

# Report

## on the results of the functioning of cogeneration units in Romania in 2010

### *Statistics – reporting year 2010*

ANRE has assessed the following aspects of the operational data sent by producers for 2010:

1. In accordance with Article 13)(3) of Government Decision No 219/2007, the production of electricity and heat in cogeneration by each energy producer in possession of cogeneration units, using the calculation method laid down in Annex II to Directive 2004/8/EC.

The results are presented in Table I, broken down by types of producer (thermoelectric power plants/autoproducers).

**Table I – National production of electricity and heat in cogeneration**

| Year        | Total electricity produced in cogeneration units | Electricity produced in cogeneration (Annex II to Directive 2004/8/EC) | of which:    |               | Share of electricity produced in cogeneration out of total national production | Useful heat produced in cogeneration units (Annex II to Directive 2004/8/EC) | of which:    |               |
|-------------|--|--|--------------|---------------|--|--|--------------|---------------|
|             |  |  | Power plants | Autoproducers |  |  | Power plants | Autoproducers |
|             | TWh  | TWh  | TWh          | TWh           | %  | PJ   | PJ           | PJ            |
| <b>2007</b> | <b>14.23</b>                                     | <b>6.62</b>  | <b>5.65</b>  | <b>0.97</b>   | <b>10.7</b>  | <b>73.2</b>  | <b>61.7</b>  | <b>11.6</b>   |
| <b>2008</b> | <b>14.06</b>                                     | <b>6.21</b>  | <b>5.24</b>  | <b>0.97</b>   | <b>9.6</b>   | <b>71.5</b>  | <b>58.6</b>  | <b>12.9</b>   |
| <b>2009</b> | <b>12.33</b>                                     | <b>6.26</b>  | <b>5.40</b>  | <b>0.86</b>   | <b>10.8</b>  | <b>66.3</b>  | <b>54.7</b>  | <b>11.6</b>   |
| <b>2010</b> | <b>11.93</b>                                     | <b>6.54</b>  | <b>5.38</b>  | <b>1.16</b>   | <b>10.8</b>  | <b>69.0</b>  | <b>53.5</b>  | <b>15.5</b>   |

2. Pursuant to the requirements laid down in Article 13(4) of Government Decision No 219/2007:

a) Cogeneration capacities (electricity/heat) – presented in Table II:

**Table II – Electricity and heat cogeneration capacities in Romania in 2010**

| <b>Cogeneration technology</b>               | <b>Maximum capacity</b> |                 |
|--|-------------------------|-----------------|
|  | <b>Electricity</b>      | <b>Heat</b>     |
|  | <b>Gross</b>            | <b>Net</b>      |
|  | <b>MW</b>               | <b>MW</b>       |
| Combined cycle                               | 185.60                  | 187.83          |
| Gas turbines with heat recovery              | 116.14                  | 181.69          |
| Internal combustion engines                  | 59.73                   | 60.85           |
| Steam backpressure turbines                  | 809.58                  | 3308.06         |
| Steam condensing turbines with heat recovery | 3411.00                 | 7032.88         |
| <b>Total</b>                                 | <b>4582.05</b>          | <b>10771.31</b> |

b) Quantities of fuel used in cogeneration process - presented in Table III:

**Table III – Quantities of fuel used to produce electricity and heat in cogeneration**

| Year        | Total fuel used by cogeneration units | Fuel used for cogeneration (Annex II to Directive 2004/8/EC) | of which:         |            |             |                      |             |
|-------------|---------------------------------------|--|-------------------|------------|-------------|----------------------|-------------|
|             |                                       |  | Solid fossil fuel | Fuel oil   | Natural gas | Renewables and waste | Other fuels |
|             | PJ                                    | PJ   | %                 | %          | %           | %                    | %           |
| <b>2007</b> | <b>221.4</b>                          | <b>122.8</b>   | <b>38.2</b>       | <b>8.3</b> | <b>52.8</b> | <b>0.0</b>           | <b>0.7</b>  |
| <b>2008</b> | <b>216.8</b>                          | <b>118.1</b>   | <b>39.5</b>       | <b>6.3</b> | <b>52.8</b> | <b>0.0</b>           | <b>1.4</b>  |
| <b>2009</b> | <b>188.6</b>                          | <b>112.4</b>   | <b>39.8</b>       | <b>6.9</b> | <b>49.7</b> | <b>0.5</b>           | <b>3.1</b>  |
| <b>2010</b> | <b>186.1</b>                          | <b>117.3</b>   | <b>38.6</b>       | <b>3.8</b> | <b>50.8</b> | <b>1.9</b>           | <b>4.9</b>  |

c) Quantities of electricity produced in high-efficiency cogeneration and primary energy savings obtained through the use of cogeneration, established in accordance with Annex III to Directive 2004/8/EC – presented in Table IV:

**Table IV – Electricity produced in high-efficiency cogeneration and primary energy savings obtained through the use of cogeneration**

| Year        | Electricity produced in high-efficiency cogeneration (Annex III to Directive 2004/8/EC) | Consumption of fuel in high-efficiency cogeneration (Annex III to Directive 2004/8/EC) | PES in absolute values (Annex III to Directive 2004/8/EC) | PES (Annex III to Directive 2004/8/EC) |
|-------------|---|--|---|--|
|             | TWh   | PJ   | PJ  | %                                      |
| <b>2007</b> | <b>4.4</b>  | <b>67.9</b>  | <b>10.5</b>   | <b>13.4</b>                            |
| <b>2008</b> | <b>3.7</b>  | <b>62.4</b>  | <b>9.2</b>  | <b>12.8</b>                            |
| <b>2009</b> | <b>3.5</b>  | <b>49.6</b>  | <b>8.2</b>  | <b>14.2</b>                            |
| <b>2010</b> | <b>3.3</b>  | <b>47.5</b>  | <b>8.0</b>  | <b>14.5</b>                            |

PES – saving of primary energy compared with separate production of energy (Primary Energy Savings)

#### **Findings:**

- 1. The national installed cogeneration potential continues to be underused, as it is largely intended only for seasonal useful heat demand (for heating), as the production technologies/units installed before 2000 are not adapted to the new conditions on the market for thermal energy (reduction by approximately 90% of the market for thermal energy in the form of steam - industrial consumption).**
- 2. There continues to be a slight downward trend in useful heat demand for heating.**
- 3. We are seeing the beginnings of an upward trend (growth) in the production of electricity and useful heat by autoproducers (for industrial consumption).**
- 4. Actions of note include:**
  - a. the commissioning of a new cogeneration unit using renewable energy sources (biomass) in Sebeș;**
  - b. the decommissioning of cogeneration units installed before 2000 in Pitești and Giurgiu;**
  - c. the start of the process of replacing cogeneration units installed before 2000 in Brașov;**
  - d. the installation of new cogeneration units (using internal combustion engines) in Bucharest.**
- 5. From an operational point of view, the focus continues to be on the efficient functioning of existing cogeneration plants.**