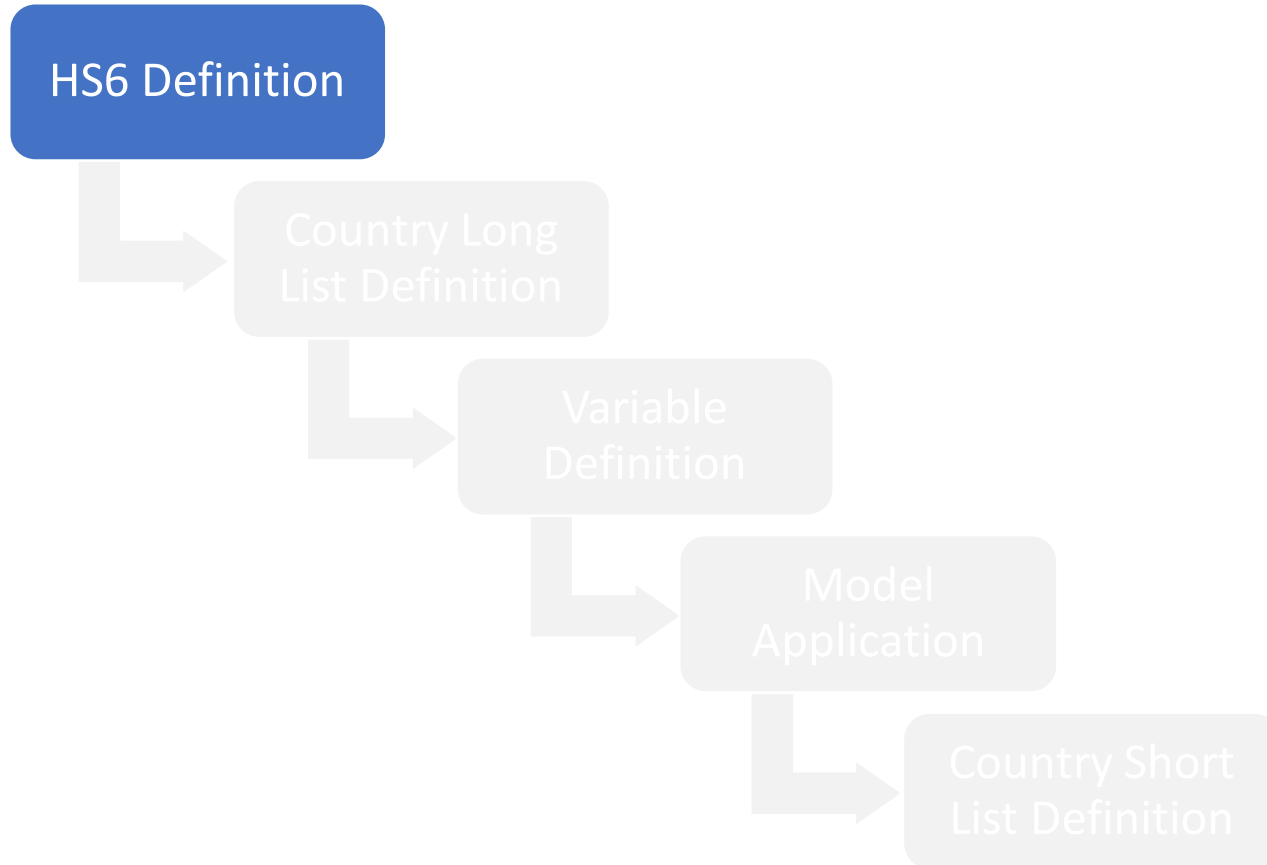
4 MAIN FRONTS



Country Ranking & Profile - Steps



Country Ranking & Profile - Steps



Country Ranking & Profile – HS6 Definition



HS6 – Nuclear Energy

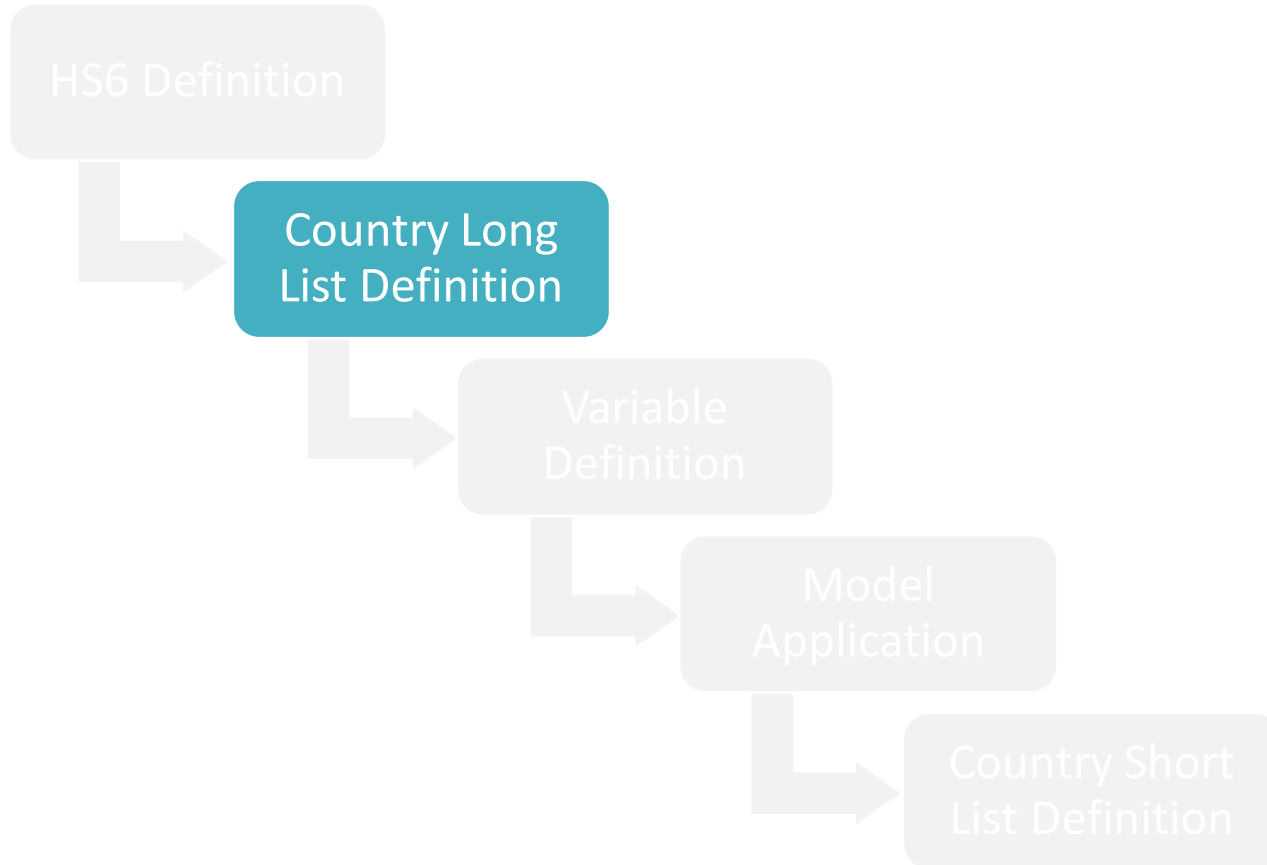
HS6	Description
284410	Natural uranium and its compounds; alloys, dispersions, ceramic products and mixtures
284420	Uranium enriched in U 235 and its compounds; plutonium and its compounds; alloys, dispersions, ceramic products and mixtures
284430	Uranium depleted in U 235 and its compounds; thorium and its compounds; alloys, dispersions, ceramic products and mixtures
284440	Radioactive elements, isotopes and compounds, and alloys and dispersions, ceramic products and mixtures, radioactive residues
284450	Spent irradiated fuel elements cartridges of nuclear reactors
840110	Nuclear reactors
840120	Machinery and devices for isotopic separation and parts thereof
840130	Fuel elements cartridges, non-irradiated, in casing with handling fixtures, for nuclear reactors
