```
                              ┌─────────┐
                              │  Start  │
                              └─────────┘
                                   │
                              ┌──────────────┐
                              │  Initialize  │
                              │ Global Sets  │
                              └──────────────┘
```

Integrating

| No ◇ Include | No ◇ Include | No ◇ Include | No ◇ Include | No ◇ Include | No ◇ Include | No ◇ Include |
| Yes | yes | Yes | Yes | Yes | Yes | Yes |

Initializing

| Water | Petrochemical | Cement | Upstream Oil & Gas | Power Generation | Power Trasmission | Refining |

Linking

| Linking | Linking | Linking | Linking | Linking | Linking | Linking |

Compiling

EMP

Fixing

Linking Variables

Hold

PATH

Writing Results to Database

Code logic for implementing sector and country integration and KEM's unique pricing rules

Integration: Check if a sector and country combination is included in the final model. Include the necessary equations.
Fixing: If a sector is excluded fix its demand quantity and the market price (marginal supply value)
Initializing: Initializing sectoral sets and reading the sectoral parameters from the database for each country.
Linking: Link each sectors demand with the corresponding supply sector, and set the governing pricing rules
Compiling: Compile optimal conditions given the pricing rules from linking stage.