

INSTRUCTIVO PROGRAMA OPENCLA

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PRODUCCIÓN MAS LIMPIA

BOGOTÁ, D.C

2018

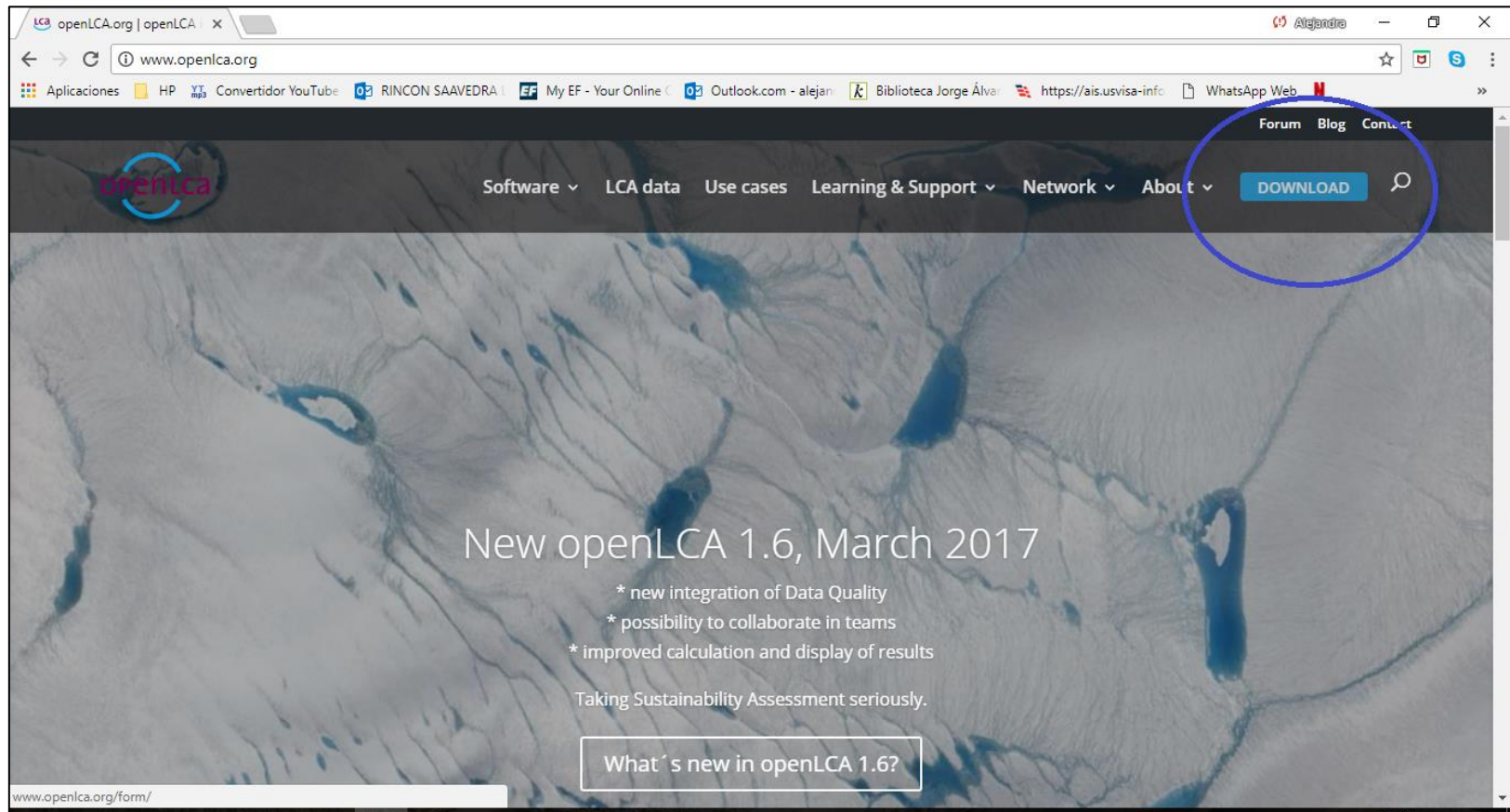
TABLA DE CONTENIDO

| | |
|--|-----------|
| 1.INSTALACIÓN DEL PROGRAMA | 3 |
| 2.INSERTAR BASE DE DATOS AL PROGRAMA (ELC) | 15 |
| 3.INSTALACIÓN DEL MÉTODO DE IMPACTO..... | 23 |
| 4.EJEMPLO BASE PARA USO DEL PROGRAMA | 30 |
| 4.1 Crear una categoría para el producto..... | 30 |
| 4.2 Crear un proceso del producto..... | 32 |
| 4.3 Crear un flujo al proceso | 33 |
| 4.3.1 Crear flujo de referencia del proceso desde base de datos..... | 33 |
| 4.3.2 Crear flujos de entrada y salida en un proceso desde base de datos | 34 |
| 4.3.3 Crear flujos de entrada y salida NUEVOS..... | 40 |
| 4.4 Crear el sistema del producto | 45 |
| 4.4 Resultados del sistema en relación con el impacto | 51 |
| 4.6 Exportar e importar información | 59 |
| 4.6.1 Exportación de información..... | 59 |
| 4.6.2 Importación de información..... | 63 |

Para la utilización del software es necesario cumplir obligatoriamente con los primeros 3 procesos a continuación explicados (1.INSTALACIÓN DEL PROGRAMA, 2.INSERTAR BASE DE DATOS AL PROGRAMA (ELC) y 3.INSTALACIÓN DEL MÉTODO DE IMPACTO)

1.INSTALACIÓN DEL PROGRAMA

1. Dirigirse a <http://www.openlca.org/>
2. Dar clic en la opción Download



3. Llenar los datos para registrarse y dar clic sobre "Submit". Datos marcados * son obligatorios

The screenshot shows a web browser window displaying the registration form for openLCA. The browser address bar shows the URL www.openlca.org/form/. The page title is "To the download section...". The form includes the following fields and options:

- Fields marked with an * are required**
- First Name ***: Karen
- Last Name ***: Ladino
- Gender ***: Male Female Undefined
- Email ***: karen.ladino@mail.escuelaing.udec.edu.co
- Organisation ***: Escuela Colombiana de ingeniería Julio Garavito
- City ***: Bogota
- Country ***: Colombia
- Send newsletter**
- Comment**: (empty text area)

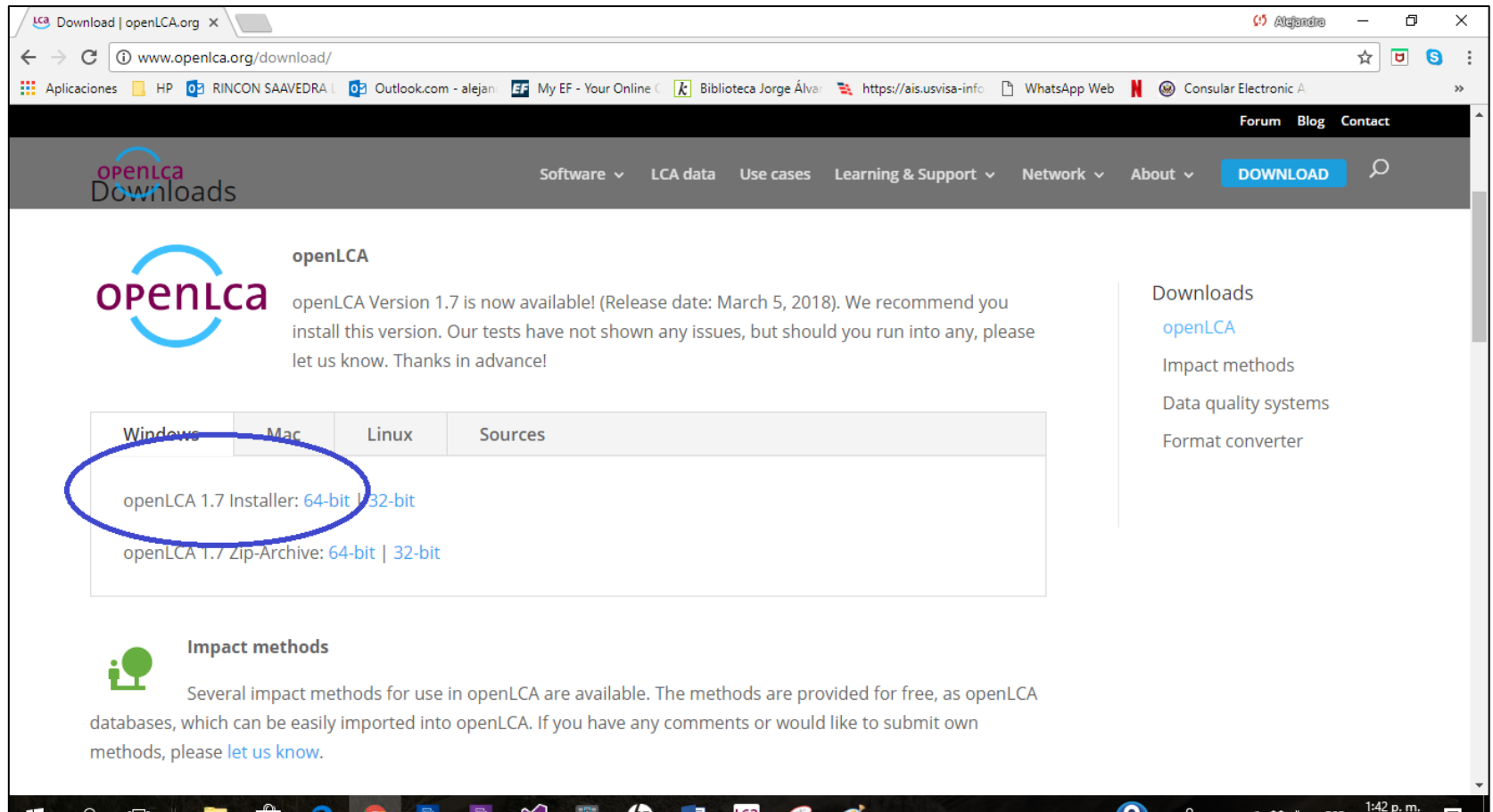
The sidebar on the right lists the following benefits:

- The download section provides, for free:
- the latest version of the openLCA modeling suite
- impact assessment methods for several purposes
- the last version of the format converter

A blue link says: [Please take me directly to the downloads.](#)

A notification box in the bottom right corner says: "Captura de pantalla añadida. Se ha añadido una captura de pantalla a tu Dropbox. Dropbox"

4. Realizar clic sobre 64-bit.132 bit. Si tiene Mac o Linux descarga el respectivo archivo



The screenshot shows the 'Downloads' page on the openLCA website. The browser address bar shows 'www.openlca.org/download/'. The page features a navigation menu with 'DOWNLOAD' highlighted. The main content area has a heading 'openLCA' and a sub-heading 'openLCA Downloads'. A message states: 'openLCA Version 1.7 is now available! (Release date: March 5, 2018). We recommend you install this version. Our tests have not shown any issues, but should you run into any, please let us know. Thanks in advance!'. Below this is a tabbed interface with four tabs: 'Windows', 'Mac', 'Linux', and 'Sources'. The 'Mac' tab is selected and circled in blue. Under the 'Mac' tab, the text reads: 'openLCA 1.7 Installer: 64-bit | 32-bit'. Below the tabs is a section titled 'Impact methods' with a sub-heading 'Impact methods' and a paragraph: 'Several impact methods for use in openLCA are available. The methods are provided for free, as openLCA databases, which can be easily imported into openLCA. If you have any comments or would like to submit own methods, please [let us know](#).'

5. Luego de descargado abrir el archivo

The screenshot shows a web browser window at www.openlca.org/download/. The page features the openLCA logo and a navigation menu with options like 'Software', 'LCA data', 'Use cases', 'Learning & Support', 'Network', and 'About'. A prominent blue 'DOWNLOAD' button is visible. The main content area has tabs for 'Windows', 'Mac', 'Linux', and 'Sources'. Under the 'Windows' tab, there are links for 'openLCA 1.7 Installer: 64-bit | 32-bit' and 'openLCA 1.7 Zip-Archive: 64-bit | 32-bit'. A right-hand sidebar lists 'Downloads' including 'openLCA', 'Impact methods', 'Data quality systems', and 'Format converter'. Below this, an 'Impact methods' section is partially visible. A context menu is open over the 'Abrir' option, with other options being 'Abrir siempre archivos de este tipo', 'Mostrar en carpeta', and 'Cancelar'. The Windows taskbar at the bottom shows the active file 'openLCA_win64_in...exe' and the system clock at 8:21 p. m.

6. Seleccionar el idioma

The screenshot shows a web browser window at www.openlca.org/download/. The page features a navigation bar with links for Forum, Blog, and Contact, and a main menu with categories like Software, LCA data, Use cases, Learning & Support, Network, and About. A prominent blue 'DOWNLOAD' button is visible. The main content area is titled 'Impact methods' and includes a sub-section for 'General purpose' with a detailed description of environmental impact assessment methods. A modal dialog box titled 'Installer Language' is overlaid on the page, prompting the user to 'Please select a language.' with a dropdown menu showing 'English', 'Deutsch', and 'English'.

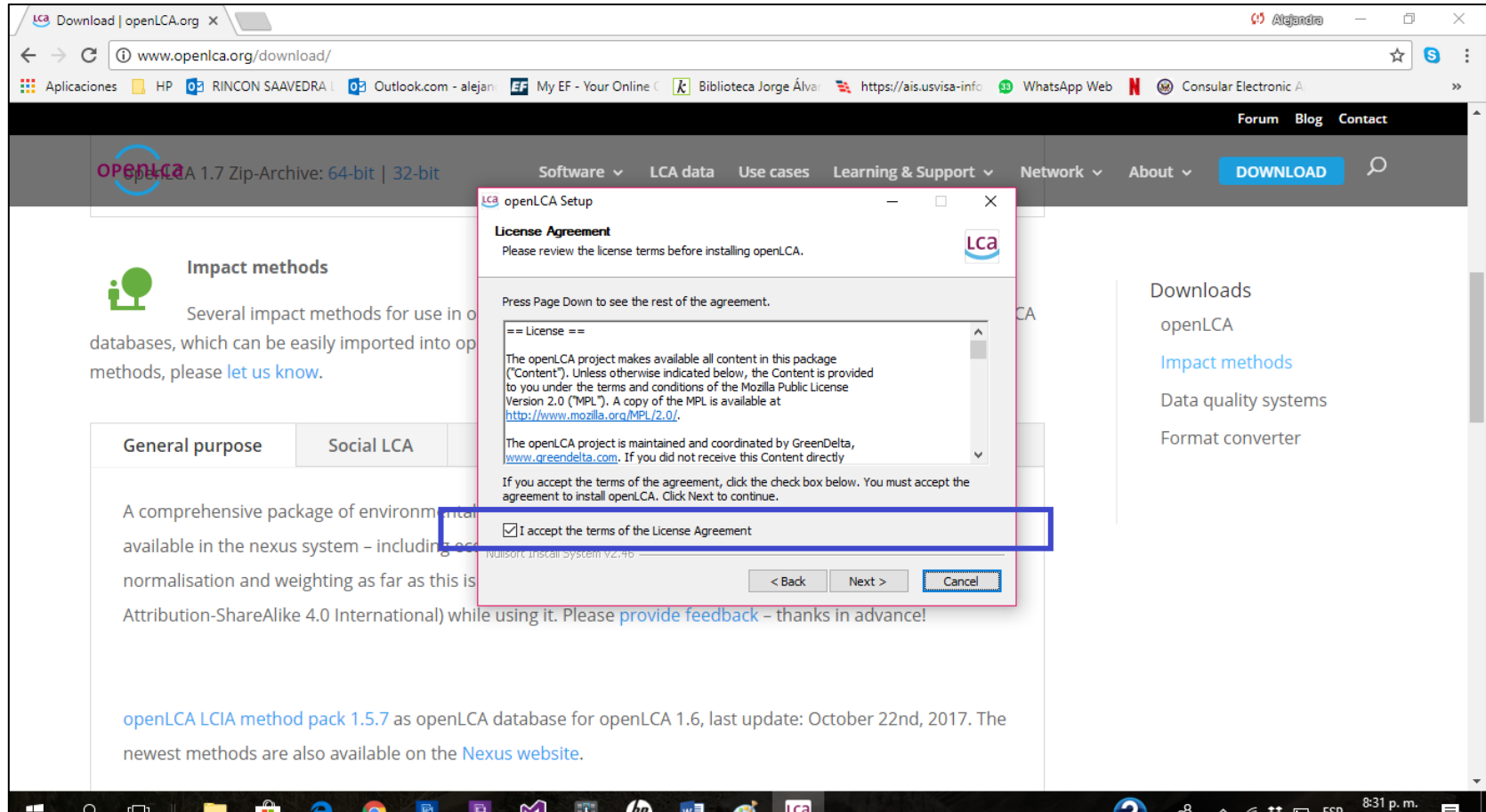
7. Dar clic sobre "Ok"

The screenshot shows a web browser window at www.openlca.org/download/. The page title is "openLCA 1.7 Zip-Archive: 64-bit | 32-bit". A blue circle highlights the "openLCA" logo in the top navigation bar. A modal dialog box titled "Installer Language" is centered on the screen, with a red border. The dialog contains the text "Please select a language." and a dropdown menu currently showing "English". There are "OK" and "Cancel" buttons at the bottom of the dialog. The background page content includes a section titled "Impact methods" with a green icon of a person and a tree, and a sidebar on the right with a "Downloads" section listing "openLCA", "Impact methods", "Data quality systems", and "Format converter".

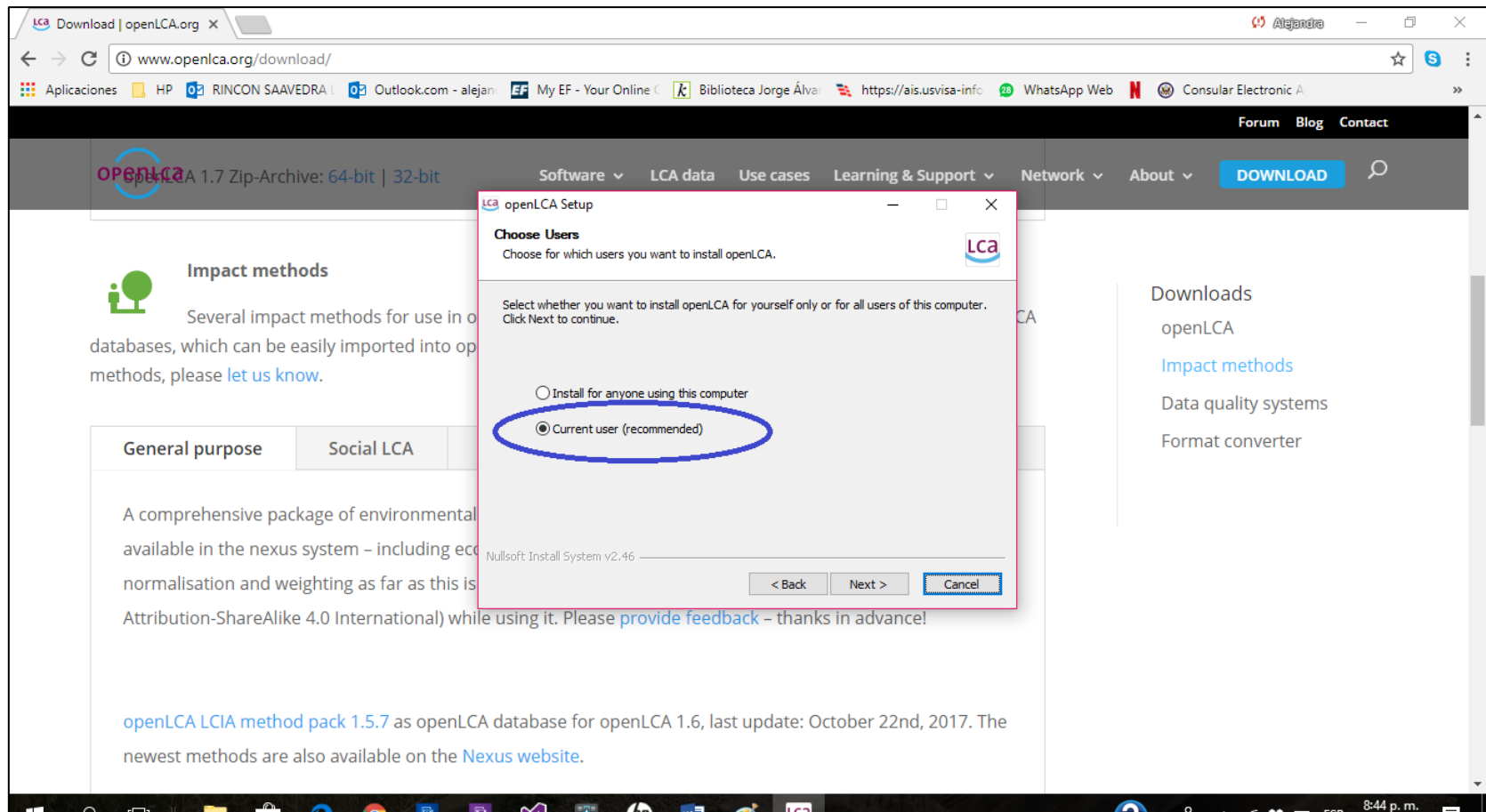
8. Dar Clic sobre "Next"

The screenshot shows a web browser window at www.openlca.org/download/. The page content includes a navigation bar with 'Software', 'LCA data', 'Use cases', 'Learning & Support', 'Network', and 'About' menus, and a 'DOWNLOAD' button. The main content area features 'Impact methods' and 'Downloads' sections. Overlaid on the page is the 'openLCA Setup' wizard window. The wizard window title is 'openLCA Setup' and it contains the text: 'Welcome to the openLCA Setup Wizard', 'This wizard will guide you through the installation of openLCA.', 'It is recommended that you close all other applications before starting Setup. This will make it possible to update relevant system files without having to reboot your computer.', and 'Click Next to continue.'. At the bottom of the wizard window, there are two buttons: 'Next >' and 'Cancel'. The 'Next >' button is circled in blue.

9. Aceptar términos y condiciones, luego dar clic sobre "Next"



10. Dar la opción de “Current user” si usted se encuentra en la cuenta de usuario principal del sistema en su Windows, de lo contrario seleccione la opción Install for anyone using this computer



11. Dar clic en “next”

The screenshot shows a web browser window at www.openlca.org/download/. The page content includes a navigation menu with 'DOWNLOAD' highlighted, and a main section titled 'Impact methods' with a sub-section for 'General purpose'. A modal dialog box titled 'openLCA Setup' is open, displaying the 'Choose Install Location' step. The dialog box contains the following text: 'Choose the folder in which to install openLCA.', 'Setup will install openLCA in the following folder. To install in a different folder, click Browse and select another folder. Click Next to continue.', and a text box for 'Destination Folder' containing 'C:\Users\Alejandra\AppData\Local\openLCA'. Below this, it shows 'Space required: 314.6MB' and 'Space available: 404.6GB'. At the bottom of the dialog, there are three buttons: '< Back', 'Next >', and 'Cancel'. The 'Next >' button is circled in blue. The background website content is partially obscured by the dialog box.

