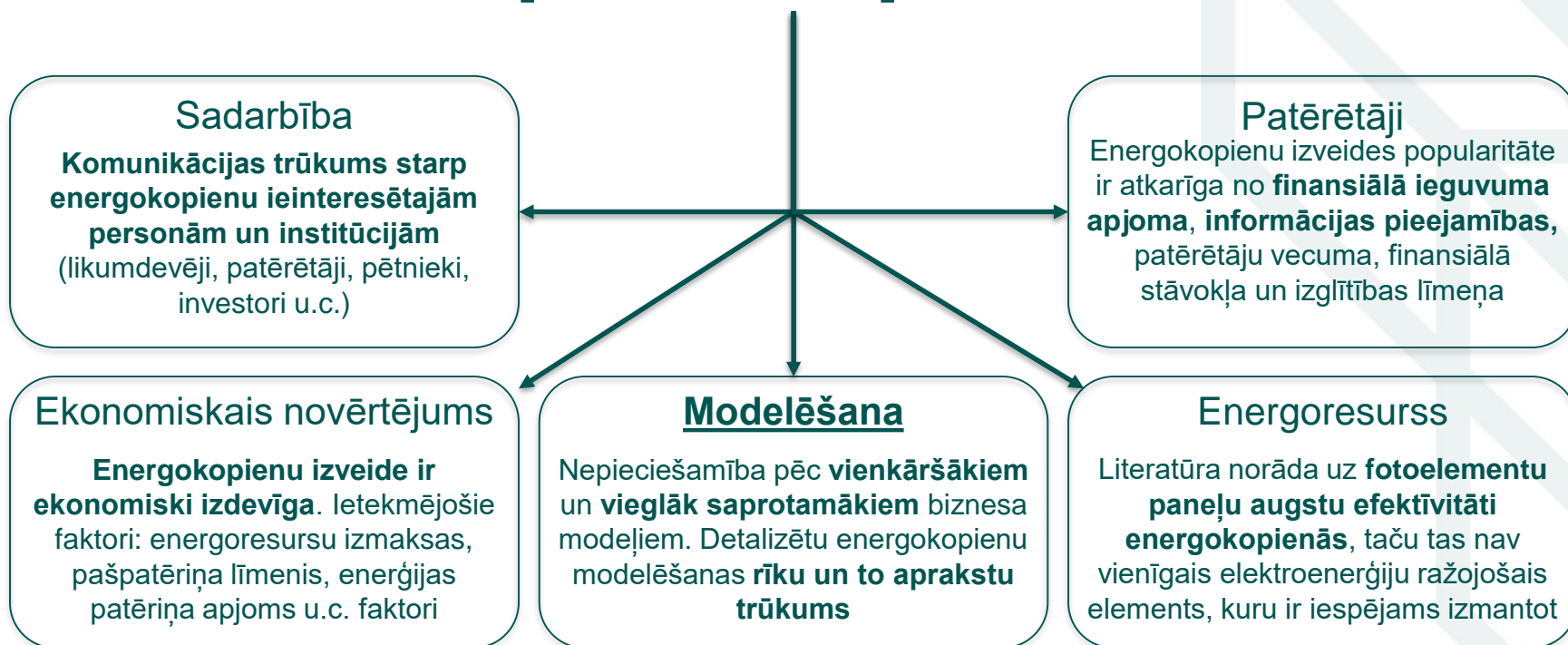


# **Energokopienū darbības novērtēšanas modelis**

Mg. Sc. Ing. Roberts Lazdiņš  
Pētnieks  
06.10.2022



# Energokopieniu modelēšanas priekšizpēte



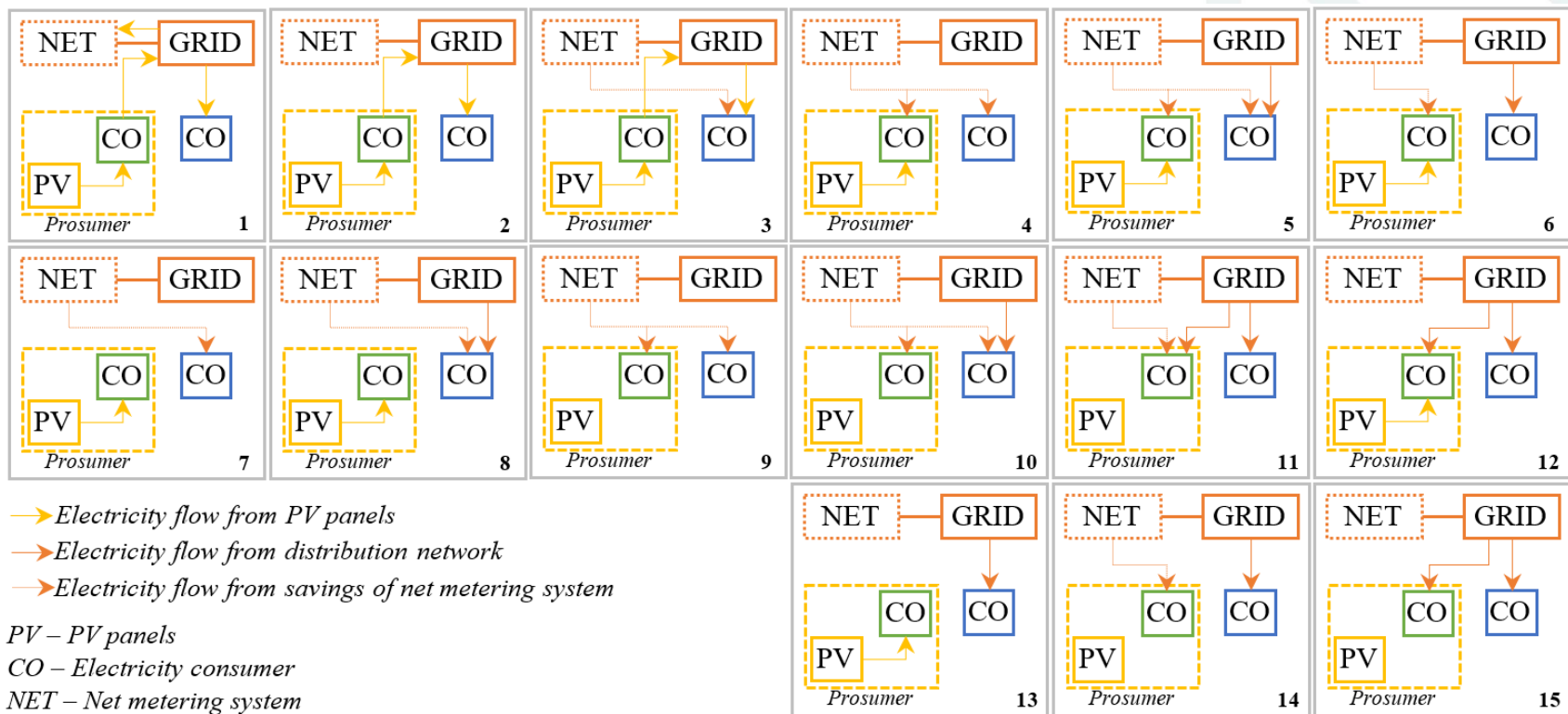
# **Energokopienū darbības novērtēšanas modeļa apraksts**

# Pamatojums energokopienų darbības novērtēšanas modelim

- Nepieciešamība pēc Latvijas apstākļiem piemērota energokopienų modelēšanas rīka → neto uzskaites sistēmas izmantošana, izmantojot sadales tīklu;
- Esošo ražojošo patērētāju elektroenerģijas ģenerācija ir pielāgota vai nedaudz pārsniedz to elektroenerģijas patēriņu → ir neliels elektroenerģijas daudzuma pārpalikums;
- **Pirmās energokopienās būs izveidotas uz esošo mikroģeneratoru un ražojošo patērētāju bāzes;**

