

Brazilian Ethanol Business



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Entry and Expansion Strategies of MNEs

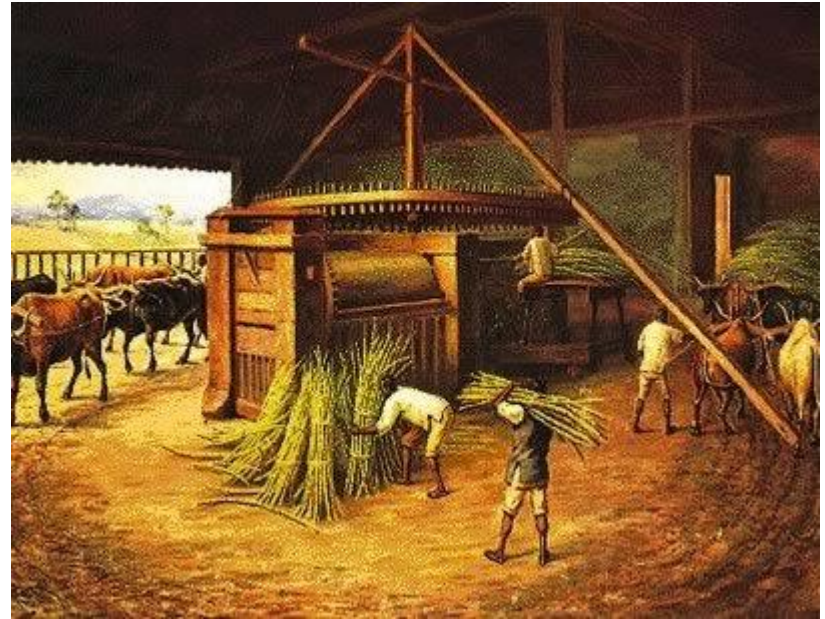
- Phase 1: Exports and foreign sourcing;
- Phase 2: Investment in marketing and distribution;
- Phase 3: Foreign production of intermediate goods and services;
- Phase 4: Deepening and widening of the value-added network;
- Phase 5: The integrated network multinational.

The Multinational Enterprises and the Global Economy
by John Dunning and Sarianna Lundan (2008).



Sugar Cane in Brazilian History

- The sugar industry, confined primarily to the Northeast, was the principal source of Brazilian wealth from the 16th to the 18th century;
- Sugar production called for major investments in land, labour (i.e., slaves), and machinery; consequently, a relatively small number of wealthy, plantation-owning families controlled the industry.



Sugarcane Plant

- (*Saccharum officinarum*), perennial grass of the Gramineae family cultivated in tropical and subtropical regions worldwide for its sweet sap;
- Sugarcane probably originated in what is now New Guinea;
- Asia is now the largest producer, followed by South America and North America.



Sugarcane Culture

- Old agricultural practices make extensive use of labor;
- Use of fire before harvesting;
- Difficult work conditions;









Sugarcane Culture

Modern Production Systems

- Intensive use of machinery;
- Mechanical harvesting;
- Specialized varieties of sugarcane;
- Biological pests control systems.