12. Dar clic sobre "Install"

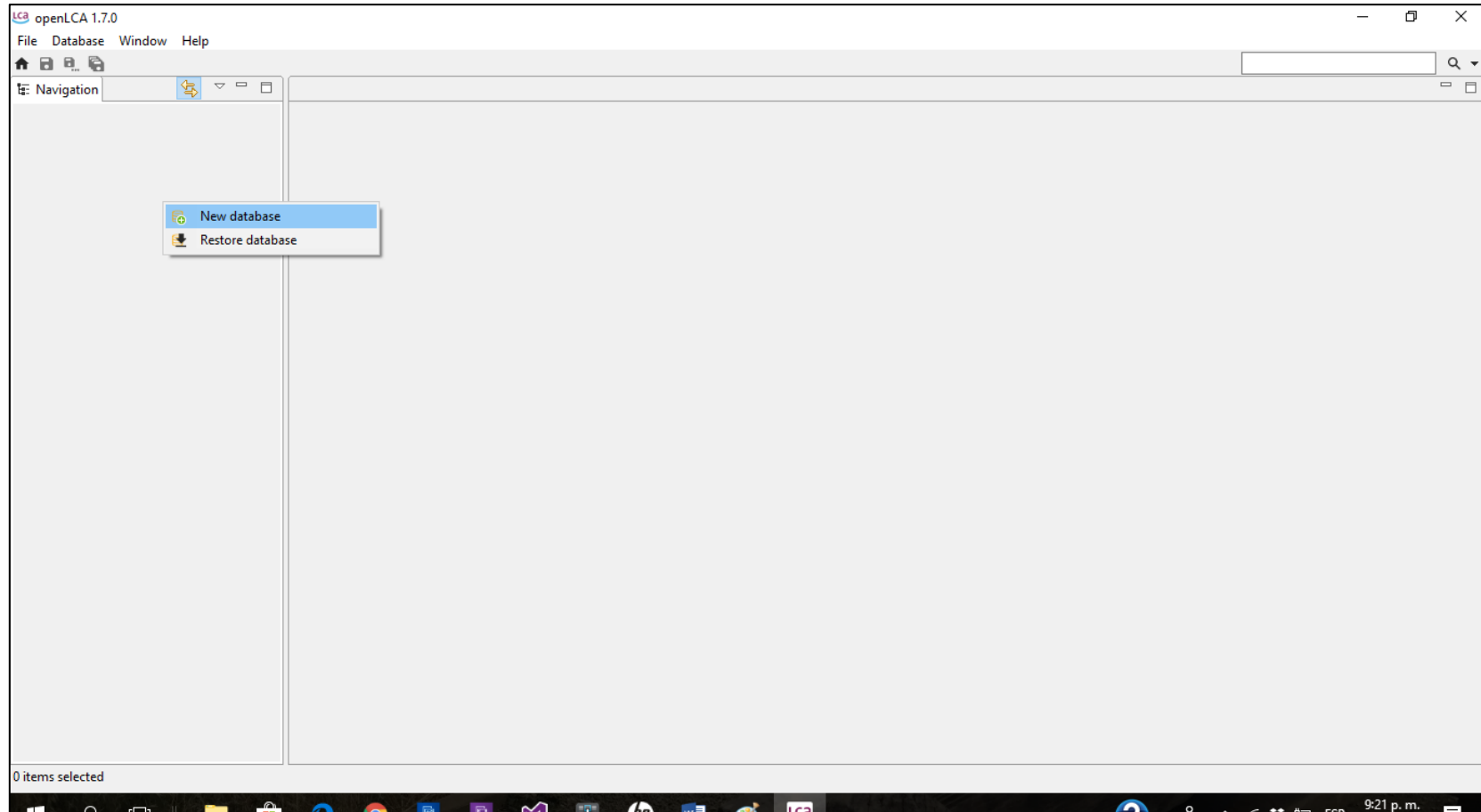
The screenshot shows a web browser window at www.openlca.org/download/. The page content includes a navigation bar with 'Forum', 'Blog', and 'Contact' links, and a main section titled 'Impact methods' with sub-sections for 'General purpose' and 'Social LCA'. A modal dialog box titled 'openLCA Setup' is open, displaying the 'Choose Start Menu Folder' step. The dialog box contains a list of folders including 'openLCA', 'Accessibility', 'Accessories', 'Administrative Tools', 'Adobe', 'Android SDK Tools', 'Bluetooth Devices', 'Communication and Chat', 'Dropbox', 'ETS', 'Games', and 'GeoGebra 5'. There is a checkbox for 'Do not create shortcuts' which is currently unchecked. The 'Install' button at the bottom of the dialog box is highlighted with a blue circle. The browser's taskbar at the bottom shows the time as 9:04 p. m.

13. Dar clic sobre la opción “Run OpenLCA” seguido por “Finish”.

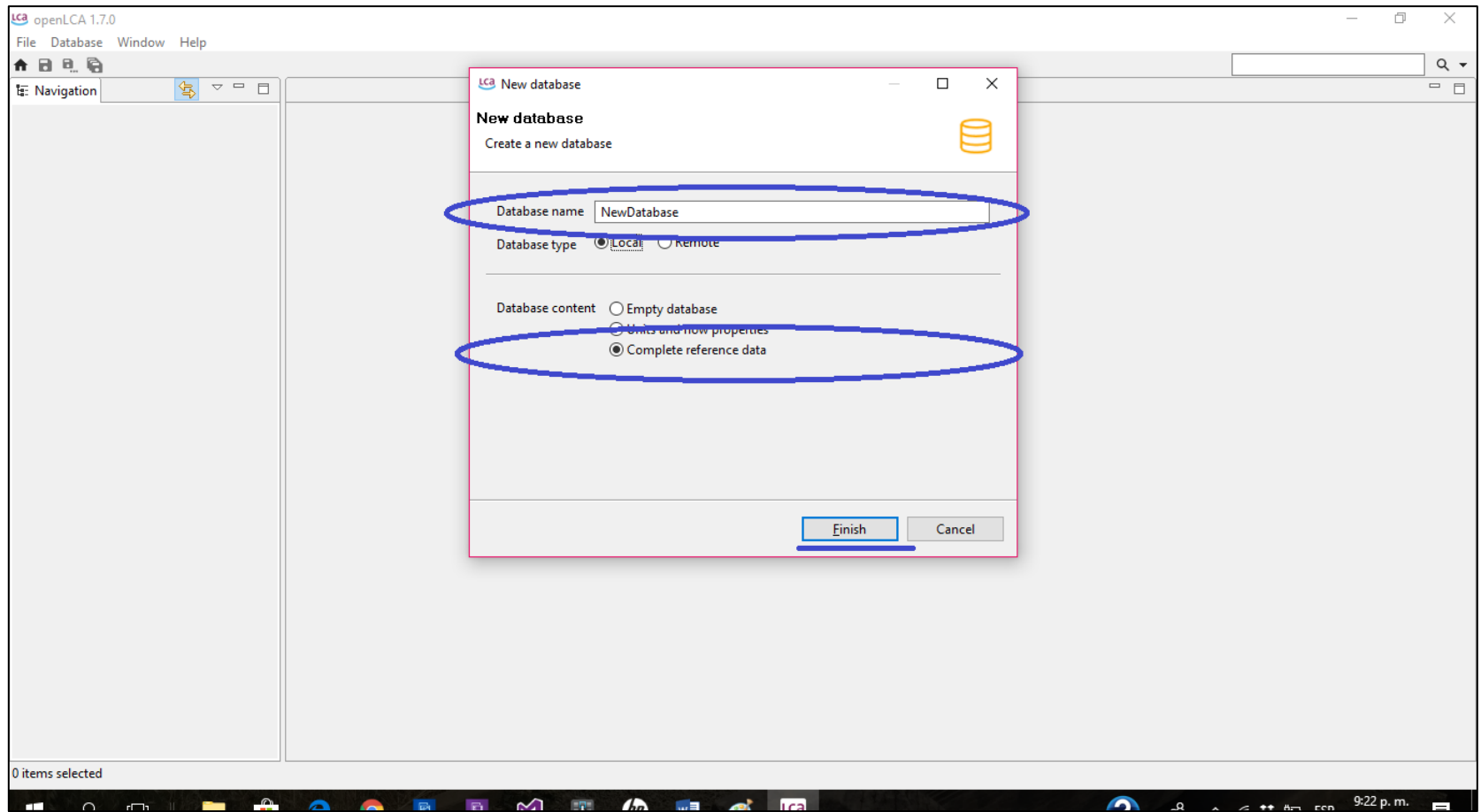
The screenshot shows a web browser window at www.openlca.org/download/. The page content includes a navigation bar with 'Forum', 'Blog', and 'Contact' links, and a 'DOWNLOAD' button. The main content area lists various download options, including 'Database for openLCA 1.4 and 1.5' and 'EcoSpold01'. A modal window titled 'Completing the openLCA Setup Wizard' is overlaid on the page. The wizard displays the openLCA logo and the message: 'openLCA has been installed on your computer. Click Finish to close this wizard.' There is a checked checkbox labeled 'Run openLCA' and a 'Finish' button at the bottom of the wizard. Red circles highlight the 'Run openLCA' checkbox and the 'Finish' button. The browser's address bar and tabs are visible at the top of the window.

2.INSERTAR BASE DE DATOS AL PROGRAMA (ELC)

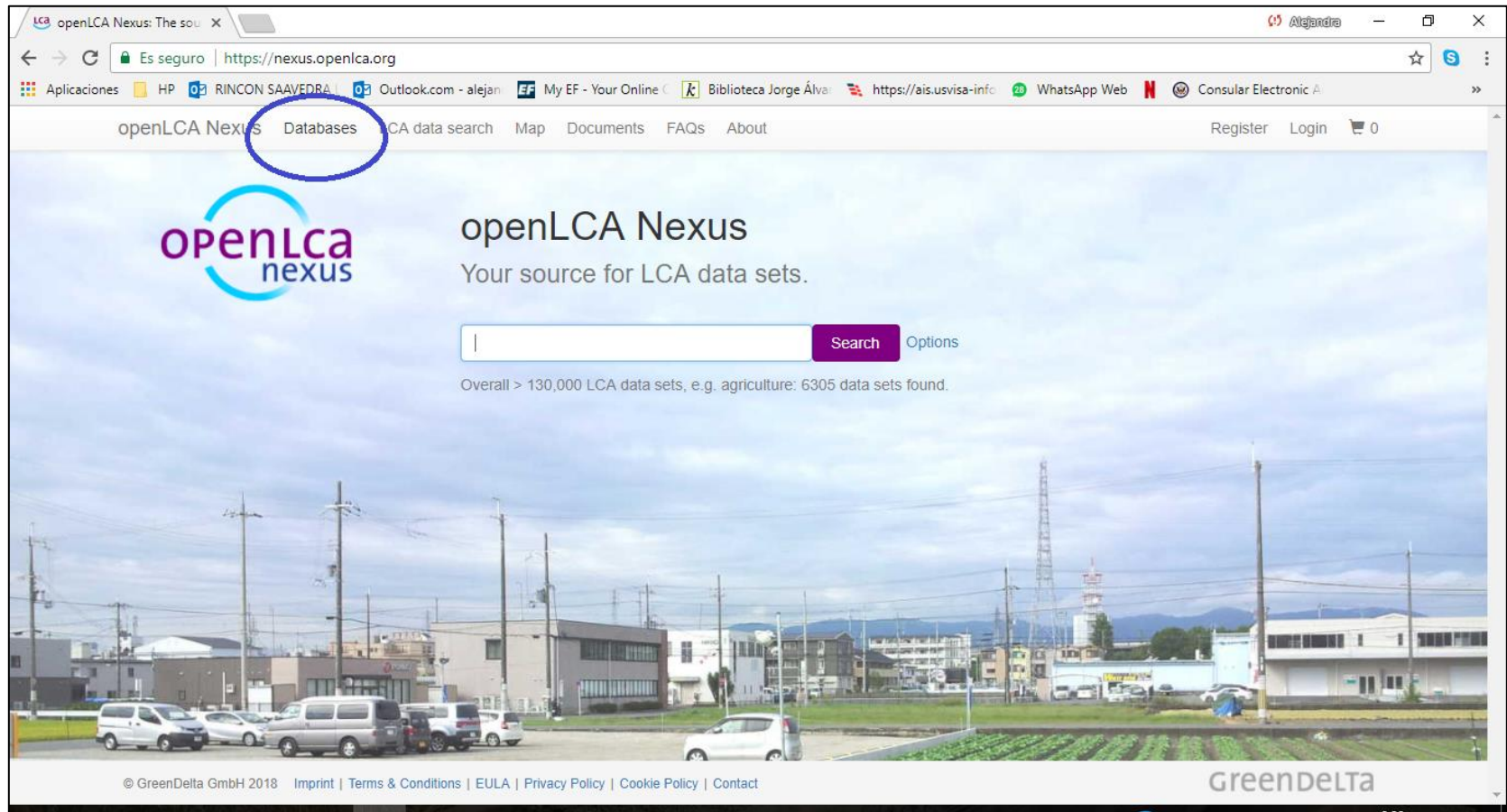
1. Para crear una nueva base de datos vacía hacer clic derecho sobre el cuadro de "Navigation" y seleccionar "New database".



2. Llenar como se muestra a continuación y dar clic sobre “finish”.



3 . Dirigirse a <https://nexus.openlca.org/> y dar clic sobre “Databases”.



4. Hacer clic sobre “ELCD”

The screenshot shows a web browser window at the URL <https://nexus.openlca.org/databases>. The page features the openLCA Nexus logo and the text "Your source for LCA data sets." Below this, there are navigation tabs for "All", "Free databases", and "For purchase databases". On the left side, a vertical list of database names is displayed, with "ELCD" circled in blue. The main content area shows a card for the "ecoinvent" database, which is marked as "updated" and includes a "Browse" button. The browser's taskbar at the bottom shows various application icons and the system clock indicating 9:34 p.m.

5. Dar clic sobre “Go to Downloads”, **cerciorarse que tiene la sesión iniciada con su cuenta en OpenLCA**

openLCA Nexus: The sou x
 Es seguro | https://nexus.openlca.org/database/ELCD
 Aplicaciones HP RINCON SAAVEDRA Outlook.com - alejan My EF - Your Online Biblioteca Jorge Álvar https://ais.usvisa-info WhatsApp Web Consular Electronic A

openLCA Nexus Databases LCA data search Map Documents FAQs About Downloads Orders leidy.rincon 0

Databases
 ecoinvent
 idea
 GaBi
 Agri-footprint
 exiobase
 ARVI
 Agribalyse
 soca
 EuGeos' 15804-IA
 NEEDS
 PSILCA
 ESU World Food
 ELCD
 LC-Inventories.ch
 Social Hotspots
 ProBas
 bioenergiadat
 USDA
 Okobaudat
 openLCA LCIA methods

JRC
 EUROPEAN COMMISSION

Info Details Documents

European reference Life Cycle Database of the Joint Research Center. Version 3.2 from October 2015. Obvious errors in the original database provided by JRC were corrected (missing data sets), elementary flows were mapped to openLCA reference list and some refactoring in categories was conducted.

ELCD Database details

| | | | |
|---------|-----|-----|-----|
| Lca | Lca | Lca | Lca |
| 1.4/1.5 | 1.5 | 1.6 | 1.7 |

ELCD
 Free
 Go to downloads

https://nexus.openlca.org/about | Privacy Policy | Cookie Policy | Contact
 GreenDelta
 9:35 p. m.

6. Seleccionar lo mostrado a continuación y dar clic en la opción "Download".

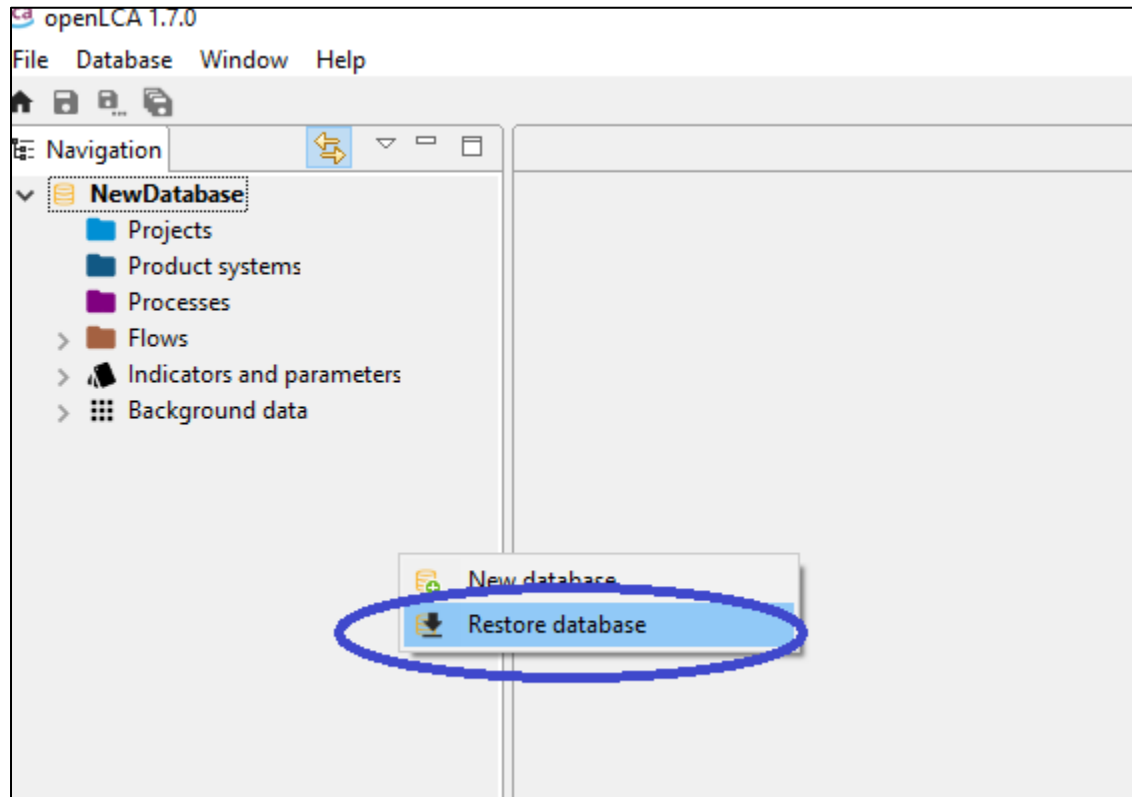
The screenshot shows the openLCA Nexus website interface. The main content area is titled "Free databases" and contains a table with the following columns: "Download?", "Data file", "Nexus version", "Format", and "Licence files". The table lists several databases, with the "ELCD 3.2" row selected. Below the table, there are two checked checkboxes: "I have read the licences of the selected databases and accept them" and "I have read the EULA and accept it". A blue "Download" button is located at the bottom right of the page.

| Download? | Data file | Nexus version | Format | Licence files |
|-------------------------------------|------------------------|---------------|-------------|--------------------------------------|
| > | Agribalyse | | | |
| > | BioEnergieDat | | | |
| > | ecoinvent LCIA methods | | | |
| ▼ | ELCD | | | |
| <input checked="" type="checkbox"/> | ELCD 3.2 | 2 | openLCA 1.7 | ELCD_III_license.pdf |
| > | exiobase | | | |
| > | NEEDS | | | |
| > | openLCA LCIA methods | | | |
| > | USDA | | | |

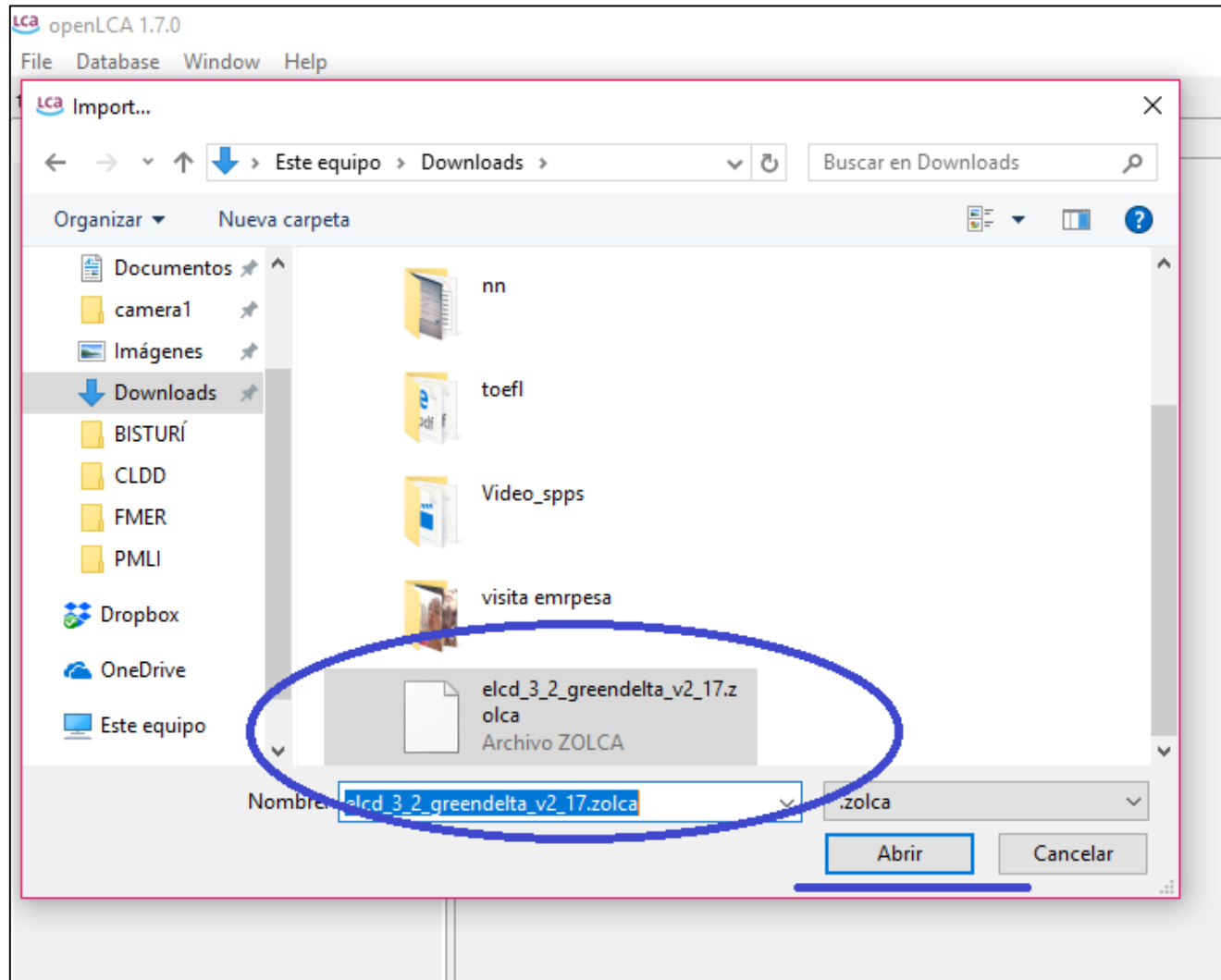
I have read the licences of the selected databases and accept them
 I have read the [EULA](#) and accept it

[Download](#)