840140	Parts of nuclear reactors



HS6 – Nuclear Medicine

HS6	Description
901813	Magnetic resonance imaging devices
901814	Scintigraphic devices
902212	Computer tomography devices
902219	devices based on the use of X-rays (other than for medical, surgical, dental or veterinary uses)
902221	devices based on the use of alpha, beta or gamma radiations, for medical, surgical, dental or veterinary uses
902290	X-ray generators other than X-ray tubes, control panels and desks, screens and accessories for devices of heading 9022

Country Ranking & Profile - Steps



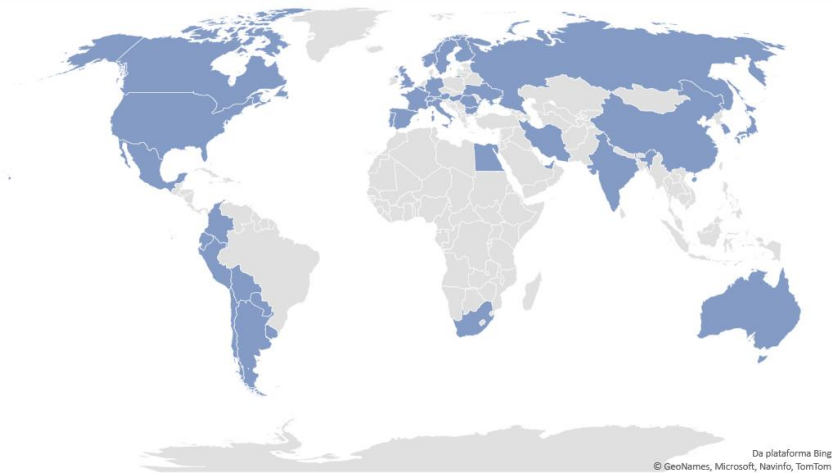
Country Ranking & Profile – Countries Long List Definition

Use of 2 Main Variables + Qualitative Experience to choose the top 38 countries for the complete analysis:

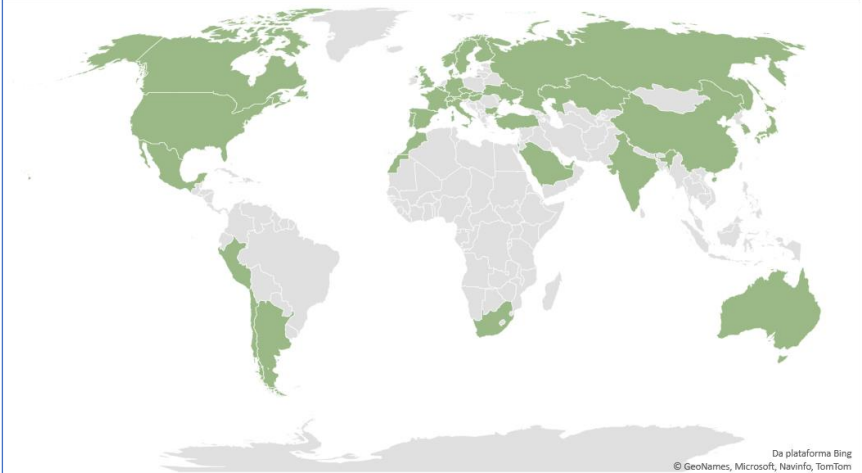
- Brazilian exports to each country
- Total imports of each country
- Brazilian imports from each country
- Total exports to each country



