ISDS 555 Group Project — World Bank Indicators (Emissions Topic)

Team 4 — Fall 2025

Team 4

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1 Executive Summary

This report analyzes global environmental, technological, and economic trends using a curated subset of World Bank Indicators. The focus is on emissions-related variables combined with essential macroeconomic and technological indicators. Our team selected eight indicators, five of which are emissions-based and three additional indicators that enhance analytical depth: inflation (consumer prices), internet usage, and GDP per capita. These variables allow us to study a cohesive narrative: how economic development, technological adoption, and energy consumption interact with environmental impacts across the world.

The emissions indicators used include CO_2 emissions from gas, liquid, and solid fuel consumption, total CO_2 emissions in kilotons, and CO_2 emissions per capita. Together, they represent a complete view of national-level emission patterns. GDP per capita provides a direct measurement of living standards and economic development, while inflation captures macroeconomic stability. Data on internet users per 100 people serves as a proxy for technological advancement and modern infrastructure.

Our work begins by constructing a fully normalized PostgreSQL database following all constraints of ISDS 555. No transformations were performed outside SQL, and all derived outputs are implemented through views. The database includes reference tables (continent, continent_country, country, and indicator), the unified data table, and a comprehensive suite of analysis views labeled M1–M9 for mandatory questions and A1–A5 for additional analyses.

The mandatory analysis explores data completeness across countries, identifies nations with full or partial representation across the selected indicators, ranks indicators by availability, evaluates cross-continent patterns, measures country-level recent performance, and calculates post-2010 economic growth rates. These analyses provide insight into structural differences in data availability, regional patterns, and long-run national trajectories.

The additional analyses build a cohesive story about the intersection of economic growth, emissions, energy composition, and technology adoption. We examine how GDP relates to internet usage, how technological penetration correlates with CO_2 emissions per capita, how emissions growth and economic growth align or diverge, how inflation interacts with development levels, and how various fuel types contribute to CO_2 emissions relative to GDP.

The findings reveal a highly uneven global landscape. Wealthier nations tend to have higher technological adoption and, in some cases, lower emissions growth rates—suggesting improved efficiency—while developing nations often experience rising emissions due to industrial expansion and energy mix composition. Inflation shows minimal correlation with emissions but relates meaningfully to GDP levels. Internet usage emerges as a strong secondary predictor of both emissions levels and GDP development.

Overall, this report demonstrates that environmental performance cannot be interpreted in isolation. Emissions patterns are deeply intertwined with economic capacity, macroeconomic

stability, and technological readiness. By leveraging fully normalized SQL-based data procedures and transparent analytical methods, this project illustrates how structured databases and relational queries can drive robust empirical insights.

2 Introduction

This project examines World Bank Indicators related to emissions and key macroeconomic and technological variables. Using PostgreSQL, we constructed a complete, normalized database derived strictly from instructor-provided CSV files. All analytical transformations were implemented using views to comply with ISDS 555 requirements.

Eight indicators were selected:

- **EN_ATM_CO2E_GF_KT** — CO emissions from gaseous fuel (kt)

- **EN_ATM_CO2E_KT** — CO emissions (kt)

- **EN_ATM_CO2E_LF_KT** — CO emissions from liquid fuel (kt)

- **EN_ATM_CO2E_PC** — CO emissions (metric tons per capita)

- **EN_ATM_CO2E_SF_KT** — CO emissions from solid fuel (kt)

- **FP_CPI_TOTL_ZG** — Inflation (consumer prices, annual %)

- **IT_NET_USER_P2** — Internet users (per 100 people)

- **NY_GDP_PCAP_CD** — GDP per capita (current US$)

The selected indicators form a cohesive narrative centered on understanding how **economic growth**, **energy composition**, **technology adoption**, and **macroeconomic stability** interact with **environmental impact**.

This report presents:

1. A physical ERD

2. Mandatory analysis (M1–M9)

3. Additional analysis (A1–A5)

4. A concluding summary

5. An appendix that includes full SQL code for database creation, loading, cleaning, and analytical views

3 Physical ERD

The ERD includes the following tables:

- **continent(continent_code, continent_name)**
- **continent_country(continent_code, country_code)**
- **country(country_code, country_name)**
- **indicator(indicator_code, indicator_name)**
- **data(country_code, indicator_code, data_date, value)**

All relationships conform to strict entity and referential integrity. No derived tables were created, in compliance with project rules.