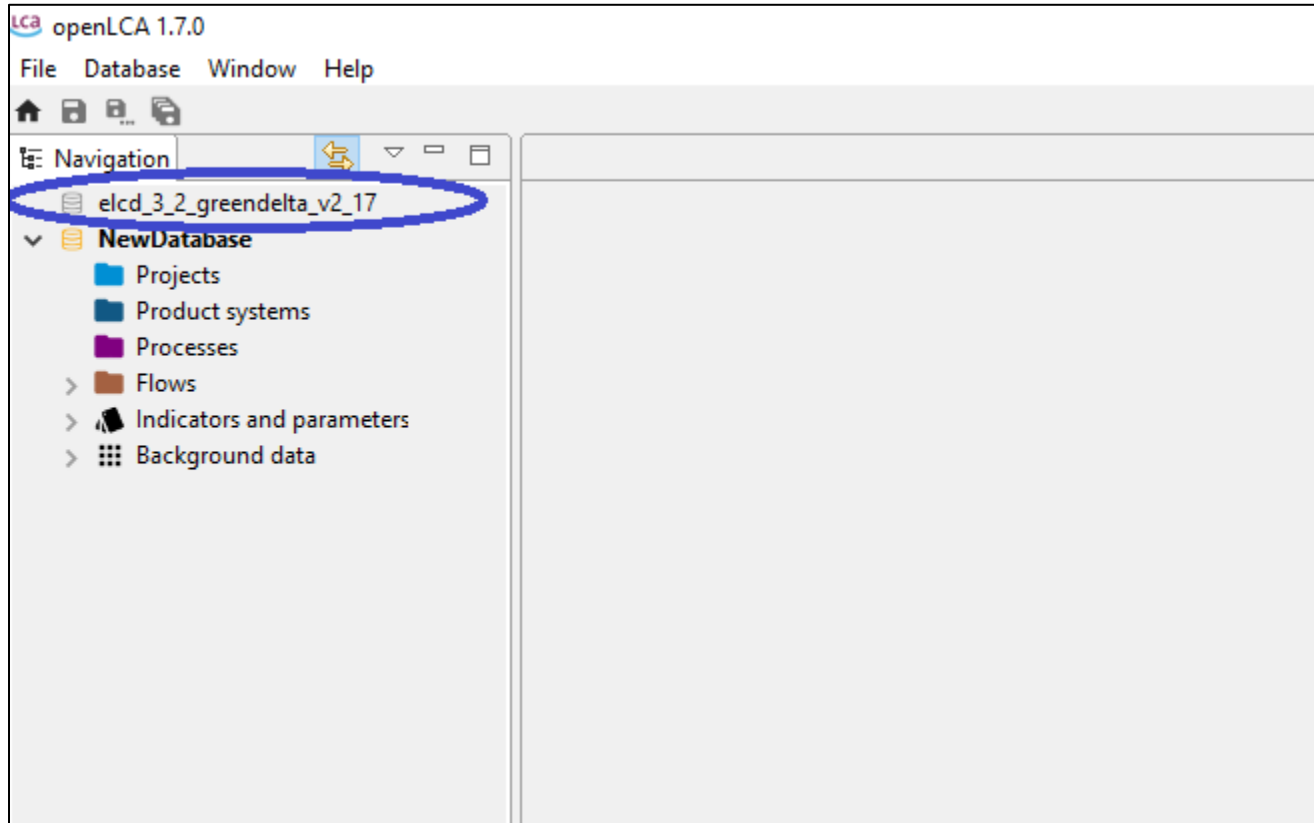
7. Volver al programa dar clic derecho sobre el cuadro de “Navigation” y seleccionar “restore database” o “Import database”



8. Abrir la base de datos descargada, en nuestro caso ELCD .



9. Para activar la base de datos que agregamos dar doble clic sobre ella “elcd_3_2_greendelta_v2_17”.



3.INSTALACIÓN DEL MÉTODO DE IMPACTO

1. Dirigirse a <http://www.openlca.org/download/> y dar clic sobre “OpenLCA LCIA method pack 1.5.7”

available in the nexus system – including ecoinvent 3, GaBi and ELCD is available here. It includes normalisation and weighting as far as this is foreseen by the method. Please observe the license* (Commons Attribution-ShareAlike 4.0 International) while using it. Please [provide feedback](#) – thanks in advance!

openLCA LCIA method pack 1.5.7 as openLCA database for openLCA 1.6, last update: October 22nd, 2017. The newest methods are also available on the [Nexus website](#).

openLCA LCIA method pack 1.5.6 as database for openLCA 1.5 (zolca file, 23 MB) with normalisation and weighting factors. Last update: February 20th, 2017.

Detailed information on the methods available in the LCIA method pack is available [here](#) (pdf, 801 kB). Last update: February 20th, 2017.

A major update was the **update of the ILCD 2011 method** from version 1.0.5 from February 2013 to version 1.0.10 from August 2016. More information about the update procedure can be found [here](#) (pdf, 1.14 MB).

Quality assurance of the implemented methods has been carried out and is available [here](#) (pdf, 381 kB).

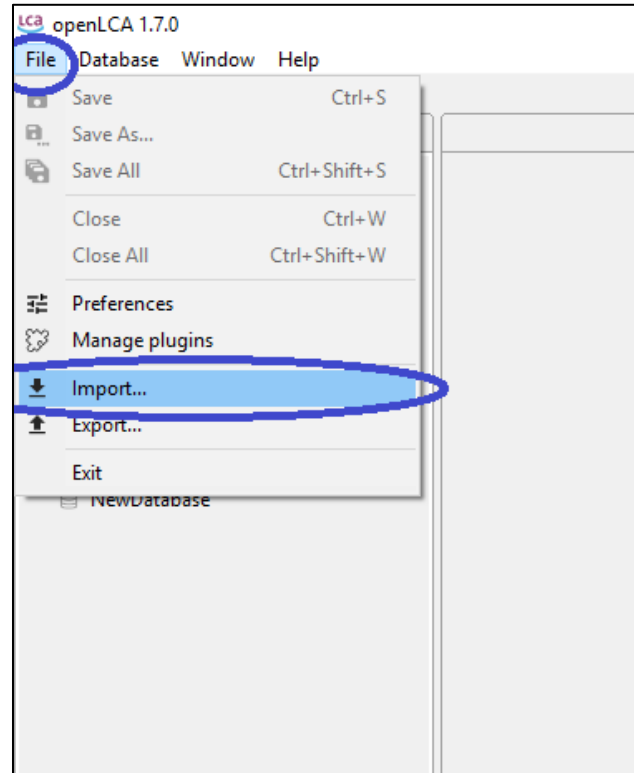
Older versions of the openLCA LCIA methods:

www.openlca.org/wp-content/uploads/2017/02/openlca_lcia_methods_1_5_6.zolca

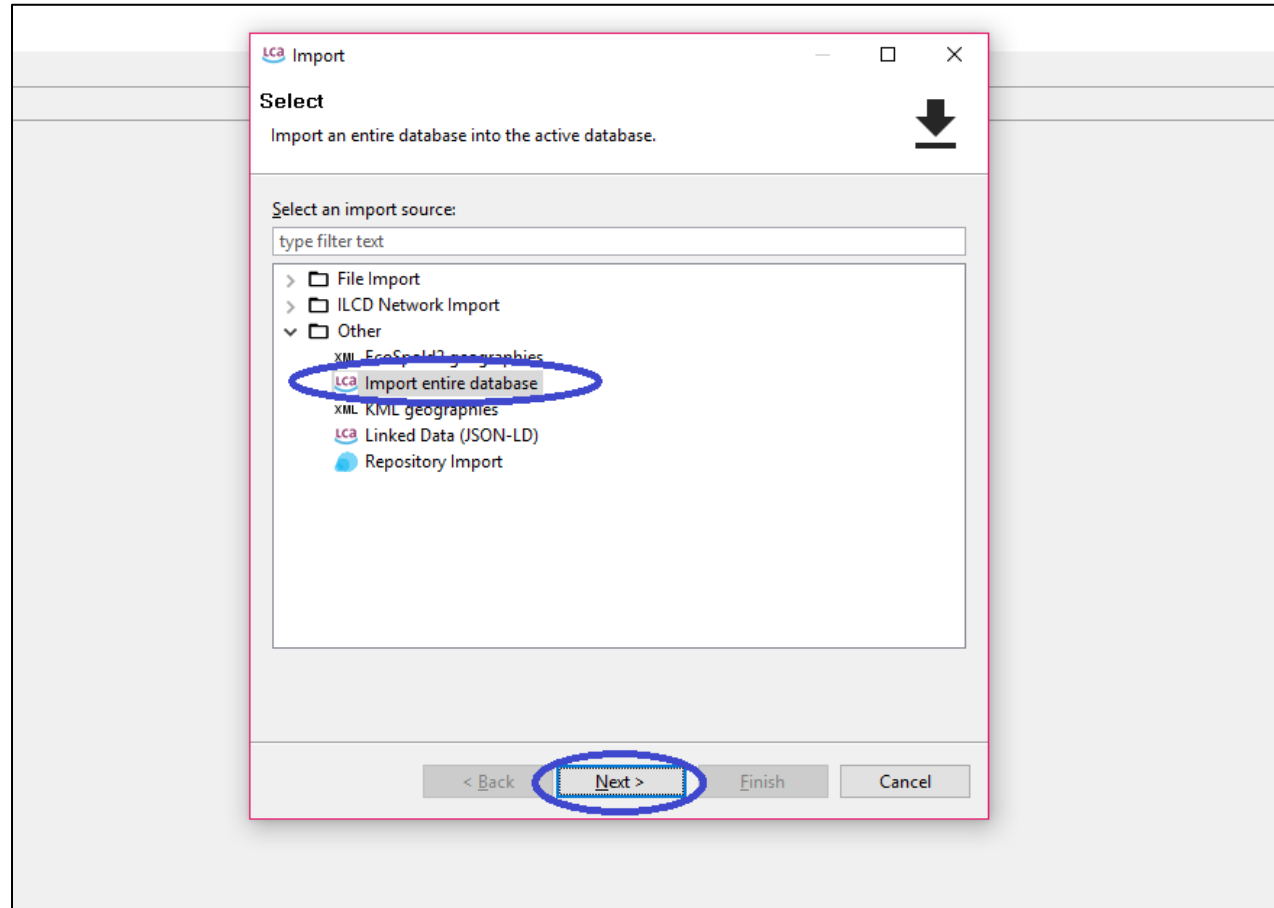
openlca_lcia_met...zolca ^ elcd_3_2_greend...zolca ^

Mostrar todo X

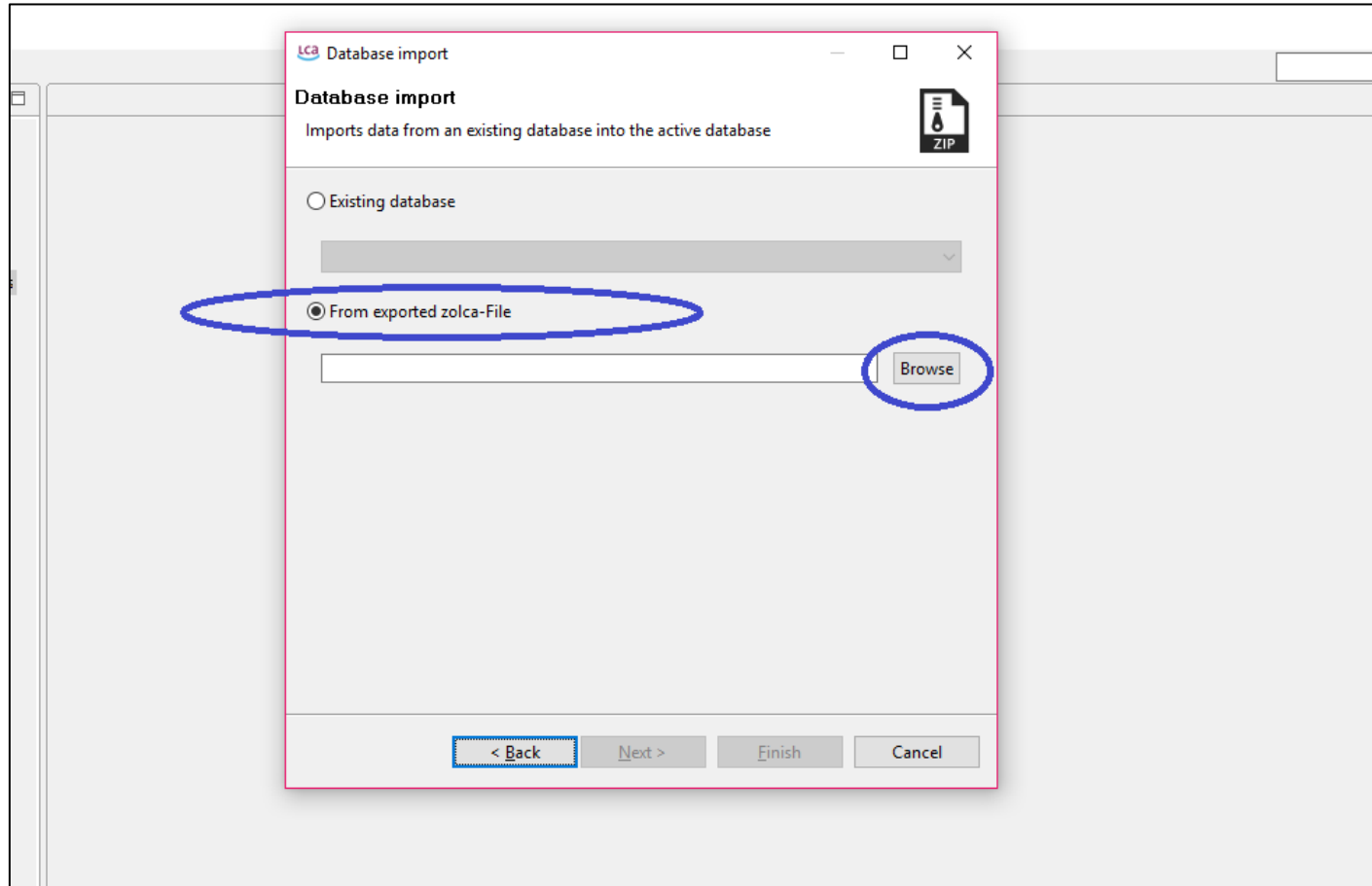
2. Dirigirse al programa y dar clic sobre "file", luego sobre "Import "



3. Elegir las siguientes opciones

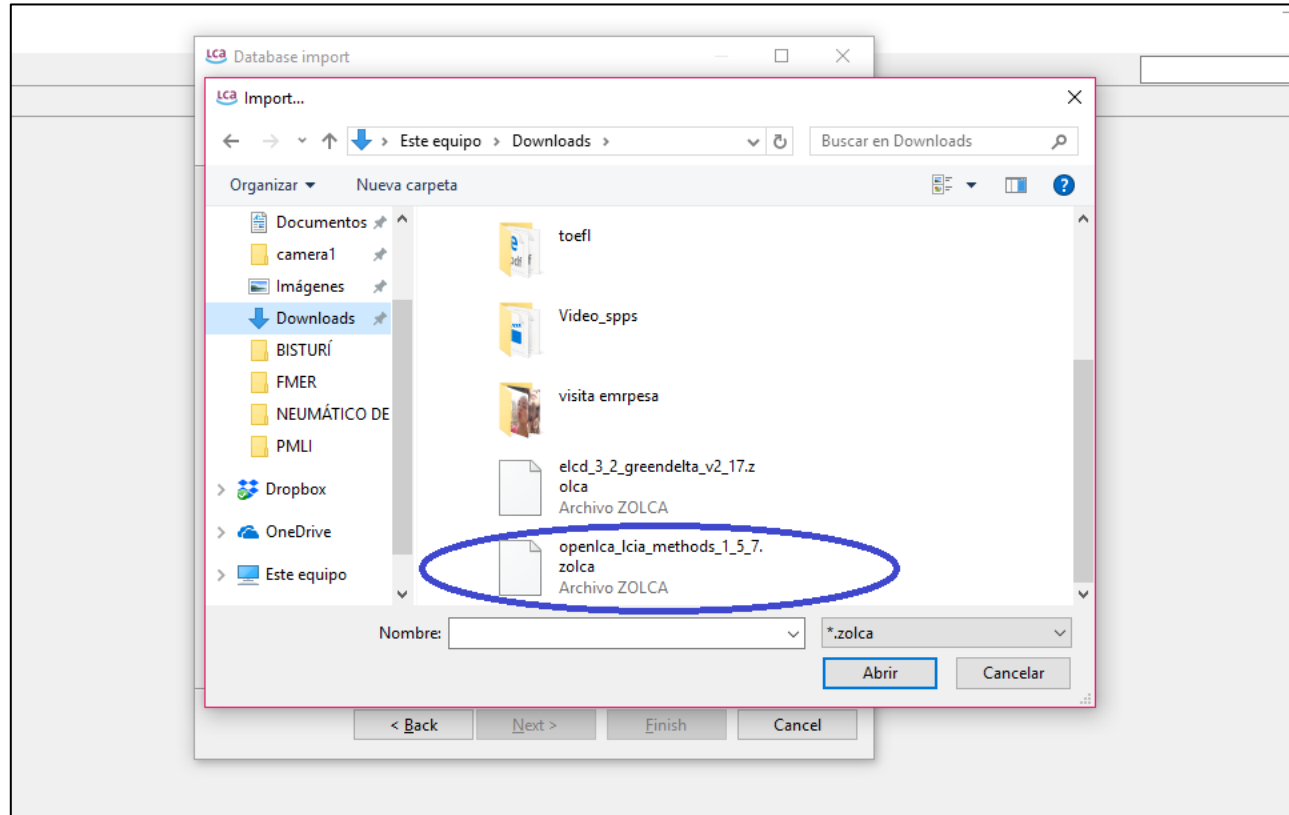


4. Elegir "From exported zolca-file" seguido por "Browse"

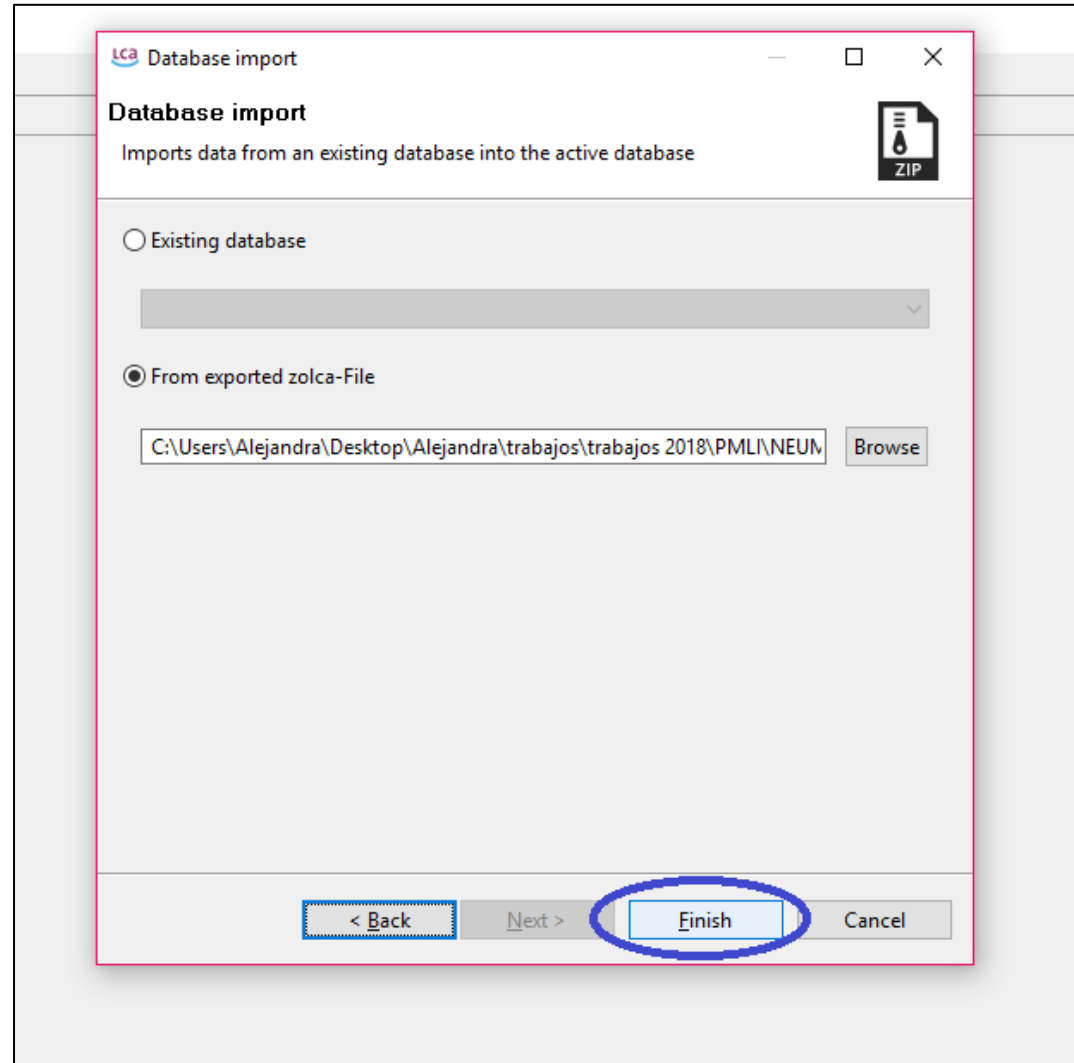


5.

