JODI-Gas Data Quality Assessment

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Joint APEC-JODI Workshop on Oil and Gas Statistics
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Content

• Data Reporting Mechanism (Questionnaires and Definitions)
• Data Transparency, Accessibility and Usability
• Data Validation Process, Techniques and Tools
• Participation Assessment
• Consistency with Other Data Sources
Content

• Data Reporting Mechanism (Questionnaires and Definitions)
  • Data Transparency, Accessibility and Usability
  • Data Validation Process, Techniques and Tools
    ➢ Time Series / Visual Checks
• Participation Assessment
• Consistency with Other Data Sources
Data Reporting Mechanism (Questionnaire and Definitions)

Definitions

• Is it growth Indigenous Production or Dry Marketable Production?
• How to report Transit Gas?

Units

• Volumetric, Energy and Mass Units. (mind the conversion factors!)

Meta Data

• Info about deviations from the definitions or explanation about unusual data.
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Data Transparency, Accessibility and Usability

JODI Website

You can download JODI databases in IVT and CSV file formats from https://www.jodidata.org website.
Data Transparency, Accessibility and Usability

GECF Data Exchange Center (DEC) System

- Web-based data collection, analysis and reporting system accessible to all GECF Member Countries.

DEC User can retrieve gas (and other energy) data, use system dashboards for analysis or quality check. Everything can be exported to Excel.
Data Transparency, Accessibility and Usability

GECF Data Exchange Center (DEC) System

- **Analysis Dashboards**

Share of each country in GECF Production

Country Comparison - Annual Gas Consumption in Power Sector
Data Transparency, Accessibility and Usability

GECF Data Exchange Center (DEC) System

- **Quality Dashboards**

DEC System automatically generates statistics and charts of Sustainability, Timeliness and Completeness. These are openly accessible to all GECF countries to achieve full transparency.
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Data Validation Process, Techniques and Tools

Time Series / Visual Checks

- Seasonal Patterns

**Red Line** = Gas consumed in Power Sector (the peaks are during summer time)

**Blue Line** = Gas consumed in Heating at residential (the peaks are during winter time)
Data Validation Process, Techniques and Tools

Time Series / Visual Checks

- Monthly Changes

DEC system highlighted that in April 2017 a country’s production, exports and consumption in power sector decreased by around 25% M-o-M basis!, and its Pipeline exports increased by 55% in October 2017.

Let us check!
Data Validation Process, Techniques and Tools

Time Series / Visual Checks

• Monthly Changes

(1) The production increased by 50% in two points only with no justifications in the data.

(2) Gas consumption in industrial sector dropped by around 80% and stayed stable!

During general visual check, you can pick up quality issues like these!
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## Participation Assessment

### Sustainability

<table>
<thead>
<tr>
<th>Year</th>
<th>Algeria</th>
<th>Bolivia</th>
<th>Egypt</th>
<th>Eq. Guinea</th>
<th>Iran</th>
<th>Libya</th>
<th>Nigeria</th>
<th>Oman</th>
<th>Qatar</th>
<th>Russia</th>
<th>Trinidad and Tobago</th>
<th>United Arab Emirates</th>
<th>Venezuela</th>
<th>Grand Total</th>
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<td>2011</td>
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<td>0</td>
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<td>0</td>
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<td>5</td>
<td>12</td>
<td>12</td>
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<td>2017</td>
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<td>12</td>
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<td>2018</td>
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<tr>
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<td>53</td>
<td>58</td>
<td>36</td>
<td>96</td>
<td>25</td>
<td>96</td>
<td>879</td>
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</tbody>
</table>

### Data Gaps:
- Algeria and Nigeria joined Data Reporting Mechanism in 2014 and 2015
- Oman changed to Observer Status so there is no obligation for them to share the data
- Changing the Focal Point affected some active countries like Bolivia

#### Data Quality Assessment (MQs) Sustainability*

- **Red**: <= 25% of the expected questionnaires
- **Yellow**: > 25% & < 75% of the expected questionnaires
- **Green**: > 75% of the expected questionnaires
Participation Assessment

Timeliness

Green: Acceptable  |  Red: Delayed  |  Blue: No data received yet.
Participation Assessment

