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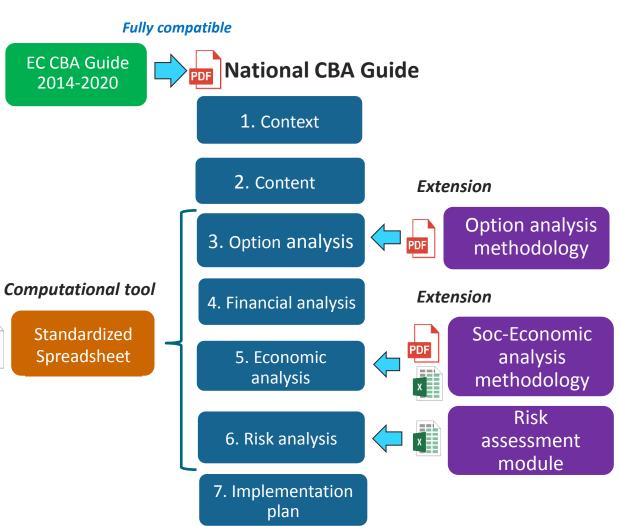
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DG REGIO-JASPERS CBA Forum meeting on energy sectors Brussels (BE), 15 – 16 May 2018

Framework of national CBA methodological documents

- National CBA guide as a practical tool:
 Guide + Spreadsheet + Supporting methodologies
- ➤ CBA is applied for all IPs of which capital investments exceed 300.000 EUR
- ➤ IP is about the changes in provision of public services or performance of administrative functions, not about construction and equipment