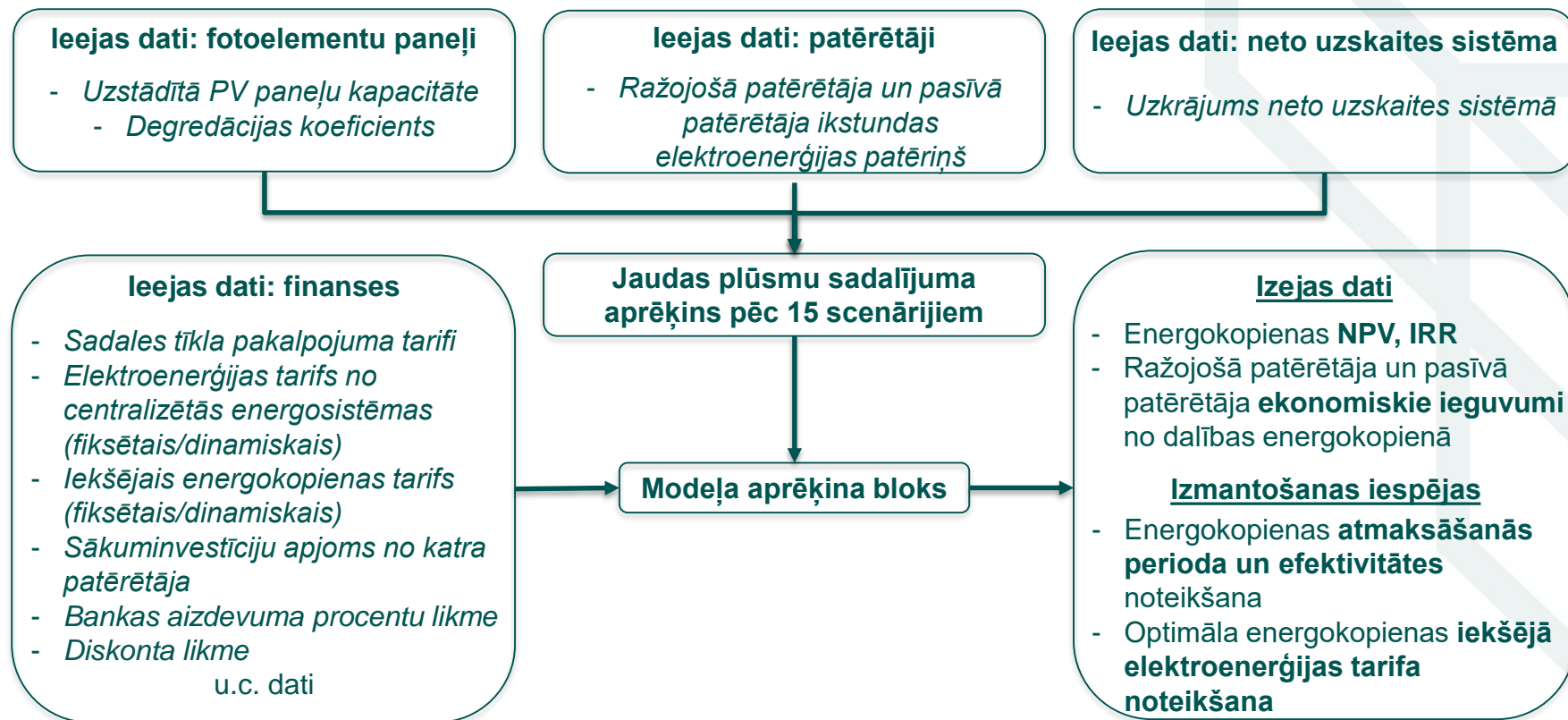
Potenciāls maza izmēra energokopienų izveidei  
(*ražojošais patērētājs + pasīvais patērētājs*)

# Modeļa algoritms – jaudas plūsmu sadalījuma scenāriji



Ražojošā patērētāja + pasīvā patērētāja energokopienas jaudas plūsmas sadalījuma scenāriji, izmantojot neto uzskaites sistēmu un sadales tīklu

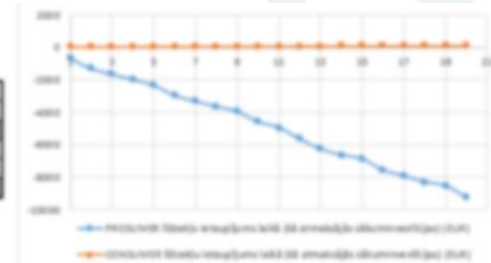
# Energokopienų darbības novērtēšanas modeļa blokshēma



# Energokopienību darbības novērtēšanas modelis

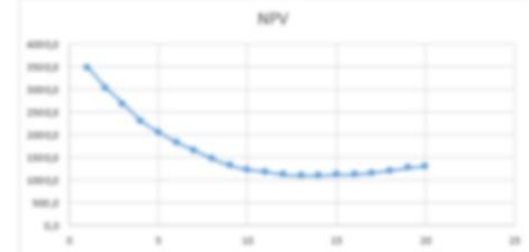
|   |      |       |     |
|---|------|-------|-----|
| Installed PV capacity (kW)                        | 55   | PROJ. | 23% |
| PV degradation coefficient (k from PV generation) | 0.5% |       |     |

|  |        |          |        |   |        |          |        |
|--|--------|----------|--------|---|--------|----------|--------|
| PROJ. electricity grid tariff                          | STATIC | Consumer | STATIC | CONSUMER electricity grid tariff                    | STATIC | Consumer | STATIC |
| PROJ. STATE grid tariff (€/MWh)                        |        |          | 0.15   | CONSUMER STATE grid tariff (€/MWh)                  |        |          | 0.15   |
| PROJ. STATE grid tariff + Pvk (€/MWh)                  |        |          | 0.32   | CONSUMER STATE grid tariff + Pvk (€/MWh)            |        |          | 0.3203 |
| €/kWh electricity tariff for PROJ. STATE               | STATIC | Consumer | STATIC | €/kWh electricity tariff for CONSUMER               | STATIC | Consumer | STATIC |
| €/kWh electricity tariff for PROJ. STATE (€/MWh)       |        |          | 0      | €/kWh electricity tariff for CONSUMER (€/MWh)       |        |          | 0.15   |
| €/kWh electricity tariff for PROJ. STATE + Pvk (€/MWh) |        |          | 0      | €/kWh electricity tariff for CONSUMER + Pvk (€/MWh) |        |          | 0.3203 |