5. Dirigirse a “Descargas” y elegir el archivo descargado de método de impactos



6. Dar click en la opción de finalizar

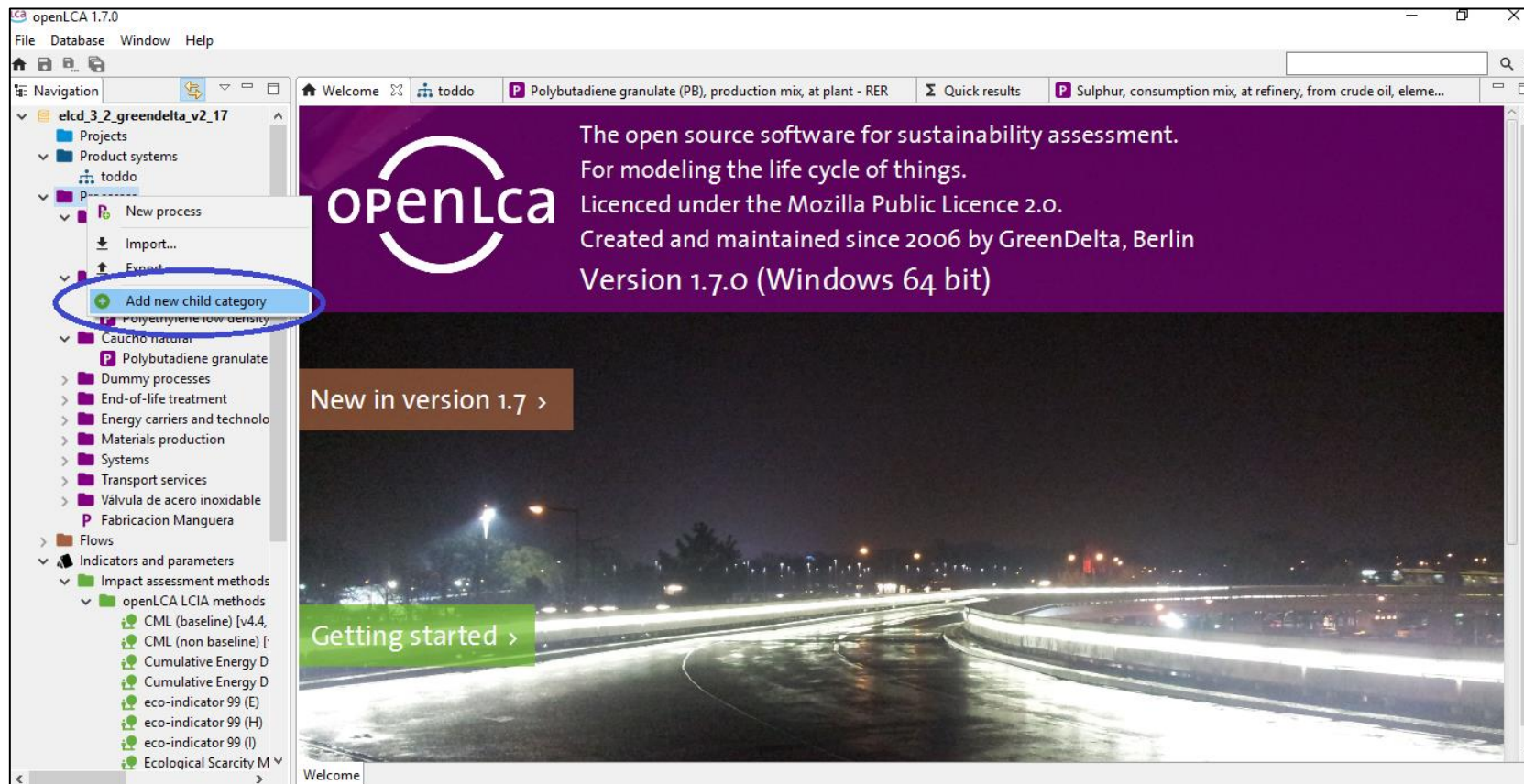


4.EJEMPLO BASE PARA USO DEL PROGRAMA

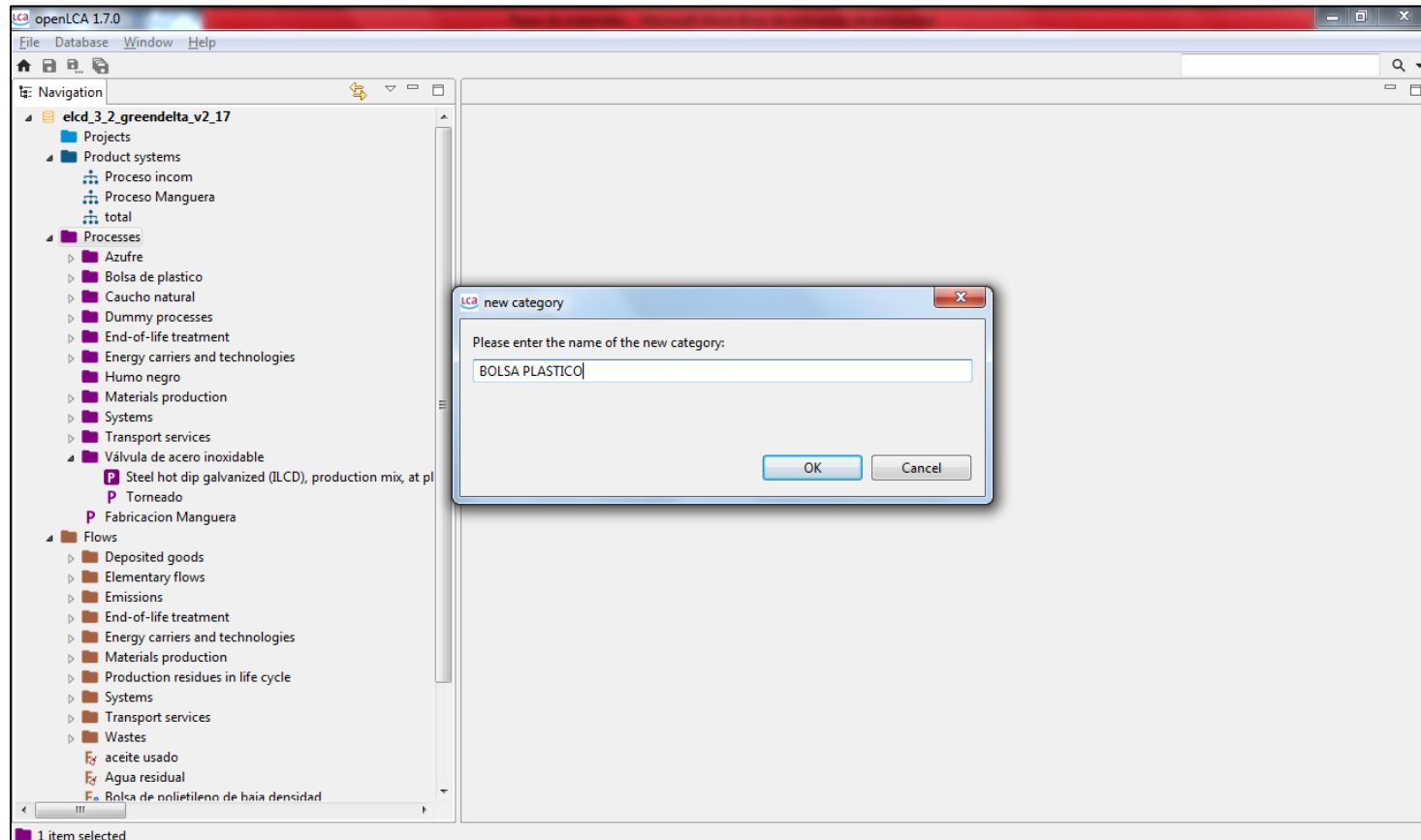
A continuación, se dará un ejemplo para fabricar una bolsa de plástico

4.1 Crear una categoría para el producto

1. Realizar clic derecho sobre "Processes" y dar clic sobre "Add new child category"

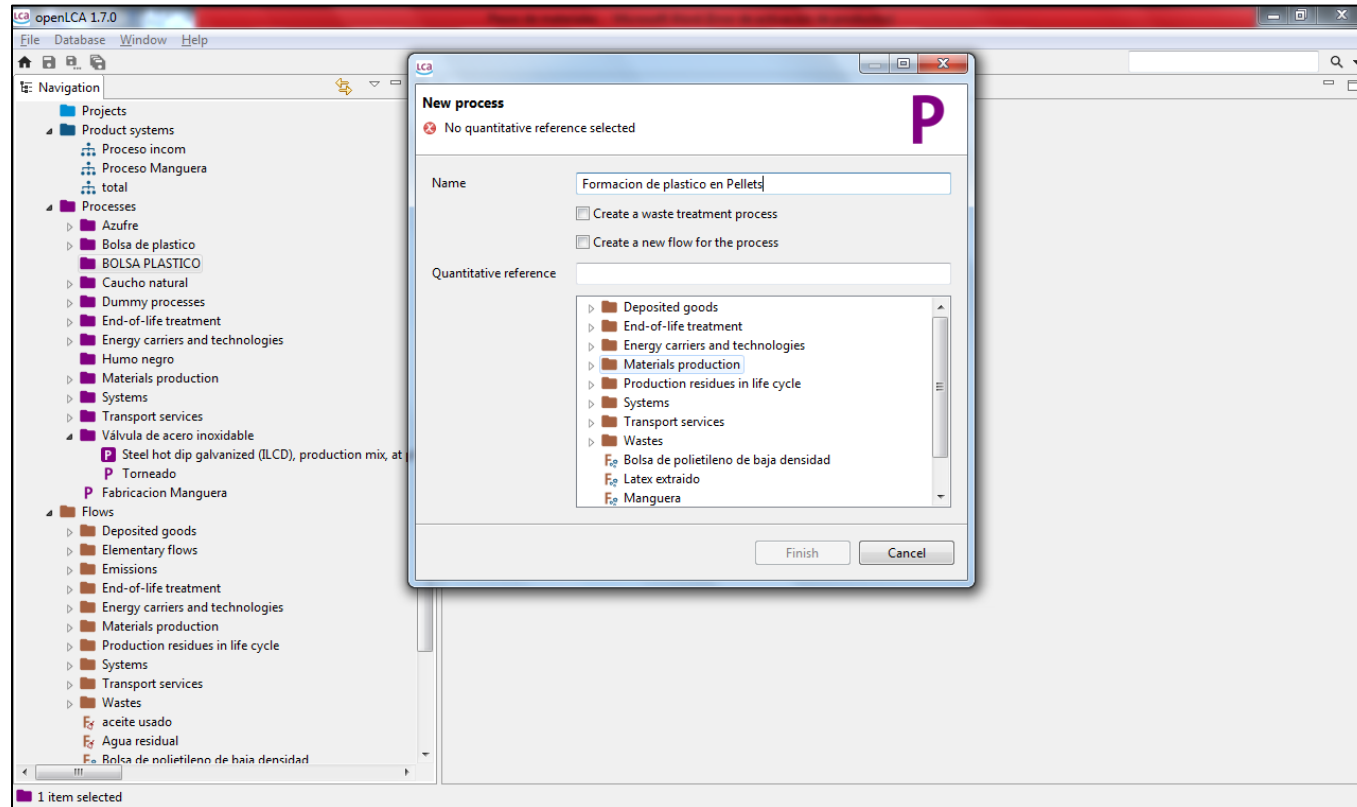


2. Agregar el nombre de BOLSA PLASTICA y dar clic sobre “ok”



4.2 Crear un proceso del producto

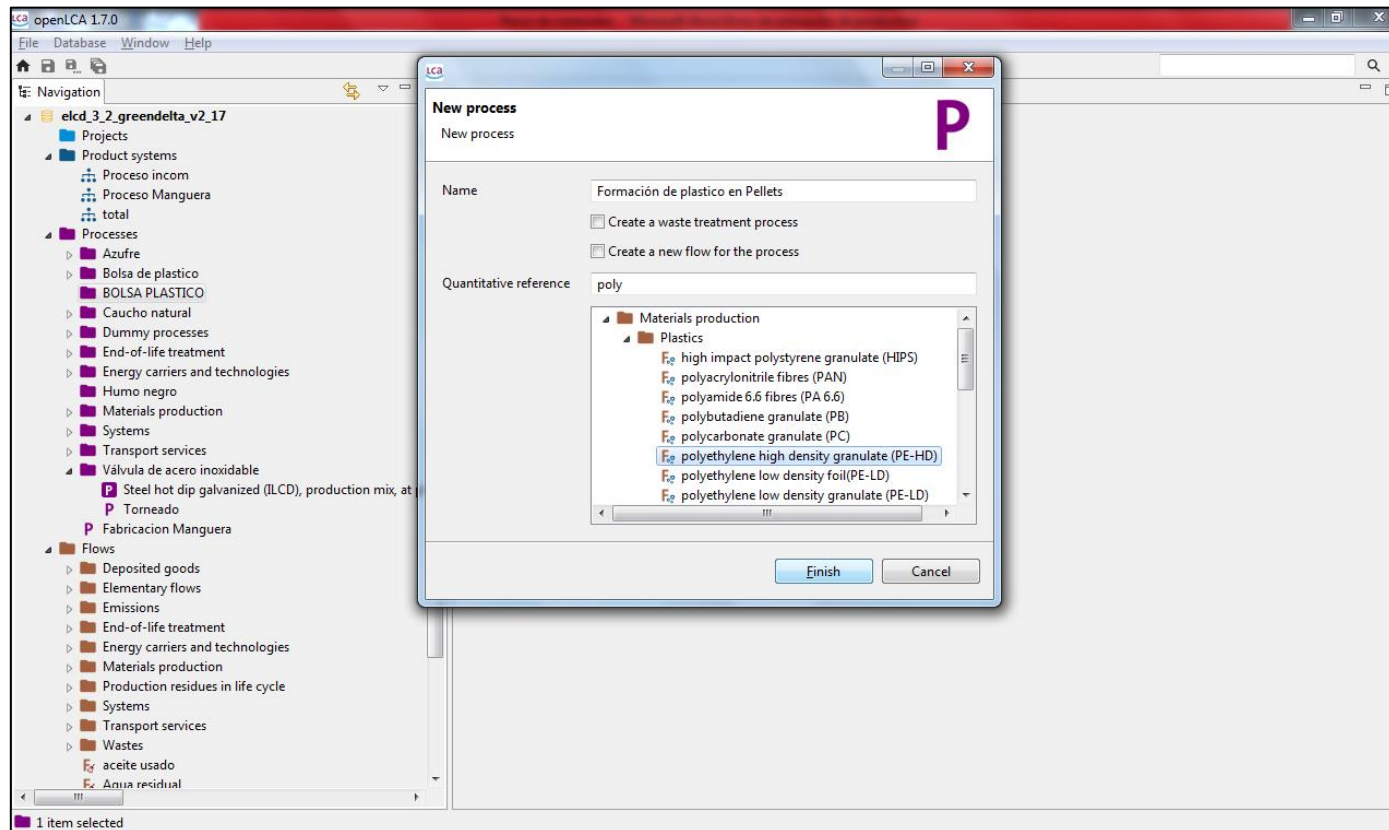
3. Para la creación de este producto se necesita de procesos los cuales se crean de la siguiente manera, clic derecho sobre “Processes” y luego seleccionar “New Processes”, llamaremos una carpeta como el producto o material que se quiere hacer en este caso “Formación de plástico en Pellets”



4.3 Crear un flujo al proceso

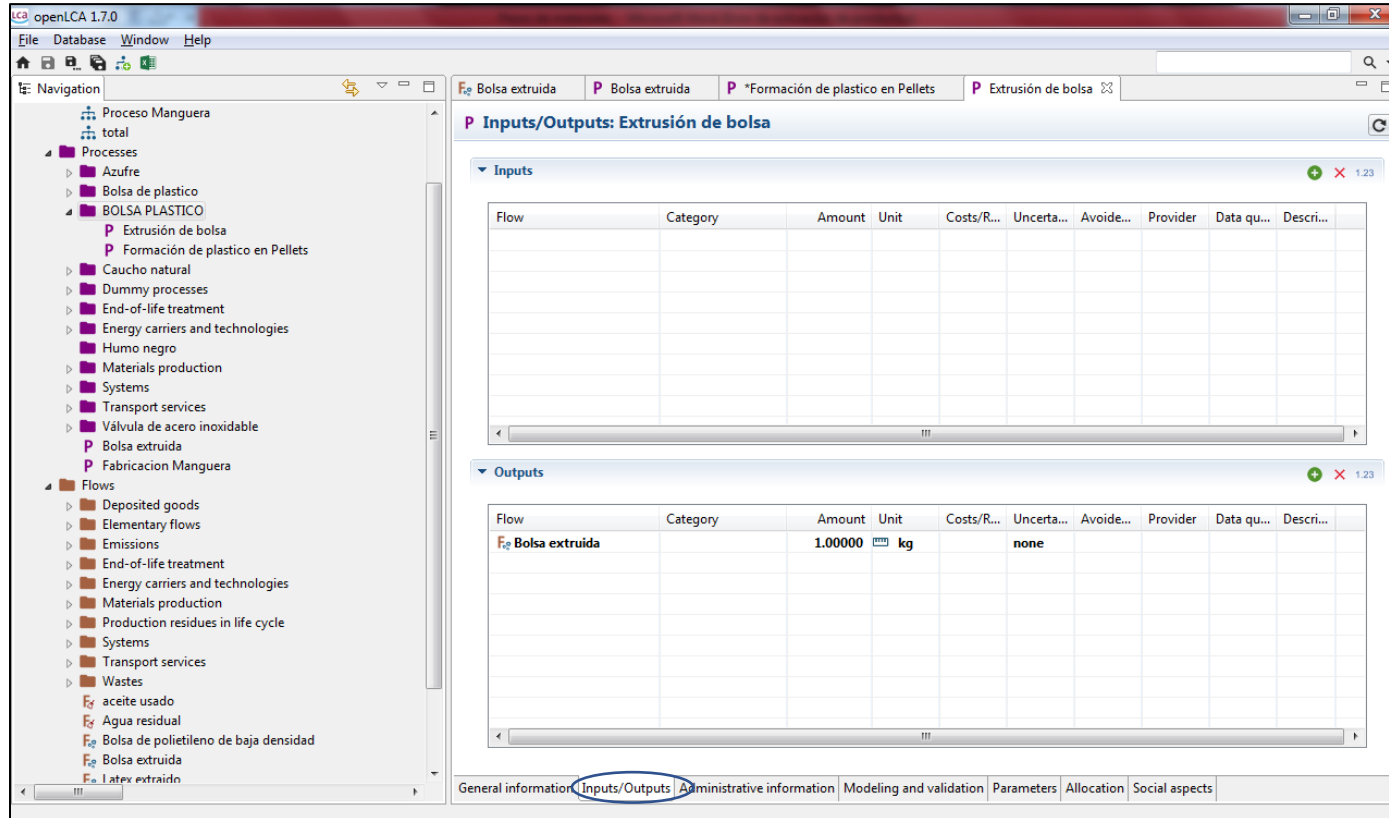
4.3.1 Crear flujo de referencia del proceso desde base de datos

3. En el momento de crear un nuevo proceso debe solo colocarse el flujo de referencia “Quantitative reference” que va a ser lo que finalmente se lleva a cabo en ese proceso . Se puede buscar de la base de datos solo colocando la palabra en la barra como en el caso “poly” y asignar el necesario o buscarlo dirigiéndose a si desea crear uno nuevo a ” materials production”, luego a “plastics “ y finalmente “polyethylene high density granulate(PE-HD)” , luego dar clic en “finish”



4.3.2 Crear flujos de entrada y salida en un proceso desde base de datos

4. Se despliega la siguiente pantalla, para insertar todos los flujos de entradas y salidas correspondientes al proceso se da clic sobre “Inputs/Outputs”

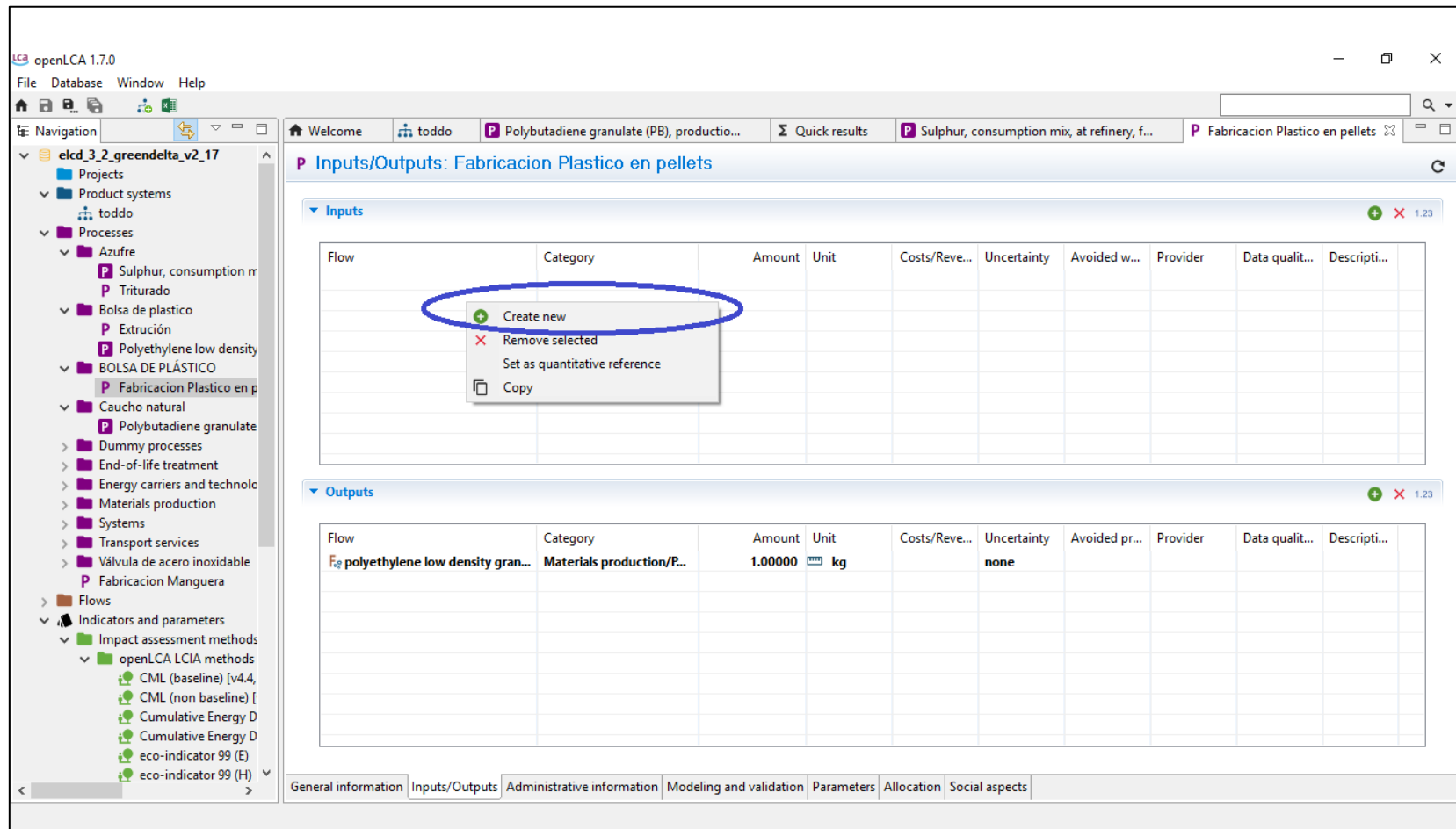


The screenshot shows the openLCA 1.7.0 software interface. The main window is titled "P Inputs/Outputs: Extrusión de bolsa". The interface is divided into several sections:

- Navigation Panel (Left):** A tree view showing the project structure. The "Processes" folder is expanded, and "Extrusión de bolsa" is selected.
- Main Data Table:** A table with columns: Flow, Category, Amount, Unit, Costs/R..., Uncerta..., Avoide..., Provider, Data qu..., and Descri... The table is split into "Inputs" and "Outputs" sections.

| Flow | Category | Amount | Unit | Costs/R... | Uncerta... | Avoide... | Provider | Data qu... | Descri... |
|------------------|----------|---------|------|------------|------------|-----------|----------|------------|-----------|
| F Bolsa extruida | | 1.00000 | kg | | none | | | | |
- Bottom Menu Bar:** A series of tabs: General information, **Inputs/Outputs** (highlighted with a blue circle), Administrative information, Modeling and validation, Parameters, Allocation, Social aspects.