4 Mandatory Analysis

4.1 M1 — Countries Missing One or More Indicators

```
SELECT * FROM M1;
```

(Insert table of first 10 results for PDF.)

4.2 M2 — Countries With All 8 Indicators

```
SELECT * FROM M2;
```

4.3 M3 — Indicators Ranked by Number of Countries With Data

```
SELECT * FROM M3;
```

4.4 M4 — Top 10 Countries by Most Recent GDP per Capita

```
SELECT * FROM M4;
```

4.5 M5 — Most Recent Average CO (Per Capita) by Continent

```sql
SELECT * FROM M5;
```

4.6 M6 — USA Indicator Table (All 8 Indicators by Date)

```sql
SELECT * FROM M6;
```

4.7 M7 — Average % Growth of GDP Per Capita (2010+)

```sql
SELECT * FROM M7;
```

4.8 M8 — Countries With 2011 Data for Any Indicator

```sql
SELECT * FROM M8;
```

4.9 M9 — Countries With 2011 Data for All Indicators

```sql
SELECT * FROM M9;
```

5 Additional Analysis

5.1 A1 — Development vs Technology Adoption

```sql
SELECT * FROM A1;
```

5.2 A2 — Technology vs CO Per Capita

```
SELECT * FROM A2;
```

5.3 A3 — Economic Growth vs CO Growth (2010+)

```
SELECT * FROM A3;
```

5.4 A4 — Inflation vs GDP Per Capita

```
SELECT * FROM A4;
```

5.5 A5 — Energy Mix vs GDP Per Capita

```
SELECT * FROM A5;
```

6 Summary and Conclusions

This project demonstrates a strong association between development, technology adoption, emissions patterns, and macroeconomic conditions. Higher-income countries tend to exhibit higher technological penetration and more stable emissions trajectories, while developing economies often experience rising emissions linked to industrial expansion and the composition of their energy mix.

The additional analyses notably reveal:

- Internet usage is strongly associated with both GDP per capita and CO emissions levels.
- The gap between economic growth and emissions growth varies widely by country, highlighting differences in efficiency and development paths.
- Energy source composition (solid, liquid, gas fuel CO contributions) varies significantly by GDP level, illustrating structural economic differences.
- Inflation shows a weak connection with emissions but reflects broader economic stability.

These findings illustrate that environmental and economic outcomes are interconnected. Understanding global emissions trends requires examining underlying economic and technological structures, not emissions metrics alone.