Spreadsheet

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Financial sustainability (real values) Talp	H12 H13 H14 H15 H16 H17 H2 H21 H22 H23	Negative 8E impact (specify negative 8E impact component) Calculation of financial analysis (FA) indicators Cash flow for investment FA indicators (real value) Complete financial sustainability cash flow (real value) Cash flow for capital FA indicators (real value) Financial net greatent value - FIFF(VI) Financial internal real of return - FIFF(VI)	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0 0 0	6.8
Financial interest value on capital - FMPVIX - 254 42	H.1.2 H.1.3 H.1.4 H.1.5 H.1.6 H.1.7 H.2 H.2.1 H.2.1 H.2.2 H.2.2	Negative 8E impact (specify negative 8E impact component) Calculation of financial analysis (FA) indicators Cash flow for (investment FA Indicators (real value) Cumulative financial sustainability cash flow feel value) Cash flow realist FA Indicators feel value) Financial interpretative of etime - FMFR(i) Financial metal real cash of etime - FMFR(i) Financial metal size of etime - FMFR(ii)	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0 0 0	6.8
Financial interest value on capital - FMPVIX - 254 42	H12 H13 H14 H15 H16 H17 H2 H21 H22 H23	Negative 8E Imped (specify negative 8E Imped component) Calouistion of financial analysis (FA) indicators Cash flow for investment FA indicators (real value) Cumulative financial statisticality cash flow free value) Cash flow for capital FA indicators free value) Financial repearer value - FIRPU() Financial read of return - FIRPU() Financial modified internal rate of return - FIRPU() Financial contents of the financial cash cash cash cash cash cash cash cash	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0 0 0	6.8
Financial internal rete of return on capital - FIRRINO 2.31% Financial modified internal rete of return on capital - FIRRINO 2.39% Caloutation of economic analysis (EA) indicators Cash flow for each indicators (real value) ////////////////////////////////////	H.1.2. H.1.3. H.1.4. H.1.5. H.1.6. H.1.7. H.2. H.2.1. H.2.2. H.2.3.	Negative 8E Imped (specify negative 8E Imped component) Calouistion of financial analysis (FA) indicators Cash flow for investment FA indicators (real value) Cumulative financial statisticality cash flow free value) Cash flow for capital FA indicators free value) Financial repearer value - FIRPU() Financial read of return - FIRPU() Financial modified internal rate of return - FIRPU() Financial contents of the financial cash cash cash cash cash cash cash cash	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0 0 0	6.8
Financial modified Internal rate of return on capital - FMIRR NO 2,96%	H.1.2. H.1.3. H.1.4. H.1.5. H.1.6. H.1.7. H.2. H.2.1. H.2.2. H.2.3.	Negative 8E Impact (specify negative 8E Impact component) Calculation of financial analysis (FA) indicators Cash flow for financial sustainability cash flow feel value) Cumulative financial sustainability cash flow feel value) Cash flow for capital FA indicators feel value Financial register and of return FRIFI(f) Financial internal rise of return - FRIFI(f) Financial modified internal rise of return - FRIFI(f) Financial cost-benefit ratio Financial cost-benefit ratio	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0 0 0	6.8
Catoutation of economic analysis (EA) indicators Cesh flow for EA indicators (red value) Converted divestments (A), INFV 5 855 160 Converted divestments (C), INFV 2 77 297 Converted divestment (C), INFV 377 297 Converted divestment (C), INFV	H.1.2. H.1.3. H.1.4. H.1.5. H.1.6. H.1.7. H.2. H.2.1. H.2.2. H.2.3.	Negative 8E Impact (specify negative 8E Impact component) Calculation of financial analysis (FA) indicators Cash flow for investment FA indicators (real value) Cash flow for capital FA indicators (real value) Cash flow for capital FA indicators (real value) Financial internal rate of return - FIRRU) Financial indemai rate of return - FIRRU) Financial modified internal rate of return - FIRRU Financial repeat value (paster) Financial repeat value (paster) Financial repeat value (paster)	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0 0 0	6.8
Cesh flow for EA. Indications (real inside)	H.1.2. H.1.3. H.1.4. H.1.5. H.1.6. H.1.7. H.2. H.2.1. H.2.2. H.2.3.	Negative 8E impact (specify negative 8E impact component) Calculation of financial analysis (FA) indicators Cash flow for investment FA indicators (real value) Countietive financial sustainability cash flow free value) Cash flow for capital FA indicators (real value) Financial interest real or etum - FIRPO) Financial indeed interest real or etum - FIRPO Financial modified interest reals or etum - FIRPO Financial indeed interest reals (FIRPO) Financial indeed interest reals (FIRPO) Financial interest reals (FIRPO) Financial interest reals or capital - FIRPO) Financial interest reals reals or freatum - capital - FIRPO) Financial interest reals of return or capital - FIRPO) Financial interest reals of return or capital - FIRPO)	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0 0 0	63
Cesh flow for EA. Indications (real inside)	H.1.2 H.1.3 H.1.4 H.1.5 H.1.6 H.1.7 H.2 H.2.1 H.2.1 H.2.2 H.2.2	Negative 8E impact (specify negative 8E impact component) Calculation of financial analysis (FA) indicators Cash flow for investment FA indicators (real value) Countietive financial sustainability cash flow free value) Cash flow for capital FA indicators (real value) Financial interest real or etum - FIRPO) Financial indeed interest real or etum - FIRPO Financial modified interest reals or etum - FIRPO Financial indeed interest reals (FIRPO) Financial indeed interest reals (FIRPO) Financial interest reals (FIRPO) Financial interest reals or capital - FIRPO) Financial interest reals reals or freatum - capital - FIRPO) Financial interest reals of return or capital - FIRPO) Financial interest reals of return or capital - FIRPO)	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0 0 0	6:
Converted Investments (A.) NPV 5 855 160	H.1.2 H.1.3 H.1.4 H.1.5 H.1.5 H.1.7 H.2.1 H.2.2 H.2.2 H.2.3	Negative 8E impact (specify negative 8E impact component) Calculation of financial analysis (FA) indicators Cash flow for investment FA indicators (reel value) Complete financial sustainability cash flow (real value) Cash flow for capital FA indicators (reel value) Financial interest real present value - FIFF(V) Financial modified internal rate of return - FIRF(V) Financial modified internal rate of return - FIRF(V) Financial internal rate of return on capital - FIFF(V) Financial internal rate of return on capital - FIFF(V) Financial modified internal rate of return on capital - FIFF(FIFF(V)) Financial modified internal rate of return on capital - FIFF(FIFF(V))	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0 0 0	63
Converted residual value (8), NPV 2.717.297	H.1.2 H.1.3 H.1.4 H.1.5 H.1.5 H.1.7 H.2.1 H.2.2 H.2.2 H.2.3	Negative 8E impact (specify negative 8E impact component) Calculation of financial analysis (FA) indicators Cash flow for linestment FA indicators (real value) Cumulative financial sustainability cash flow free value) Cash flow for capital FA indicators (real value) Financial modified interior are or return - FMFR(II) Financial modified interior are or return - FMRR(II) Financial modified interior are or return - FMRR(II) Financial indicators are returned to return - FMRR(II) Financial indicators are of return or capital - FMRR(II) Financial indicators are of return on capital - FMRR(II) Financial indicators (FMRR(II) Financial modified interior rate of return on capital - FMRR(II) Calculation of economic analysis (EA) indicators	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	68											
Converted residual value (8), NPV 2.717.297	H1.2 H1.3 H1.4 H1.5 H1.6 H1.7 H2.1 H2.1 H2.2 H2.3	Negative 8E Impact (specify negative 8E Impact component) Calculation of financial analysis (FA) indicators Cash flow for Investment FA Indicators (real value) Countainty infrancial sustainability cash flow freel value) Cash flow for capital FA Indicators freel value) Financial research value - FNFF(II) Financial modified Internal rate of return - FNFR(II) Financial modified Internal rate of return - FNFR(II) Financial reternal value - FNFR(II) Financial reternal value of return on capital - FNFR(II) Financial internal rate of return on capital - FNFR(II) Financial modified internal rate of return on capital - FNFR(II) Calculation of economic analysis (EA) return of capital - FNFR(II) Cash flow for EA indicators (real value)	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	68											
Converted revenue (C) NPV 322 004	H1.2 H1.3 H1.4 H1.5 H1.6 H1.7 H2.1 H2.1 H2.2 H2.3	Negative 8E impact (specify negative 8E impact component) Calculation of financial analysis (FA) indicators Cash flow for financial sustainability cash flow feel value) Cumulative financial sustainability cash flow feel value) Cash flow for capital FA indicators (feel value) Financial regatile FA indicators feel value) Financial internal rate of return - FIRIFUI) Financial internal rate of return - FIRIFUI Financial modified internal rate of return - FIRIFUI Financial internal rate of return - Capital - FIRIFUI Financial internal rate of return on capital - FIRIFUI Financial modified internal rate of return on capital - FIRIFUI F	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	68											
Converted operating costs (D.1,) NPV 337 955	H1.2 H1.3 H1.4 H1.5 H1.6 H1.7 H2.1 H2.1 H2.2 H2.3	Negative 8E impact (specify negative 8E impact component) Calculation of financial analysis (FA) indicators Cash flow for financial sustainability cash flow feel value) Cumulative financial sustainability cash flow feel value) Cash flow for capital FA indicators (feel value) Financial regatile FA indicators feel value) Financial internal rate of return - FIRIFUI) Financial internal rate of return - FIRIFUI Financial modified internal rate of return - FIRIFUI Financial internal rate of return - Capital - FIRIFUI Financial internal rate of return on capital - FIRIFUI Financial modified internal rate of return on capital - FIRIFUI F	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	68 10 68											
Source and operating visited principle for the p	H12 H13 H14 H15 H16 H17 H2 H21 H21 H22	Negative 8E Impact (specify negative 8E Impact component) Calculation of financial analysis (FA) indicators Cash flow for investment FA indicators (real value) Cumulative financial real passant value - FNFV(II) Financial real passant value - FNFV(II) Financial modified internal rate of return - FNFV(II) Financial modified internal rate of return - FNFV(III) Financial modified internal rate of return - FNFV(III) Financial modified internal rate of return on capital - FNFV(III) Financial modified internal rate of return on capital - FNFRIK(III) Financial modified internal rate of return on capital - FNFRIK(III) Calculation of economic analysis (FA) individuals (FA) INFV Converted investments (A) INFV Converted resistancial value (E) INFV Converted resistancial value (E) INFV	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	68 10 68											
	H.1.2 H.1.3 H.1.4 H.1.5 H.1.5 H.1.7 H.2.1 H.2.2 H.2.2 H.2.3	Negative 8E impact (specify negative 8E impact component) Calculation of financial analysis (FA) indicators Cash flow for investment FA indicators (real value) Countietive financial sustainability cash flow free value) Financial receptable FA indicators (real value) Financial interest real or etum - FIRP(I)) Financial modified interest reals or feature for etum - FIRP(I)) Financial modified interest reals or feature for etum - FIRP(I) Financial modified interest reals or feature for etum - FIRP(I) Financial modified interest and or feature or capital - FIRP(I) Financial modified interest reals or feature on capital - FIRP(I) Financial modified interest reals of return on capital - FIRP(I) Calculation of economic analysis (EA) indicators (real value) Converted investments (A) NPV Converted investments (A) NPV Converted residuel value (B) NPV Converted revenue (C) NPV	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0												