| Type  | Unit | Participant | YEAR   |        |        |         |        |        |        |         |        |        |        |        |        |        |        |         |        |        |        |         | Σ      |        |         |        |
|---|------|-------------|--------|--------|--------|---------|--------|--------|--------|---------|--------|--------|--------|--------|--------|--------|--------|---------|--------|--------|--------|---------|--------|--------|---------|--------|
|   |      |             | 0      | 1      | 2      | 3       | 4      | 5      | 6      | 7       | 8      | 9      | 10     | 11     | 12     | 13     | 14     | 15      | 16     | 17     | 18     | 19      |        | 20     |         |        |
| Savienots elektroenerģijas daudzums no PV paneļiem  | kWh  | PROJ. STATE | 2380.4 | 2345.7 | 2302.1 | 4484.7  | 3906.9 | 2845.7 | 2092.1 | 4484.6  | 4479.8 | 2845.7 | 2092.1 | 4484.6 | 4479.8 | 2845.7 | 2092.1 | 4484.6  | 4479.8 | 2845.7 | 2092.1 | 4484.7  | 2345.7 | 72405  |         |        |
|   |      | CONSUMER    | 2273.8 | 2273.1 | 2434   | 2776.4  | 2435.9 | 2273.1 | 2434   | 2776.4  | 2777.9 | 2273.1 | 2434   | 2776.4 | 2273.1 | 2434   | 2776.4 | 2273.1  | 2434   | 2776.4 | 2435.9 | 2273.1  | 2434   | 2776.4 | 43800   |        |
|   |      | TOTAL       | 5154   | 5154.8 | 6326.5 | 6261.2  | 6340.2 | 5154.8 | 6326.5 | 6261.2  | 6340.9 | 6257.5 | 5154.8 | 6326   | 6261.2 | 5154.8 | 6326.5 | 6261.2  | 6340.9 | 6257.5 | 6326.5 | 6261.2  | 6340.9 | 6257.5 | 5154.8  | 116205 |
| Summa par savienoto elektroenerģijas daudzumu no PV paneļiem  | €    | PROJ. STATE | 0      | 0      | 0      | 0       | 0      | 0      | 0      | 0       | 0      | 0      | 0      | 0      | 0      | 0      | 0      | 0       | 0      | 0      | 0      | 0       | 0      | 0      |         |        |
|   |      | CONSUMER    | 412.66 | 412.21 | 441.78 | 522.42  | 442.04 | 412.21 | 441.78 | 522.42  | 522.69 | 412.21 | 441.78 | 522.42 | 412.67 | 412.2  | 441.28 | 522.42  | 442.04 | 412.21 | 441.78 | 522.42  | 412.66 | 7913   |         |        |
|   |      | TOTAL       | 412.66 | 412.21 | 441.78 | 522.42  | 442.04 | 412.21 | 441.78 | 522.42  | 522.69 | 412.21 | 441.78 | 522.42 | 412.67 | 412.2  | 441.28 | 522.42  | 442.04 | 412.21 | 441.78 | 522.42  | 412.66 | 7913   |         |        |
| Elektroenerģijas izmaksas (atpakaļgaita no šīs savienotās elektroenerģijas vietās, piedaloties €/kWh) | €    | PROJ. STATE | 548.78 | 630.58 | 874.59 | 1008.1  | 878.02 | 630.58 | 874.59 | 1008.1  | 1013.8 | 630.58 | 874.57 | 630.58 | 634    | 874.57 | 1007.9 | 630.58  | 878.02 | 874.59 | 1008.1 | 630.57  | 874.59 | 1008.1 | 16159   |        |
|   |      | CONSUMER    | 418.08 | 417.89 | 447.55 | 528.62  | 447.82 | 417.89 | 447.55 | 528.62  | 528.9  | 417.89 | 447.54 | 528.62 | 417.88 | 417.89 | 447.05 | 528.62  | 447.81 | 417.89 | 447.55 | 528.62  | 417.89 | 447.55 | 528.62  | 8017   |
|   |      | TOTAL       | 966.86 | 1048.2 | 1322.1 | 1536.7  | 1325.8 | 1048.2 | 1322.1 | 1536.7  | 1542.7 | 1048.2 | 1322.1 | 957.22 | 1048.2 | 1048.2 | 1322.1 | 1048.2  | 1322.1 | 1325.8 | 1322.1 | 1048.2  | 1322.1 | 1048.2 | 1322.1  | 24176  |
| Ekonomiskā ieguvumi €/kWh atbilstotam par šādu €/kWh  | €    | PROJ. STATE | 548.78 | 630.58 | 874.59 | 1008.1  | 878.02 | 630.58 | 874.59 | 1008.1  | 1013.8 | 630.58 | 874.57 | 630.58 | 634    | 874.57 | 1007.9 | 630.58  | 878.02 | 874.59 | 1008.1 | 630.57  | 874.59 | 1008.1 | 16159   |        |
|   |      | CONSUMER    | 5.2821 | 5.2842 | 5.7726 | 4.213   | 5.7758 | 5.2842 | 5.7726 | 4.2129  | 4.2184 | 5.2842 | 5.7724 | 4.213  | 5.2846 | 5.2842 | 5.7724 | 4.213   | 5.2846 | 5.2842 | 5.7726 | 4.213   | 5.7758 | 5.2842 | 5.7726  | 108    |
|   |      | TOTAL       | 578.18 | 635.87 | 880.36 | 1012.33 | 883.79 | 635.87 | 880.36 | 1012.29 | 1018.6 | 635.87 | 880.36 | 634.88 | 635.89 | 638.98 | 879.81 | 1012.11 | 634.88 | 883.79 | 879.81 | 1012.33 | 635.87 | 880.36 | 1012.33 | 16267  |
| Share of €/kWh in final consumption   | %    | TOTAL       | 100%   | 100%   | 100%   | 100%    | 100%   | 100%   | 100%   | 100%    | 100%   | 100%   | 100%   | 100%   | 100%   | 100%   | 100%   | 100%    | 100%   | 100%   | 100%   | 100%    | 100%   | 100%   |         |        |

|   |           |
|---|-----------|
| Reālās atdeves procenti   | 4%        |
| Reālās atdeves (€)  | 23802     |
| Ordnings vērtība  | 7.44%     |
| CAPEX par €/kWh izmaksām (izmaksas ar atbilstošu vairo šīs PV (€/MWh))      | 1.2       |
| Reālās CAPEX ar PV (€/MWh)  | 17380     |
| OPEX par €/kWh gada uzturēšanas izmaksas ar atbilstošu vairo šīs PV (€/MWh) | 0.212     |
| Reālās OPEX gada ar PV (€/MWh/gadā)   | 273.02    |
| Subjektīvas (€)   | 4000      |
| Atbilstošā (€), ko vairo €/kWh atbilstošā (€/MWh) ar                        | 0         |
| Reālās atdeves summa gada, kas ar 4000 par (€) ar 20 gadu                   | 704.25102 |



Energokopienības darbības novērtēšanas modelis ir realizēts atvērtā vidē – MS Excel