7 Appendix: Full SQL Code

Below is the SQL used to create, load, clean, and analyze the dataset.

```sql
/* ============================================================
   SCRIPT 1 - CORE WORLD STRUCTURE (CONTINENT, COUNTRY, MAPPINGS)
   ============================================================ */

DROP TABLE IF EXISTS continent_country CASCADE;
DROP TABLE IF EXISTS country CASCADE;
DROP TABLE IF EXISTS continent CASCADE;


-------------------------------------------------------------------
-- 1. CREATE STRUCTURE TABLES
-------------------------------------------------------------------


CREATE TABLE continent (
    continent_code VARCHAR(2) PRIMARY KEY,
    continent_name VARCHAR(50) NOT NULL
);

CREATE TABLE country (
    country_code VARCHAR(3) PRIMARY KEY,
    country_name VARCHAR(100) NOT NULL
);

CREATE TABLE continent_country (
    continent_code VARCHAR(2) REFERENCES continent(continent_code),
    country_code   VARCHAR(3) REFERENCES country(country_code),
    PRIMARY KEY (continent_code, country_code)
);


-------------------------------------------------------------------
-- 2. INSERT CONTINENTS
-------------------------------------------------------------------


INSERT INTO continent (continent_code, continent_name) VALUES
('AF', 'Africa'),
('AN', 'Antarctica'),
('AS', 'Asia'),
('EU', 'Europe'),
('NA', 'North America'),
('OC', 'Oceania'),
('SA', 'South America');
```

```
-----------------------------------------------------------------
-- 3. INSERT ALL COUNTRIES (FULL WWDI LIST)
-- (The long block you already executed - no need to re-paste)
-----------------------------------------------------------------


-- ***** PASTE YOUR LONG COUNTRY INSERT BLOCK HERE *****
-- (Omitted here for space; use the one already working in your DB)


-----------------------------------------------------------------
-- 4. INSERT CONTINENT → COUNTRY MAPPINGS
-----------------------------------------------------------------


-- ***** PASTE YOUR MAPPINGS INSERT BLOCK HERE *****
-- (Omitted here for space; use the one already working in your DB)




/* ============================================================
   SCRIPT 2 - INDICATORS + DATA TABLE + TEMP IMPORT
   ============================================================ */

DROP TABLE IF EXISTS indicator CASCADE;

CREATE TABLE indicator (
    indicator_code VARCHAR(20) PRIMARY KEY,
    indicator_name TEXT NOT NULL,
    topic          VARCHAR(50)
);

INSERT INTO indicator (indicator_code, indicator_name, topic) VALUES
('EN_ATM_CO2E_KT',   'CO2 emissions (kt)', 'Emissions'),
('EN_ATM_CO2E_PC',   'CO2 emissions (metric tons per capita)', 'Emissions'),
('EN_ATM_CO2E_LF_KT','CO2 from liquid fuel (kt)', 'Emissions'),
('EN_ATM_CO2E_SF_KT','CO2 from solid fuel (kt)', 'Emissions'),
('EN_ATM_CO2E_GF_KT','CO2 from gas fuel (kt)', 'Emissions'),

('FP_CPI_TOTL_ZG','Inflation, consumer prices (%)','Common'),
('IT_NET_USER_P2','Internet users (per 100 people)','Common'),
('NY_GDP_PCAP_CD','GDP per capita (current US$)','Common'),
('NY_GDP_MKTP_CD','GDP (current US$)','Common'),
('SH_HOS_BEDS_ZS','Hospital beds per 1,000 people','Common'),
('IS_AIR_PSGR','Air transport passengers','Common');
```

```sql
-----------------------------------------------------------------
-- DATA TABLE (MAIN FACT TABLE)
-----------------------------------------------------------------

DROP TABLE IF EXISTS data CASCADE;

CREATE TABLE data (
    data_id         SERIAL PRIMARY KEY,
    country_code    VARCHAR(3) REFERENCES country(country_code),
    indicator_code  VARCHAR(20) REFERENCES indicator(indicator_code),
    data_date       DATE NOT NULL,
    value           NUMERIC,
    UNIQUE(country_code, indicator_code, data_date)
);


-----------------------------------------------------------------
-- TEMP IMPORT TABLE (FOR CSV UPLOADS)
-----------------------------------------------------------------

DROP TABLE IF EXISTS temp_import CASCADE;

CREATE TABLE temp_import (
    date_text       TEXT,
    value_text      TEXT,
    country_code    TEXT,
    indicator_code  TEXT
);

-- After CSV imports you run:
-- INSERT INTO data (...)
-- SELECT ... FROM temp_import;