Features of spreadsheet

- All indicators all calculated automatically
- Automatic financial sustainability check
- Automatic VAT calculation

Observed benefits:



No mistakes in calculation of indicitors



Less specific knowledge is needed – saved money on consultancy



Much easier and shorter process of evaluation



Option analysis: investment objects



BUILDINGS

ENGINEERING INFRASTRUCTURE





INTANGIBLE ASSET



EQUIPMENTS & MACHINERIES





TRANSPORT EQUIPMENT



Option analysis: investment objects and the must analyzed alternatives

Every object has 2 – 5 investment object's types for which the lists of predetermined alternatives must be analyzed



BUILDINGS

Type 1 - New building construction:

- 1. <u>Construction</u> of new building
- 2. Provision of <u>distance services</u> for IP's target groups I
- 3. Reconstruction of the current asset
- 4. Rent of premises
- 5. <u>Purchase</u> of existing premises in the market

Energy sector: house rehabilization

Type 2 – Improvement of the existing building's technical and functional properties:

- 1. <u>Improvement</u> of existing building's characteristics
- 2. <u>Sale of an existing building</u> and the <u>purchase of a new</u> <u>one</u> satisfying technical and functional characteristics
- 3. <u>Purchase of equipments</u> needed to ensure building's technical and functional performance characteristics

Type 3 - Enlargement of existing building:

- Enlargement of existing building
- 2. Optimization
- 3. Rent of premises

Type 4 - Completion of building started to build:

- 1. Completion of building started to build
- 2. <u>Refusal</u> of existing building and construction of a new building
- 3. Rent of premises

Type 5 – Change of purpose of building:

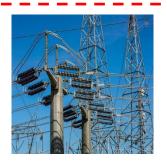
- 1. Change of purpose of building
- 2. Rent of premises

Analysis of additional alternative is always welcome!



Option analysis: investment objects and the must analyzed alternatives

Energy sector: electricity, gas, renewables...



ENGINEERING INFRASTRUCTURE

Type 1 – Construction of new engineering infrastructure:

- 1. Construction of new engineering infrastructure
- Improvement of existing engineering infrastructure characteristics
- 3. Rent of engineering infrastructure
- Provision of services by purchasing services in the private market

Type 2 – Improvement of existing engineering infrastructure characteristics:

- Improvement of existing engineering infrastructures characteristics
- 2. Replacement of existing engineering infrastructure
- 3. Provision of services by purchasing services in the market

Type 3 - Replacement of existing engineering infrastructure:

- 1. Replacement of existing engineering infrastructure to technology A
- 2. Replacement of existing engineering infrastructure to technology B
- 3. Provision of services by purchasing services in the market

Most commonly found!

Comparison of technology A with technology B

Analysis of additional alternative is always welcome!

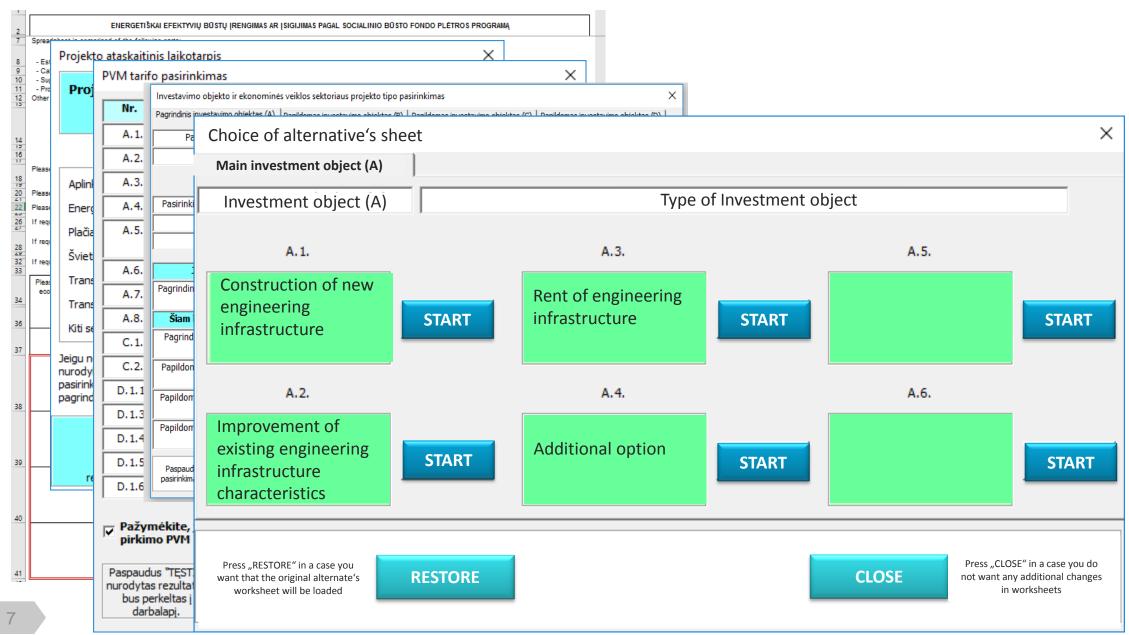
Observed benefits:



More efficient use of public resources



Option analysis: functions of spreadsheet





Formation of alternatives

For rational comparison

Effectiveness

The budget for capital investments is the same in all options and the option with the largest outputs is considered as the most beneficial



Example: house rehabilitation

energy concumption reduction for the same money in all alternatives



Efficiency

The same results are determined to achieve in all options and the option with the lowest costs is considered as the most beneficial

Example: house rehabilitation

the same energy concumption class in all alternatives



Economic analysis: convertion factors

How to make the calculation of shadow prices easier?