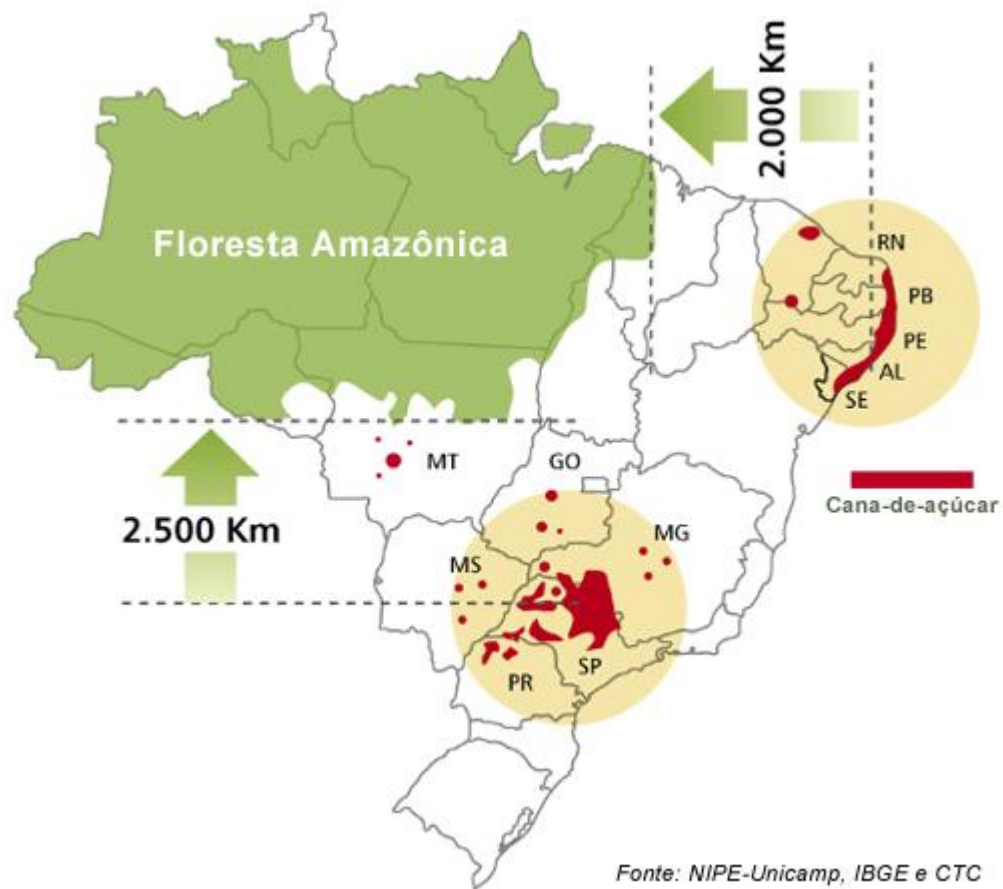






Sugarcane Production

- Traditional production region, Northeast Coast;
- Main production area: Sao Paulo State;
- Production is developing in Minas Gerais and Parana;
- Biggest potential is the Center West Region (Goias, Mato Grosso and Mato Grosso do Sul).



Sugar and Ethanol Production

- Juice extraction;
- It is possible to produce from the sugarcane sap, both sugar and ethanol;
- Sugar production sequence;
- Ethanol production sequence;
- This possibility brings lower risks to the business.





Ethanol Production





Total of Sugar Cane Processed in Brazil

STATES/HARVEST	99/00	00/01	01/02	02/03	03/04	04/05	05/06	06/07	07/08	08/09
ACRE	0	0	0							
RONDONIA	0	0	0							106.292
AMAZONAS	0	0	201.036	255.852	250.881	267.767	252.672	224.700	318.141	303.350
PARÁ	521.339	527.383	283.406	311.492	419.514	580.999	510.086	697.400	575.525	626.865
TOCANTINS	0	0	0				95.314	179.300		55.456
MARANHÃO	938.174	799.490	1.094.115	1.105.114	1.303.509	1.275.119	1.797.490	1.660.300	2.134.604	2.280.160
PIAUÍ	218.022	248.289	273.691	284.180	322.802	349.329	492.369	706.000	689.130	900.181
CEARÁ	131.166	65.671	73.637	88.954	63.907	79.444	40.709	27.400	8.250	122.355
R. G. NORTE	1.892.617	2.388.270	2.064.515	2.681.857	2.614.068	2.917.677	2.356.268	2.397.400	2.047.750	3.186.768
PARAIBA	3.418.496	3.594.320	4.001.051	4.335.516	5.017.263	5.474.229	4.291.473	5.107.700	5.653.047	5.885.978
PERNAMBUCO	13.320.164	14.366.994	14.351.050	14.891.497	17.003.192	16.684.867	13.858.319	15.293.700	19.844.415	18.949.518
ALAGOAS	19.315.230	25.198.251	23.124.558	22.645.220	29.536.815	26.029.770	22.532.291	23.635.100	29.444.208	27.309.285
SERGIPE	1.163.285	1.413.639	1.316.925	1.429.746	1.526.270	1.465.185	1.109.052	1.136.100	1.371.683	1.831.714
BAHIA	2.098.231	1.920.653	2.048.475	2.213.955	2.136.747	2.268.369	2.391.415	2.185.600	2.522.923	2.541.816
MINAS GERAIS	13.599.488	10.634.653	12.204.821	15.599.511	18.915.977	21.649.744	24.543.456	29.034.195	35.723.246	42.480.968
ESPIRITO SANTO	2.126.902	2.554.166	2.010.903	3.292.724	2.952.895	3.900.307	3.804.231	2.894.421	3.938.757	4.373.248
RIO DE JANEIRO	4.953.176	3.934.844	3.072.603	4.478.142	4.577.007	5.638.063	4.799.351	3.445.154	3.831.652	4.018.840
SÃO PAULO	194.234.474	148.256.436	176.574.250	192.486.643	207.810.964	230.280.444	243.767.347	263.870.142	296.242.813	346.292.969
PARANÁ	24.351.048	19.320.856	23.075.623	23.892.645	28.485.775	28.997.547	24.808.908	31.994.581	40.369.063	44.829.652
SANTA CATARINA	0	0	0	0	0	0	0	0	0	0
R. G. SUL	0	0	80.262	102.999	93.836	77.997	57.976	91.919	128.980	107.184
MATO GROSSO	10.110.766	8.669.533	10.673.433	12.384.480	14.349.933	14.447.155	12.335.471	13.179.510	14.928.015	15.283.134
MATO GROSSO DO SUL	7.410.240	6.520.923	7.743.914	8.247.056	8.892.972	9.700.048	9.037.918	11.635.096	14.869.066	18.090.388
GOIÁS	7.162.805	7.207.646	8.782.275	9.922.493	13.041.232	14.006.057	14.559.760	16.140.043	21.082.011	29.486.508
CENTER-SOUTH	263.948.899	207.099.057	244.218.084	270.406.693	299.120.591	328.697.362	337.714.418	372.285.061	431.113.603	504.962.891
NORTH-NORTHEAST	43.016.724	50.522.960	48.832.459	50.243.383	60.194.968	57.392.755	49.727.458	53.250.700	64.609.676	64.099.738
BRAZIL	306.965.623	257.622.017	293.050.543	320.650.076	359.315.559	386.090.117	387.441.876	425.535.761	495.723.279	569.062.629

