Residual Mix Workshop 2016

Markus Klimscheffskij, Grexel Systems Ltd.

8th Domain Workshop, Brussels, 24-25 Jun 2014

Conclusions from RE-DISS II

- Without an implicit disclosure regime, explicit electricity tracking (GOs) is double counted!
- Impact of proper implicit disclosure is currently estimated at avoidance of 167.5 TWh of double counting of RES annually
- European Attribute Mix will continue to be counted using a shifted transaction-based methodology
  - Issuance-based methodology continues to be supported and fits well if production and disclosure year of GOs are to large extent the same.

What has happened?

- RE-DISS II ended September 2015
  - Recommendation to continue EAM using Shifted-Transaction Based accounting
- AIB decided to facilitate EAM & RM calculations for 2015 and 2016
  - Grexel was selected through tendering as the provider
- EAM & Residual Mixes for 2015 were published 13.5.2016
- Grexel performs EAM & RM calculations following the legacy methodology of RE-DISS
  - Any methodological development has to be separately agreed
### Aims of This Session

- Increase awareness of the Residual Mix Calculation Methodology
- Present and Discuss Results of 2015
- Discuss possible developments for 2016 calculation
  - E.g. New result graphs, need for bilateral support, more explanations, specific data

### Association of Issuing Bodies

Residual Mix Calculation
Residual Mix Workshop 2016

Markus Klimschek, Grevol Systems Ltd.

---

![Sweets Image](image1)

![Sweets Image](image2)
8th Domain Workshop, Brussels, 24-25 Jun 2014

Renewable Energy Balance in a Country

Producers

Consumers

GOs

NO! If you’re gonna track electricity, you need to pay the price!

8th Domain Workshop, Brussels, 24-25 Jun 2014

Renewable Energy Balance in a Country

Producers

Consumers

And the price is the residual mix

8th Domain Workshop, Brussels, 24-25 Jun 2014

International Renewable Energy Balance

RM is still 100% green

8th Domain Workshop, Brussels, 24-25 Jun 2014

Balance of Electricity Generation Attributes vs. Consumption

Europe 2015

Production

Europe 2015

Consumption

→ the missing attributes are somewhere we just need to find them

Enter Physics: Every consumed MWh in Europe has an origin!
Balancing of Generation Attributes According to RE-DISS Methodology

<table>
<thead>
<tr>
<th>Domain A</th>
<th>Domain B</th>
<th>Domain C</th>
<th>Domain D</th>
</tr>
</thead>
<tbody>
<tr>
<td>Surplus</td>
<td>GO Export</td>
<td>Surplus</td>
<td>GO Import</td>
</tr>
</tbody>
</table>

European Attribute Mix

RM is still 100% green

No! If you're gonna export GOs, you need to pay the price!

International Renewable Energy Balance

Couple of Words on Use...

- Typically suppliers only cancel GOs for part of their total sales
- Gap between electricity sales and attributes from explicit instruments (GOs) should be "patched up" from the Residual Mix of the respective country
- Use of the Residual Mix shall be enforced by a Competent Authority (responsible for supervision of electricity disclosure)
8th Domain Workshop, Brussels, 24-25 Jun 2014

**How to Perform Electricity Disclosure – No Cancellations for Supplier Mix**

**2015 Electricity Sales**

- 6000 GWh Total Supplier Mix
- 1950 RES
- 1575 NUC
- 2475 FOS

**Supplier sales 2015 without specified product:**
- 4000 GWh National Residual Mix
- 400 RES (10%)
- 1400 NUC (35%)
- 2200 FOS (55%)

**Electricity Products sold in 2015:**
- 1500 GWh RES GOs
- 4500 GWh National Residual Mix
- 450 RES (10%)
- 1575 NUC (35%)
- 2475 FOS (55%)

**Residual Product:**

- 500 GWh Total Supplier Mix
- 500 RES (10%)
- 1400 NUC (31%)
- 2200 FOS (49%)

---

**Evolution of European Attribute Mix**

**Association of Issuing Bodies**

Residual Mix Calculation Results 2015

Residual Mix Workshop 2016

Markus Klimeschek, Grevel Systems Ltd.
Evolution of Production vs. Residual Mix

CAGR: 7.5% → Entire Prod. RES 2030

Evolution of Production vs. Residual Mix (TWh)

Production vs. Residual Mixes 2015

Residual vs. Total Supplier Mixes 2015
Residual Mixes 2015

Average: 79%
Weighted Average: 74%

CO2 / kWh in Production, Residual and Total Supplier Mix 2015

Production Mix 2013, 2014, 2015 CO2 / kWh

Various CO2 Indicators in Residual Mixes 2015
Radioactive Waste in Production, Residual and Total Supplier Mix

Production vs. Total Supplier Mix 2015

Yearly Variation Causes

- Different Disclosure DL
- Increased data on RTS
- Increased / Decreased Tracking
- EECS Membership
- Regulative Changes
- Size of the country
- Inexplicable effects

Thank you for your attention