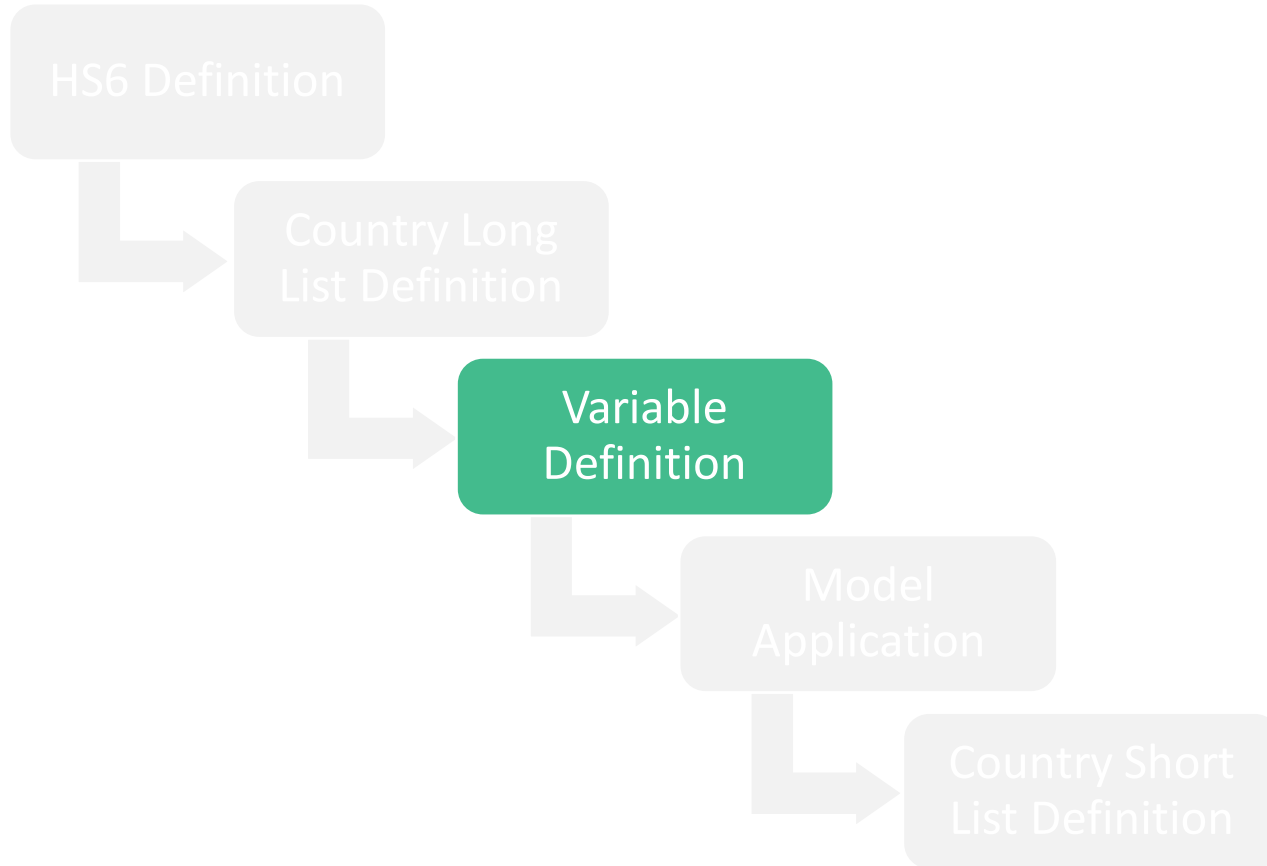
Export



Investment Attraction



Country Ranking & Profile - Steps



Country Ranking & Profile – Variable Definition

5 Main Performance Blocks (Example for the Export Front):

Trade Volume



Trade Growth



Competition



Macroeconomic



Sector-Specific



Total Sector Imports in 2018 (US\$)



Brazilian Exports in 2018 (US\$)



Relative Symmetric Import Vocation



Brazilian Market-Share in 2018 (%)

Country Ranking & Profile – Variable Definition

5 Main Performance Blocks (Example for the Export Front):

Trade Volume



Trade Growth



Competition



Macroeconomic



Sector-Specific



Compound Annual Growth Rate of
Total Imports 2014-2018 (%)



Compound Annual Growth Rate of
Brazilian Exports 2014-2018 (%)



Gross Variation in Sector Imports
2014-2018 (US\$)



Gross Variation of Brazilian
Exports 2014-2018 (US\$)

Country Ranking & Profile – Variable Definition

5 Main Performance Blocks (Example for the Export Front):

Trade Volume



Trade Growth



Competition



Macroeconomic



Sector-Specific



13 variables, 6 of which count for the calculation of the Export Front and 5 for the Investment Attraction Front:



Exports of the Target Country in 2018 (US\$)



CAGR of Exports from the Target Country in 2018 (%)



Revealed Symmetric Comparative Advantage (RSCA)



Main Competitor Exports to the Target Country in 2018 (US\$)



CAGR of Exports from the Main Competitor to the Target Country 14-18 (%)



Main Competitor Market-Share in 2018 (%)

Country Ranking & Profile – Variable Definition

5 Main Performance Blocks (Example for the Export Front):

Trade Volume



Trade Growth



Competition



Macroeconomic



Sector-Specific



14 variables, 14 of which count for the calculation of the Export Front and 12 for the Investment Attraction Front:



GDP PPP 2019 (Value, CAGR and Projection)
and GDP per capita PPP 2019 (US\$)



Total Population, Urban Population (%)
2019 and its Growth Projection (17-21)



Inflation 2019 (%)



Consumer Spending 2019 (US\$ million),
Consumer Spending/GDP (%) and CAGR



Logistics Performance Index 2019 and
Trading Across Borders Index 2019



Gross fixed capital formation 2019 (US\$
million), GFCF/GDP (%) and CAGR

Country Ranking & Profile – Variable Definition

5 Main Performance Blocks:

Trade Volume



Trade Growth



Competition



Macroeconomic



Sector-Specific



45 variables, 19 of which count for the calculation of the Export Front and 39 for the calculation of the Investment Attraction Front, such as:



Net Energy Consumption 2019 (TWh) and
CAGR 2014-2019 (%)



