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Status of implementation of IE3 Efficiency Class as Industrial Motor's MEPS in Brazil

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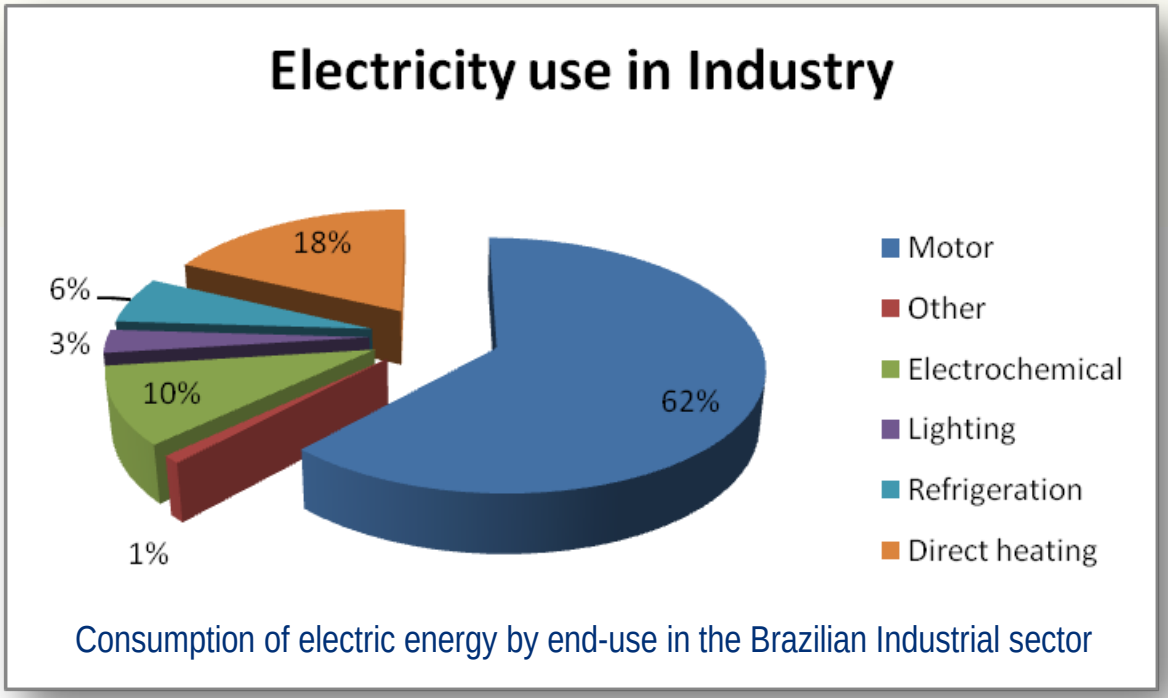
Introduction