Completeness

**Green:** > 60%  |  **Red:** < 60%  |  **Blue:** No data received yet.
### Participation Assessment

#### Smiley Faces

<table>
<thead>
<tr>
<th>Country</th>
<th>Sustainability</th>
<th>Timeliness</th>
<th>Completeness (%)</th>
<th>Sustainability</th>
<th>Timeliness</th>
<th>Completeness (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Algeria</td>
<td>6</td>
<td>0</td>
<td>77%</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Bolivia</td>
<td>0</td>
<td>0</td>
<td>0%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Egypt</td>
<td>6</td>
<td>5</td>
<td>77%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Eq. Guinea</td>
<td>6</td>
<td>0</td>
<td>77%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Iran</td>
<td>1</td>
<td>0</td>
<td>77%</td>
<td></td>
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<tr>
<td>Libya</td>
<td>0</td>
<td>0</td>
<td>0%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nigeria</td>
<td>6</td>
<td>4</td>
<td>70%</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Oman</td>
<td>0</td>
<td>0</td>
<td>0%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Qatar</td>
<td>5</td>
<td>5</td>
<td>45%</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Russia</td>
<td>6</td>
<td>0</td>
<td>45%</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Trinidad and Tobago</td>
<td>6</td>
<td>2</td>
<td>90%</td>
<td></td>
<td></td>
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<tr>
<td>United Arab Emirates</td>
<td>0</td>
<td>0</td>
<td>0%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Venezuela</td>
<td>6</td>
<td>0</td>
<td>70%</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

From July to Dec 2018
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Consistency with Other Data Sources

Data Sources

Gas Annual Data
- GECF ASB: a primary source of annual data for GECF Member Countries
- EIA: International Energy Data
- BP Statistical Review
- IEA Natural Gas Information
- Others

Renewables
- IRENA Installed Capacity & Electricity Generation

Macroeconomics
- World Bank WDI Indicators

More sources, in progress…
Brazilian gas consumption increase 2011 to 2014. It was 37.8 Bcm. In 2014, pipeline gas imports for Brazil = 12.1 Bcm, Argentina = 5.74 Bcm. The pipeline exports of Bolivia = 17.8.

Data for 3 Countries, from 3 sources in one chart!
Consistency with Other Data Sources

Benchmarking

When integrating data from different sources, benchmarking figures is a recommended practice. A perfect match of Bolivian Marketed Production / Dry Natural Gas Production in three different sources.

Data for 3 Countries, from 3 sources in one chart!
Consistency with Other Data Sources

Benchmarking

- **Bolivian Exports**
  - Export figures of 2015 & 2016 among GECF and a second source are not matching!
  - 1.7 Bcm difference in 2016. Which may be the reason of the decline of exports in the integrated chart?
  - We have full trust in GECF primary data, some times secondary sources do data estimates.

<table>
<thead>
<tr>
<th>Year</th>
<th>Bolivia Export Pipeline</th>
<th>Other Source</th>
<th>Bolivia Natural Gas Pipelines Exports</th>
<th>GECF</th>
</tr>
</thead>
<tbody>
<tr>
<td>2014</td>
<td>17.8</td>
<td>18.1</td>
<td>17.8</td>
<td>17.8</td>
</tr>
<tr>
<td>2015</td>
<td>18.1</td>
<td>17.5</td>
<td>16.1</td>
<td></td>
</tr>
<tr>
<td>2016</td>
<td>17.8</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Consistency with Other Data Sources

Benchmarking

- **Japan Gas Consumption**
  - The Japan Consumption figures of EIA and a second source are not matching!
  - Is it definitions mismatch? May be some sectors are not included in second source?
  - DISD team is continuously doing such data analysis to support its users.

### Table: Consistency with Other Data Sources

<table>
<thead>
<tr>
<th>Year</th>
<th>Japan Consumption</th>
<th>Other Source</th>
<th>Japan Dry Natural Gas Consumption</th>
<th>EIA</th>
</tr>
</thead>
<tbody>
<tr>
<td>2011</td>
<td>108</td>
<td>120</td>
<td>127</td>
<td>121</td>
</tr>
<tr>
<td>2012</td>
<td>120</td>
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</tr>
<tr>
<td>2014</td>
<td>121</td>
<td>120</td>
<td>131</td>
<td></td>
</tr>
</tbody>
</table>
Questions?
Gas defines GECF. Data leads the way

Thank You!

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