

urbEN SPREADSHEET USER'S MANUAL

This manual is for game masters only, not for players.

This user's manual explains how the urbEN Excel application works. Readers may also look at cells formula, which are directly documented in the worksheets.

SECURITY WARNINGS

When you begin a new game, always start from the original urbEN X.XX template Excel folder and make a copy of it with a different name. Never use an Excel folder which has already been used before. This already used folder may contain residual data, including hidden variables, from previous games that will prevent the model from working smoothly.

At the end of every term of office don't forget to make a back-up with a different name so that you can go back to it in case of any problem.

Before a game session, make sure that Excel macros are functioning on your computer, i.e. implementing actions results in numbers appearing in the worksheet "Results term 1".

If macros are not functioning, remove the protections blocking the macros. Such protections may come from Windows, antivirus, firewall, etc.

But however, the worksheets' protections into the workbook urbEN should never be removed.

Visual Basic (VBA) macros in the urbEN Excel application have been designed for Windows and are not fully compatible with Excel on Apple computers. Consequently they may randomly cause erroneous results on Apple platforms.

urbEN APPLICATION CONTENT

The urbEN Excel workbook includes the following worksheets:

- Actions data;
- Goal, rate, transfers;
- Actions implementation;
- Results term 1;
- Results term 2;
- Results term 3;
- Results term 4;
- Parameters;
- Types;
- Actors' actions;
- Prerequisites.

In the course of the game, only "Actions implementation" and "Goal, rate, transfers" are active. They register decisions made by players. All other worksheets are protected.

The corresponding "Results term X" is affected (passively) by the decisions.

Other worksheets ("Actions data", "Parameters", "Types", "Actors' actions", "Prerequisites") are inactive and do not change in the course of the game.

ACTIONS DATA WORKSHEET

The worksheet "Actions data" gives all necessary information to implement an action.

The gross annual income of an investment is given annually in percentage (and not for a whole term of office) because, for energy production, it depends on the annual production capacity.

The gross income for one whole term of office is given in absolute value. This value is equal to Investment x Annual gross income x Number of year in one term. This last number is given in the worksheet "Parameters".

GOAL, RATE, TRANSFERS WORKSHEET

At the start of every term of office, the LOCAL AUTHORITY (LA) team puts forward its goal in term of renewable energy.

The current tax rate may be increased at any moment in the course of the game in order to raise the LOCAL AUTHORITY's financial capacity. As a result, the LOCAL AUTHORITY's popularity (public opinion) decreases proportionately: 1 point (e.g. 5% to 6%) tax raise entails X lost points in popularity. Correspondingly 1 point tax decrease translates into Y additional points in popularity. X and Y are variables located in the worksheet "Parameters".

Chance cards drawing

With cards stating that a plot is put up for auction, proceed to the auction. Then select the highest bidder's name in the column "ORIGIN" and select "EXTERNAL" in the column "BENEFICIARY". Complete with the transaction amount and add the plot's name as a comment.

Note: after drawing the chance cards, transfers using this worksheet are only exceptional such as for lending money or selling a plot to another player. Subsidies from the LA or the Government for identified actions, as well as Capital transfers from co-investors, are normally registered in "Actions' implementation".

Undo a transaction on plot

The "ORIGIN" is "GOVT" and the "BENEFICIARY" is the player who has been unduly debited.

ACTIONS IMPLEMENTATION WORKSHEET

Implementing an action:

CAUTION: an action is automatically implemented as soon as the name of the "INVESTOR" has been confirmed. And this move cannot be undone (There is no possibility to undo such implementation). So only confirm the INVESTOR once you are really sure.

The current term's number (1 to 4) is entered in column B.

The Investor's name is chosen from a drop down list. Only potential investors for the action (i.e. having the know-how) are on the list (see "Actors' actions" worksheet).

If the Investor's financial capacity is insufficient, the action is not implemented except if the player has found a co-investor.

Prerequisite actions, and storage capacity (for intermittent energy production) are then checked to verify that the action can be implemented. If it cannot yet be so, no data is registered.

The items Capital transfer (Origin, Amount, Recurring pay-out) are used for investment partnership with another actor (actor without the know-how but with sufficient financial capacity). If the Capital transfer Origin's financial capacity is insufficient, the transfer is not registered.

The column Capital transfer beneficiary is automatically filled with the Investor's name.

The column Recurring Pay-out Beneficiary is automatically filled with the Capital transfer origin's name.

In case of Subsidy from the Local Authority or the Government, and of Capital transfer from another player, the Beneficiary is the Investor.

The columns Landlord and Rent are used when the action is implemented on a plot not belonging to the Investor.

Capital transfer and subsidies are one-off transactions whereas Rent and Pay-out are recurring revenues defined for a whole term of office which are carried over to the next term (see the section "Going to a new term of office" below).