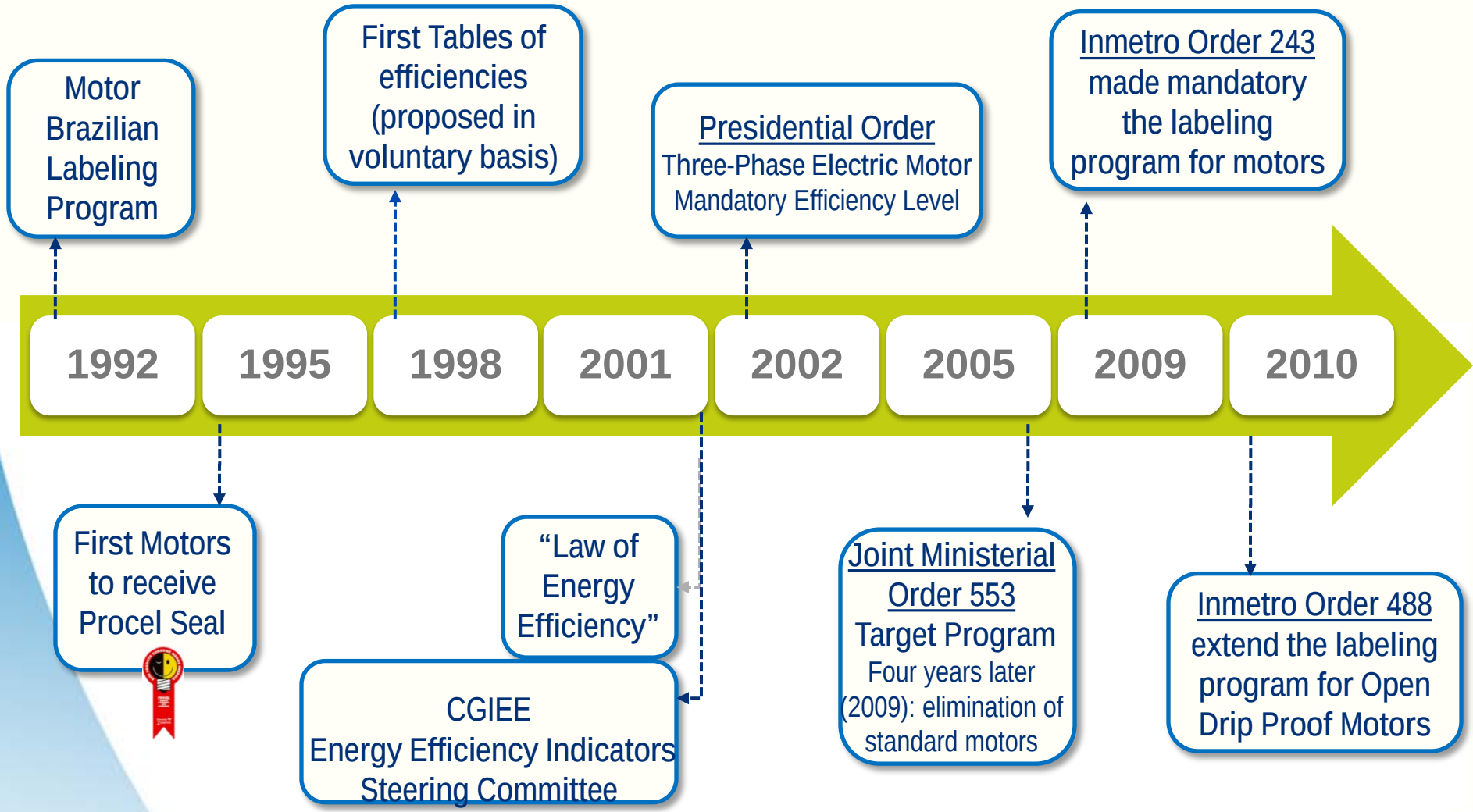
Brazil is one of the tenth biggest economies with a strong industrial sector with machine manufacturer sector well-established



Consumption of electric energy by end-use in the Brazilian Industrial sector

The last national production estimation was about 1.3 millions of units per year

Introduction



Current Brazilian MEPS for industrial motors is quite similar to IE2

Brazilian Premium Efficiency Class for induction motor – IR3

Guidelines for adoption of IE3 efficiency class defined by IEC 60034-30 (2008)

- create a minimum efficiency level table that follow IE3

- name this new class of Premium Efficiency Class – IR3

- respect the strong Brazil OEM market

- include values for 8 poles

- include lower level for 0,75 kW – 2 poles

- include seven different values for smaller frames

Brazilian Premium Efficiency Class for induction motor – IR3

Power		Pole			
kW	cv/hp	2	4	6	8
		rated efficiency			
0,75	1	77,0	**83,5** [1]	82,5	75,5
1,1	1,5	84,0	**86,5** [2]	**87,5** [3]	78,5
1,5	2	85,5	86,5	**88,5** [4]	84,0
2,2	3	86,5	**89,5** [5]	**89,5** [6]	85,5
3	4	88,5	89,5	89,5	86,5
3,7	5	88,5	89,5	89,5	86,5
4,4	6	88,5	89,5	89,5	86,5
5,5	7,5	89,5	**91,7** [7]	91,0	86,5
7,5	10	90,2	91,7	91,0	89,5
9,2	12,5	91,0	92,4	91,7	89,5
11	15	91,0	92,4	91,7	89,5
15	20	91,0	93,0	91,7	90,2
18,5	25	91,7	93,6	93,0	90,2
22	30	91,7	93,6	93,0	91,7
30	40	92,4	94,1	94,1	91,7
37	50	93,0	94,5	94,1	92,4
45	60	93,6	95,0	94,5	92,4
55	75	93,6	95,4	94,5	93,6
75	100	94,1	95,4	95,0	93,6
90	125	95,0	95,4	95,0	94,1
110	150	95,0	95,8	95,8	94,1
130	175	95,4	96,2	95,8	94,5
150	200	95,4	96,2	95,8	94,5
185	250	95,8	96,2	95,8	95,0
220	300	95,8	96,2	95,8	95,0
260	350	95,8	96,2	95,8	95,0
300	400	95,8	96,2	95,8	95,0
330	450	95,8	96,2	95,8	95,0
370	500	95,8	96,2	95,8	95,0

[1] For motors produced in frame size 80, the minimum efficiency value is 83%.