Centralized Calculation

		Values of CFs													
	Convertion factors		Social security	Education and science	Transport	Energy	and information	Environment protection	Urban development	National defence	Justice / law enforcement	Public security	Tourism	Public inf. for business	Culture
KK6	Materials	0,977	0,977	0,977	0,977	0,977	0,977	0,977	0,977	0,977	0,977	0,977	0,977	0,977	0,977
	Energy														
KK7.1	Electricity	0,986	0,986	0,986	0,986	0,986	0,986	0,986	0,986	0,986	0,986	0,986	0,986	0,986	0,986
KK7.2	Petrol	0,415	0,415	0,415	0,415	0,415	0,415	0,415	0,415	0,415	0,415	0,415	0,415	0,415	0,415
KK7.3	Diesel	0,535	0,535	0,535	0,535	0,535	0,535	0,535	0,535	0,535	0,535	0,535	0,535	0,535	0,535
KK7.4	Natural gas (heating)	0,97	0,97	0,97	0,97	0,97	0,97	0,97	0,97	0,97	0,97	0,97	0,97	0,97	0,97
KK4	Project preparation, supervision, testing [= Qualified work]	0,947	0,947	0,947	0,947	0,947	0,947	0,947	0,947	0,947	0,947	0,947	0,947	0,947	0,947
KK8	Waste disposal [= Standard CF]	0,998	0,998	0,998	0,998	0,998	0,998	0,998	0,998	0,998	0,998	0,998	0,998	0,998	0,998
KK11	Construction	0,884	0,885	0,885	0,884	0,884	0,884	0,884	0,884	0,888	0,884	0,884	0,884	0,884	0,884
KK12	Periodical and scheduled maintenance	0,863	0,862	0,868	0,879	0,861	0,89	0,86	0,861	0,873	0,863	0,863	0,86	0,865	0,86
KK13	Replacement and renewal of depreciated elements	0,896	0,903	0,903	0,895	0,900	0,902	0,896	0,892	0,898	0,896	0,896	0,896	0,896	0,896
KK9	Other services [= Standard CF]	0,998	0,998	0,998	0,998	0,998	0,998	0,998	0,998	0,998	0,998	0,998	0,998	0,998	0,998
KK10	Equipment	0,907	0,921	0,921	0,906	0,91	0,91	0,908	0,911	0,908	0,907	0,907	0,908	0,908	0,908
KK1	Standard convertion factor	0,998	0,998	0,998	0,998	0,998	0,998	0,998	0,998	0,998	0,998	0,998	0,998	0,998	0,998
KK3	Qualified work	0,947	0,947	0,947	0,947	0,947	0,947	0,947	0,947	0,947	0,947	0,947	0,947	0,947	0,947
KK2	Unqualified work	0,842	0,842	0,842	0,842	0,842	0,842	0,842	0,842	0,842	0,842	0,842	0,842	0,842	0,842
KK5	Land	1	1	1	1	1	1	1	1	1	1	1	1	1	1
KK14	Transfers	0	0	0	0	0	0	0	0	0	0	0	0	0	0



Economic benefits: street lighting

How to evaluate?

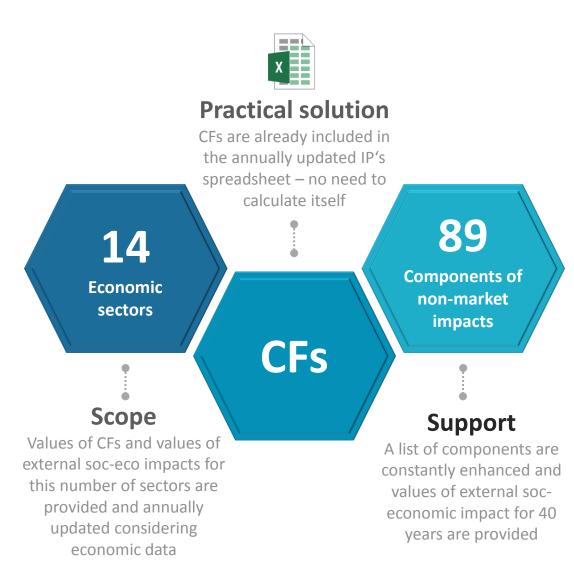








Economic analysis: CFs and assessment of economic benefits



Sectors:

- 1. Health care
- 2. Social security
- 3. Education and science
 - 4. Transport
 - 5. Energy
- 6. Development and information society
 - 7. Environment protection
- 8. Urban development
 - 9. National defence
 - 10. Justice / law enforcement
 - 11. Public security
 - 12. Tourism
 - 13. Public inf. for business
 - 14. Culture

Economic benefits:

- Increase of security and reliability of energy supply
- Increase and diversification of energy supply to meet increasing demand
- Reduction of energy costs for substitution of the energy source
- Market integration
- Improved energy consumption efficiency
- Variation of CO2 emissions
- Variation of air pollutant emissions



Question for the audience:

What is the value of CO2 per ton (2018)?

- a) 9,95 EUR/h
- b) 12,50 EUR/h
- c) 17,25 EUR/h
- d) 25,00 EUR/h
- e) 33,00 EUR/h



Economic analysis: CFs and essessment of non-market impacts



Some of 89 Components of evaluation of economic benefit (Values in euro)

Sector	Component	Units (of which an estimate is multiplied)	2018	2019	2020	2021	2022	2023	2024	2025	2026	t+n	2065
Energy	Increase of security and reliability of electricity supply (country)	kWh	4,13	4,32	4,51	4,70	4,90	5,12	5,35	5,59	5,83		31,91
Energy	2. Increase of security and reliability of heating energy supply (country)	kWh	2,27	2,38	2,48	2,59	2,70	2,82	2,95	3,08	3,21		17,58
	3. Increase of security and reliability of gas supply (country)	Working day	59,49	62,24	64,98	67,79	70,67	73,82	77,10	80,54	84,12		460,02
Energy	Decrease of CO2	t	33,00	34,00	35,00	36,00	37,00	38,00	39,00	40,00	41,00		85
	4. Reduction of energy costs for substitution of the energy source	kWh	Individud	al calculo	ation ac	cording t	to the m	ethodolo	ogy prov	rided			
	5. Improved efficiency of heating energy consumption in buildings	kWh	Individual calculation according to the methodology provided										

Observed benefits:



Less subjectivity on economic analysis



Time saving on rutin tasks

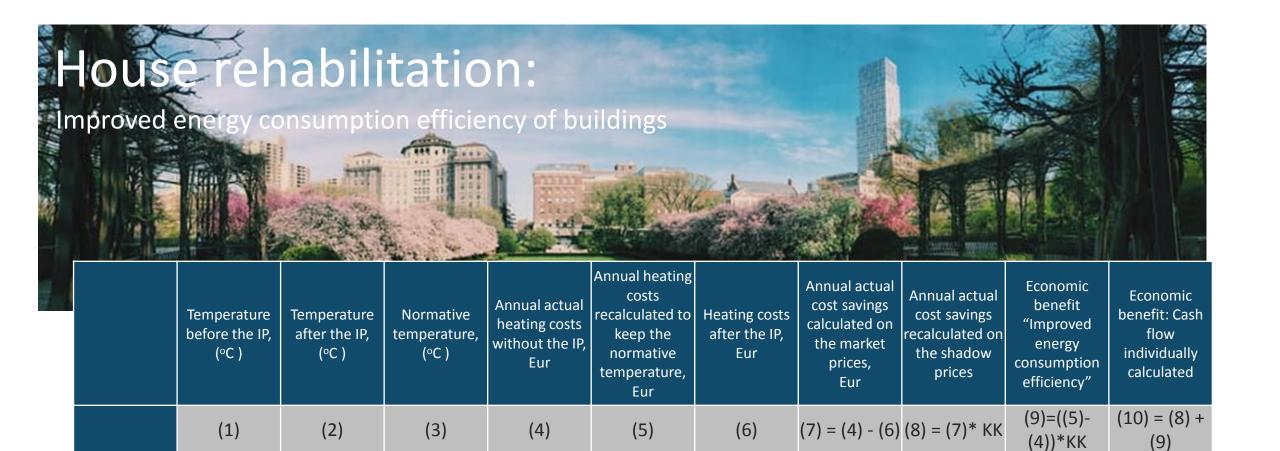


Less specific skills needed – more time left to focus on demand and cost analysis



Better quality of IP preparation





195,4

97,7

293,1

488,5



195,4

390,8

488,5

No. 1

No. 2

No. 3



Calculation of economic benefits: template for house rehabilitation

Integrated	in	the	Spread	dsł	neet
meegracea	• • •			, 0 .	

