Scenario ID	Primary Variables	Algorithm Chosen	Justification
S1	Historical Consumption	**WisRule**	Ideal for baseline demand forecasting as it identifies recurring patterns in historical data.
S2	Consumption, Weather Conditions	**Linear Regression**	Simple, effective for factoring in seasonal and weather-based demand variations.
S3	Production Source, Consumption	**Decision Tree**	Adapts to classifying energy production sources, ideal for renewable vs. non-renewable predictions.
S4	Consumption, Energy Cost	**Regression Analysis**	Accurately models cost-demand relationships, useful for cost-sensitive consumption analysis.
S5	Consumption, Carbon Emissions	**Neural Network**	Handles complex, non-linear interactions between carbon footprint and energy usage.
S6	Consumption, GDP	**Time Series (ARIMA)**	Suitable for time-dependent GDP data, accurately capturing economic trends in energy demand.
S7	Imports vs. Local Production	**Random Forest**	Effectively analyzes the impact of import levels and production balance on energy dependency.
S8	Energy Generation Capacity (Yearly)	**Linear Regression**	Simple model to track how capacity impacts consumption and peak demand patterns over time.
S9	Yearly Consumption Growth	**Exponential Smoothing**	Smooths out consumption data, revealing long-term growth trends without seasonal fluctuations.
S10	Generation Output (Electricity vs. Gas)	**Support Vector Machine**	SVM handles complex classifications between sources, identifying distinct consumption trends per source.
S11	Annual Energy Imports	**K-Means Clustering**	Groups countries by import levels, identifying how different countries' energy dependency compares.