- 5 Para agregar Entradas“Inputs” dar clic izquierdo sobre el primer recuadro debajo de “Flow” y dar clic en la opción “Creare new”

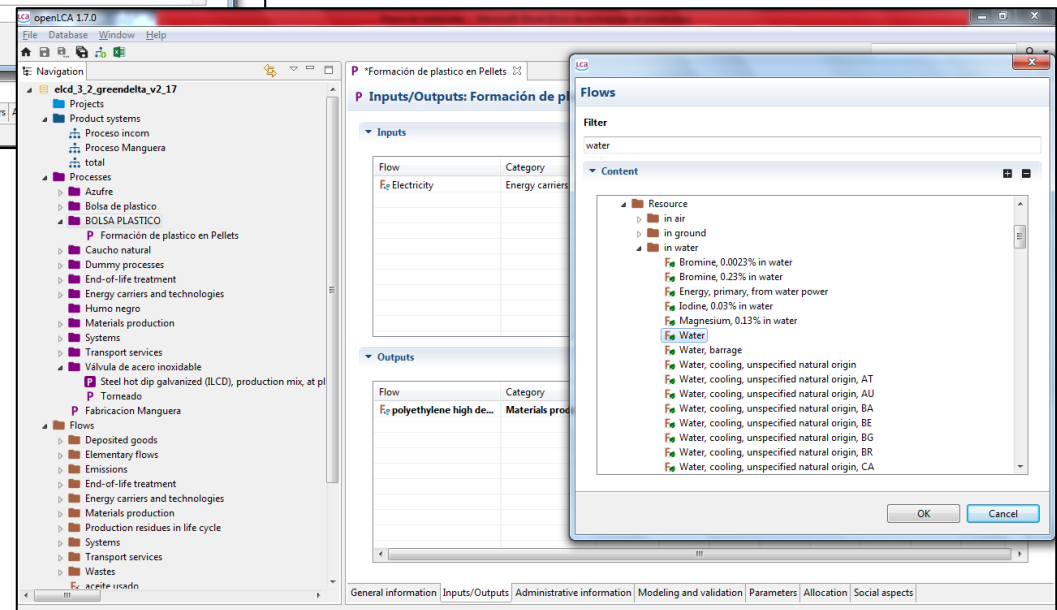
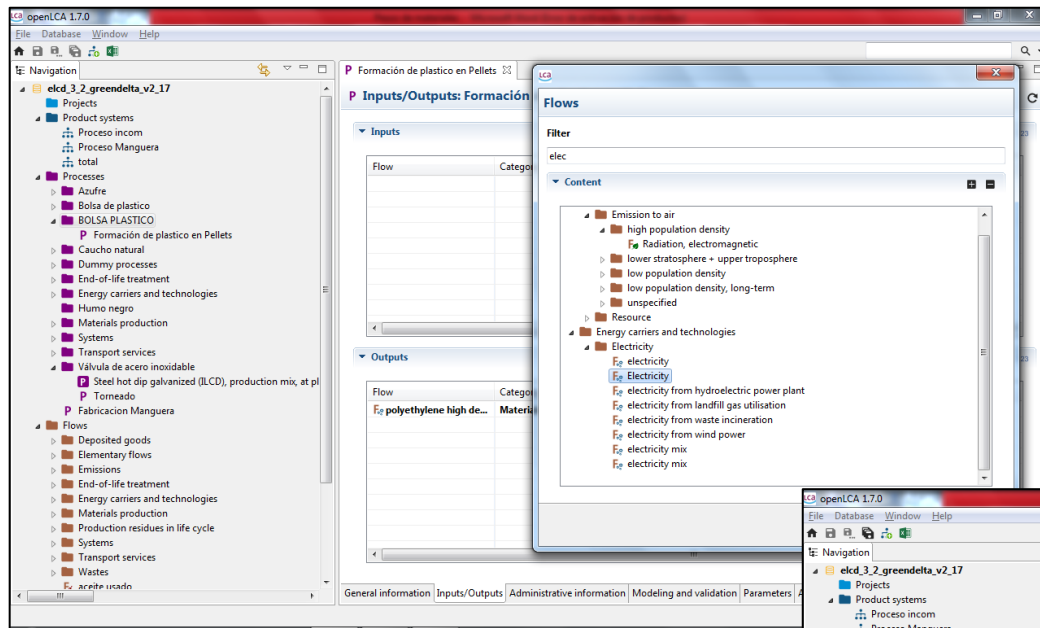


The screenshot shows the openLCA 1.7.0 interface. The left sidebar displays a project tree for 'elcd_3_2_greendelta_v2_17'. The main window is titled 'Inputs/Outputs: Fabricacion Plastico en pellets'. It contains two tables: 'Inputs' and 'Outputs'. The 'Inputs' table is currently empty, and a context menu is open over its first row, with the 'Create new' option highlighted. The 'Outputs' table contains one entry: 'polyethylene low density gran...' with a quantity of 1.00000 kg.

| Flow | Category | Amount | Unit | Costs/Reve... | Uncertainty | Avoided w... | Provider | Data qual... | Descripti... |
|------|----------|--------|------|---------------|-------------|--------------|----------|--------------|--------------|
| | | | | | | | | | |
| | | | | | | | | | |

| Flow | Category | Amount | Unit | Costs/Reve... | Uncertainty | Avoided pr... | Provider | Data qual... | Descripti... |
|-------------------------------------|--------------------------|---------|------|---------------|-------------|---------------|----------|--------------|--------------|
| F: polyethylene low density gran... | Materials production/P.. | 1.00000 | kg | | none | | | | |
| | | | | | | | | | |
| | | | | | | | | | |

- 6 Agregar todo lo que se necesita para crear los pellets , se puede buscar en la barra de “Filter” de no encontrar dirijase a las carpetas convenientes y agregue el material con mayor similitud al que necesita, en el ejemplo agregamos “Electricity”. Si no encuentra ninguno similar lo deberá crear como se indica en los procesos siguientes. (Ver página 36)



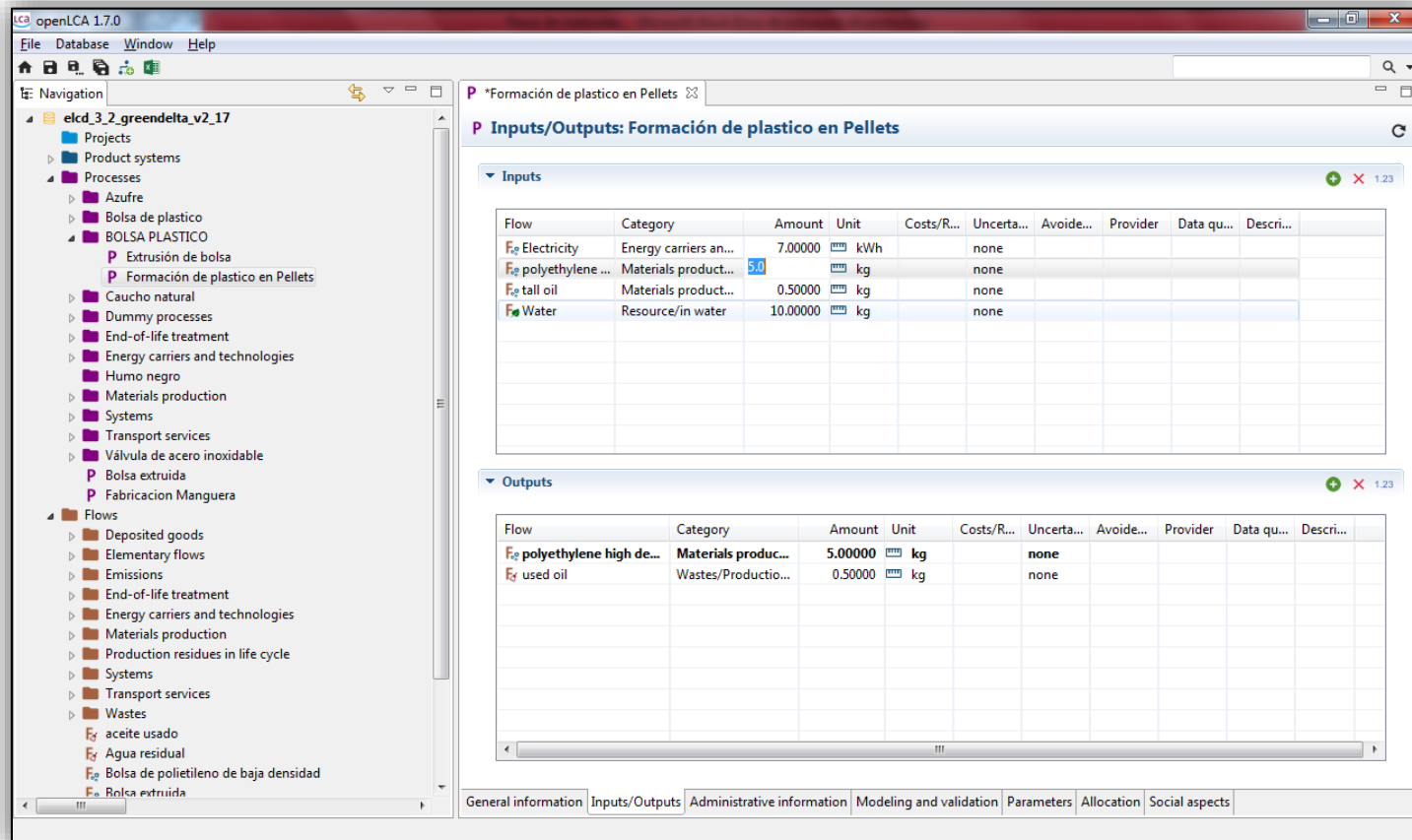
- 7 Lo mismo es para las salidas del proceso, para el ejemplo se utiliza maquinaria que necesita de aceites de tal manera que en las salidas aparece el aceite usado , en este caso agregamos “used oil”

The screenshot shows the openLCA 1.7.0 interface. The main window displays the 'Inputs/Outputs: Formación de plástico en Pellets' process. The 'Outputs' tab is selected, and a 'Flows' dialog box is open, showing a tree view of flow categories. The 'used oil' flow is highlighted in blue under 'Production residues'.

The 'Flows' dialog box shows the following structure:

- Filter: use
- Content:
 - Elementary flows
 - Emission to air
 - unspecified
 - Air, used
 - Energy, primary, unused, from solar energy
 - Energy, primary, unused, from wind power
 - Used cooling (Emission air conditioner)
 - Emission to soil
 - Emission to water
 - Resource
 - Materials production
 - Wastes
 - Production residues
 - used oil

8. Luego de colocar lo que se necesita, se debe establecer la cantidad y unidad de medida en cada flujo de entrada y salida teniendo en cuenta la UNIDAD FUNCIONAL.



The screenshot shows the openLCA 1.7.0 interface. The left sidebar displays a project tree with the following structure:

- elcd_3_2_greendelta_v2_17
 - Projects
 - Product systems
 - Processes
 - Azufre
 - Bolsa de plastico
 - BOLSA PLASTICO
 - Extrusión de bolsa
 - Formación de plástico en Pellets
 - Caucho natural
 - Dummy processes
 - End-of-life treatment
 - Energy carriers and technologies
 - Humo negro
 - Materials production
 - Systems
 - Transport services
 - Válvula de acero inoxidable
 - Bolsa extruida
 - Fabricación Manguera
 - Flows
 - Deposited goods
 - Elementary flows
 - Emissions
 - End-of-life treatment
 - Energy carriers and technologies
 - Materials production
 - Production residues in life cycle
 - Systems
 - Transport services
 - Wastes
 - aceite usado
 - Agua residual
 - Bolsa de polietileno de baja densidad
 - Bolsa extruida

The main window displays the 'Inputs/Outputs' for the process 'Formación de plástico en Pellets'. It is divided into two sections: 'Inputs' and 'Outputs'.

Inputs Table:

| Flow | Category | Amount | Unit | Costs/R... | Uncerta... | Avoide... | Provider | Data qu... | Descri... |
|------------------|-----------------------|----------|------|------------|------------|-----------|----------|------------|-----------|
| Electricity | Energy carriers an... | 7.00000 | kWh | | none | | | | |
| polyethylene ... | Materials product... | 5.0 | kg | | none | | | | |
| tall oil | Materials product... | 0.50000 | kg | | none | | | | |
| Water | Resource/in water | 10.00000 | kg | | none | | | | |

Outputs Table:

| Flow | Category | Amount | Unit | Costs/R... | Uncerta... | Avoide... | Provider | Data qu... | Descri... |
|-------------------------|---------------------|---------|------|------------|------------|-----------|----------|------------|-----------|
| polyethylene high de... | Materials produc... | 5.00000 | kg | | none | | | | |
| used oil | Wastes/Productio... | 0.50000 | kg | | none | | | | |

The bottom of the window shows a tabbed interface with the following tabs: General information, Inputs/Outputs (selected), Administrative information, Modeling and validation, Parameters, Allocation, and Social aspects.

9. Se puede también puede cambiar la unidad de medida dando doble clic sobre la unidad que se quiera cambiar

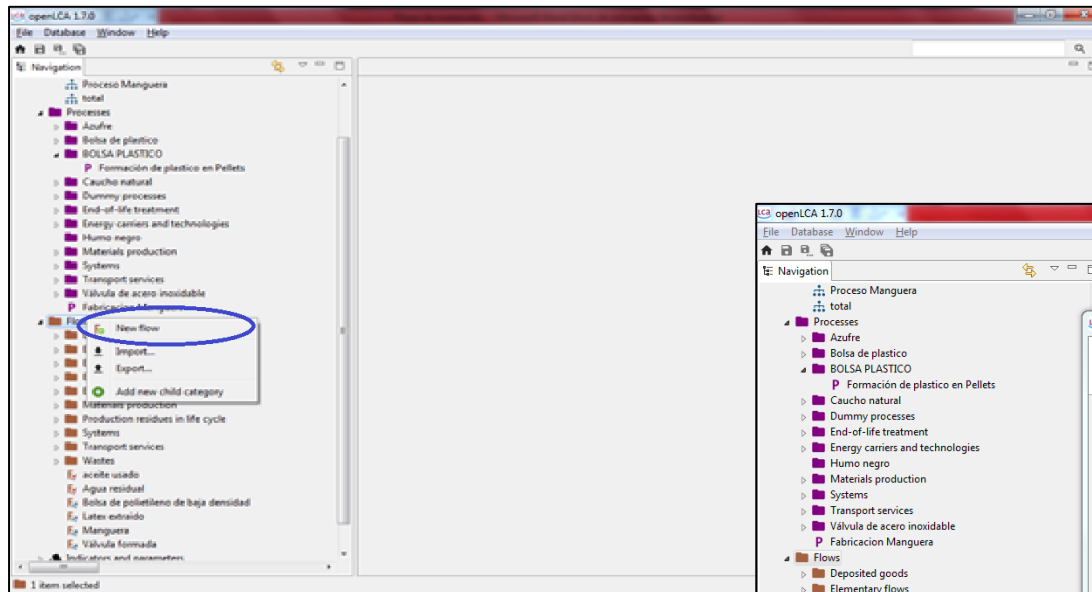
The screenshot shows the openLCA 1.7.0 interface. The left sidebar displays a project tree for 'ekd_3_2_greendelta_v2_17'. The main window is titled 'Formación de plástico en Pellets' and shows the 'Inputs/Outputs' table. A context menu is open over the 'Unit' column, listing various energy units. The 'MJ - Net calorific value' option is highlighted.

| Flow | Category | Amount | Unit | Costs/E | Uncerta... | Avoide... | Provider | Data qu... | Descri... |
|-------------|-----------------------|----------|------|---------|------------|-----------|----------|------------|-----------|
| Electricity | Energy carriers an... | 7.00000 | | | | none | | | |
| Water | Resource/in water | 20.00000 | | | | | | | |
| tall oil | Materials product... | 0.50000 | | | | | | | |

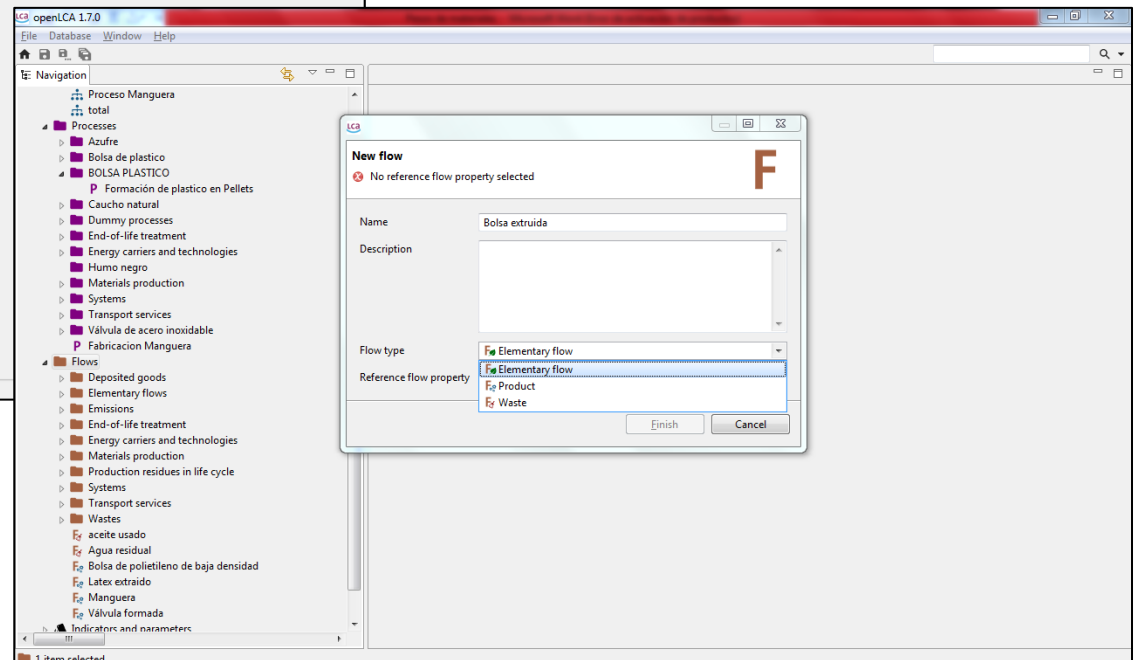
| Flow | Category | Amount | U | | Avoide... | Provider | Data qu... | Descri... |
|-------------------------|---------------------|---------|----|--|-----------|----------|------------|-----------|
| polyethylene high de... | Materials produc... | 1.00000 | kg | | none | | | |
| used oil | Wastes/Productio... | 1.00000 | kg | | none | | | |

4.3.3 Crear flujos de entrada y salida NUEVOS

1. Es decir los flujos de entrada o de salida no son específicamente de la base de datos, para este caso dar clic derecho en “new Flow”



2. Colocar el nombre, si desea alguna descripción del flujo.



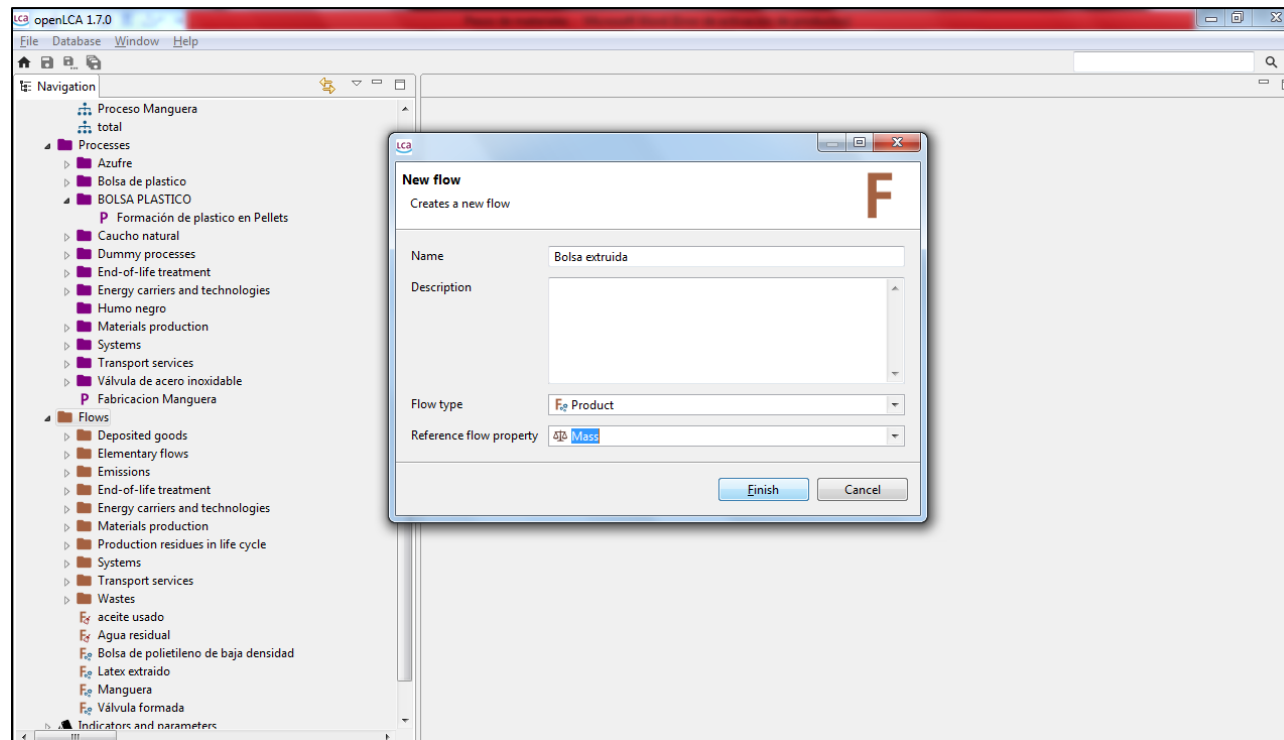
Para el caso del ejemplo se tendrá que crear un flujo llamado **bolsa extruida**, debido a que este será la salida cuando los pellets entren en el proceso de extrusión.