Year	Calendar year	Actual electricty concumption before the IP, MWh	Actual heating season, days	Normative heating season, days	Actual electricity consumption is recalculated to the normative heating season, MWh
1	2013	5	140	210	8
2	2014	7	160	210	9
3	2015	6	156	210	8
4	2016	6	146	210	9
5	2017	7	156	210	9
Average:		6,2			8,6

Last known actual price must be used

Control for CO2 calculation

Convertion factors are calculated by the special institution and do not need to be calculated individually

		FINANCIAL BENEFIT										
	Energy consumption before the IP recalculated to the normative year, MWh	Actual energy consumption before the IP (average of the last 5 years)	Energy consumption after the IP for the normative year, MWh	Actual energy concumption reduction, MWh	Price of 1 MWh, EUR	Actual annual decrease (-) / increase (+) in heating costs, EUR	Economic benefit "Improved energy efficiency", MWh	Convertion factor	Economic benefit "Improved energy efficiency", EUR			
	(1)	(2)	(3)	(4) = (2) - (3)	(5)	(6) = (4)*(5)	(7)=(1)-(2)	(8)	(9)=(5)*(7)*(8)			
Heating	250	158	120	38,0	60	-2282,81	92,0	0,977	5390,29			
Electric energy												
heating)	12	9	0	8,6	165	-1412,98	3,4	0,988	560,21			
Electric energy (except heating)		0	0	0	165	0,00						
Sum		0	<u> </u>	0	103	-1412,98			5950,50			

Value is used as an economic benefit. The same value is used for all refernece period

Annual emission	
reduction (+)/	
increase (-) t CO2e	
/ year	14,92

	Heating	Electric energy
Energy convertion		
to pollution factor,		
t/MWh to t CO2		
e/vear	0.233	0.707

control for con carearan											
CO2 heating	CO2 electric energy	CO2 total									
8.86	6.05	14.92									
0,00	0,05	14,52									

Value is used in line D1.3 of option data sheet. The same value is used for all refernece period

	Sector	Component	Primary sector (when component comes from another sector)	Primary component (when component comes from another sector)	Is it fully compatible with the original component?	Unit which are multiply by the value of component	2018	2019	2021 Values conthe econbenefit, 8		2022	2023	2024
		Decrease of CO2		Decrease of CO2					beriene, i				
		emissions (central		emissions (central									
L	Energy	value)	Transport	value)	Yes	Ton	25,00	25,00	40,00	40,00	40,00	40,00	40,00
5		Decrease of CO2											
		emissions, EUR							596,77	596,77	596,77	596,77	596,77



Calculation of economic benefits: template for street lighting



Year	Calendar year	Actual use life of devices, hour	Power of devices, W	Actual electricity concumption before the IP, MWh	Annual use of device in time in accordance with the applicable statutory requirements, hour	Actual energy consumption before the project has been recalculated to the applicable statutory requirements, MWh
1	2016	2 841	751 951	2 136	3 984	2 996
2	2015	2 841	751 951	2 136	3 984	2 996
3	2014	2 841	751 951	2 136	3 984	2 996
4	2013	2 841	751 951	2 136	3 984	2 996
5	2012	2 841	751 951	2 136	3 984	2 996
Average:				2136		2996

Integrated in the Spreadsheet

Convertion factors are calculated by the special institution and do not need to be calculated individually

						,			FINANCIAL BENEFIT	Г		ECONOMIC BENEFIT
	Annual use of the device	implementation of the	reduction of	Planned electricity concumption before the IP, MWh	consumption before the IP	Electric energy consumption after the implementation of the IP, MWh	consumption energy reduction.	Price of 1 MWh, EUR	Actual annual decrease (-) / increase (+) in electric energy costs, EUR	Economic benefit "Improved energy efficiency", MWh	Convertion factor	Economic benefit "Improved energy efficiency", EUR
										(10)=(4)*(2)/		(12)=(8)*(10)*(1
	(1)	(2)	(3)	(4)	(5)	(6) = (4)*(1-(3))	(7) = (5) - (6)	(8)	(9) = (7)*(8)	(1)-(5)	(11)	1)
Electricity	3 984	3 984	65,79%	2996	2136,401	1024,831	1112	107,663	-119 675	859	0,988	91 412

Windows User:

If the device is planned to be operated in accordance with legal requirements, the number indicated in the C52 box should be indicated

Annual emission reduction (+)/ increase (-) t CO2e / year 785,88

Control for CO2 calculation

		Electric energy	CO2 Total						
Energy conv	ertion to								
pollution fac	tor,								
t/MWh to t	002								
e/year		0,707	785,88						