# Energokopienību darbības novērtēšanas modelis

|   |         | GĀS    |                                       |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        | Σ      |        |        |        |
|---|---------|--------|---------------------------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
|   |         | 20     | 1                                     | 2      | 3      | 4      | 5      | 6      | 7      | 8      | 9      | 10     | 11     | 12     | 13     | 14     | 15     | 16     | 17     | 18     | 19     |        | 20     |        |        |
| <b>PROGNOZĒjamā izdevumu atbilstība (M)</b>               |         |        |                                       |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |
|   |         |        | <b>PROGNOZĒjamā darbības izdevumi</b> |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |
| Īst. enerģ. patēriņš (MWh) par katru atsevišķu (MWh/izm.) | 0,0007% | deviņi | 53,91                                 | 0,02   | 0,02   | 0,02   | 0,02   | 0,02   | 0,02   | 0,02   | 0,02   | 0,02   | 0,02   | 0,02   | 0,02   | 0,02   | 0,02   | 0,02   | 0,02   | 0,02   | 0,02   | 0,02   | 0,02   | 54,4   |        |
| Īst. enerģ. patēriņš (MWh) par katru atsevišķu (MWh/izm.) | 2,4     | deviņi | 48,00                                 | 48,00  | 48,00  | 48,00  | 48,00  | 48,00  | 48,00  | 48,00  | 48,00  | 48,00  | 48,00  | 48,00  | 48,00  | 48,00  | 48,00  | 48,00  | 48,00  | 48,00  | 48,00  | 48,00  | 48,00  | 48,00  | 960,0  |
| Prognost. (MWh) izdevumi (MWh/izm.)                       | 1,04    | deviņi | 20,80                                 | 20,80  | 20,80  | 20,80  | 20,80  | 20,80  | 20,80  | 20,80  | 20,80  | 20,80  | 20,80  | 20,80  | 20,80  | 20,80  | 20,80  | 20,80  | 20,80  | 20,80  | 20,80  | 20,80  | 20,80  | 20,80  | 416,0  |
| Mēģinājumi (MWh) atpakaļskaitļi (MWh/izm.)                | 0,0017% | deviņi | 0,00                                  | 0,00   | 0,00   | 0,00   | 0,00   | 0,00   | 0,00   | 0,00   | 0,00   | 0,00   | 0,00   | 0,00   | 0,00   | 0,00   | 0,00   | 0,00   | 0,00   | 0,00   | 0,00   | 0,00   | 0,00   | 0,00   | 0,0    |
| Mēģinājumi (MWh) atpakaļskaitļi (MWh/izm.)                | 0,0001  | deviņi | 0,00                                  | 0,00   | 0,00   | 0,00   | 0,00   | 0,00   | 0,00   | 0,00   | 0,00   | 0,00   | 0,00   | 0,00   | 0,00   | 0,00   | 0,00   | 0,00   | 0,00   | 0,00   | 0,00   | 0,00   | 0,00   | 0,00   | 0,0    |
| Īst. enerģ. patēriņš (MWh) par katru atsevišķu (MWh/izm.) | 2,4004  | deviņi | 27,28                                 | 27,28  | 27,28  | 27,28  | 27,28  | 27,28  | 27,28  | 27,28  | 27,28  | 27,28  | 27,28  | 27,28  | 27,28  | 27,28  | 27,28  | 27,28  | 27,28  | 27,28  | 27,28  | 27,28  | 27,28  | 27,28  | 545,7  |
| Īst. enerģ. patēriņš (MWh) par katru atsevišķu (MWh/izm.) |         |        | 149,99                                | 96,11  | 96,11  | 96,11  | 96,11  | 96,11  | 96,11  | 96,11  | 96,11  | 96,11  | 96,11  | 96,11  | 96,11  | 96,11  | 96,11  | 96,11  | 96,11  | 96,11  | 96,11  | 96,11  | 96,11  | 96,11  | 1876,1 |
| Īst. enerģ. patēriņš (MWh) par katru atsevišķu (MWh/izm.) |         |        | 191,89                                | 136,29 | 136,29 | 136,29 | 136,29 | 136,29 | 136,29 | 136,29 | 136,29 | 136,29 | 136,29 | 136,29 | 136,29 | 136,29 | 136,29 | 136,29 | 136,29 | 136,29 | 136,29 | 136,29 | 136,29 | 136,29 | 2391,1 |
|   |         |        | <b>PROGNOZĒjamā darbības izdevumi</b> |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |
| Īst. enerģ. patēriņš (MWh) par katru atsevišķu (MWh/izm.) | 0,0007% | deviņi | 116,41                                | 116,41 | 116,41 | 116,41 | 116,41 | 116,41 | 116,41 | 116,41 | 116,41 | 116,41 | 116,41 | 116,41 | 116,41 | 116,41 | 116,41 | 116,41 | 116,41 | 116,41 | 116,41 | 116,41 | 116,41 | 116,41 | 2301,7 |
| Īst. enerģ. patēriņš (MWh) par katru atsevišķu (MWh/izm.) | 2,4     | deviņi | 48,00                                 | 48,00  | 48,00  | 48,00  | 48,00  | 48,00  | 48,00  | 48,00  | 48,00  | 48,00  | 48,00  | 48,00  | 48,00  | 48,00  | 48,00  | 48,00  | 48,00  | 48,00  | 48,00  | 48,00  | 48,00  | 48,00  | 960,0  |
| Prognost. (MWh) izdevumi (MWh/izm.)                       | 1,04    | deviņi | 20,80                                 | 20,80  | 20,80  | 20,80  | 20,80  | 20,80  | 20,80  | 20,80  | 20,80  | 20,80  | 20,80  | 20,80  | 20,80  | 20,80  | 20,80  | 20,80  | 20,80  | 20,80  | 20,80  | 20,80  | 20,80  | 20,80  | 416,0  |
| Mēģinājumi (MWh) atpakaļskaitļi (MWh/izm.)                | 0,0017% | deviņi | 0,01                                  | 0,01   | 0,01   | 0,01   | 0,01   | 0,01   | 0,01   | 0,01   | 0,01   | 0,01   | 0,01   | 0,01   | 0,01   | 0,01   | 0,01   | 0,01   | 0,01   | 0,01   | 0,01   | 0,01   | 0,01   | 0,01   | 0,2    |
| Mēģinājumi (MWh) atpakaļskaitļi (MWh/izm.)                | 0,0001  | deviņi | 0,01                                  | 0,01   | 0,01   | 0,01   | 0,01   | 0,01   | 0,01   | 0,01   | 0,01   | 0,01   | 0,01   | 0,01   | 0,01   | 0,01   | 0,01   | 0,01   | 0,01   | 0,01   | 0,01   | 0,01   | 0,01   | 0,01   | 0,2    |
| Īst. enerģ. patēriņš (MWh) par katru atsevišķu (MWh/izm.) |         |        | 191,01                                | 190,39 | 190,39 | 190,39 | 190,39 | 190,39 | 190,39 | 190,39 | 190,39 | 190,39 | 190,39 | 190,39 | 190,39 | 190,39 | 190,39 | 190,39 | 190,39 | 190,39 | 190,39 | 190,39 | 190,39 | 190,39 | 4469,7 |
| Īst. enerģ. patēriņš (MWh) par katru atsevišķu (MWh/izm.) |         |        | 231,12                                | 230,57 | 230,57 | 230,57 | 230,57 | 230,57 | 230,57 | 230,57 | 230,57 | 230,57 | 230,57 | 230,57 | 230,57 | 230,57 | 230,57 | 230,57 | 230,57 | 230,57 | 230,57 | 230,57 | 230,57 | 230,57 | 5406,0 |

