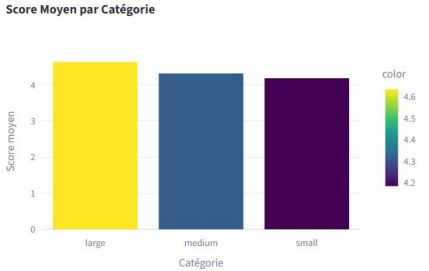
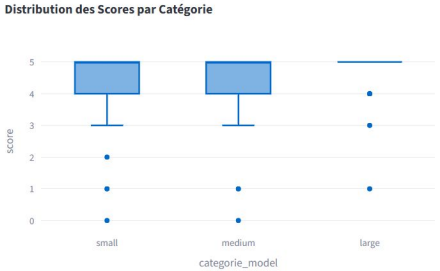
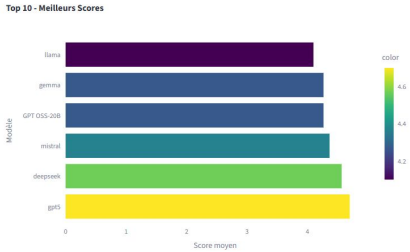
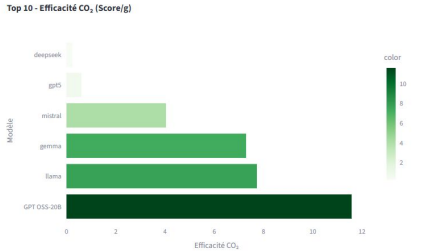
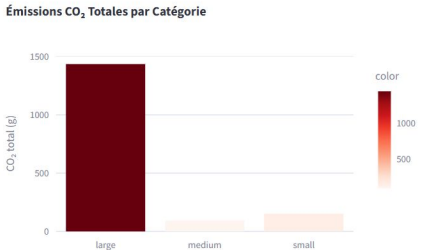
ComparAI: General finding

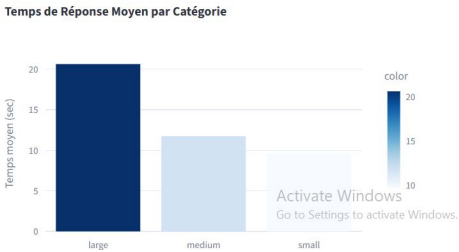


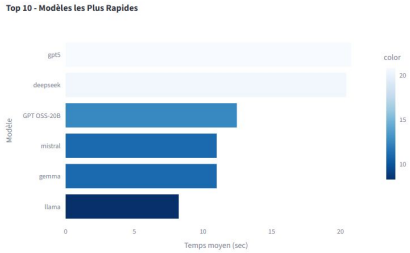


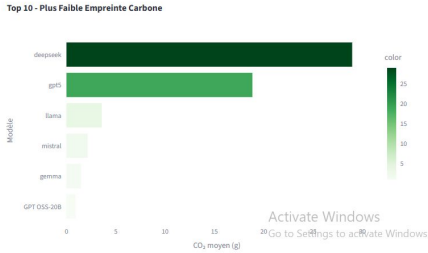












- Performance vs. Efficiency: Larger models provide slightly better average scores but at the cost of much higher carbon emissions and slower speeds.
- Top Models: gpt5 and Gpt OSS-20Boffer an appealing compromise—high scores, fastest inference times, and lowest carbon footprints despite their CO_2 efficiency per score being lower.
- Environmental Impact: Deploying large models widely can have a heavy carbon impact, suggesting that, unless peak accuracy is indispensable, medium or small models may offer a better efficiency-to-performance ratio.

ComparAI: Model by case

Best by score

model	categorie model	categorie question	score	energy (wh)	CO2(g)
gemma 3n -4b	small	easy factual	5	1.03	0.64
GPT5	large	reasoning & quantitaitve	4.2	20.97	12.62
GPT5	large	programming & debugging	5	26	16
Deepseek	large	Harder knowledge & reasoning	5	60	36
GPT5	large	advanced	5	36	20

Best by trade-off

model	categorie model	categorie question	score	energy (wh)	CO2(g)
GPT OSS-20B	medium	easy factual	4.9	0.96	0.60
mistral	medium	reasoning & quantitaitve	4	3.78	2.36
GPT OSS-20B	medium	programming & debugging	4.8	1.21	0.75
gemma 3n -4b	small	Harder knowledge & reasoning	3.8	6	3.46
GPT OSS-20B	meduim	advanced	4.6	1.06	0.65

Note: In the programming & debugging question categorire we notice that the CO2 for “medium model - 1.21 g” is less to “small model - 7.10 g” but the electricity consumption of “medium model” is inferior to “small model” so we can hypothesis that medium model are more train in this categorie than small one so their output token is less

Final recommendation

With all analysis we can conclude that using a medium model is the best trade-off for most of the case if you care about electricity consumption and the quantity of CO2 liberated.
My preferred model is “GPT OSS-20B”

github:https://github.com/gyxcit/greenai-tp1

streamlit dashboard: https://gyxcit-greenai-tp1-app-tffke0.streamlit.app/

spreadsheet:
https://docs.google.com/spreadsheets/d/1_v9mUKppzWSKCKMGYIYK-hUQYwcdhp3-cBZVgO3ZlYw/edit?gid=319276651#gid=319276651