[2] For motors produced in frame size 80, the minimum efficiency value is 84%.

[3] For motors produced in frame size 80, the minimum efficiency value is 85.5%

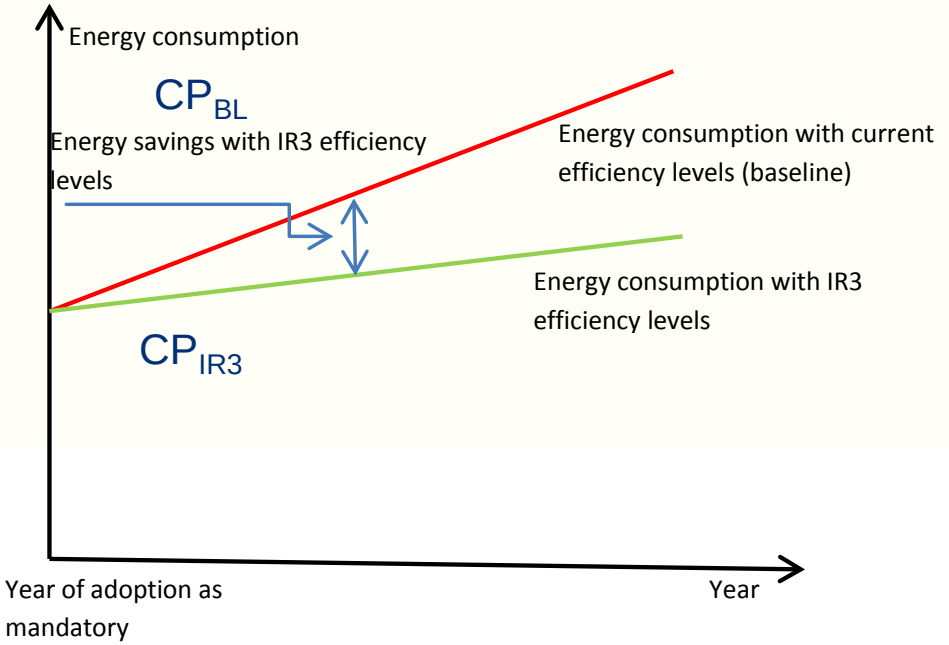
[4] For motors produced in frame size 100, the minimum efficiency value is 86.5%.

[5] For motors produced in frame size 90, the minimum efficiency value is 87.5%.

[6] For motors produced in frame size 100, the minimum efficiency value is 87%.

[7] For motors produced in frame size 112, the minimum efficiency value is 91%.

Estimated Energy Savings by the Adoption of Class IR3 as MEPS



Energy Savings $_{motor}$ = CP_{BL} - CP_{IR3}

Period of analysis : 2017 a 2030

Installed equipment consumption = increase of 4,1% per year

Year 1 (2017): sales only of IR3 motors

Variables included: depreciation factor (FD), efficiency load factor (FR) and life cycle