Windows User:

Value is considered as an economic benefit. The same value is used for all refernece period

Sector	Component	Primary sector (when component comes from another sector)	component (when component comes from another sector)	Is it fully compatible with the original component?	Unit which are multiply by the value of component	2019	2020	2021	2022	2023	2024	2025	2026
			Decrease of CO2										
	Decrease of CO2		emissions (central			25,00	40,00	40,00	40,00	40,00	40,00	40,00	40,00
Energy	emissions (central value)	Transport	value)	Yes	Ton								

Risk assessment

Sensitivity analysis Scenario analysis, Probabilities, Monte Carlo



Statistics is based on Lithuanian experience

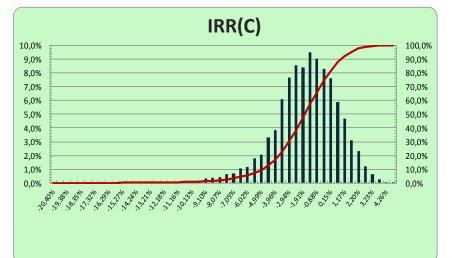
in IP implementation







Observed benefits:





Lithuania specific risk estimates are calculated – less subjectivity



Risk analysis is easy to perform – less specific skills are required



Time saving



82,2K. Eur savings (due to application of empirically-grounded risk estimates) in contingent liabilities related to every 1 mln. Eur of investments



Development steps

Government has designated to CPMA functions to act as the national methodological and consultancy center for public private partnership (PPP) and concession projects



2010

PPP COMPETENCE CENTRE

2010 - 2015

CAPACITY BUILDING



Capacity building project was implemented, methodologies and training programs developed,

The Center received additional functions to act as to methodological and consultancy center for all investment projects, financed from the EU structural funds during 2014-2020



2014

METHODOLOGICAL SUPPORT CENTER FOR ALL IP

2017

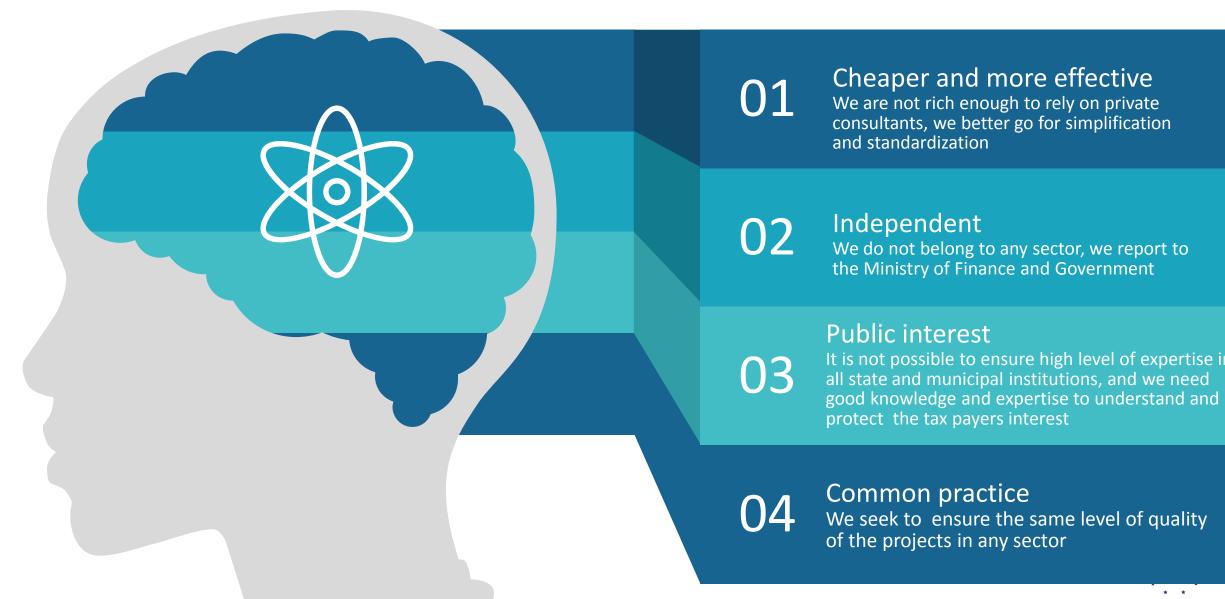
INDEPENDENT PROJECT ASSESSMENT



LR Seimas designated the additional function: to assess all PPP projects and to provide the conclusion on their social economic impact to society and added value of partnership



Why is the centralized competence needed?







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More Information



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