|   |         | GĀS    |                                      |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        | Σ      |        |        |         |         |
|---|---------|--------|--------------------------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|---------|---------|
|   |         | 20     | 1                                    | 2      | 3      | 4      | 5      | 6      | 7      | 8      | 9      | 10     | 11     | 12     | 13     | 14     | 15     | 16     | 17     | 18     | 19     |        | 20     |        |         |         |
| <b>CONSUMĒjamā izdevumu atbilstība (M)</b>                |         |        |                                      |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |         |         |
|   |         |        | <b>CONSUMĒjamā darbības izdevumi</b> |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |         |         |
| Īst. enerģ. patēriņš (MWh) par katru atsevišķu (MWh/izm.) | 0,0007% | deviņi | 91,68                                | 91,58  | 91,22  | 72,42  | 99,28  | 91,58  | 99,22  | 72,42  | 72,47  | 91,58  | 99,22  | 72,42  | 91,64  | 91,58  | 99,22  | 72,42  | 99,28  | 91,58  | 99,22  | 72,42  | 99,22  | 72,42  | 1777,41 |         |
| Īst. enerģ. patēriņš (MWh) par katru atsevišķu (MWh/izm.) | 2,4     | deviņi | 48,00                                | 48,00  | 48,00  | 48,00  | 48,00  | 48,00  | 48,00  | 48,00  | 48,00  | 48,00  | 48,00  | 48,00  | 48,00  | 48,00  | 48,00  | 48,00  | 48,00  | 48,00  | 48,00  | 48,00  | 48,00  | 48,00  | 960,00  |         |
| Prognost. (MWh) izdevumi (MWh/izm.)                       | 1,04    | deviņi | 20,80                                | 20,80  | 20,80  | 20,80  | 20,80  | 20,80  | 20,80  | 20,80  | 20,80  | 20,80  | 20,80  | 20,80  | 20,80  | 20,80  | 20,80  | 20,80  | 20,80  | 20,80  | 20,80  | 20,80  | 20,80  | 20,80  | 416,00  |         |
| Mēģinājumi (MWh) atpakaļskaitļi (MWh/izm.)                | 0,0017% | deviņi | 0,00                                 | 0,00   | 0,00   | 0,00   | 0,00   | 0,00   | 0,00   | 0,00   | 0,00   | 0,00   | 0,00   | 0,00   | 0,00   | 0,00   | 0,00   | 0,00   | 0,00   | 0,00   | 0,00   | 0,00   | 0,00   | 0,00   | 0,20    |         |
| Mēģinājumi (MWh) atpakaļskaitļi (MWh/izm.)                | 0,0001  | deviņi | 0,00                                 | 0,00   | 0,00   | 0,00   | 0,00   | 0,00   | 0,00   | 0,00   | 0,00   | 0,00   | 0,00   | 0,00   | 0,00   | 0,00   | 0,00   | 0,00   | 0,00   | 0,00   | 0,00   | 0,00   | 0,00   | 0,00   | 0,00    |         |
| Īst. enerģ. patēriņš (MWh) par katru atsevišķu (MWh/izm.) |         |        | 141,48                               | 141,58 | 140,02 | 141,22 | 140,08 | 141,58 | 140,02 | 141,22 | 141,27 | 141,58 | 140,02 | 141,22 | 141,44 | 141,58 | 140,02 | 141,22 | 140,08 | 141,58 | 140,02 | 141,22 | 140,08 | 141,22 | 140,08  | 3103,42 |
| Īst. enerģ. patēriņš (MWh) par katru atsevišķu (MWh/izm.) |         |        | 195,29                               | 195,27 | 195,50 | 176,87 | 205,57 | 195,27 | 205,50 | 176,87 | 176,94 | 195,27 | 205,50 | 176,87 | 195,54 | 195,27 | 205,51 | 176,87 | 205,57 | 195,27 | 205,50 | 176,87 | 205,50 | 176,87 | 205,50  | 4013,4  |
|   |         |        | <b>CONSUMĒjamā darbības izdevumi</b> |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |         |         |
| Īst. enerģ. patēriņš (MWh) par katru atsevišķu (MWh/izm.) | 0,0007% | deviņi | 91,68                                | 91,58  | 91,22  | 72,42  | 99,28  | 91,58  | 99,22  | 72,42  | 72,47  | 91,58  | 99,22  | 72,42  | 91,64  | 91,58  | 99,22  | 72,42  | 99,28  | 91,58  | 99,22  | 72,42  | 99,22  | 72,42  | 1777,41 |         |
| Īst. enerģ. patēriņš (MWh) par katru atsevišķu (MWh/izm.) | 2,4     | deviņi | 48,00                                | 48,00  | 48,00  | 48,00  | 48,00  | 48,00  | 48,00  | 48,00  | 48,00  | 48,00  | 48,00  | 48,00  | 48,00  | 48,00  | 48,00  | 48,00  | 48,00  | 48,00  | 48,00  | 48,00  | 48,00  | 48,00  | 960,00  |         |
| Prognost. (MWh) izdevumi (MWh/izm.)                       | 1,04    | deviņi | 20,80                                | 20,80  | 20,80  | 20,80  | 20,80  | 20,80  | 20,80  | 20,80  | 20,80  | 20,80  | 20,80  | 20,80  | 20,80  | 20,80  | 20,80  | 20,80  | 20,80  | 20,80  | 20,80  | 20,80  | 20,80  | 20,80  | 416,00  |         |
| Mēģinājumi (MWh) atpakaļskaitļi (MWh/izm.)                | 0,0017% | deviņi | 4,00                                 | 4,00   | 4,28   | 3,13   | 4,29   | 4,00   | 4,28   | 3,13   | 3,13   | 4,00   | 4,28   | 3,13   | 4,00   | 4,00   | 4,28   | 3,13   | 4,29   | 4,00   | 4,28   | 3,13   | 4,29   | 4,00   | 76,76   |         |
| Mēģinājumi (MWh) atpakaļskaitļi (MWh/izm.)                | 0,0001  | deviņi | 0,45                                 | 0,45   | 0,49   | 0,36   | 0,49   | 0,45   | 0,49   | 0,36   | 0,36   | 0,45   | 0,49   | 0,36   | 0,45   | 0,45   | 0,49   | 0,36   | 0,49   | 0,45   | 0,49   | 0,36   | 0,49   | 0,36   | 8,72    |         |
| Īst. enerģ. patēriņš (MWh) par katru atsevišķu (MWh/izm.) |         |        | 145,94                               | 145,63 | 145,79 | 144,70 | 144,70 | 145,63 | 145,79 | 144,70 | 144,70 | 145,63 | 145,79 | 144,70 | 144,70 | 145,63 | 145,63 | 145,79 | 144,70 | 145,63 | 145,63 | 145,79 | 144,70 | 145,79 | 144,70  | 3126,07 |
| Īst. enerģ. patēriņš (MWh) par katru atsevišķu (MWh/izm.) |         |        | 200,78                               | 200,45 | 200,09 | 175,08 | 200,15 | 200,45 | 200,09 | 175,08 | 175,14 | 200,45 | 200,09 | 175,08 | 200,70 | 200,45 | 200,09 | 175,08 | 200,15 | 200,45 | 200,09 | 175,08 | 200,15 | 200,45 | 200,09  | 4019,0  |

Energokopienības darbības novērtēšanas modelis ir realizēts atvērtā vidē – MS Excel



# Energokopieniu darbības novērtēšanas modelis

| Tēze   | Gads   |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        | Σ      |  |
|--|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--|
|  | 1      | 2      | 3      | 4      | 5      | 6      | 7      | 8      | 9      | 10     | 11     | 12     | 13     | 14     | 15     | 16     | 17     | 18     | 19     | 20     |        |  |
| Reālā, bez PVN, ar 0% nodevu arvien PRODUKTI | 320    | 325,84 | 349    | 254,71 | 349,21 | 325,84 | 349    | 254,71 | 254,92 | 325,84 | 349,99 | 254,71 | 325,85 | 325,84 | 349,81 | 254,71 | 349,21 | 325,84 | 349    | 254,71 | 6252,6 |  |
| Ērģi, ar PVN pie 0%                          | 877,42 | 877,42 | 877,42 | 877,42 | 877,42 | 877,42 | 877,42 | 877,42 | 877,42 | 877,42 | 877,42 | 877,42 | 877,42 | 877,42 | 877,42 | 877,42 | 877,42 | 877,42 | 877,42 | 877,42 | 17949  |  |
| Reālā(Ērģi)                                  |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |  |
| BPV  | 4896,8 | 5044,7 | 5284,4 | 7199,7 | 5054,4 | 5912,7 | 5962,6 | 5475,7 | 5222,9 | 5798,6 | 5299,8 | 5223,7 | 5299,6 | 5395,5 | 5222,5 | 5228,9 | 5267,5 | 5232,8 | 5299,9 | 5225,7 |        |  |
| Σ  |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |  |

| Tēze  | Gads   |        |        |        |       |        |        |        |        |        |        |        |        |        |        |        |       |        |        |       |  |
|---|--------|--------|--------|--------|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|-------|--------|--------|-------|--|
|   | 1      | 2      | 3      | 4      | 5     | 6      | 7      | 8      | 9      | 10     | 11     | 12     | 13     | 14     | 15     | 16     | 17    | 18     | 19     | 20    |  |
| PRODUKTI Reālā, atņaujums laikā šā gada laikā sākuminvestīcijai (EUR) |        |        |        |        |       |        |        |        |        |        |        |        |        |        |        |        |       |        |        |       |  |
| PRODUKTI Reālā, atņaujums laikā šā gada laikā sākuminvestīcijai (EUR) | 5,9922 | 10,718 | 16,552 | 23,764 | 26,54 | 31,928 | 27,699 | 41,911 | 46,128 | 51,514 | 57,288 | 61,499 | 66,889 | 71,275 | 76,041 | 81,294 | 86,02 | 91,418 | 96,289 | 102,4 |  |

Energokopienas darbības novērtēšanas modelis ir realizēts atvērtā vidē – MS Excel