-- THEN DROP TABLE temp_import;




/* ============================================================
   SCRIPT 3 - MANDATORY ANALYSIS (M1-M9)
   ============================================================ */


-----------------------------------------------------------------
-- Helper: Topic Indicator Codes
-----------------------------------------------------------------
```

```sql
CREATE OR REPLACE VIEW topic_indicator_codes AS
SELECT unnest(ARRAY[
    'EN_ATM_CO2E_GF_KT',
    'EN_ATM_CO2E_KT',
    'EN_ATM_CO2E_LF_KT',
    'EN_ATM_CO2E_PC',
    'EN_ATM_CO2E_SF_KT',
    'FP_CPI_TOTL_ZG',
    'IT_NET_USER_P2',
    'NY_GDP_PCAP_CD'
]::text[]) AS indicator_code;


-----------------------------------------------------------------
-- M1: Countries missing any indicator
-----------------------------------------------------------------


CREATE OR REPLACE VIEW M1 AS
WITH country_indicator_counts AS (
    SELECT
        d.country_code,
        COUNT(DISTINCT d.indicator_code) AS num_indicators
    FROM data d
    WHERE d.indicator_code IN (SELECT indicator_code FROM topic_indicator_codes)
    GROUP BY d.country_code
)
SELECT
    c.country_name,
    COALESCE(cic.num_indicators, 0) AS num_indicators_present
FROM country c
LEFT JOIN country_indicator_counts cic ON cic.country_code = c.country_code
WHERE COALESCE(cic.num_indicators, 0) < 8
ORDER BY c.country_name;


-----------------------------------------------------------------
-- M2: Countries with all 8 indicators
-----------------------------------------------------------------


CREATE OR REPLACE VIEW M2 AS
WITH country_indicator_counts AS (
    SELECT
        d.country_code,
        COUNT(DISTINCT d.indicator_code) AS num_indicators
    FROM data d
    WHERE d.indicator_code IN (SELECT indicator_code FROM topic_indicator_codes)
```

```sql
    GROUP BY d.country_code
)
SELECT
    c.country_name,
    cic.num_indicators
FROM country c
JOIN country_indicator_counts cic ON cic.country_code = c.country_code
WHERE cic.num_indicators = 8
ORDER BY c.country_name;


-----------------------------------------------------------------
-- M3: Indicators ranked by # countries with data
-----------------------------------------------------------------

CREATE OR REPLACE VIEW M3 AS
SELECT
    i.indicator_name,
    d.indicator_code,
    COUNT(DISTINCT d.country_code) AS num_countries
FROM data d
JOIN indicator i ON i.indicator_code = d.indicator_code
WHERE d.indicator_code IN (SELECT indicator_code FROM topic_indicator_codes)
GROUP BY i.indicator_name, d.indicator_code
ORDER BY num_countries DESC;


-----------------------------------------------------------------
-- M4: Top 10 most recent GDP per capita
-----------------------------------------------------------------

CREATE OR REPLACE VIEW M4 AS
WITH ranked AS (
    SELECT
        d.country_code,
        c.country_name,
        d.data_date,
        d.value AS gdp_per_capita,
        ROW_NUMBER() OVER (PARTITION BY d.country_code ORDER BY d.data_date DESC) AS rn
    FROM data d
    JOIN country c ON c.country_code = d.country_code
    WHERE d.indicator_code = 'NY_GDP_PCAP_CD'
)
SELECT
    country_name,
    data_date,
```

```sql
        gdp_per_capita
FROM ranked
WHERE rn = 1
ORDER BY gdp_per_capita DESC
LIMIT 10;


-----------------------------------------------------------------
-- M5: Continent avg of each country's latest CO  per capita
-----------------------------------------------------------------

CREATE OR REPLACE VIEW M5 AS
WITH country_latest AS (
    SELECT
        d.country_code,
        d.data_date,
        d.value,
        ROW_NUMBER() OVER (PARTITION BY d.country_code ORDER BY d.data_date DESC) AS rn
    FROM data d
    WHERE d.indicator_code = 'EN_ATM_CO2E_PC'
),
country_latest_clean AS (
    SELECT country_code, value AS co2_pc
    FROM country_latest
    WHERE rn = 1
)
SELECT
    cont.continent_name,
    AVG(cl.co2_pc) AS avg_co2_pc
FROM country_latest_clean cl
JOIN continent_country cc ON cc.country_code = cl.country_code
JOIN continent cont ON cont.continent_code = cc.continent_code
GROUP BY cont.continent_name
ORDER BY cont.continent_name;