Generation of Nuclear Energy (TWh) and
Generation of Thermal Energy (TWh)



Final Consumption of Energy by Industry,
Transport, Commerce and Residence (Mtoe)



Number and Capacity of Nuclear Reactors
Under Construction 2019 (MW)



Energy Price for Industrial Users 2019 and
for Residential Users 2019 (US\$/KWh)



Nuclear Waste: Spent Fuel Arising
2019

Country Ranking & Profile – Variable Definition

5 Main Performance Blocks:

Trade Volume



Trade Growth



Competition



Macroeconomic



Sector-Specific



5 variables for the Export Front and 14 for the Investment Attraction Front, such as:



Diagnostic Imaging Total Sales 2019 (US\$)



Imaging Parts and Accessories Sales 2019 (US\$)



Radiation Apparatus Sales 2019 (US\$)



Electrocardiographs Exports 2018 (US\$)

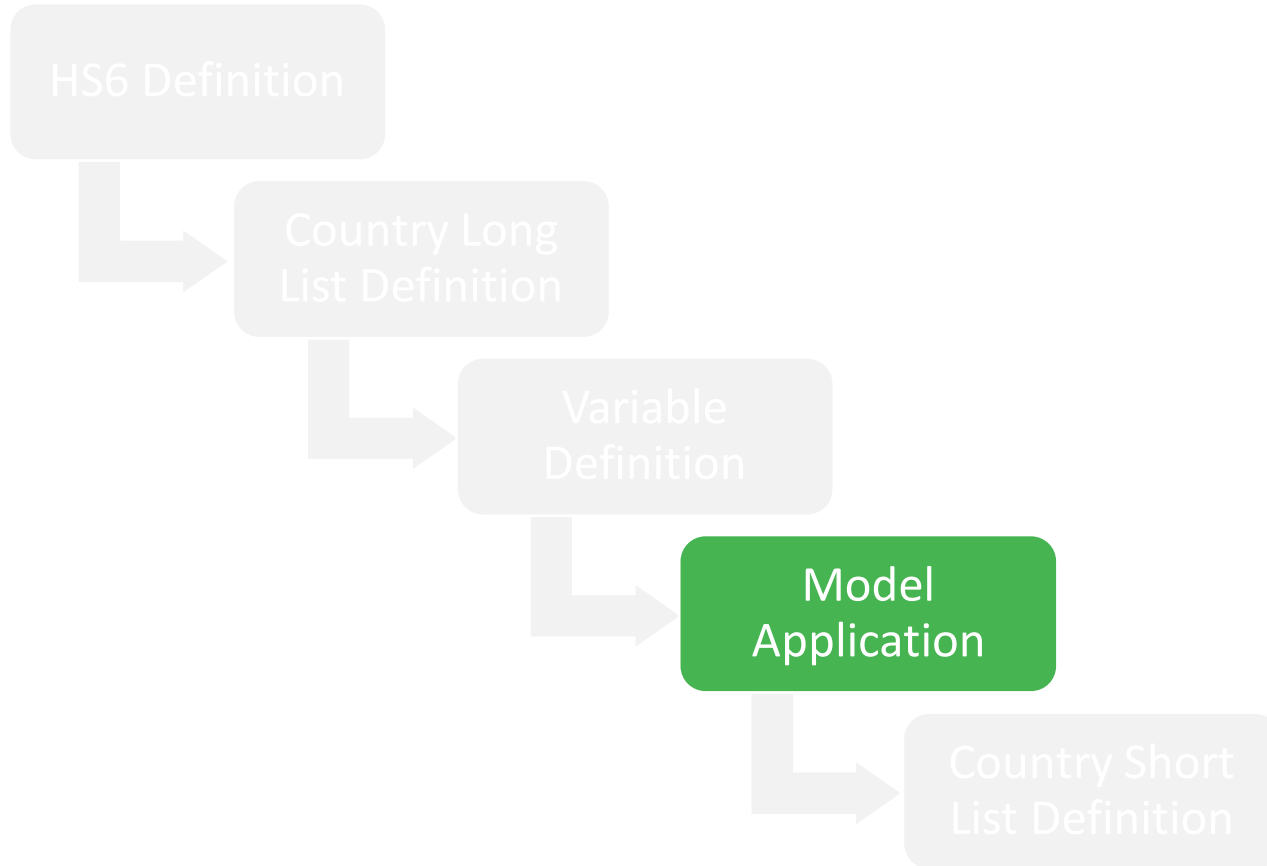


Scintigraphic Apparatus Sales 2019 (US\$)