4. Usted tendrá la opción de seleccionar los siguientes tipos de flujo :

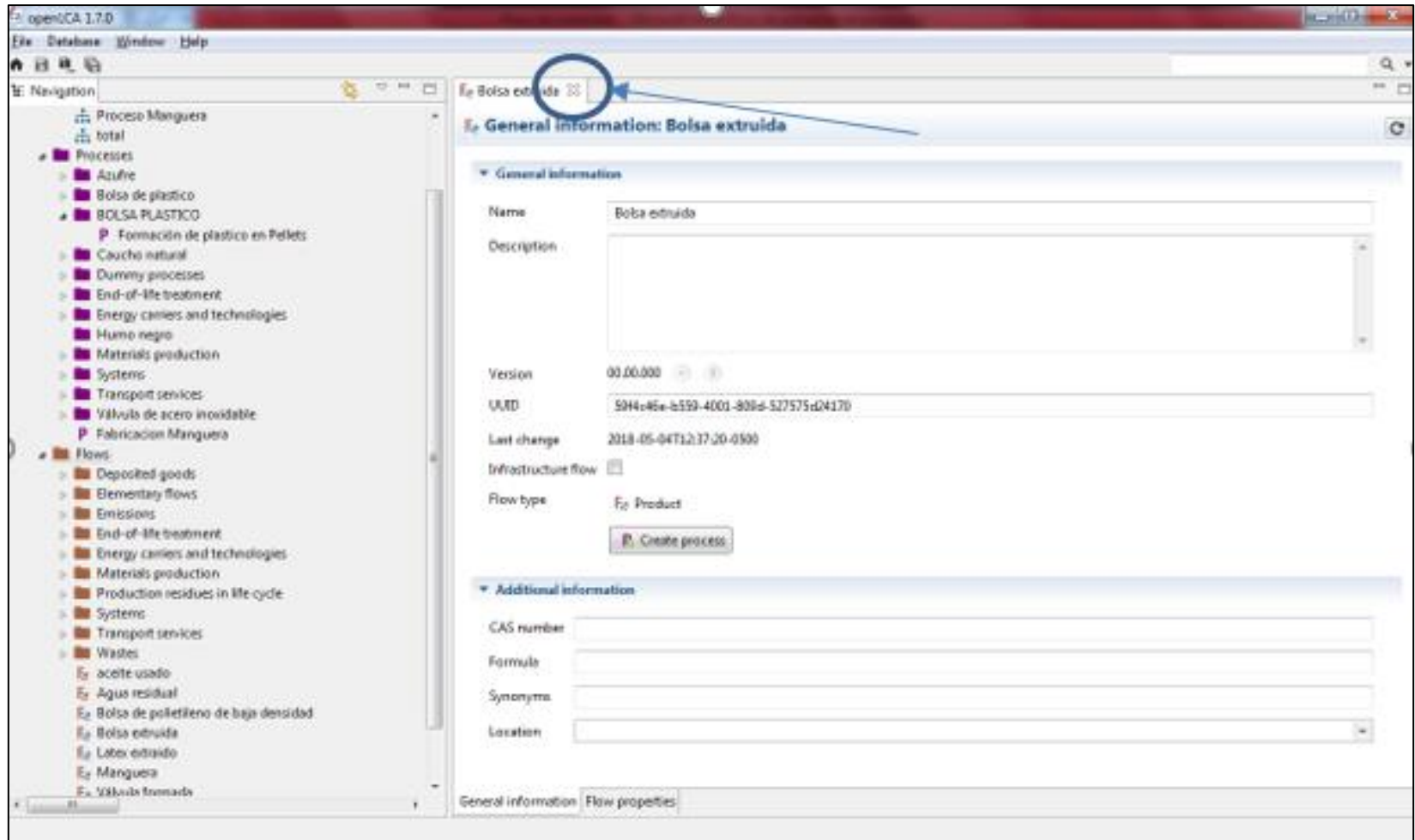
- **Flujo elemental:** considerado como un recurso de la naturaleza
- **Producto**
- **Waste:** Hace referencia a los residuos (que no hagan parte de la base de datos).

En el caso del ejemplo utilizamos “Product”

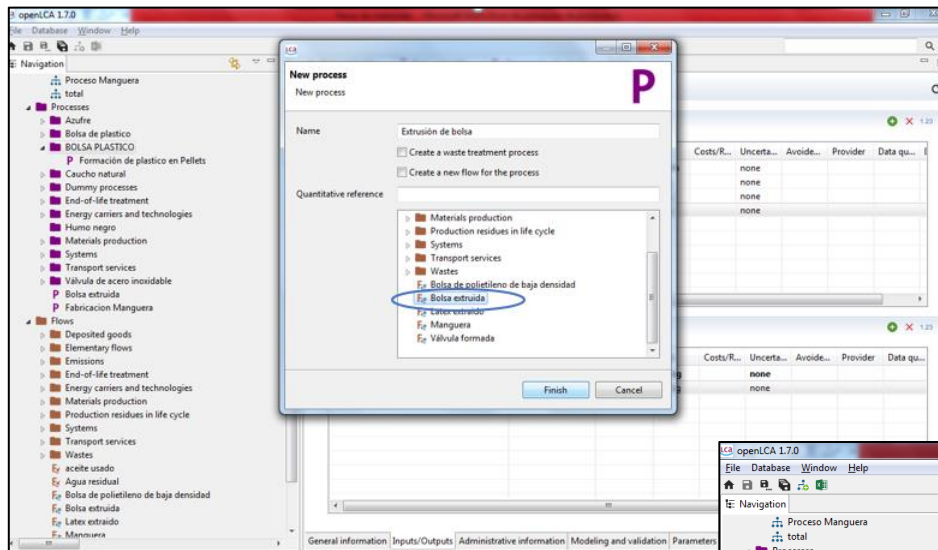
Luego de seleccionar el que se considere, se debe establecer la propiedad de este flujo, para este ejemplo es massa (Mass), dar clic en “Finish”



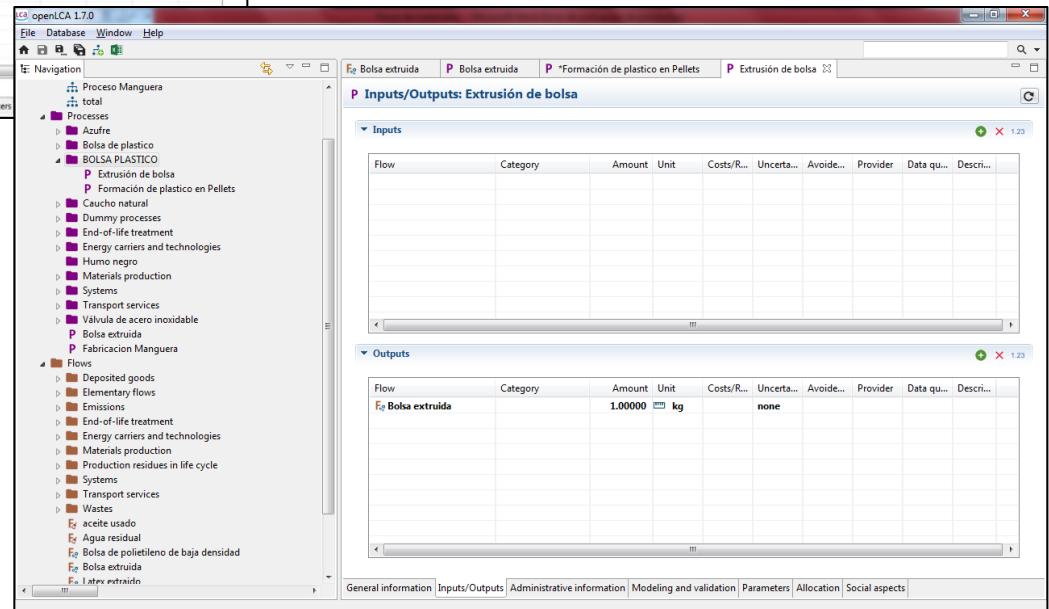
- Se abrirá la siguiente ventana, usted puede crear el proceso de una vez o si lo desea poner como un flujo en otro proceso, para ello solo cierre la ventana.



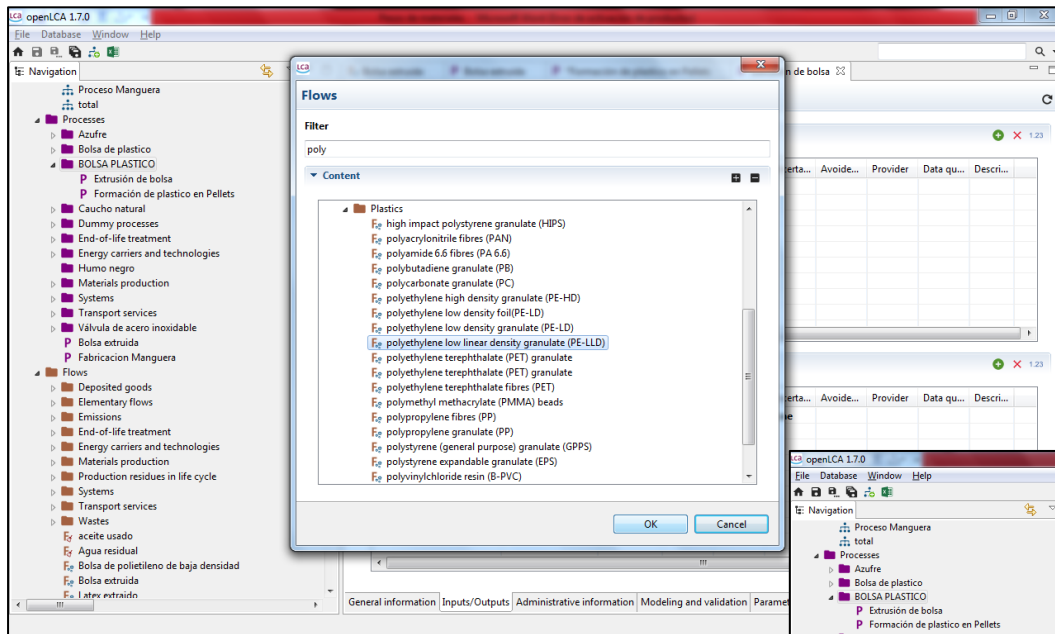
6. Para el ejemplo lo agregaremos como un flujo en el proceso de extrusión , el proceso de extrusión es creado previamente como se indica anteriormente en el proceso de “Formación de plástico en pellets” (Ver página 32), esta vez utilizando como flujo de referencia “Bolsa Plástica” y luego dar clic en “Finish”.



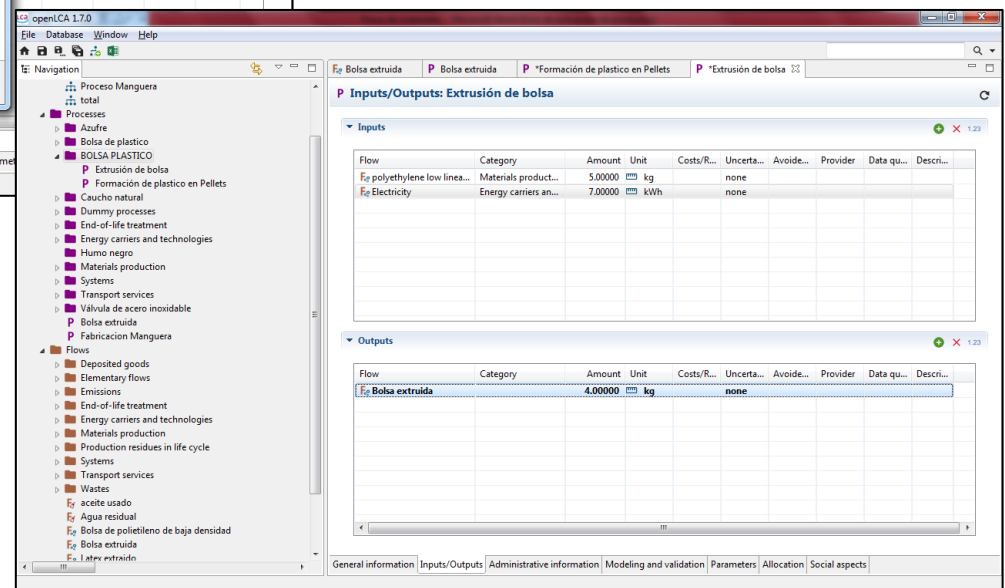
De la misma manera colocar las entradas y salidas como se indicó anteriormente (Ver página 34), teniendo en cuenta que para que se unan los procesos la entrada del proceso de “Extrusión de bolsa” debe contener la salida de “formación de plástico en Pellets” en este caso el flujo de salida referente que es “polietileno de alta densidad”.



7. Se agregan los flujos como se indicó anteriormente (Ver página 36)



De esta forma y agregando los demás flujos queda de la siguiente manera :



4.4 Crear el sistema del producto

1. Debe colocar en la parte que dice "Provider" de dónde proviene ese flujo es decir de que otro proceso para que se una en el sistema final

The screenshot displays the openLCA 1.7.0 interface. On the left is a navigation tree with a hierarchy: elcd_3_2_greendelta_v2_17 > Product systems > BOLSA PLASTICO > Extrusión de bolsa. The main window shows the 'Inputs/Outputs' for 'Extrusión de bolsa'. The 'Inputs' table is as follows:

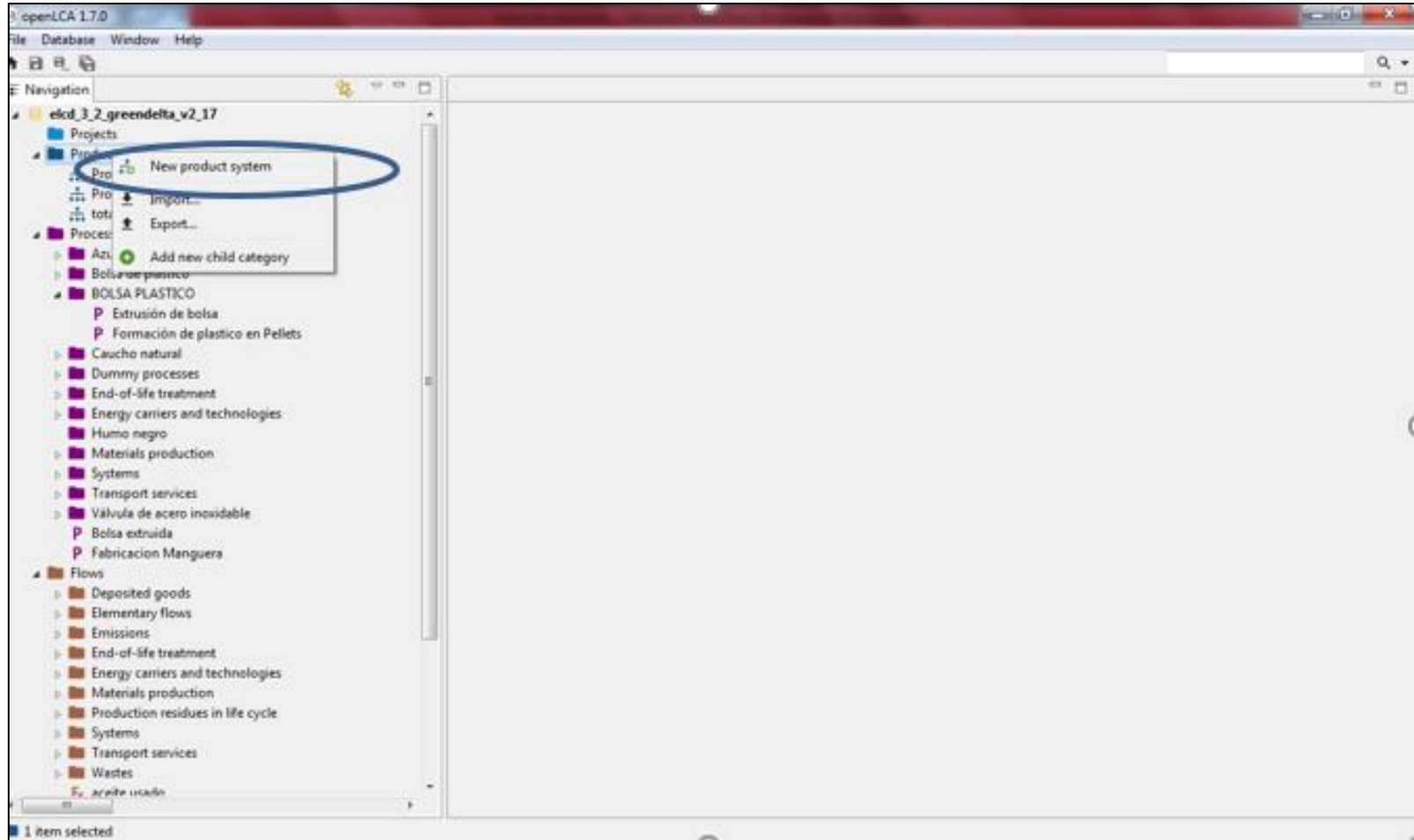
| Flow | Category | Amount | Unit | Costs/R... | Uncerta... | Avoid... | Provider | Data qu... | Descri... |
|--------------------------|-----------------------|---------|------|------------|------------|----------|--------------|------------|-----------|
| Electricity | Energy carriers an... | 7.00000 | kWh | | none | | | | |
| polyethylene high den... | Materials product... | 1.00000 | kg | | none | | P in Pellets | | |

The 'Outputs' table is as follows:

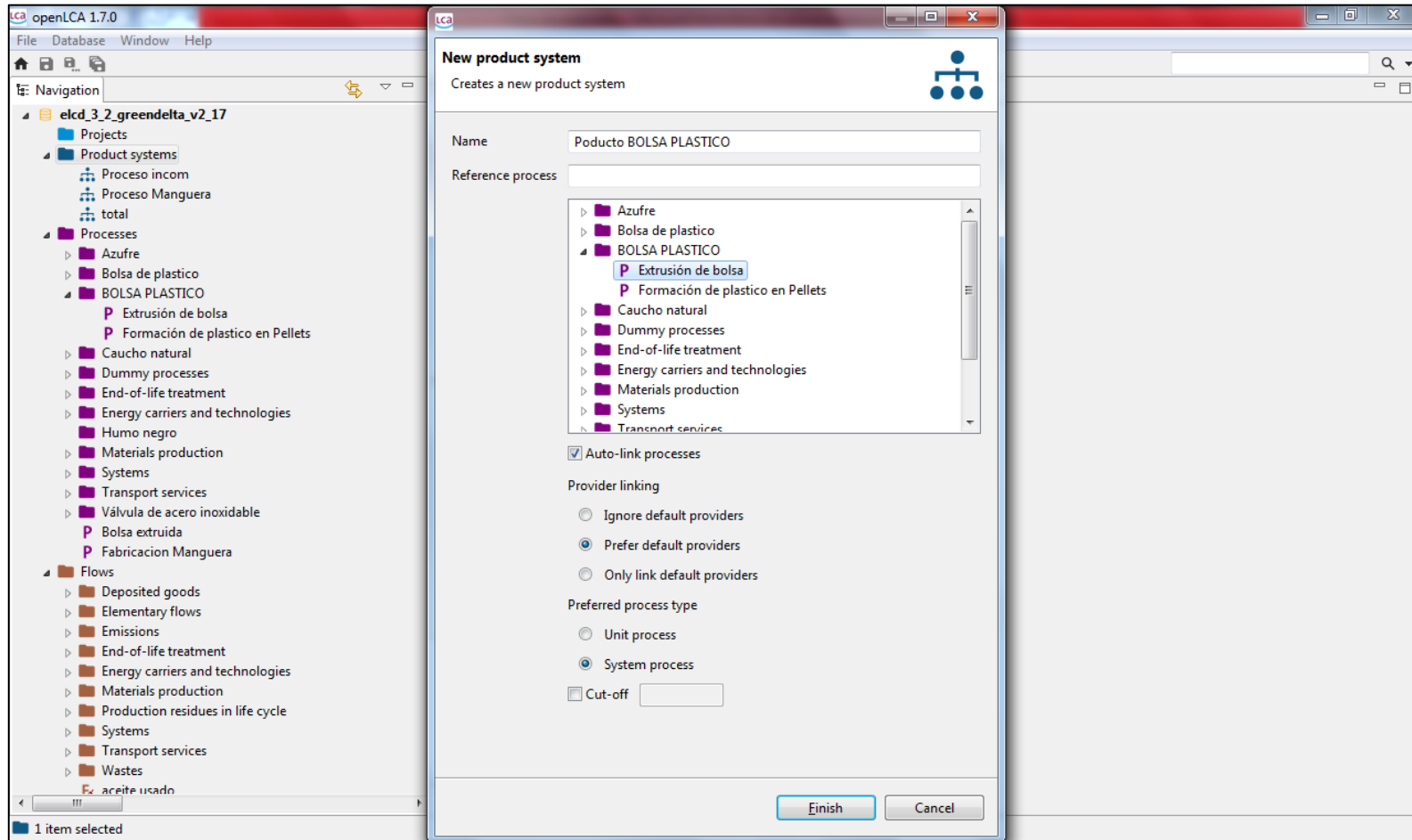
| Flow | Category | Amount | Unit | Costs/R... | Uncerta... | Avoid... | Provider | Data qu... | Descri... |
|----------------|----------|---------|------|------------|------------|----------|----------|------------|-----------|
| Bolsa extruida | | 4.00000 | kg | | none | | | | |

A tooltip for the 'polyethylene high den...' input shows the description: 'Formación de plástico en Pellets' and 'Polyethylene high density granulate (PE-HD), production mix, at plant - RER'.

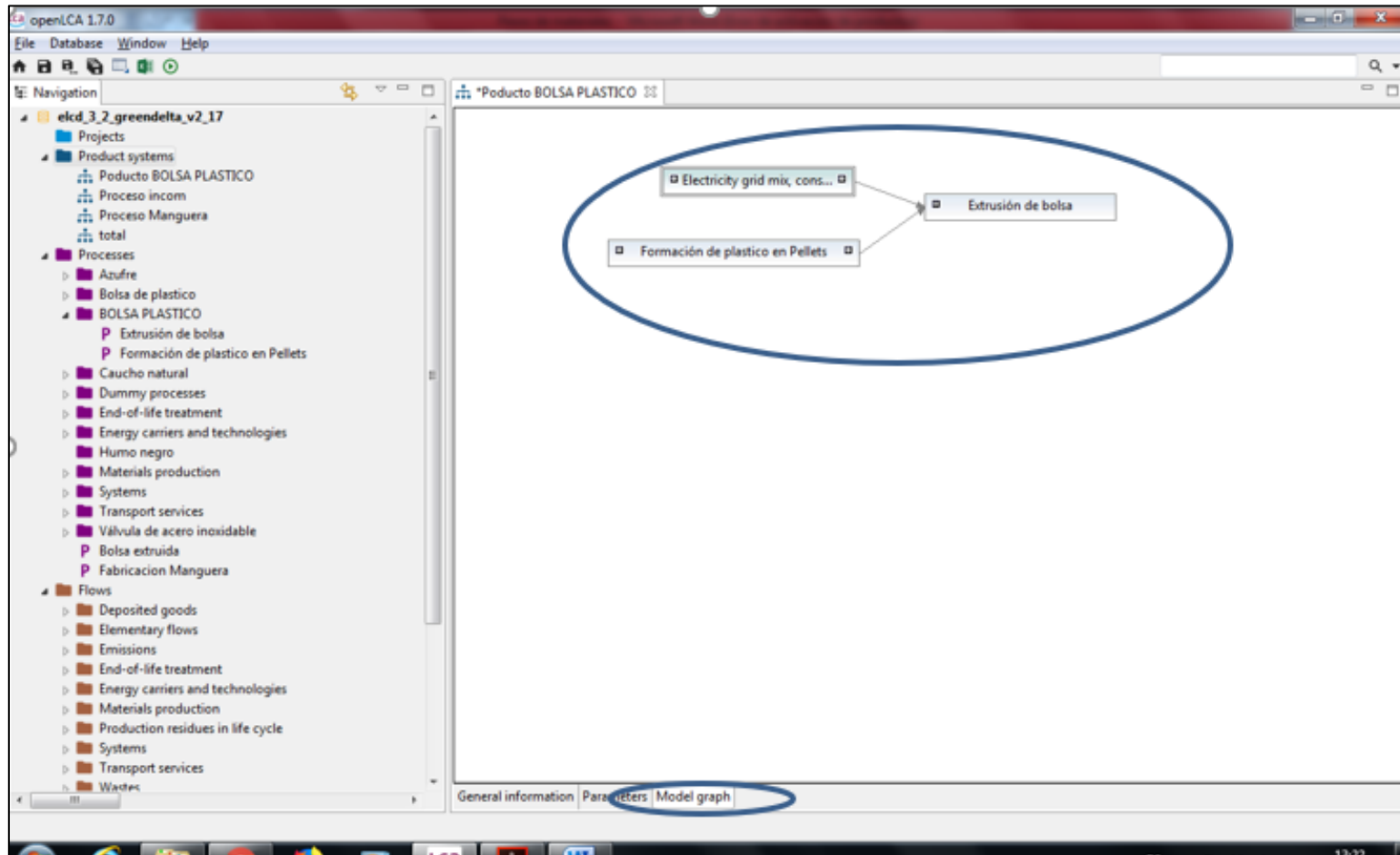
2. Para crear el sistema del producto dar clic derecho sobre “Product systems” y dar clic sobre “New product system”.