RESULTS TERM 1 WORKSHEET

Part 1: table of figures

For all players except the Local Authority initial FINANCIAL CAPACITIES are set at the beginning of the game according to the corresponding table in the worksheet "Parameters".

For the LOCAL AUTHORITY, the initial financial capacity is calculated as follows: Initial fiscal base * Initial rate minus Operating expenses.

The initial fiscal base is the result of Population * Tax base per inhabitant (taken from the worksheet "Parameters").

In the course of the game, the additional base is added to the initial one and this sum is multiplied by the current rate to give the yield.

The additional base is in fact the sum of the term's direct investments (not including capital transfers by co-investors) to which is applied a reduction coefficient set in the worksheet "Parameters".

From term 2 onwards the "Previous year LA's surplus" is added to the yield to give the global LA's tax revenue.

RECURRING REVENUES are "Investments' returns" + "Rents" + "Pays-out (dividends)".

OPERATING EXPENSES are constant, meaning they do not change in the course of the game (see table in the worksheet "Parameters").

How is net profit calculated?

- For the LOCAL AUTHORITY, the net profit is in fact a budget surplus which will be carried over the following period. It is equal to FINANCIAL CAPACITY + RECURRING REVENUES
- For other actors, the net profit is RECURRING REVENUES – OPERATING EXPENSES

Other columns are filled automatically with data taken from the worksheet “Actions data”.

Part 2: summary data

At the beginning of a term, the “Initial voters’ approval rate” (Popularity) is set according to the corresponding percentage in the worksheet “Parameters”.

At the beginning of Term 1, the “Initial energy consumption” is equal to “Energy consumption per head” * “Population” which are drawn from the Worksheet “Parameters”.

From Term 2 onwards, the “Initial energy consumption” is carried over from the previous term.

During the course of the game “Current energy consumption” is equal to “Initial energy consumption” minus “Saved energy”.

Note: Saved energy may be negative when actions add up to local consumption (Activity and Dwellings types).

“Total renewable energy” is equal to “Continuous renewable energy” plus “Intermittent renewable energy”

“Part of renewable energy” is equal to “Total renewable energy” divided by “Current energy consumption”.

“Jobs in renewable energy” is equal to “Jobs created” by actions of the categories “Continuous energy production” (Pc) and “Intermittent energy production” (Pi).

GOING TO A NEW TERM OF OFFICE

The same worksheet “Actions implementation” is still used to enter decisions during the new term of office.

But the new term of office is specified (column B) so that implemented actions’ data is transcribed in the corresponding “Results term X”.

The new worksheet “Results term X” is derived from the former term’s one.

In this new worksheet, some variables are carried over from the former one and others are reset as follows:

Carried over variables

Financial capacities in the new term of office:

- Local Authority: $(n-1 \text{ year Total fiscal base}) \times (n-1 \text{ year Current rate}) + (n-1 \text{ year Budget surplus}^1)$;
- Entrepreneurs: $(n-1 \text{ year Financial capacity}) + (n-1 \text{ year Net profit})$.

Operating expenses remain the same from one term to another.

¹ Budget surplus for the LA is the equivalent of Net profit for other actors.

Recurring revenues: Investments' returns, Rents, Pay-outs (dividends) are carried over to the new term.

"Current energy consumption" is carried over to the next term where it becomes "Initial energy consumption".

"Current available storage capacity" is carried over to the next term where it becomes "Initial storage capacity".

"Current part of renewable energy" is carried over to the next term where it becomes "Initial part of renewable energy".

Reset variables

Investments, Continuous renewable energy, Intermittent renewable energy, Energy saving, Storage capacity, Created jobs columns are reset to zero.

The column Net profit is also reset but doesn't show zero because of Recurring revenues and Operating expenses.

The new Renewable goal is reset according to the figure put forward by the LOCAL AUTHORITY team, which is already entered in the "Goal and rate" worksheet.

Initial voters' support (popularity) is set according to the worksheet "Parameters" corresponding percentage.

EXAMPLES

Examples of decisions registered in the worksheet "Actions implementation" and of their effects in the worksheet "Results term X":

Example 1

Description:

The actor LOC-EN invests in the action BIOGAS located on a plot belonging to FARM.

Entering data into the worksheet "Actions implementation":

On the line corresponding to the action BIOGAS, the term number and the investor's name are entered in columns TERM and INVESTOR respectively.

The name of the renter is entered in column LANDLORD.

The rent freely negotiated between LOC-EN and FARM is entered in column RENT.

Impacts on the worksheet "Results term X":

Investment cost, revenue, energy production, new jobs, are all taken automatically from the "Actions data" worksheet.

On the INVESTOR line, the BIOGAS cost is deducted from FINANCIAL CAPACITY and added to INVESTMENT.

The BIOGAS cost multiplied by the "Tax base coefficient" (Parameters!C5) is added to the "Additional fiscal base".

The BIOGAS gross income² is added to INVESTMENTS RETURNS.