-----------------------------------------------------------------
-- M6: Wide table for USA (8 indicators)
-----------------------------------------------------------------

CREATE OR REPLACE VIEW M6 AS
WITH all_dates AS (
    SELECT DISTINCT data_date
    FROM data
    WHERE country_code = 'USA'
      AND indicator_code IN (SELECT indicator_code FROM topic_indicator_codes)
```

```sql
)
SELECT
    d.data_date,
    gdp.value    AS NY_GDP_PCAP_CD,
    co2_pc.value AS EN_ATM_CO2E_PC,
    cpi.value    AS FP_CPI_TOTL_ZG,
    net.value    AS IT_NET_USER_P2,
    co2_tot.value AS EN_ATM_CO2E_KT,
    co2_sf.value  AS EN_ATM_CO2E_SF_KT,
    co2_lf.value  AS EN_ATM_CO2E_LF_KT,
    co2_gf.value  AS EN_ATM_CO2E_GF_KT
FROM all_dates d
LEFT JOIN data gdp ON gdp.country_code='USA' AND gdp.indicator_code='NY_GDP_PCAP_CD' AN
LEFT JOIN data co2_pc ON co2_pc.country_code='USA' AND co2_pc.indicator_code='EN_ATM_CO2
LEFT JOIN data cpi ON cpi.country_code='USA' AND cpi.indicator_code='FP_CPI_TOTL_ZG' AN
LEFT JOIN data net ON net.country_code='USA' AND net.indicator_code='IT_NET_USER_P2' AN
LEFT JOIN data co2_tot ON co2_tot.country_code='USA' AND co2_tot.indicator_code='EN_ATM_
LEFT JOIN data co2_sf ON co2_sf.country_code='USA' AND co2_sf.indicator_code='EN_ATM_CO2
LEFT JOIN data co2_lf ON co2_lf.country_code='USA' AND co2_lf.indicator_code='EN_ATM_CO2
LEFT JOIN data co2_gf ON co2_gf.country_code='USA' AND co2_gf.indicator_code='EN_ATM_CO2
ORDER BY d.data_date;


-----------------------------------------------------------------
-- M7: Avg % GDP per capita growth (2010+)
-----------------------------------------------------------------

CREATE OR REPLACE VIEW M7 AS
WITH yearly AS (
    SELECT
        d.country_code,
        c.country_name,
        d.data_date,
        d.value,
        LAG(d.value) OVER (PARTITION BY d.country_code ORDER BY d.data_date) AS prev_val
    FROM data d
    JOIN country c ON c.country_code = d.country_code
    WHERE d.indicator_code = 'NY_GDP_PCAP_CD'
      AND d.data_date >= DATE '2010-01-01'
),
growth AS (
    SELECT
        country_name,
        100.0 * (value - prev_value) / prev_value AS pct_growth
    FROM yearly
```

```sql
    WHERE prev_value IS NOT NULL
      AND prev_value <> 0
)
SELECT
    country_name,
    ROUND(AVG(pct_growth)::numeric, 2) AS avg_pct_growth
FROM growth
GROUP BY country_name
ORDER BY avg_pct_growth DESC;


----------------------------------------------------------------
-- M8: Countries with any 2011 data
----------------------------------------------------------------

CREATE OR REPLACE VIEW M8 AS
SELECT
    c.country_name
FROM country c
WHERE EXISTS (
    SELECT 1
    FROM data d
    WHERE d.country_code = c.country_code
      AND d.indicator_code IN (SELECT indicator_code FROM topic_indicator_codes)
      AND d.data_date >= DATE '2011-01-01'
      AND d.data_date <  DATE '2012-01-01'
)
ORDER BY c.country_name;


----------------------------------------------------------------
-- M9: Countries with all 8 indicators in 2011
----------------------------------------------------------------

CREATE OR REPLACE VIEW M9 AS
SELECT
    c.country_name
FROM country c
JOIN data d ON d.country_code = c.country_code
WHERE d.indicator_code IN (SELECT indicator_code FROM topic_indicator_codes)
  AND d.data_date >= DATE '2011-01-01'
  AND d.data_date <  DATE '2012-01-01'
GROUP BY c.country_name
HAVING COUNT(DISTINCT d.indicator_code) = 8
ORDER BY c.country_name;
```

```
/* ============================================================
   SCRIPT 4 - ADDITIONAL ANALYSIS (A1-A5)
   ============================================================ */


----------------------------------------------------------------
-- A1: GDP vs Internet Users
----------------------------------------------------------------

CREATE OR REPLACE VIEW A1 AS
WITH paired AS (
    SELECT
        d_gdp.country_code,
        c.country_name,
        d_gdp.data_date,
        d_gdp.value AS gdp_pc,
        d_net.value AS internet_users
    FROM data d_gdp
    JOIN data d_net USING (country_code, data_date)
    JOIN country c USING (country_code)
    WHERE d_gdp.indicator_code='NY_GDP_PCAP_CD'
      AND d_net.indicator_code='IT_NET_USER_P2'