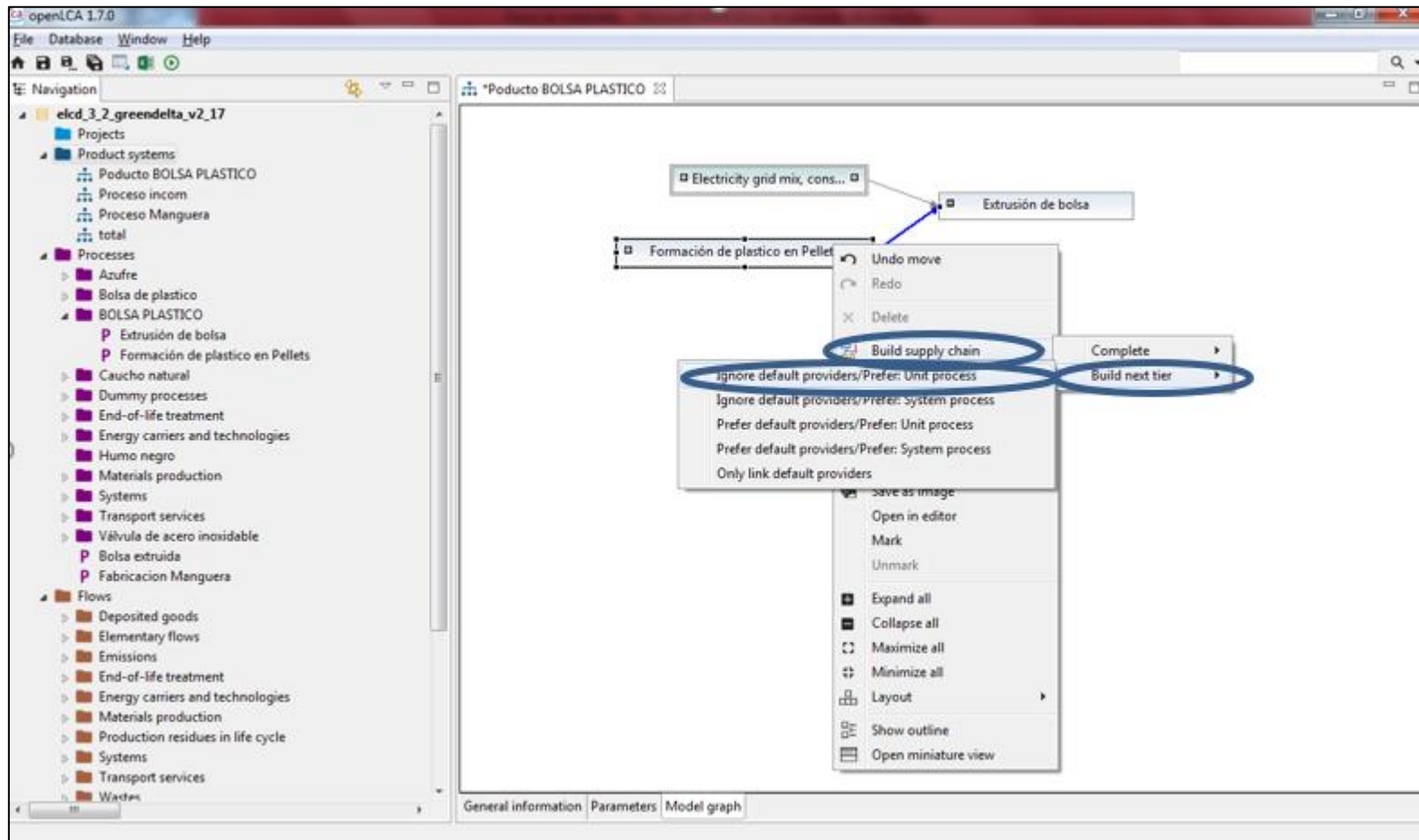
3. Nombrar el sistema y seleccionar el proceso de referencia (ultimo proceso que se le hace al producto).
 Para el ejemplo es “Extrusión de bolsa” y seleccionar las opciones como se muestra a continuación, seguido de clic sobre “Finish”.



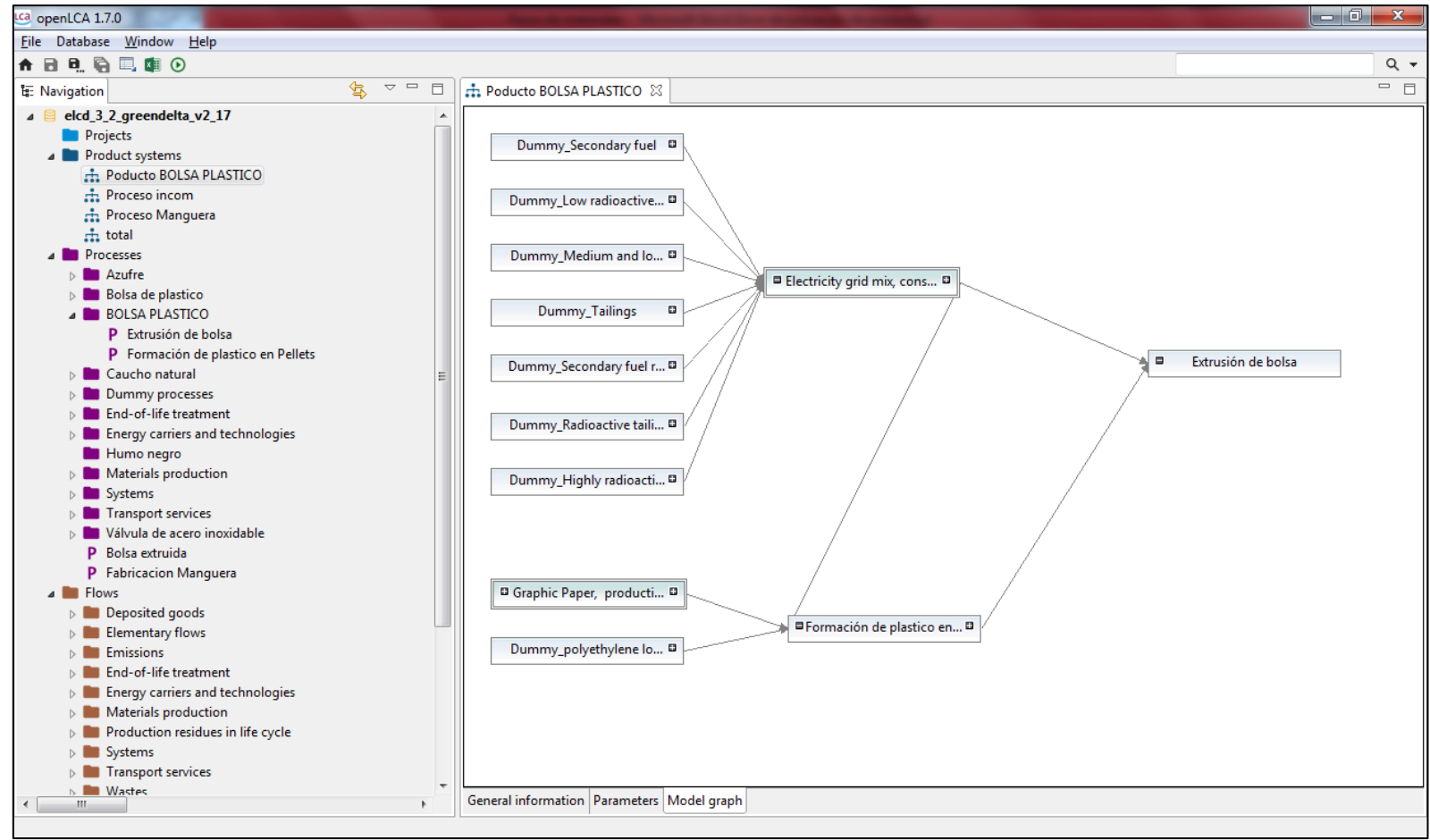
4. Dirigirse a la pestaña de Model graph donde podrá observar el sistema completo como se muestra a continuación.



5. Si desea mostrar los procesos de donde provienen los flujos que colocó de la base de datos dar clic derecho de la siguiente manera.

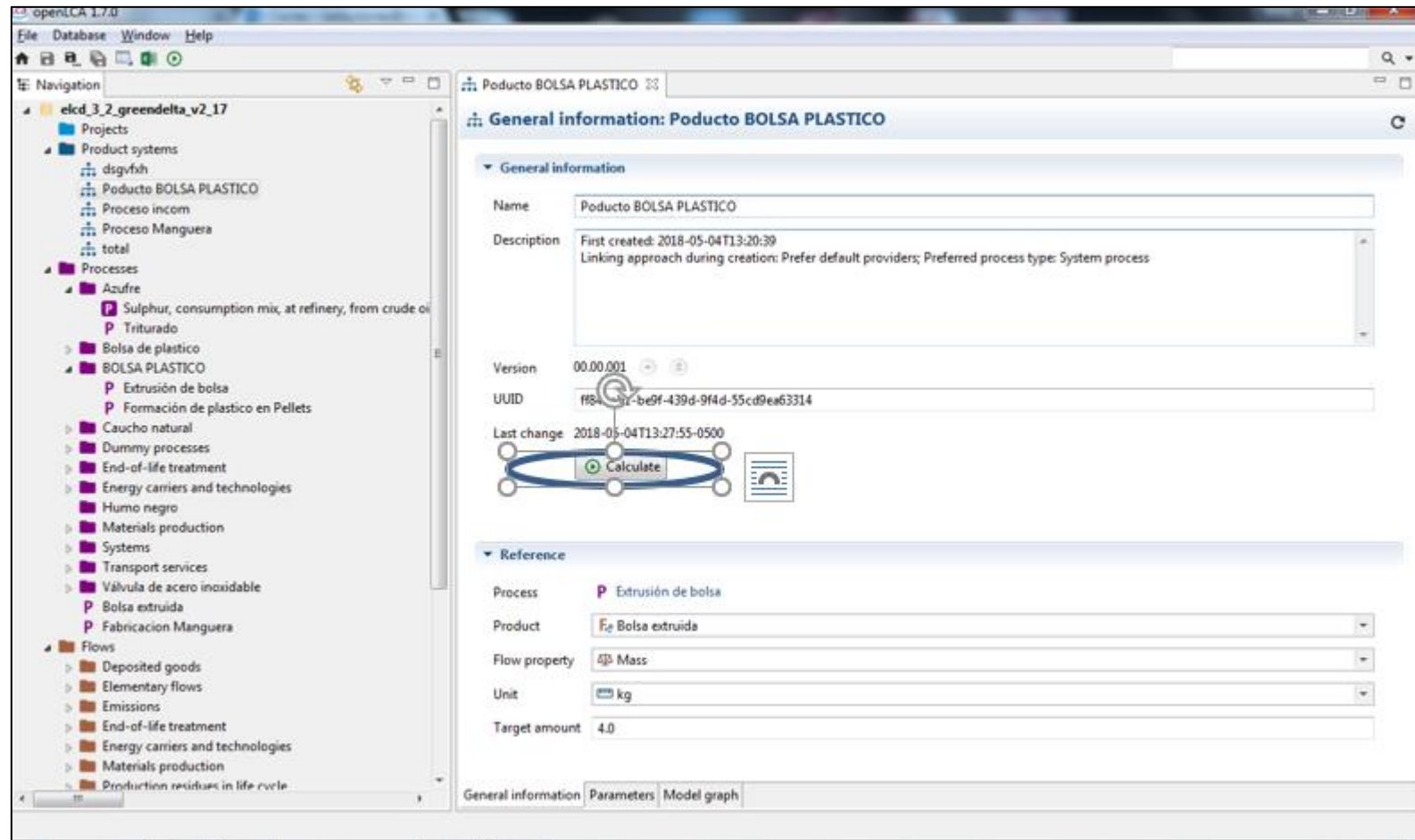


6.Finalmente observará algo como lo que se muestra a continuación



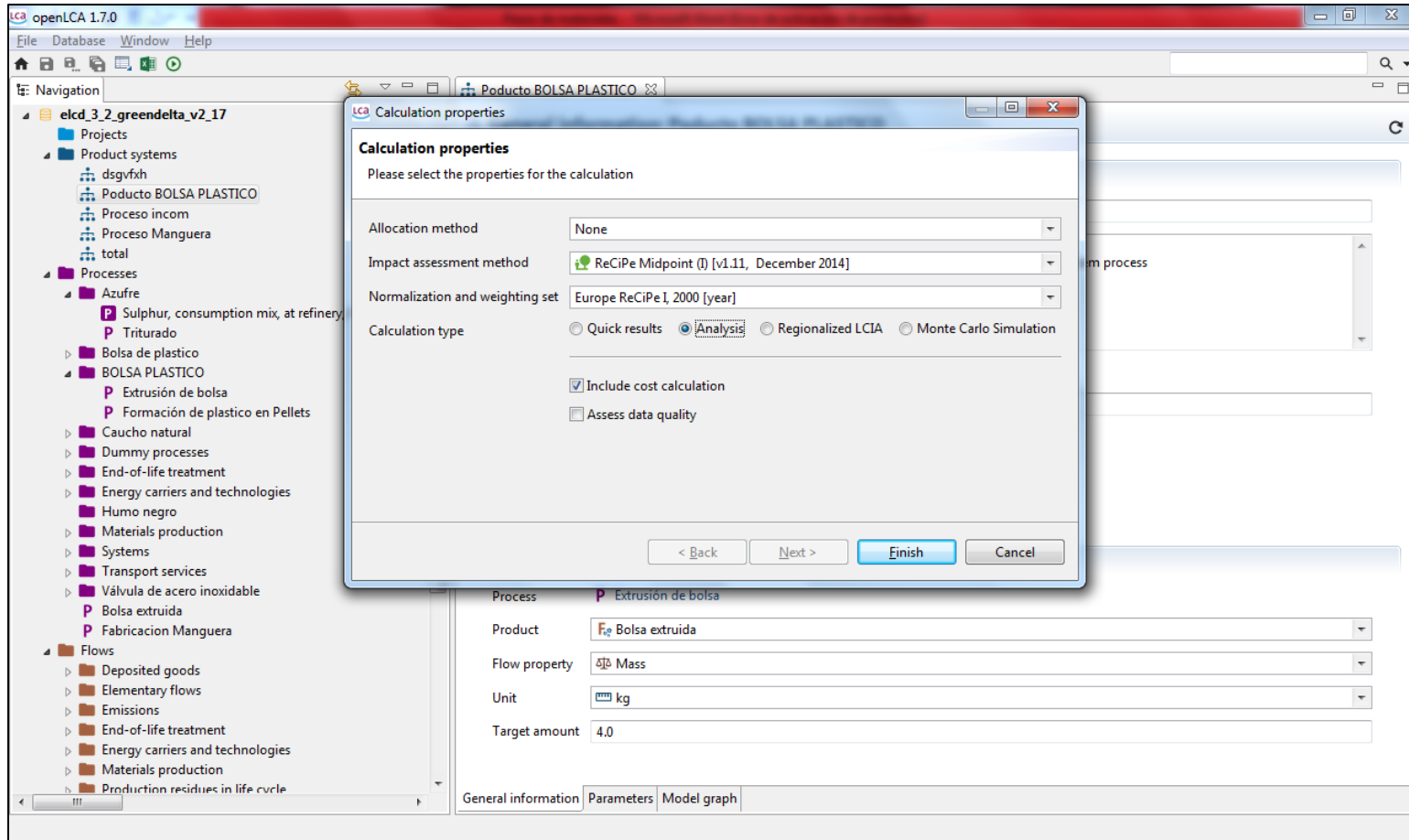
4.4 Resultados del sistema en relación con el impacto

1. Usted debe dar clic sobre “Calculate”

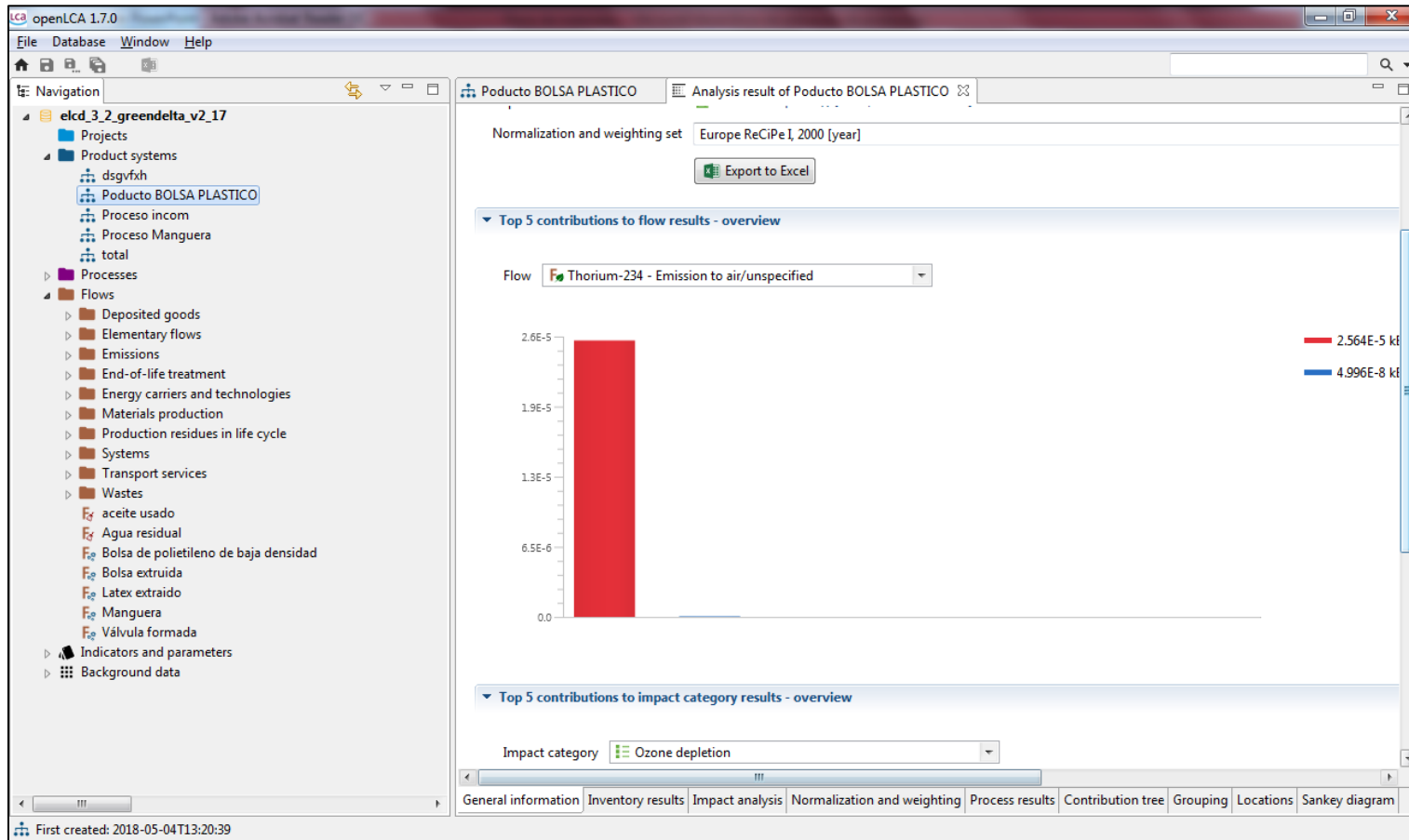


The screenshot shows the openLCA 1.7.0 software interface. On the left is a navigation tree with a folder named 'elcd_3_2_greendelta_v2_17' containing various project and process folders. The main window displays 'General information: Producto BOLSA PLASTICO'. The 'General information' section includes fields for Name, Description, Version, UUID, and Last change. A 'Calculate' button with a green play icon is highlighted with a blue oval. Below this is a 'Reference' section with dropdown menus for Process, Product, Flow property, and Unit, along with a Target amount field.

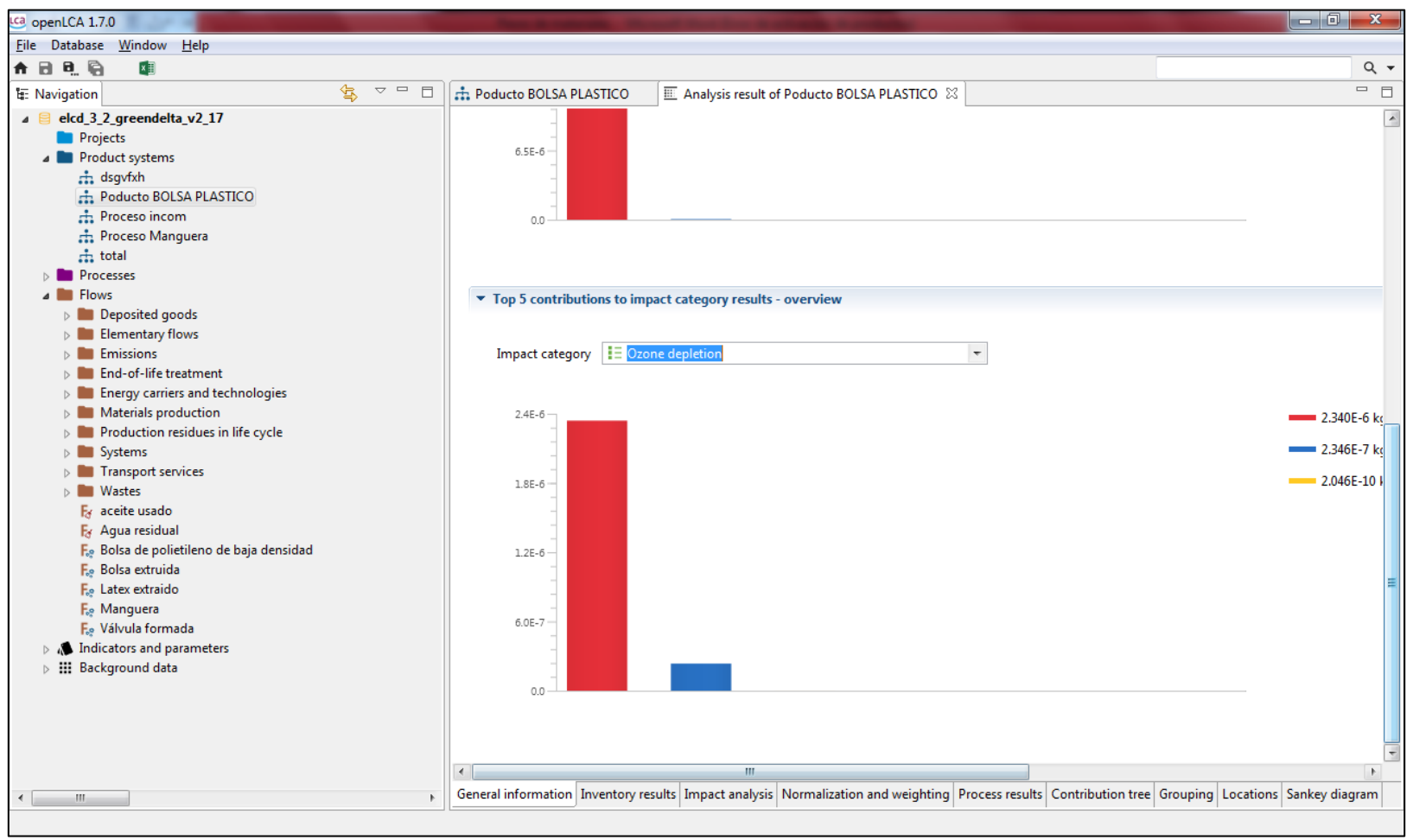
- Se despliega una ventana en donde se debe seleccionar el método que se va a utilizar para la evaluación del impacto, puede probar evaluar con varios métodos de impacto y seleccionar el método de impacto que desee, preferiblemente el que genere menos valores en negativo. Dar clic en la opción "Analysis", seguido por clic en "Finish".