The energy production is added to CONTINUOUS RENEWABLE ENERGY.

The new jobs are added to JOBS CREATED and JOBS IN RENEWABLE ENERGY.

² Reminder: gross income for one term is the result of: Investment x Gross annual income percentage x number of years in one term of office. The latter is drawn from the worksheet "Parameters".

The rent is registered negatively in RENTS on the line LOC-EN and positively on the line FARM.

Example 2

Description:

The chance card “Government grant for energy production from biomass (BIOGAS)” has been drawn from the pile. LOC-EN wants to take advantage of it and decides to implement BIOGAS.

Entering data into the worksheet “Actions implementation”:

On the BIOGAS line, GOVT is selected in the column SUBSIDY ORIGIN;
The column SUBSIDY AMOUNT is filled with the grant’s amount.

Impacts on the worksheet “Results term X”:

The grant’s amount is added to LOC-EN’s FINANCIAL CAPACITY.

Note 1: In the case of a subsidy from the LA (and not from the Government), the subsidy’s amount is deducted from the LA’s FINANCIAL CAPACITY.

Note 2: The subsidy always benefits the action investor (project owner) and not any potential co-investor.

Example 3

Description:

Example 3 is like Example 1 but with an equity stake from actor PC. In return PC will get a recurring revenue.

Entering data into the worksheet “Actions implementation”:

The partner’s name is selected from the drop-down list in the column CAPITAL TRANSFER ORIGIN.

The column CAPITAL TRANSFER BENEFICIARY is automatically filled with the Investor’s name.

The equity stake amount is entered in the column CAPITAL TRANSFER AMOUNT.

The recurring revenue paid by LOC-EN to PC, and negotiated freely between them, is registered in RECURRING PAY-OUT.

The column RECURRING PAY-OUT BENEFICIARY is automatically filled with the CAPITAL TRANSFER ORIGIN.

Note: the pay-out beneficiary is the capital transfer provider. In the game we consider the equity stake to be permanent. In other words, it is not the equivalent of a loan with the principal amount to be repaid on maturity date.

Impacts on the worksheet “Results term X”:

The equity stake’s amount is deducted from the PC’s FINANCIAL CAPACITY column and added to LOC-EN’s one in the same column. The equity stake’s amount is also added to PC’s Investment³.

The recurring revenue paid by LOC-EN to PC, and negotiated freely between them, is registered in RECURRING PAY-OUT, negatively for LOC-EN and positively for PC.

Example 4

³ In the game we may consider it as an indirect investment whereas LOC-EN’s one is a direct investment.

Description:

PC invests in IND after buying the required land (urban waste) from the LA.

Entering data into the worksheet “Goal, rate, transfers”

The land transaction is registered the following way:

- PC is selected from the ORIGIN drop-down list;
- LA is selected in the BENEFICIARY drop-down list;
- the freely negotiated land price is indicated in the AMOUNT column;
- the plot’s name is added in the column COMMENT.

Impacts of the land transaction on the worksheet “Results term X”:

The land price is deducted from PC’s FINANCIAL CAPACITY and added to LA’s one.

Entering data into the worksheet “Actions implementation”:

On the action IND-HT line, the term number and the investor’s name PC are selected in columns TERM and INVESTOR respectively.

The software checks that at least one of the prerequisite actions (D-LuxG or D-LuxO) have already been implemented⁴.

Impacts on the worksheet “Results term X”:

Investment cost, revenue, energy saved, new jobs, are all taken automatically from the “Actions data” worksheet.

On the investor PC line, the IND-HT cost is deducted from FINANCIAL CAPACITY and added to INVESTMENT.

The IND-HT revenue is added to INVESTMENTS RETURNS.

Same for JOBS CREATED. But JOBS IN RENEWABLE ENERGY is not incremented because created jobs are only industrial.

ENERGY SAVING is affected negatively because the activity IND-HT consumes energy instead of saving it

HIDDEN VARIABLES

Some intermediate variables are hidden in order not to confuse players with unnecessary information that could distract them from relevant data.

These hidden variables are in the worksheet “Results term X” and in the worksheet “Prerequisites”.

The hidden cells content may be read on the formula bar (above the calculation area).

Results term X worksheet

Co-investment by a player other than the main investor is added in the hidden cell K20 corresponding to the caption “Total capital transfers:” in cell I20. As a matter of fact, such co-investment is not taken into account in the total fiscal base and must be registered on its own to avoid double counting.

“Transfers impacting LA” (I21), positively or negatively, are registered in cell K21 to prevent the formula in B3 from being erased every time such transfers occur.

Prerequisites worksheet

⁴ The implementation criteria are a term number in the column TERM OF OFFICE and a name in the column INVESTOR.

When an action is implemented, columns J and K in the “Prerequisites” worksheet are used to register the term and the investor respectively. This information allows the software application to detect if an action is already implemented, in which case an error message will be displayed.