# Modeļi izmantotie lielumi

| Name   | Abbrev.                      | Name   | Abbrev.                      |
|--|------------------------------|--|------------------------------|
| <b>PV panels</b>   |                              |  |                              |
| 1 Installed PV capacity (kW)   | $P_{PV,inst}$                | 3 PV electricity generation by time t (kW)   | $P_{PV,t}$                   |
| 2 PV generation coefficient  | $G_{PV}$                     | 4 PV degradation coefficient (% from yearly PV generation)                                 | $\Delta_{PV}$                |
| <b>NETO system</b>   |                              |  |                              |
| 5 Amount of electricity stored in the NETO system (kWh)                                  | $P_{NETO,store}$             | 7 Sum of the amount of electricity from NETO and PV generation (kWh)                       | $P_{NETO,tot}$               |
| 6 Amount of electricity in NETO system for the next hour (kWh)                           | $P_{NETO,store,t+1}$         | 8 Amount of Prosumers' received electricity from NETO system (kWh)                         | $P_{NETO,tot,rec}$           |
| <b>Prosumer</b>  |                              |  |                              |
| 9 Hourly electricity consumption (kWh)   | $W_{Pro}$                    | 17 Payment for received electricity only from EaC (EUR)                                    | $C_{EaC,Pro}$                |
| 10 Grid electricity tariff (without VAT) (€/kWh)   | $C_{grid,Pro}$               | 18 Payment for received electricity only from grid (as a member of EaC) (EUR)              | $C_{grid,Pro,EaC}$           |
| 11 Grid electricity tariff (VAT included) (€/kWh)  | $C_{grid,Pro,tot}$           | 19 Total payment for electricity only (as a consumer without PV) (EUR)                     | $TC_{Pro,without PV}$        |
| 12 EaC electricity tariff (without VAT) (€/kWh)  | $C_{EaC,Pro}$                | 20 Total payment for electricity only (as a member of EaC) (EUR)                           | $TC_{Pro,with EaC}$          |
| 13 EaC electricity tariff (VAT included) (€/kWh)   | $C_{EaC,Pro,tot}$            | 21 Yearly received amount of electricity from $P_{NETO,tot,rec}$ (kWh/year)                | $P_{NETO,tot,rec,year}$      |
| 14 Amount of electricity received from $P_{NETO,tot,rec}$ (kWh)                          | $P_{NETO,tot,rec,year}$      | 22 Yearly payment for received electricity from EaC (EUR/year)                             | $C_{EaC,Pro,year}$           |
| 15 Required amount of imported electricity from the grid (kWh)                           | $P_{grid,Pro}$               | 23 Yearly electricity cost reduction from the grid by being a member of EaC                | $\Delta C_{grid,Pro}$        |
| 16 Savings $P_{NETO,tot,rec}$ after prosumer self-consumption (kWh)                      | $P_{NETO,tot,rec,year}$      | 24 Yearly economic benefits by being a member of EaC                                       | $\Delta EB_{Pro,year}$       |
| <b>Prosumer: additional electricity tariff components</b>                                |                              |  |                              |
| 25 Connection current  | $I_{conn,Pro}$               | 30 Variable mandatory procurement component OER, cogeneration (EUR/kWh/year) - without VAT | $C_{conn,Pro,year,OER}$      |
| 26 Tariff for electricity distribution - without VAT (EUR/kWh)                           | $C_{conn,Pro,dist}$          | 31 Capacity charge tariff for electricity producers  | $C_{conn,Pro,year,charge}$   |
| 27 Tariff for the current value of the protection device - without VAT (EUR/A/year)      | $C_{conn,Pro,year,dev}$      | 32 Amount of tariff payment per year - without VAT (EUR)                                   | $C_{conn,Pro,year,tot}$      |
| 28 Fixed mandatory procurement component OER, for amps - without VAT (EUR/A/year)        | $C_{conn,Pro,year,OER}$      | 33 Amount of tariff payment per year - with VAT (EUR)                                      | $TC_{Pro,year,tot,tax}$      |
| 29 Variable mandatory procurement component OER, renewables - without VAT (EUR/kWh/year) | $C_{conn,Pro,year,OER}$      |  |                              |
| <b>Consumer</b>  |                              |  |                              |
| 34 Hourly electricity consumption (kWh)  | $W_{Cons}$                   | 42 Payment for received electricity only from grid (as a member of EaC) (EUR)              | $C_{grid,Cons,EaC}$          |
| 35 Grid electricity tariff (without VAT) (€/kWh)   | $C_{grid,Cons}$              | 43 Total payment for electricity only (as a consumer without PV availability) (EUR)        | $TC_{Cons,without PV}$       |
| 36 Grid electricity tariff (VAT included) (€/kWh)  | $C_{grid,Cons,tot}$          | 44 Total payment for electricity only (as a member of EaC) (EUR)                           | $TC_{Cons,with EaC}$         |
| 37 EaC electricity tariff (without VAT) (€/kWh)  | $C_{EaC,Cons}$               | 45 Yearly received amount of electricity from $P_{NETO,tot,rec,year}$ (EUR/year)           | $P_{NETO,tot,rec,year,Cons}$ |
| 38 EaC electricity tariff (VAT included) (€/kWh)   | $C_{EaC,Cons,tot}$           | 46 Yearly payment for received electricity from EaC (EUR/year)                             | $C_{EaC,Cons,year}$          |
| 39 Amount of electricity received from $P_{NETO,tot,rec,year}$ (kWh)                     | $P_{NETO,tot,rec,year,Cons}$ | 47 Yearly electricity cost reduction from the grid by being a member of EaC (EUR/year)     | $\Delta C_{grid,Cons}$       |
| 40 Required amount of imported electricity from the grid (kWh)                           | $P_{grid,Cons}$              | 48 Yearly economic benefits by being a member of EaC (EUR/year)                            | $\Delta EB_{Cons,year}$      |
| 41 Payment for received electricity only from EaC (EUR)                                  | $C_{EaC,Cons}$               |  |                              |
| <b>Consumer: additional electricity tariff components</b>                                |                              |  |                              |
| 49 Connection current  | $I_{conn,Cons}$              | 52 Variable mandatory procurement component OER, renewables - without VAT (EUR/kWh/year)   | $C_{conn,Cons,year,OER}$     |
| 50 Tariff for electricity distribution - without VAT (EUR/kWh)                           | $C_{conn,Cons,dist}$         | 54 Variable mandatory procurement component OER, cogeneration (EUR/kWh/year) - without VAT | $C_{conn,Cons,year,OER}$     |
| 51 Tariff for the current value of the protection device - without VAT (EUR/A/year)      | $C_{conn,Cons,year,dev}$     | 55 Amount of tariff payment per year - without VAT (EUR)                                   | $C_{conn,Cons,year,tot}$     |
| 52 Fixed mandatory procurement component OER, for amps - without VAT (EUR/A/year)        | $C_{conn,Cons,year,OER}$     | 56 Amount of tariff payment per year - with VAT (EUR)                                      | $C_{conn,Cons,year,tot,tax}$ |
| <b>Financial data</b>  |                              |  |                              |
| 57 Bank interest rate for the loan (%)   | $i_{bank}$                   | 63 OPEX per installed PV capacity - with VAT (EUR)   | $OPEX^P$                     |
| 58 Amount of the loan from the bank (EUR)  | $C_{bank,tot}$               | 64 Amount of subsidies / grants given for the creation of EaC (EUR)                        | $Subsidies$                  |
| 59 Discount rate (%)   | $i_{dis}$                    | 65 Initial investment cash flow from initial from Prosumer (EUR)                           | $I_{Pro,init}$               |
| 60 CAPEX per installed PV capacity watt - without VAT (EUR/W)                            | $C_{CAPEX}$                  | 66 Initial investment cash flow from initial from Consumer (EUR)                           | $I_{Cons,init}$              |
| 61 CAPEX per installed PV capacity - with VAT (EUR)                                      | $C_{CAPEX}$                  | 67 Total initial investment cash flow (EUR)  | $I_0$                        |
| 62 OPEX per installed PV capacity watt - without VAT (EUR/W)                             | $C_{OPEX}$                   | 68 Amount of repayment to the bank per year term - 20 years (EUR/year)                     | $C_{EaC,bank}$               |
| <b>Cash flow and financial indicators</b>  |                              |  |                              |
| 69 Incoming cash flow for Prosumer (revenue) - without VAT (EUR/year)                    | $C_{Pro,year}$               | 73 Internal rate of return (%)   | $IRR$                        |
| 70 Outgoing cash flow from Prosumer and Consumer (expenditure) - with VAT (EUR/year)     | $C_{Pro,year,tot}$           | 74 Total economic savings/benefits for Prosumer for being a member of EaC (EUR/year tot.)  | $ES^P_{Pro}$                 |
| 71 Total cash flow from incoming and outgoing cash flows (EUR/year)                      | $C_{Pro,year,tot}$           | 75 Total economic savings/benefits for Consumer for being a member of EaC (EUR/year tot.)  | $ES^C_{Cons}$                |
| 72 Net present value (EUR/year)  | $NPV^P$                      |  |                              |