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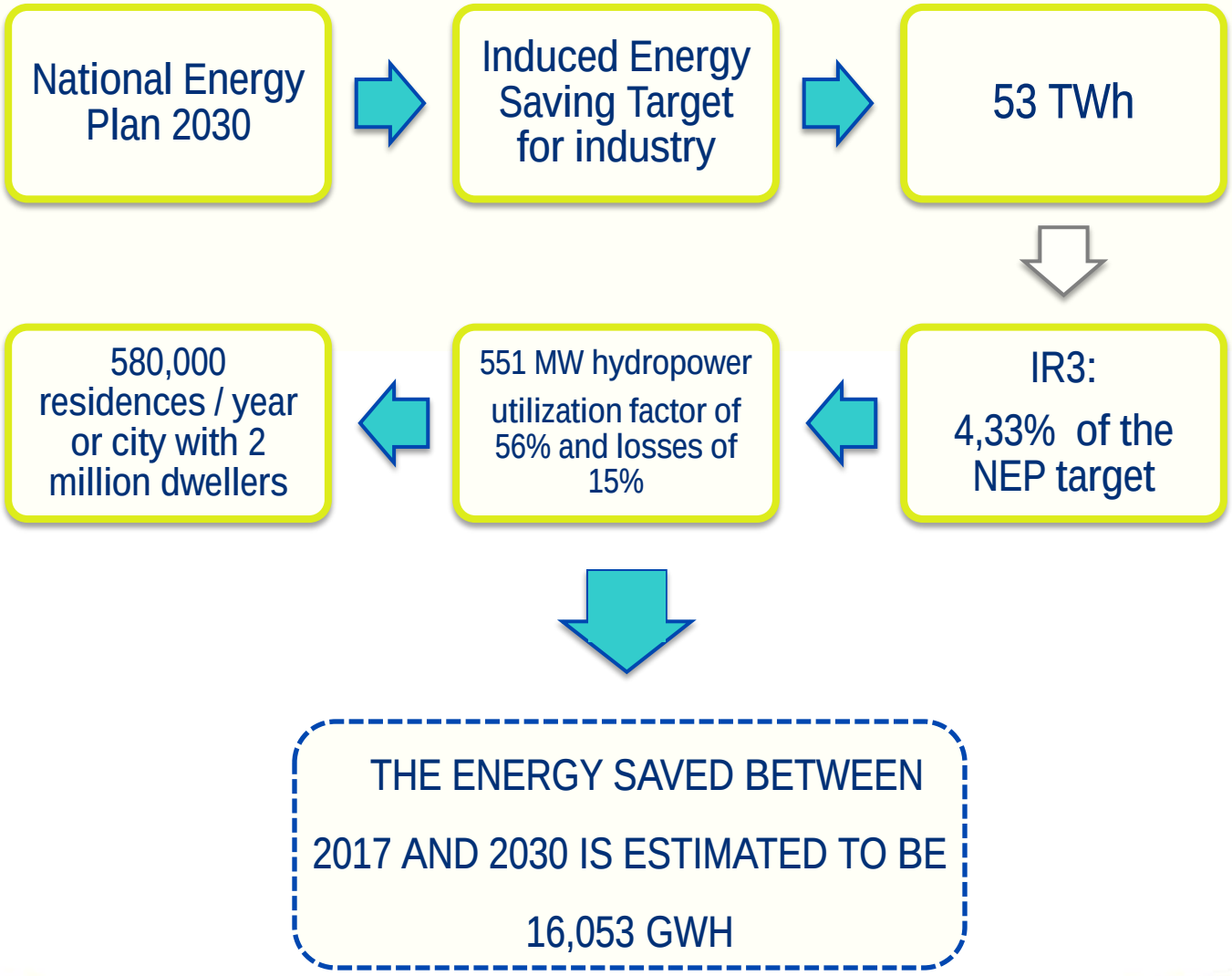

Status of the implementation of the new MEPS

Publish the IR3 table in the motor specification standard

Inclusion of class IR3 in Brazilian Labeling Program, which will permit the evaluation of efficiency conformity

The main scope of target program will be: 1 hp to 500 hp; 2,4,6,e 8 poles; until 1000 V; ODP and TEFC; operating continuously; 60 Hz, Design class N, H , A, B e C

Status of the implementation of the new MEPS

Regulatory Impact Analysis Elaboration was approved

- Capacity of Steel industry to attend the demand
- The impact of these prices elevations on the OEM sector
- Feasibility of adoption of IR3 as minimum efficiency level for motors manufactured, imported or commercialized in Brazil in 2018 or 2019.

Conclusion

- The savings obtained by the introduction of a new class of Premium Motors are significant and can account for about 4% of the energy saving target for 2030.

- It is preliminarily estimated that the impacts on the steel market and on motor prices for motor users shall not pose constraints.

- The crucial question is related to the OEM sector in which motors are part of other machines and the price rises reflect directly on prices of these machines. Some experts connect the activity level of this sector with the industrialization level of a country.

"Even with all mentioned difficulties we do believed IE3 Class as MEPS in Brazil will be in 2018 or 2019"

THANK YOU FOR YOUR ATTENTION!

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