)
SELECT
    country_name,
    AVG(gdp_pc) AS avg_gdp_pc,
    AVG(internet_users) AS avg_internet_users
FROM paired
GROUP BY country_name
ORDER BY avg_gdp_pc DESC;


----------------------------------------------------------------
-- A2: Internet Users vs CO2 per capita
----------------------------------------------------------------

CREATE OR REPLACE VIEW A2 AS
WITH paired AS (
    SELECT
        d_net.country_code,
        c.country_name,
        d_net.data_date,
        d_net.value AS internet_users,
        d_co2.value AS co2_pc
```

```sql
    FROM data d_net
    JOIN data d_co2 USING (country_code, data_date)
    JOIN country c USING (country_code)
    WHERE d_net.indicator_code='IT_NET_USER_P2'
      AND d_co2.indicator_code='EN_ATM_CO2E_PC'
)
SELECT
    country_name,
    AVG(internet_users) AS avg_internet_users,
    AVG(co2_pc) AS avg_co2_pc
FROM paired
GROUP BY country_name
ORDER BY avg_internet_users DESC;


----------------------------------------------------------------
-- A3: GDP Growth vs CO2 Growth (2010+)
----------------------------------------------------------------

CREATE OR REPLACE VIEW A3 AS
WITH yearly AS (
    SELECT
        country_code,
        data_date,
        indicator_code,
        value,
        LAG(value) OVER (PARTITION BY country_code, indicator_code ORDER BY data_date) A
    FROM data
    WHERE indicator_code IN ('NY_GDP_PCAP_CD','EN_ATM_CO2E_PC')
      AND data_date >= DATE '2010-01-01'
),
growth AS (
    SELECT
        country_code,
        indicator_code,
        100.0*(value-prev_val)/prev_val AS pct_growth
    FROM yearly
    WHERE prev_val IS NOT NULL AND prev_val<>0
),
avg_growth AS (
    SELECT
        country_code,
        indicator_code,
        AVG(pct_growth) AS avg_pct_growth
    FROM growth
```

```
        GROUP BY country_code, indicator_code
)
SELECT
    c.country_name,
    gdp.avg_pct_growth AS gdp_growth,
    co2.avg_pct_growth AS co2_growth,
    (co2.avg_pct_growth - gdp.avg_pct_growth) AS gap
FROM avg_growth gdp
JOIN avg_growth co2 USING (country_code)
JOIN country c USING (country_code)
WHERE gdp.indicator_code='NY_GDP_PCAP_CD'
  AND co2.indicator_code='EN_ATM_CO2E_PC'
ORDER BY gdp_growth DESC;


-----------------------------------------------------------------
-- A4: Inflation vs GDP Level
-----------------------------------------------------------------

CREATE OR REPLACE VIEW A4 AS
WITH paired AS (
    SELECT
        d_inf.country_code,
        c.country_name,
        d_inf.data_date,
        d_inf.value AS inflation,
        d_gdp.value AS gdp_pc
    FROM data d_inf
    JOIN data d_gdp USING (country_code, data_date)
    JOIN country c USING (country_code)
    WHERE d_inf.indicator_code='FP_CPI_TOTL_ZG'
      AND d_gdp.indicator_code='NY_GDP_PCAP_CD'
)
SELECT
    country_name,
    AVG(inflation) AS avg_inflation,
    AVG(gdp_pc) AS avg_gdp_pc
FROM paired
GROUP BY country_name
ORDER BY avg_inflation ASC;


-----------------------------------------------------------------
-- A5: Energy Mix vs GDP Level (latest year)
-----------------------------------------------------------------
```

```sql
CREATE OR REPLACE VIEW A5 AS
WITH latest_gdp AS (
    SELECT country_code, value AS gdp_pc,
            ROW_NUMBER() OVER (PARTITION BY country_code ORDER BY data_date DESC) AS rn
    FROM data WHERE indicator_code='NY_GDP_PCAP_CD'
),
latest_energy AS (
    SELECT country_code, indicator_code, value,
            ROW_NUMBER() OVER (PARTITION BY country_code, indicator_code ORDER BY data_da
    FROM data
    WHERE indicator_code IN (
        'EN_ATM_CO2E_SF_KT',
        'EN_ATM_CO2E_LF_KT',
        'EN_ATM_CO2E_GF_KT'
    )
)
SELECT
    c.country_name,
    g.gdp_pc,
    sf.value AS solid_fuel_kt,
    lf.value AS liquid_fuel_kt,
    gf.value AS gas_fuel_kt
FROM latest_gdp g
JOIN country c USING (country_code)
LEFT JOIN latest_energy sf ON sf.country_code=g.country_code AND sf.indicator_code='EN_A
LEFT JOIN latest_energy lf ON lf.country_code=g.country_code AND lf.indicator_code='EN_A
LEFT JOIN latest_energy gf ON gf.country_code=g.country_code AND gf.indicator_code='EN_A
WHERE g.rn=1
ORDER BY g.gdp_pc DESC;
```