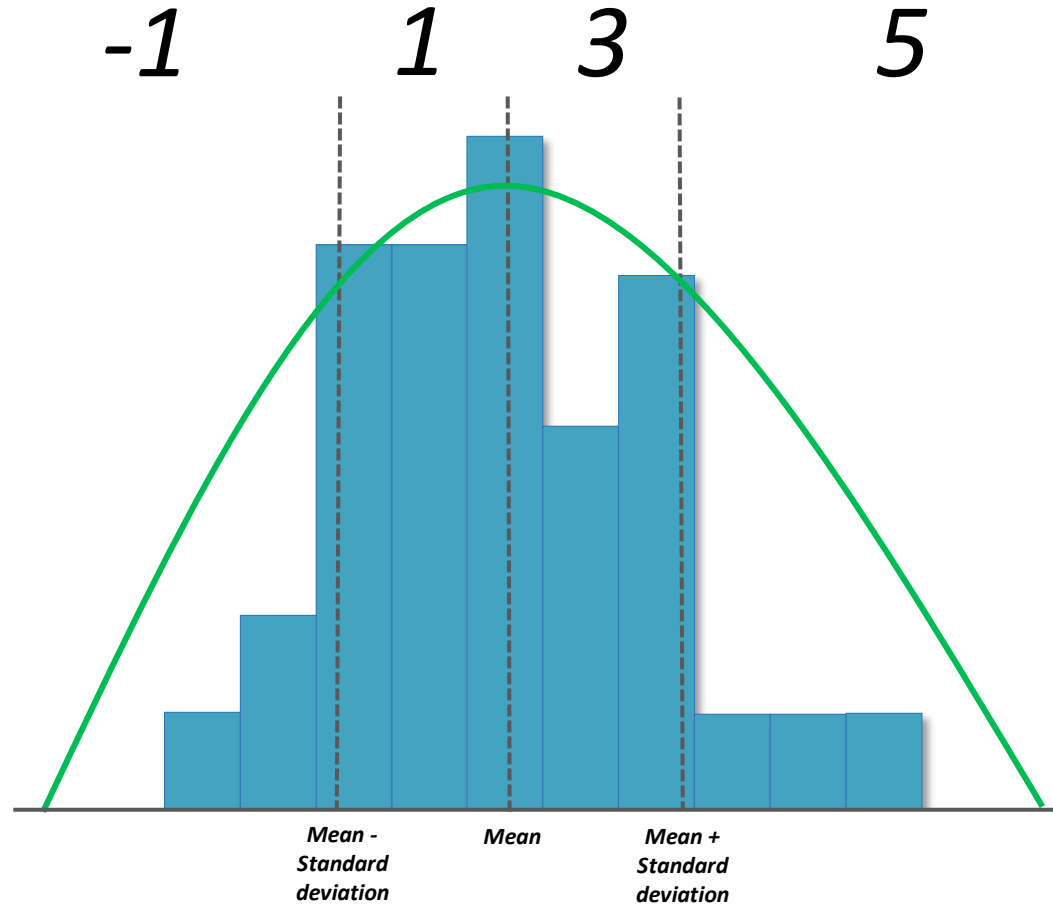


Contrast Media Exports 2018 (US\$)