# Aprēķini un algoritmi

## Algorithm regarding Prosumer:

Prosumer:

14. Amount of electricity received from  $P_{NETO, PV}^{prod}$

a) if  $P_{NETO, PV}^{prod} < W_{grid}^{prod}$ , then  $P_{NETO, PV}^{prod-net} = P_{NETO, PV}^{prod}$

b) if  $P_{NETO, PV}^{prod} \geq W_{grid}^{prod}$ , then  $P_{NETO, PV}^{prod-net} = W_{grid}^{prod}$

15. Required amount of imported electricity from the grid:

a) if 14 a) is true, then  $P_{grid-net}^{prod} = W_{grid}^{prod} - P_{NETO, PV}^{prod-net}$

b) if 14 b) is true, then  $P_{grid-net}^{prod} = 0$

NETO system:

8. Amount of Prosumer's received electricity from NETO system:

a) if  $P_{PV} \geq W_{grid}^{prod}$ , then  $P_{NETO-net}^{prod} = 0$

b) if  $P_{PV} < W_{grid}^{prod}$ , then  $P_{NETO-net}^{prod} = W_{grid}^{prod} - P_{PV} - P_{grid-net}^{prod}$

Prosumer:

16. Surplus  $P_{NETO, PV}^{prod}$  after prosumer self-consumption:

a) if 14 a) is true, then  $P_{NETO, PV}^{prod-surplus} = 0$

b) if 14 b) is true, then  $P_{NETO, PV}^{prod-surplus} = P_{NETO, PV}^{prod} - P_{NETO, PV}^{prod-net}$

17. Payment for received electricity only from EnC:  $C_{EnC-net}^{prod} = P_{NETO, PV}^{prod-net} \cdot C_{grid-net}^{prod-net}$

18. Payment for received electricity only from grid (as a member of EnC):  $C_{grid-net}^{prod-net} = P_{grid-net}^{prod-net} \cdot C_{grid-net}^{prod-net}$

19. Total payment for electricity only (as a consumer without PV):  $IC_{consumer-net}^{prod} = W_{grid}^{prod} \cdot C_{grid-net}^{prod-net}$

20. Total payment for electricity only (as a member of EnC):  $IC_{consumer-net}^{prod} = C_{EnC-net}^{prod} + C_{grid-net}^{prod-net}$

21. Yearly received amount of electricity from  $P_{NETO, PV}^{prod-net}$ :  $P_{NETO, PV}^{prod-net} = IP_{NETO, PV}^{prod-net}$

22. Yearly payment for received electricity from EnC:  $C_{EnC-net}^{prod} = IC_{EnC-net}^{prod}$

Prosumer: additional electricity tariff components:

32. Amount of tariff payment per year – without VAT:

a) if Prosumer is a member of EnC, then  $C_{consumer-net}^{prod} = C_{grid-net}^{prod-net} \cdot (IP_{NETO, PV}^{prod-net} + IP_{grid-net}^{prod-net}) + C_{grid-net}^{prod-net} \cdot I_{consumption} + C_{grid-net}^{prod-net} \cdot I_{consumption} + C_{grid-net}^{prod-net} \cdot IP_{grid-net}^{prod-net} + C_{grid-net}^{prod-net} \cdot IP_{grid-net}^{prod-net} + C_{grid-net}^{prod-net} \cdot IP_{grid-net}^{prod-net} + C_{grid-net}^{prod-net} \cdot IP_{grid-net}^{prod-net}$

b) if Prosumer is not a member of EnC, then  $C_{consumer-net}^{prod} = C_{grid-net}^{prod-net} \cdot IP_{NETO, PV}^{prod-net} + C_{grid-net}^{prod-net} \cdot I_{consumption} + C_{grid-net}^{prod-net} \cdot I_{consumption} + C_{grid-net}^{prod-net} \cdot IP_{grid-net}^{prod-net} + C_{grid-net}^{prod-net} \cdot IP_{grid-net}^{prod-net}$

33. Amount of tariff payment per year – with VAT:  $C_{consumer-net}^{prod} = C_{consumer-net}^{prod} + C_{consumer-net}^{prod} \cdot VAT$

Prosumer:

23. Yearly electricity cost reduction from the grid by being a member of EnC:

$\Delta C_{consumer-net}^{prod} = (IP_{NETO, PV}^{prod-net} \cdot C_{grid-net}^{prod-net} + C_{grid-net}^{prod-net} \cdot IP_{grid-net}^{prod-net} - (IP_{grid-net}^{prod-net} \cdot C_{grid-net}^{prod-net} + C_{grid-net}^{prod-net} \cdot IP_{grid-net}^{prod-net})) \cdot (1 - VAT)$

24. Yearly economic benefits by being a member of EnC:

$\Delta ER_{consumer-net}^{prod} = (IC_{consumer-net}^{prod} + C_{consumer-net}^{prod} \cdot (1 - VAT)) - (IC_{grid-net}^{prod-net} + IC_{grid-net}^{prod-net} + C_{consumer-net}^{prod} \cdot (1 - VAT))$

## Algorithm regarding Consumer:

Consumer:

36. Amount of electricity received from  $P_{NETO, PV}^{prod-net}$

a) if  $P_{NETO, PV}^{prod-net} < W_{grid}^{prod}$ , then  $P_{NETO, PV}^{prod-net-con} = P_{NETO, PV}^{prod-net}$

b) if  $P_{NETO, PV}^{prod-net} \geq W_{grid}^{prod}$ , then  $P_{NETO, PV}^{prod-net-con} = W_{grid}^{prod}$

40. Required amount of imported electricity from the grid:

a) if 36 a) is true, then  $P_{grid-net}^{prod} = W_{grid}^{prod} - P_{NETO, PV}^{prod-net-con}$

b) if 36 b) is true, then  $P_{grid-net}^{prod} = 0$

NETO system:

6. Amount of electricity in NETO system for the next hour:  $P_{NETO, PV}^{prod-net} = P_{grid}^{prod} + P_{NETO, PV}^{prod-net} - P_{NETO, PV}^{prod-net-con}$

Consumer:

41. Payment for received electricity only from EnC:  $C_{EnC-net}^{prod} = P_{NETO, PV}^{prod-net-con} \cdot C_{grid-net}^{prod-net}$

42. Payment for received electricity only from grid (as a member of EnC):  $C_{grid-net}^{prod-net} = P_{grid-net}^{prod-net} \cdot C_{grid-net}^{prod-net}$

43. Total payment for electricity only (as a consumer without PV availability):  $IC_{consumer-net}^{prod} = W_{grid}^{prod} \cdot C_{grid-net}^{prod-net}$

44. Total payment for electricity only (as a member of EnC):  $IC_{consumer-net}^{prod} = C_{EnC-net}^{prod} + C_{grid-net}^{prod-net}$

45. Yearly received amount of electricity from  $P_{NETO, PV}^{prod-net}$ :  $P_{NETO, PV}^{prod-net-con} = IP_{NETO, PV}^{prod-net-con}$

46. Yearly payment for received electricity from EnC:  $C_{EnC-net}^{prod} = IC_{EnC-net}^{prod}$

Consumer: additional electricity tariff components:

35. Amount of tariff payment per year – without VAT:

a) if Consumer is a member of EnC, then  $C_{consumer-net}^{prod} = C_{grid-net}^{prod-net} \cdot (IP_{NETO, PV}^{prod-net-con} + IP_{grid-net}^{prod-net}) + C_{grid-net}^{prod-net} \cdot I_{consumption} + C_{grid-net}^{prod-net} \cdot I_{consumption} + C_{grid-net}^{prod-net} \cdot IP_{grid-net}^{prod-net} + C_{grid-net}^{prod-net} \cdot IP_{grid-net}^{prod-net}$

b) if Consumer is not a member of EnC, then  $C_{consumer-net}^{prod} = C_{grid-net}^{prod-net} \cdot IP_{NETO, PV}^{prod-net-con} + C_{grid-net}^{prod-net} \cdot I_{consumption} + C_{grid-net}^{prod-net} \cdot I_{consumption} + C_{grid-net}^{prod-net} \cdot IP_{grid-net}^{prod-net} + C_{grid-net}^{prod-net} \cdot IP_{grid-net}^{prod-net}$

36. Amount of tariff payment per year – with VAT:  $C_{consumer-net}^{prod} = C_{consumer-net}^{prod} + C_{consumer-net}^{prod} \cdot VAT$

Consumer:

47. Yearly electricity cost reduction from the grid by being a member of EnC:

$\Delta C_{consumer-net}^{prod} = (IP_{NETO, PV}^{prod-net-con} \cdot C_{grid-net}^{prod-net} + C_{grid-net}^{prod-net} \cdot IP_{grid-net}^{prod-net} - (IP_{grid-net}^{prod-net} \cdot C_{grid-net}^{prod-net} + C_{grid-net}^{prod-net} \cdot IP_{grid-net}^{prod-net})) \cdot (1 - VAT)$

48. Yearly economic benefits by being a member of EnC:

$\Delta ER_{consumer-net}^{prod} = (IC_{consumer-net}^{prod} + C_{consumer-net}^{prod} \cdot (1 - VAT)) - (IC_{grid-net}^{prod-net} + IC_{grid-net}^{prod-net} + C_{consumer-net}^{prod} \cdot (1 - VAT))$

## Algorithm regarding Cash flow and financial indicators

Cash flow and financial indicators:

49. Incoming cash flow for Prosumer (revenue) – without VAT:  $C_{EnC-net}^{prod} = IC_{EnC-net}^{prod} + IC_{EnC-net}^{prod}$

70. Outcoming cash flow from Prosumer and Consumer (expenditure) – with VAT:  $C_{EnC-net}^{prod} = OPEX + C_{EnC-net}^{prod}$

71. Total cash flow from incoming and outcoming cash flows:  $C_{EnC-net}^{prod} = |C_{EnC-net}^{prod}| - |C_{EnC-net}^{prod}|$

72. Net present value:  $NPV = -I_0 + \sum_{t=1}^n \frac{C_{EnC-net}^{prod}}{(1+i)^t}$

73. Internal rate of return:  $IRR = \frac{I_0}{\sum_{t=1}^n \frac{C_{EnC-net}^{prod}}{(1+i)^t}} - 1$

74. Total economic savings/benefits for Prosumer for being a member of EnC:

a) When  $y=1$ :  $ES_{EnC-net}^{prod} = -I_0 + C_{EnC-net}^{prod} - C_{EnC-net}^{prod} + \Delta ER_{EnC-net}^{prod} + (IC_{EnC-net}^{prod} - IC_{EnC-net}^{prod} + VAT)$

b) When  $y \geq 2$ :  $ES_{EnC-net}^{prod} = ES_{EnC-net}^{prod} - C_{EnC-net}^{prod} + \Delta ER_{EnC-net}^{prod} + (\sum_t C_{EnC-net}^{prod} - \sum_t C_{EnC-net}^{prod} + VAT)$

75. Total economic savings/benefits for Consumer for being a member of EnC:

a) When  $y=1$ :  $ES_{EnC-net}^{prod} = -I_0 + \Delta ER_{EnC-net}^{prod}$

b) When  $y \geq 2$ :  $ES_{EnC-net}^{prod} = ES_{EnC-net}^{prod} + \Delta ER_{EnC-net}^{prod}$

**Elektroenerģijas sadales  
sistēmas pakalpojumu  
diferencēto tarifu samazinājuma  
ietekme uz energokopienas  
ekonomiskajiem rādītājiem**

# Galvenie ieejas dati

## Vidējais elektroenerģijas patēriņš:

- Ražojošā patērētājs: 305 kWh;
- Pasīvais patērētājs: 185 kWh.

## Fotoelementu paneļi:

- Degradācijas koeficients: 0,5%/gadā;
- Sākotnējās izmaksas: 1300 EUR/uzstādīto kW;
- Uzturēšanas izmaksas (gadā): 13 EUR/uzstādīto kW.

## Subsīdiju/atbalsta apjoms:

Ministru kabineta noteikumi Nr. 150, 7. tabula.

## Sadales tīkls:

- "Sadales tīkla" elektroenerģijas sadales sistēmas pakalpojumu diferencētie tarifi pie 0,4 kV; trīsfāžu pieslēgums, IAA=20A; S2;
- Fiksētais elektroenerģijas tarifs: 0,15 EUR/kWh.

## Energokopienas iekšējais elektroenerģijas tarifs:

- Pasīvajam patērētājam: 0,10 EUR/kWh.

## Bankas aizdevums:

- Aizdevumu likme: 5,9%;
- Diskonta likme: 7,44%.

# Rezultāti

Elektroenerģijas sadales sistēmas pakalpojumu diferencēto tarifu samazinājuma ietekme uz energokopienas ekonomiskajiem rādītājiem

| PV paneļu kapacitāte (kW) | Sadales sistēmas pakalpojumu diferencēto tarifu samazinājums (%) | Ekonomiskie ieguvumi ražošajam patērētājam par dalību energokopienā | Ekonomiskie ieguvumi pasīvajam patērētājam par dalību energokopienā |
|---------------------------|--|---|---|
| 4                         | 0%   | 2400  | 1922  |
|                           | 25%  | 3283  | 2884  |
|                           | 50%  | 4166  | 3845  |
|                           | 75%  | 5050  | 4807  |
|                           | 100%   | 5934  | 5769  |
| 7                         | 0%   | 1272  | 2686  |
|                           | 25%  | 1836  | 3640  |
|                           | 50%  | 2401  | 4595  |
|                           | 75%  | 2965  | 5549  |
|                           | 100%   | 3529  | 6503  |

**Samazinot sadales sistēmas pakalpojumu diferencēto tarifus par 1%:**

Ražošā patērētāja vidējie ekonomiskie ieguvumi paaugstinās par 1,4% - 1,7%;

Pasīvā patērētāja vidējie ekonomiskie ieguvumi paaugstinās par 1,4% - 2,0%.

# Secinājumi un nākotnes darbi

- Piedāvātā energokopienas konfigurācija ir ekonomiski izdevīga;
- Modelēšanas rezultāti uzrāda sadales sistēmas pakalpojumu diferencēto tarifu samazinājuma pozitīvo ietekmi uz piedāvātās energokopienas patērētāju ekonomiskajiem ieguvumiem;
- Potenciāls turpināt iesākto modelēšanas virzienu, izveidojot darbības novērtēšanas modeļus citās konfigurācijās (*2 ražojošie patērētāji; ražojošais patērētājs + 2 pasīvie patērētāji u.c.*)
- Iepazīstināt ieinteresētās personas ar energokopienas ieviešanas un to modelēšanas iespējām.





# **Paldies par uzmanību!**

E-pasts saziņai un sadarbības iespējām:

Mg.Sc.Ing Roberts.Lazdins@rtu.lv

Prof. Anna Mutule: amutule@edi.lv