Source: Brazilian Ministry of Agriculture/ 2010

Pro-Alcool

- Government program implemented to create a renewable source of energy in Brazil;
- Started during the first oil crisis;
- Aim the development of technologies for sugarcane production, sugarcane processing, and new vehicles engines;
- Very successful program.





The Flex Engine

- A engine capable of using both gasoline and ethanol at the same time in any proportion;
- Widely produced and used in Brazil as car engines;
- Research to develop flex engines for trucks and small airplanes;
- Possibility to chose between ethanol and gasoline;

The Flex Engine

- 40 % of all Brazilian cars do use the flex engine (more than 3.000.000 cars);
- Currently more than 92% of the new cars sold in Brazil have a flex engine;





Brazilian Ethanol Exports

YEAR	VOLUME (millions of liters)		
	Brasil	Center-South	North-NE
2000	227,3	183,6	43,7
2001	345,7	300,0	45,7
2002	789,2	576,1	213,0
2003	757,4	457,3	300,1
2004	2.408,3	1.865,8	542,5
2005	2.600,6	2.090,8	509,8
2006	3.416,6	2.966,3	450,3
2007	3.530,1	3.055,4	474,7
2008	5.118,7	4.590,3	528,4

Source: Secex 2010

Brazilian Ethanol Exports

Year	US\$ FOB (millions US\$)		
	Brasil	Center-South	North-NE
2000	34,8	24,2	10,6
2001	92,1	78,9	13,2
2002	169,2	121,9	47,3
2003	158,0	91,1	66,9
2004	497,7	376,5	121,2
2005	765,5	602,0	163,5
2006	1.604,7	1.415,1	189,6
2007	1.477,6	1.266,9	210,7
2008	2.390,1	2.149,5	240,6

Source: Secex, 2010.

Brazilian Ethanol Exports

Country	VOLUME (millions of liters)		
	2006	2007	2008
Total	3.416,6	3.530,1	4.848,1
United States	1.749,2	849,7	1.519,4
The Netherlands	344,5	800,9	1.331,4
Jamaica	133,0	312,1	436,1
El Salvador	182,7	226,8	355,9
Japão	227,7	367,2	263,2
Trinidad and Tobago	72,3	160,5	224,3
Virgen Islands		52,7	187,9
South Korea	93,4	67,4	186,6
Costa Rica	92,2	172,2	109,4
Nigéria	43,1	124,2	97,8
United Kingdom	26,7	47,1	69,6
Índia	9,9		66,4

Source: Unica, 2010.

The USA Market

- Strategic decision to increase the use of renewable sources of energy;
- The market that is currently consuming 42 billion liters of ethanol is projected to absorb 136 billion liters before 2022;
- The Environment Protection Agency (EPA) classified the Brazilian ethanol as “advanced” source of energy (it is responsible for a low emission of CO₂).

The Business Environment

- More than 150 companies are producing ethanol in Brazil;
- A consolidation process just started;
- It is increasing the investment of international capital (currently it is 25%);
- New categories of companies are investing in the sector (oil companies and traders).

International Capital

- Cosan (Brazilian) and Shell (British and Dutch);
- Bunge (Dutch) and Moema (Brazilian);
- Shree Renuka Sugars (Indian) and Equipav (Brazilian);
- Louis Dreyfus (French) and Santelisa Vale (Brazilian);
- ADM
- ETH and Brenco;
- Petrobras;
- BP;

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