Country Ranking & Profile - Steps



Country Ranking & Profile – Model Application



Country Ranking & Profile – Model Application



33 Export. Medicine

46 Invest. Medicine

47 Export. Energy

71 Invest. Energy

Variables



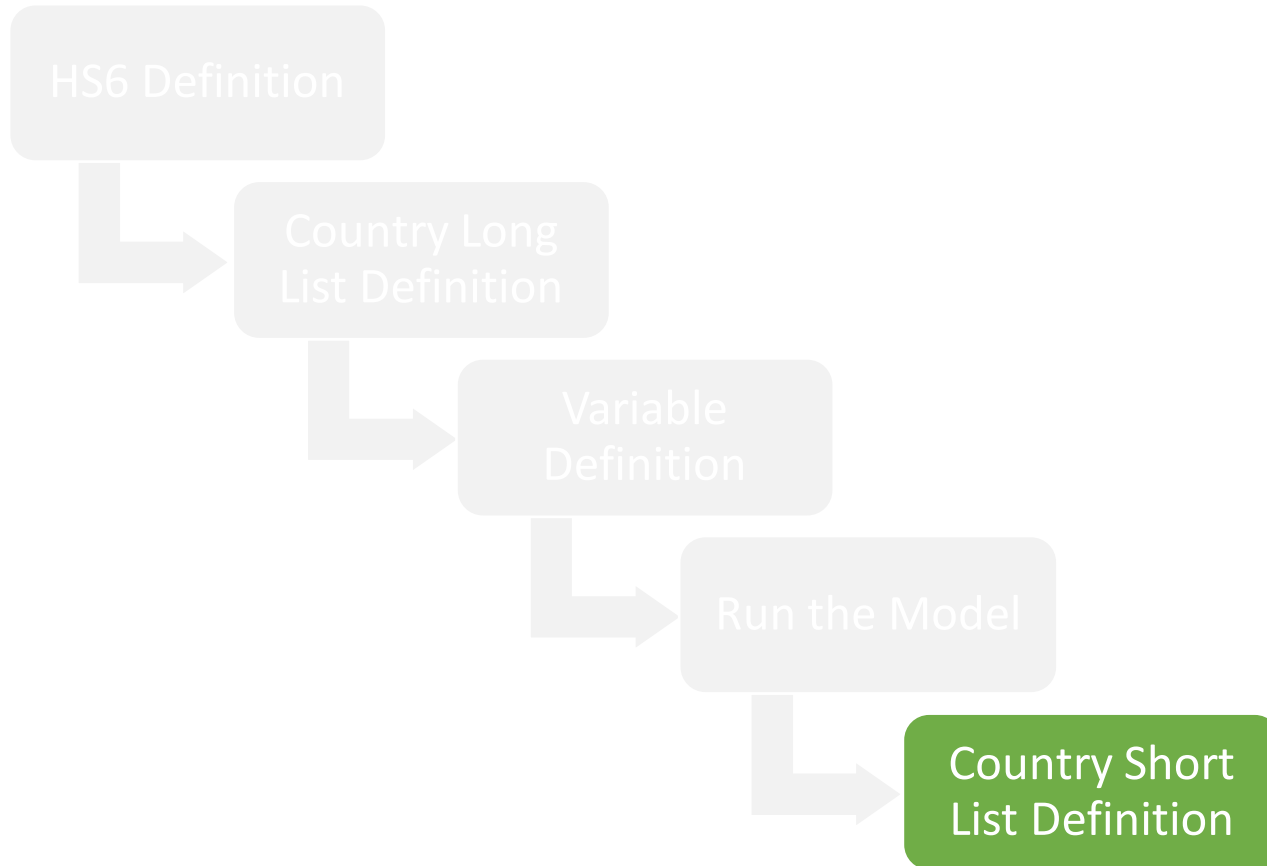
38 Countries

Info País			Bloco Comércio - Valor e Bloco Comércio Crescimento					
cod_pais_comtrade	País	Continente	US\$	COMTRADE	%	COMTRADE	US\$	COMTRADE
			COMTRADE	COMTRADE	COMTRADE	COMTRADE	COMTRADE	COMTRADE
			Direta	Direta	Direta	Direta	Direta	Direta
			Importações totais do Setor 2018	Nota	CMA das Importações Totais 2014-2018	Nota	Variação das Importações do Setor 2014-2018	Nota
32	Argentina	América do Sul	102.320.162	1	-1,77	1	-7.594.190	3
36	Austrália	Ásia e Oceania	299.005.201	3	0,83	3	9.762.839	3
40	Áustria	União Europeia	105.319.376	1	-0,95	3	-4.092.708	3
56	Bélgica	União Europeia	404.466.723	3	-3,25	1	-57.223.138	3
68	Bolívia	América do Sul	9.082.174	-1	-9,87	-1	-4.682.268	3
100	Bulgária	União Europeia	88.253.584	1	-5,24	1	-21.211.120	3
124	Canadá	América do Norte	576.209.302	3	-6,14	-1	-166.108.655	1
152	Chile	América do Sul	39.489.105	-1	-5,17	1	-9.336.115	3
156	China	Ásia e Oceania	5.227.424.935	5	-0,43	3	-91.797.898	1
170	Colômbia	América do Sul	55.960.237	1	-3,59	1	-8.808.982	3
218	Equador	América do Sul	14.710.480	-1	-0,82	3	-489.852	3
246	Finlândia	União Europeia	282.102.787	3	2,03	3	21.784.744	3
251	França	União Europeia	1.877.341.131	5	-20,60	-1	-2.847.023.096	-1
276	Alemanha	União Europeia	2.473.493.845	5	-1,64	1	-169.265.746	1
348	Hungria	União Europeia	221.497.354	1	-1,26	1	-11.534.270	3
364	Irã	Oriente Médio	97.647.250	1	7,45	3	24.380.583	3
381	Itália	União Europeia	487.936.343	3	2,33	3	42.887.069	3
392	Japão	Ásia e Oceania	1.477.616.405	5	-3,28	1	-211.213.629	1
410	Coreia do Sul	Ásia e Oceania	1.156.414.313	3	-0,07	3	-3.380.316	3
484	México	América do Norte	322.282.909	3	3,78	3	44.495.860	
484	México	América do Norte	355.585.808	3	3,18	3	44.495.860	
410	Coreia do Sul	Ásia e Oceania	1.128.414.313	3	-0,01	3	-3.380.316	3
381	Itália	Ásia e Oceania	1.433.616.405	3	-3,38	3	-211.213.629	1

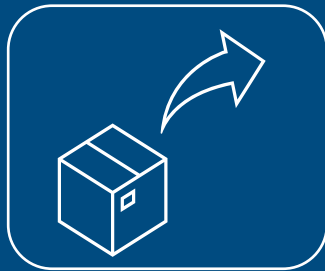
4 Concepts



Country Ranking & Profile - Steps



INSIGHTS



**FRONT:
EXPORTS**



**VERTICAL:
MEDICINE**

Country Ranking & Profile – Country Short List Definition



USA

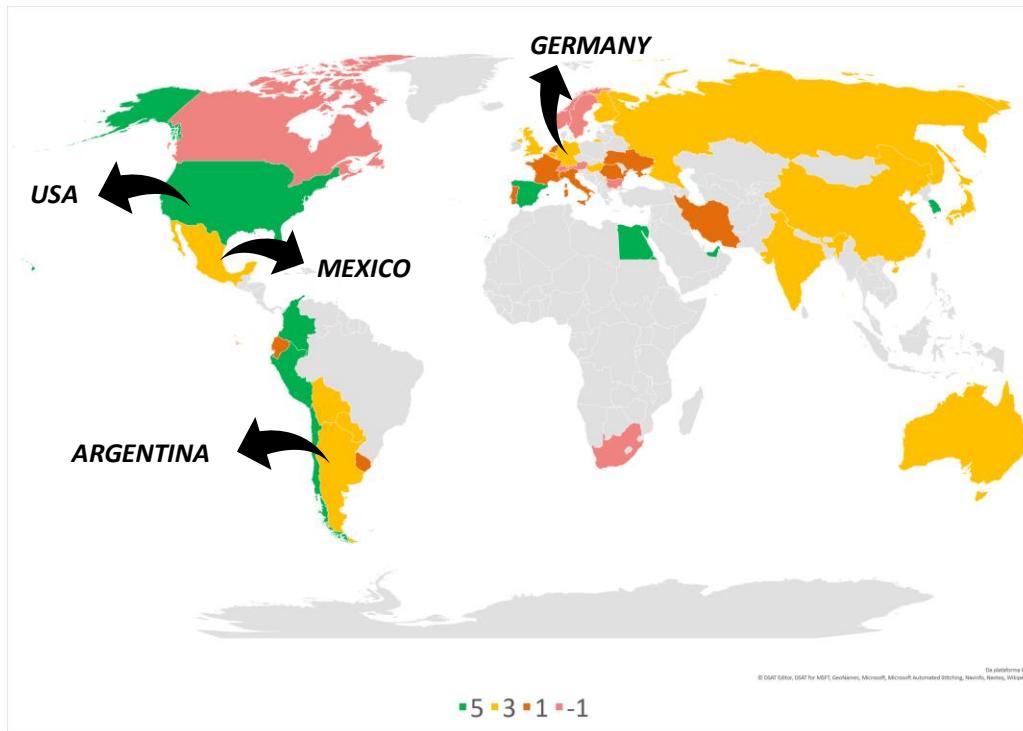
- Highest total imports in the sector
- Highest Brazilian exports in the sector
- Biggest diagnostic imaging total sales and radiation apparatus total sales
- One of the biggest drops in sector imports since 2014
- 2nd largest exporter in the sector



Argentina

- Is not a major exporter in the sector
- Decrease in exports between 2014-2018
- Its main supplier, the USA, dominates 30% of the market
- USA has been growing at a rate of 15% per year in the exports to the country

Evaluation of opportunities by country



Germany

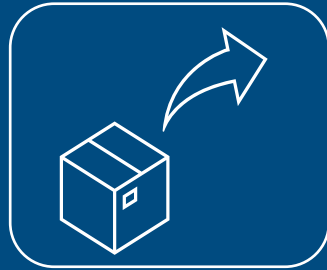
- 3rd largest importer in the sector
- Brazilian exports had the 4th highest CAGR between 2014 and 2018
- Largest exporter in the sector
- Leads exports in relation to contrast media and radiation apparatus



Mexico

- Stands out for its consistency
- Good performance in the Performance Blocks: Trade Value, Trade Growth and Sector-Specific
- USA dominates its market, with 50% market-share and CAGR of 2% per year

INSIGHTS



FOCUS:
EXPORTS



VERTICAL:
ENERGY

Country Ranking & Profile – Country Short List Definition



USA

- 2nd country with the highest energy consumption in the world, mainly in the consumption originated by transport and commerce
- 2nd main importer in the sector
- 6th main exporter in the sector
- Canada dominates 34% of the country's market



Argentina

- 1st in relation to Brazilian nuclear energy exports and growth
- Its total sector imports, however, have been suffering a significant fall, of 26%
- Negative GDP variation, low GFCF and low logistics performance index



Germany

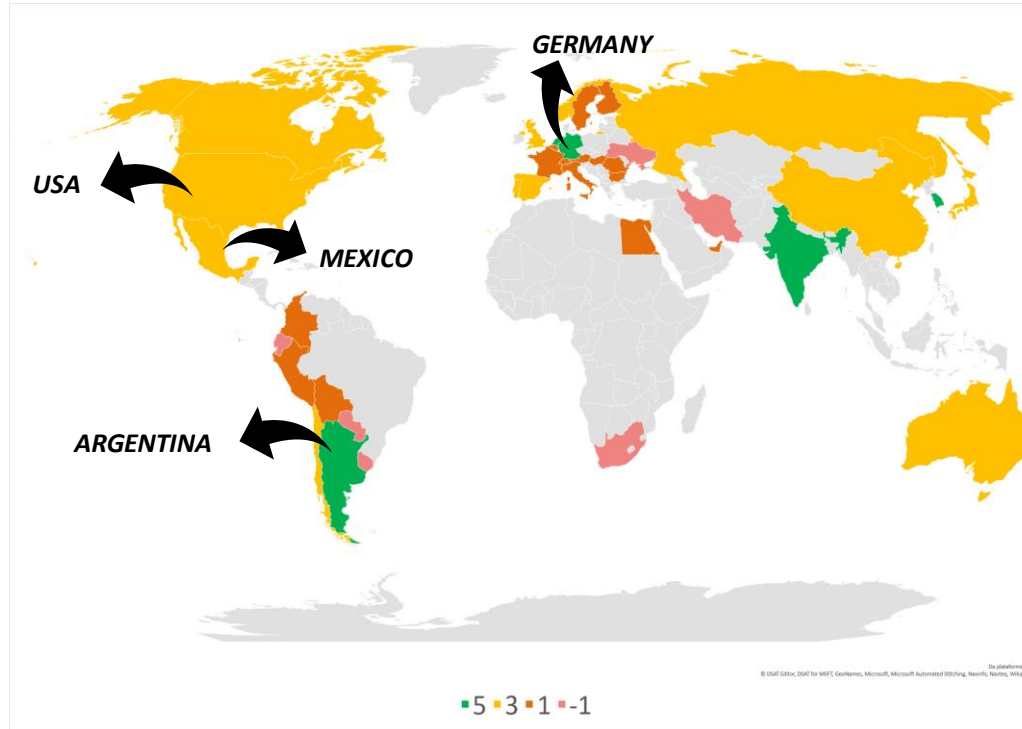
- 5th largest importer in the sector
- 3rd largest exporter in the world
- 5th largest final energy consumption by commerce and residences
- Brazilian exports to the country are very low
- It has the greatest logistical performance index



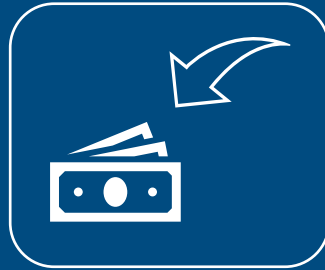
Mexico

- Interesting CAGR in its total energy consumption, of 3.6%
- Not a major exporter in the sector
- Brazilian exports there are negligible
- Dominated, in this sector, by the USA, which has 85% of the market

Evaluation of opportunities by country



INSIGHTS



**FRONT:
INVESTMENTS**



**VERTICAL:
MEDICINE**

Country Ranking & Profile – Country Short List Definition



USA

- Leader of sales in scanners CT, diagnostic imaging, radiation apparatus and scintigraphic apparatus
- Largest stock of foreign direct investment in the world and in Brazil
- 2nd largest total exporter and 2nd supplier to Brazil in the sector
- Largest negative variation in imports from Brazil



Canada

- 4th largest electrocard. exporter
- 5th largest contrast media exporter
- 6th highest variation in the FDI stock in the world
- 8th greatest FDI stock in the world



United Kingdom

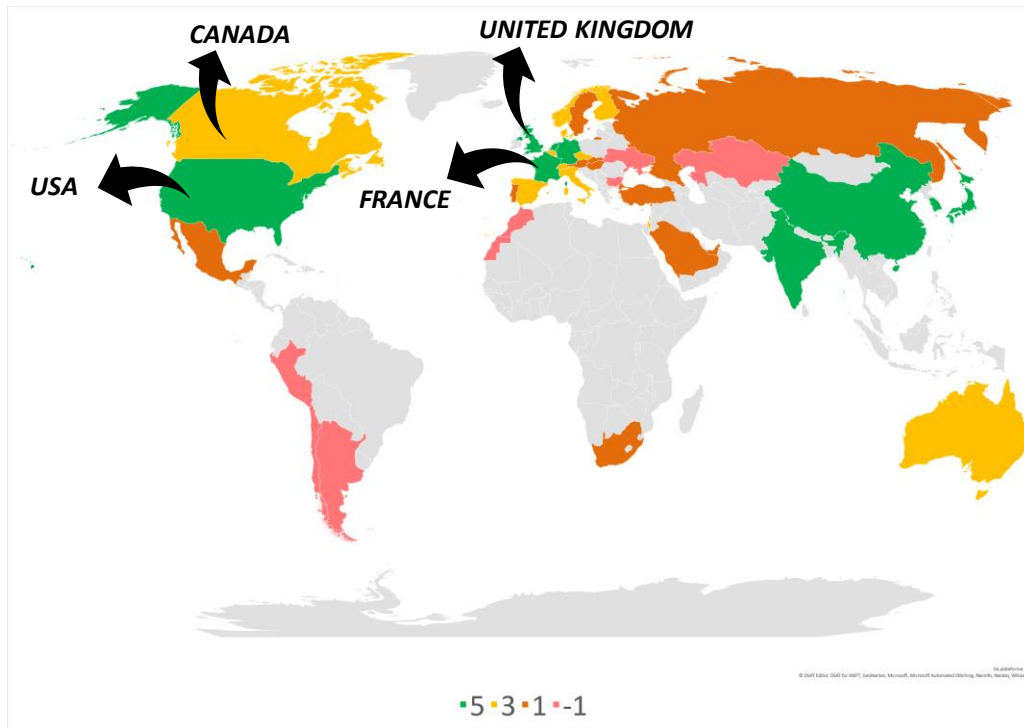
- 5th largest Brazilian buyer in the segment and 6th largest total exporter in the sector
- 4th largest FDI stock in the world
- 8th highest performance logistics index
- 6th biggest sales of diagnostic imaging and imaging parts and accessories



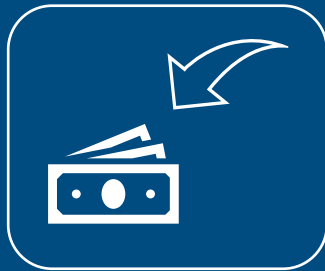
France

- 3th major supplier of contrast media
- 4th major exporter of imaging parts and accessories
- 5th major exporter of scintigraphic apparatus
- 6th major exporter of radiation apparatus and diagnostic imaging

Evaluation of opportunities by country



INSIGHTS



**FRONT:
INVESTMENTS**



**VERTICAL:
ENERGY**

Country Ranking & Profile – Country Short List Definition



USA

- Largest FDI stock in the world and in Brazil
- Largest nuclear energy capacity and nuclear energy generation
- Largest number of nuclear reactors in operation and highest total capacity
- Largest total market size for processing of nuclear fuel



Canada

- 2nd largest exporter of the sector
- 2nd largest nuclear fuel exporter
- 2nd largest nuclear waste: spent fuel arising
- 3rd largest producer of nuclear fuel



United Kingdom

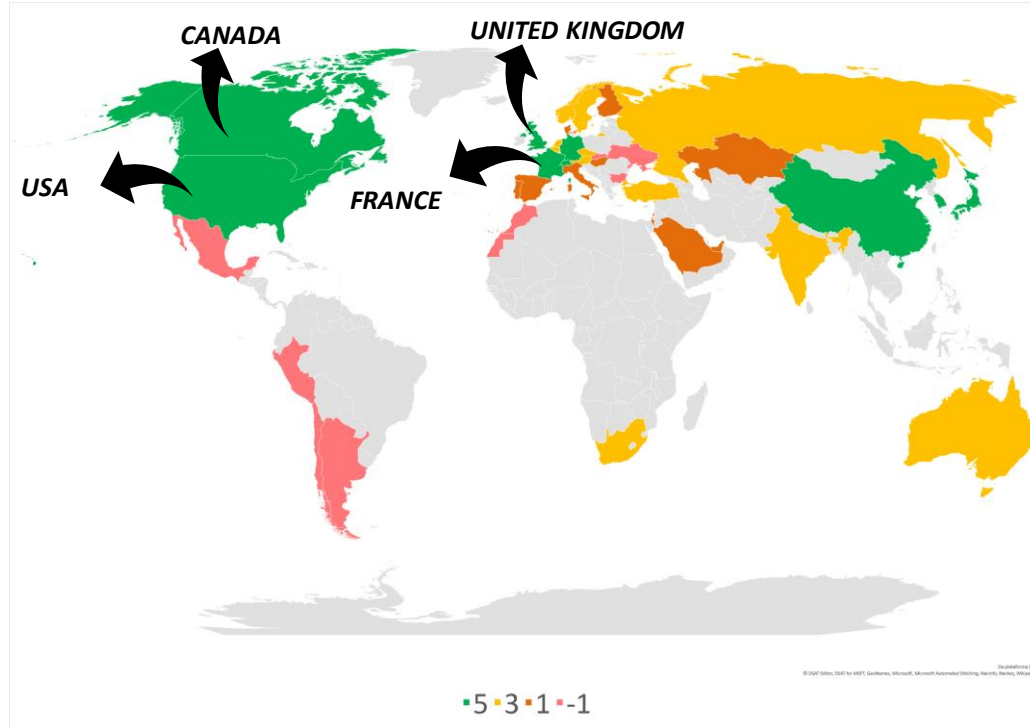
- 5th highest final energy consumption by residences
- 5th highest price of industrial electricity
- 6th largest total market size for processing of nuclear fuel
- Highest negative variation in Brazilian imports



France

- 2nd largest number of nuclear reactors in operation and 2nd highest total capacity
- 2nd largest nuclear energy total capacity and nuclear energy generation
- 5th largest total export and 5th Brazilian destination of exports in the sector

Evaluation of opportunities by country



THANK YOU!

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