3. En su pantalla se generará lo siguiente , en donde gráficamente puede observar la cantidad de flujos
 - Flujos



- Impactos

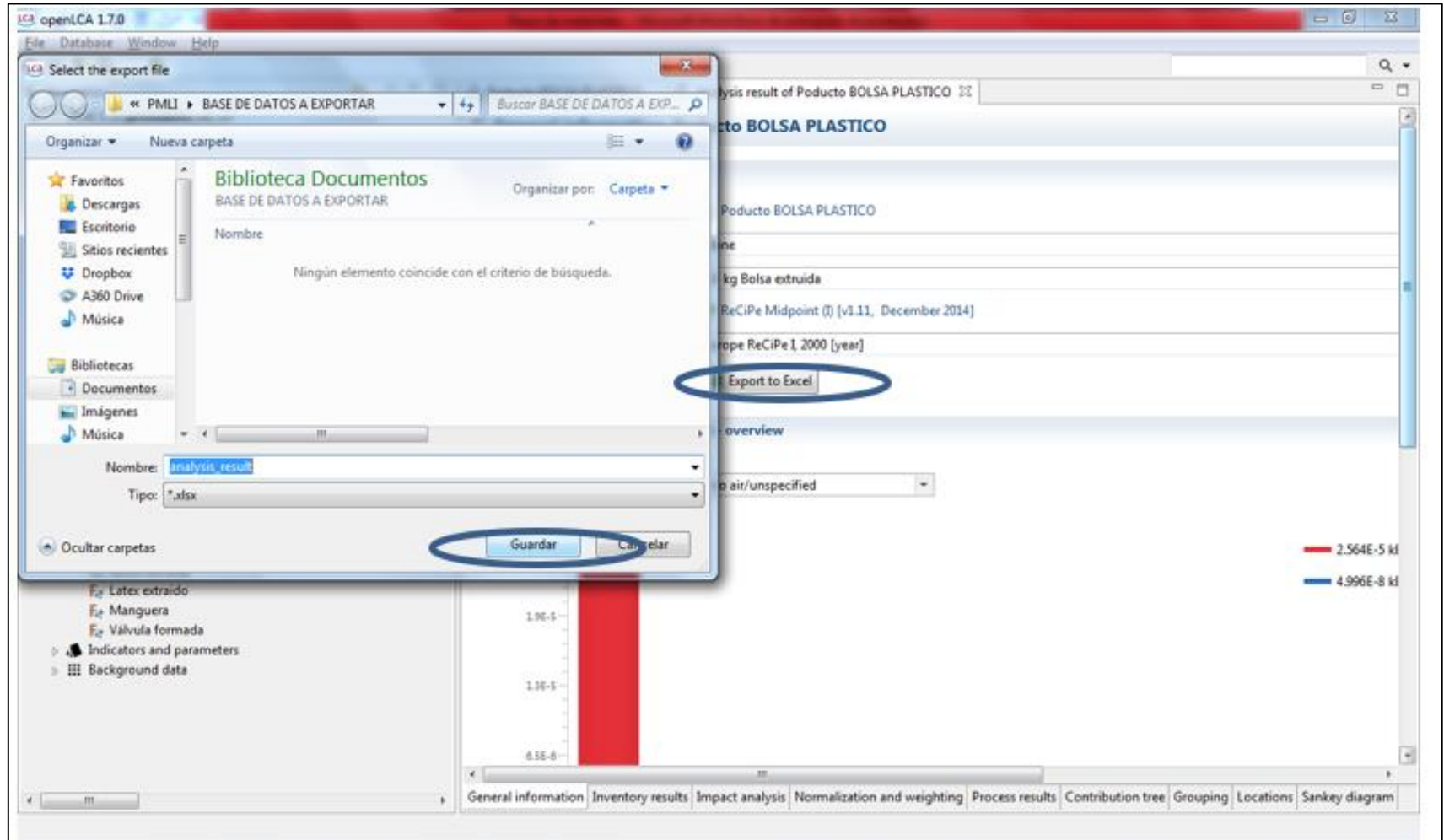


- En la pestaña análisis de impacto podrá observar la cantidad de impactos que genera, los valores en negativo quieren decir que no se está generando gran impacto en esa categoría o se dejó de generar .

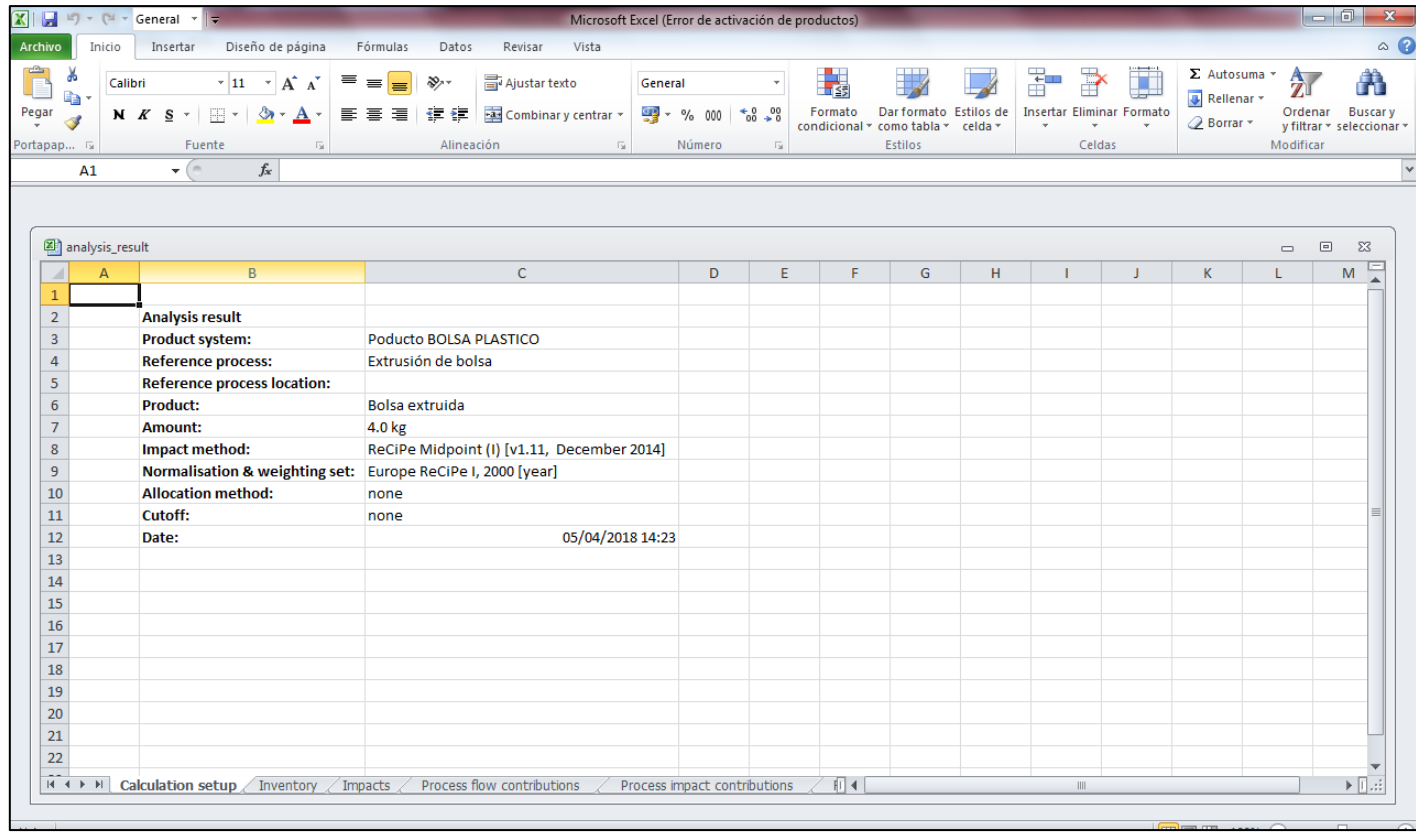
The screenshot shows the openLCA 1.7.0 interface. The left sidebar displays a project tree with 'Producto BOLSA PLASTICO' selected. The main window shows the 'Impact analysis' results for this product. The 'Subgroup by processes' checkbox is checked, and the 'Cut-off' is set to 1%. The table below lists various impact categories and their results.

| Name | Category | Inventory r... | Impact fac... | Impact result | Unit |
|---------------------------------|----------|----------------|---------------|---------------|---------|
| Ozone depletion | | | | 2.57515E-6 | kg ... |
| Freshwater ecotoxicity | | | | 0.04899 | kg 1... |
| Fossil depletion | | | | 13.96644 | kg ... |
| Agricultural land occupation | | | | 0.00282 | m2*a |
| Natural land transformation | | | | -8.72909E-6 | m2 |
| Freshwater eutrophication | | | | 0.00365 | kg ... |
| Ionising radiation | | | | 5.34090 | kg ... |
| Terrestrial ecotoxicity | | | | 0.01997 | kg 1... |
| Terrestrial acidification | | | | 0.17736 | kg S... |
| Climate Change | | | | 52.40867 | kg ... |
| Human toxicity | | | | 19.78370 | kg 1... |
| Marine eutrophication | | | | 0.01260 | kg ... |
| Metal depletion | | | | 2.37924 | kg F... |
| Photochemical oxidant formation | | | | 0.07420 | kg ... |
| Urban land occupation | | | | 0.00121 | m2*a |
| Marine ecotoxicity | | | | 0.14043 | kg 1... |
| Particulate matter formation | | | | 0.04433 | kg ... |
| Water depletion | | | | 18.67196 | m3 |

5. El archivo se puede exportar a Excel dando clic en "Export to Excel" donde debe guardarla en una carpeta



Aquí podrá observar las mismas pestañas del programa de la siguiente manera:



The screenshot shows a Microsoft Excel spreadsheet with the following data:

| | A | B | C | D | E | F | G | H | I | J | K | L | M |
|----|---|--------------------------------|--|------------------|---|---|---|---|---|---|---|---|---|
| 1 | | | | | | | | | | | | | |
| 2 | | Analysis result | | | | | | | | | | | |
| 3 | | Product system: | Producto BOLSA PLASTICO | | | | | | | | | | |
| 4 | | Reference process: | Extrusión de bolsa | | | | | | | | | | |
| 5 | | Reference process location: | | | | | | | | | | | |
| 6 | | Product: | Bolsa extruida | | | | | | | | | | |
| 7 | | Amount: | 4.0 kg | | | | | | | | | | |
| 8 | | Impact method: | ReCIpe Midpoint (I) [v1.11, December 2014] | | | | | | | | | | |
| 9 | | Normalisation & weighting set: | Europe ReCIpe I, 2000 [year] | | | | | | | | | | |
| 10 | | Allocation method: | none | | | | | | | | | | |
| 11 | | Cutoff: | none | | | | | | | | | | |
| 12 | | Date: | | 05/04/2018 14:23 | | | | | | | | | |
| 13 | | | | | | | | | | | | | |
| 14 | | | | | | | | | | | | | |
| 15 | | | | | | | | | | | | | |
| 16 | | | | | | | | | | | | | |
| 17 | | | | | | | | | | | | | |
| 18 | | | | | | | | | | | | | |
| 19 | | | | | | | | | | | | | |
| 20 | | | | | | | | | | | | | |
| 21 | | | | | | | | | | | | | |
| 22 | | | | | | | | | | | | | |

The spreadsheet is titled "analysis_result" and is part of a larger application with tabs for "Calculation setup", "Inventory", "Impacts", "Process flow contributions", and "Process impact contributions".

Microsoft Excel (Error de activación de productos)

Archivo Inicio Insertar Diseño de página Fórmulas Datos Revisar Vista

Pegar Fuente Alineación Número Estilos Celdas Modificar

H10

analysis_result

| | A | B | C | D | E | F | G | H | I | J | K | L | M | N | O | P |
|----|---|-------------------|---------------------------------|------------------|---------------|---|---|---|---|---|---|---|---|---|---|---|
| 1 | | | | | | | | | | | | | | | | |
| 2 | | Impact cat | Impact category | Reference | Result | | | | | | | | | | | |
| 3 | | 068d1372- | Agricultural land occupation | m2*a | 0,002817 | | | | | | | | | | | |
| 4 | | 97ecd83- | Climate Change | kg CO2 eq | 52,40867 | | | | | | | | | | | |
| 5 | | f2b9e68c- | Fossil depletion | kg oil eq | 13,96644 | | | | | | | | | | | |
| 6 | | 82dc372c- | Freshwater ecotoxicity | kg 1,4-DB | 0,048986 | | | | | | | | | | | |
| 7 | | 6b923508- | Freshwater eutrophication | kg P eq | 0,003648 | | | | | | | | | | | |
| 8 | | d7433ee3- | Human toxicity | kg 1,4-DB | 19,7837 | | | | | | | | | | | |
| 9 | | c38230c1- | Ionising radiation | kg U235 eq | 5,340903 | | | | | | | | | | | |
| 10 | | a06a2853- | Marine ecotoxicity | kg 1,4-DB | 0,140431 | | | | | | | | | | | |
| 11 | | d00a2257- | Marine eutrophication | kg N eq | 0,012597 | | | | | | | | | | | |
| 12 | | 34f29ecb- | Metal depletion | kg Fe eq | 2,379241 | | | | | | | | | | | |
| 13 | | 96c4dd04- | Natural land transformation | m2 | -8,7E-06 | | | | | | | | | | | |
| 14 | | 19702eb1- | Ozone depletion | kg CFC-11 | 2,58E-06 | | | | | | | | | | | |
| 15 | | 80daeb0f- | Particulate matter formation | kg PM10 eq | 0,044326 | | | | | | | | | | | |
| 16 | | 1528f7ba- | Photochemical oxidant formation | kg NMVO eq | 0,074196 | | | | | | | | | | | |
| 17 | | cba2afc2- | Terrestrial acidification | kg SO2 eq | 0,177364 | | | | | | | | | | | |
| 18 | | 993cc085- | Terrestrial ecotoxicity | kg 1,4-DB | 0,019966 | | | | | | | | | | | |
| 19 | | 1b7800d5- | Urban land occupation | m2*a | 0,001214 | | | | | | | | | | | |
| 20 | | 584ea2d2- | Water depletion | m3 | 18,67196 | | | | | | | | | | | |
| 21 | | | | | | | | | | | | | | | | |
| 22 | | | | | | | | | | | | | | | | |

Calculation setup Inventory **Impacts** Process flow contributions Process impact contributions

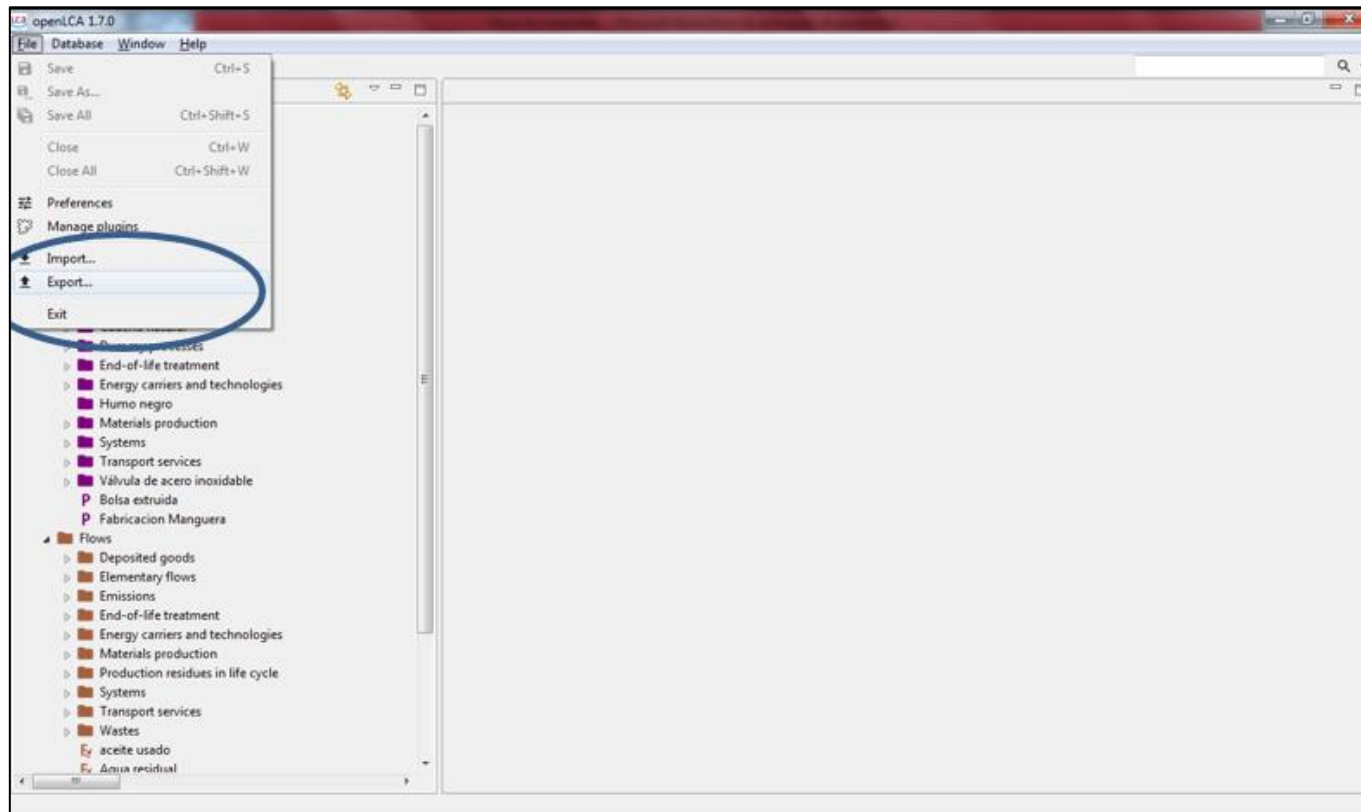
Listo 100%

4.6 Exportar e importar información en programa

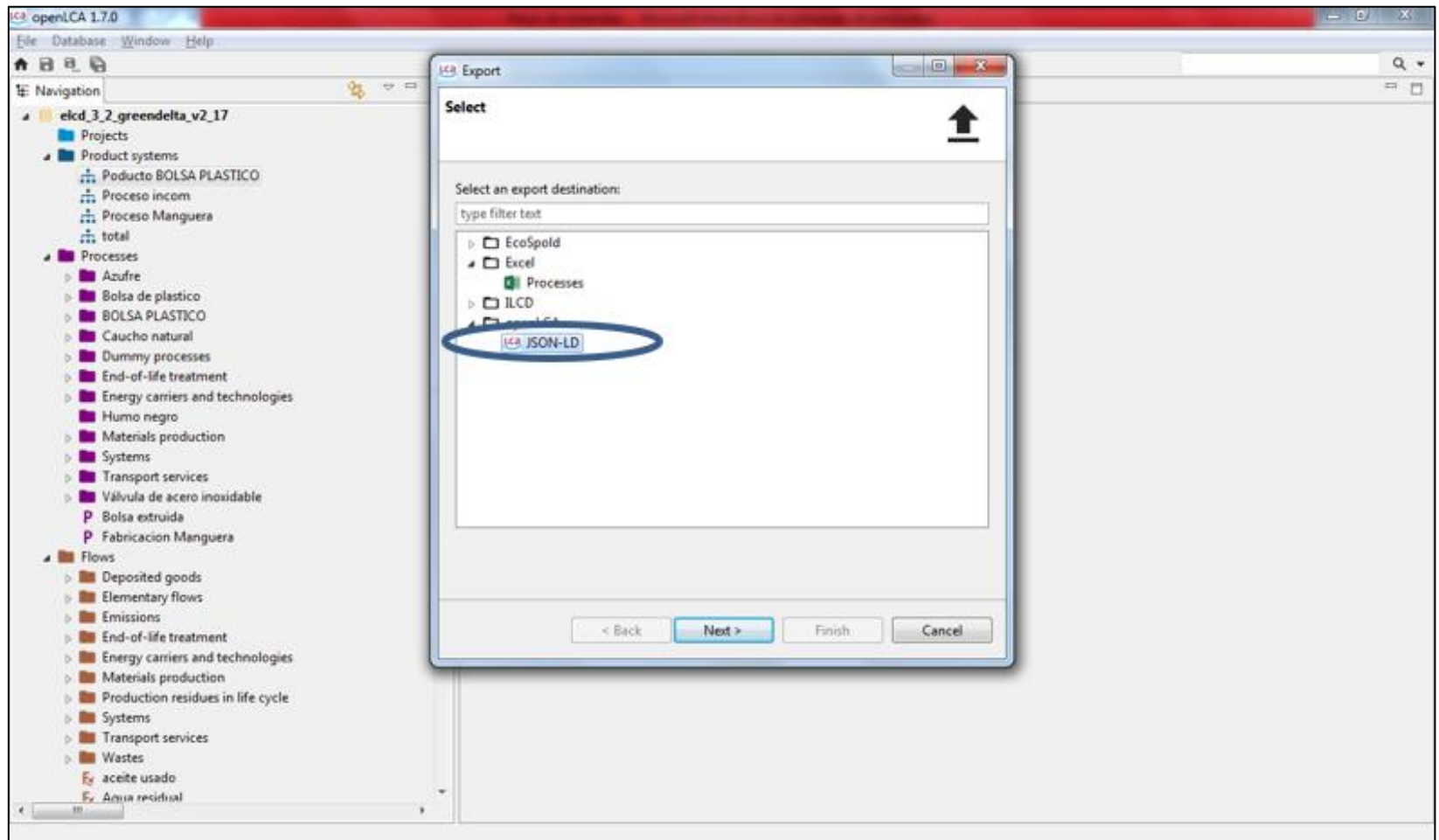
Como datos adicionales usted puede importar y exportar algo que haya agregado en la base de datos es decir los procesos que creó para que de esa manera pueda pasarse a otro computador que tenga el programa y trabajar en los mismos procesos .

4.6.1 Exportación de información

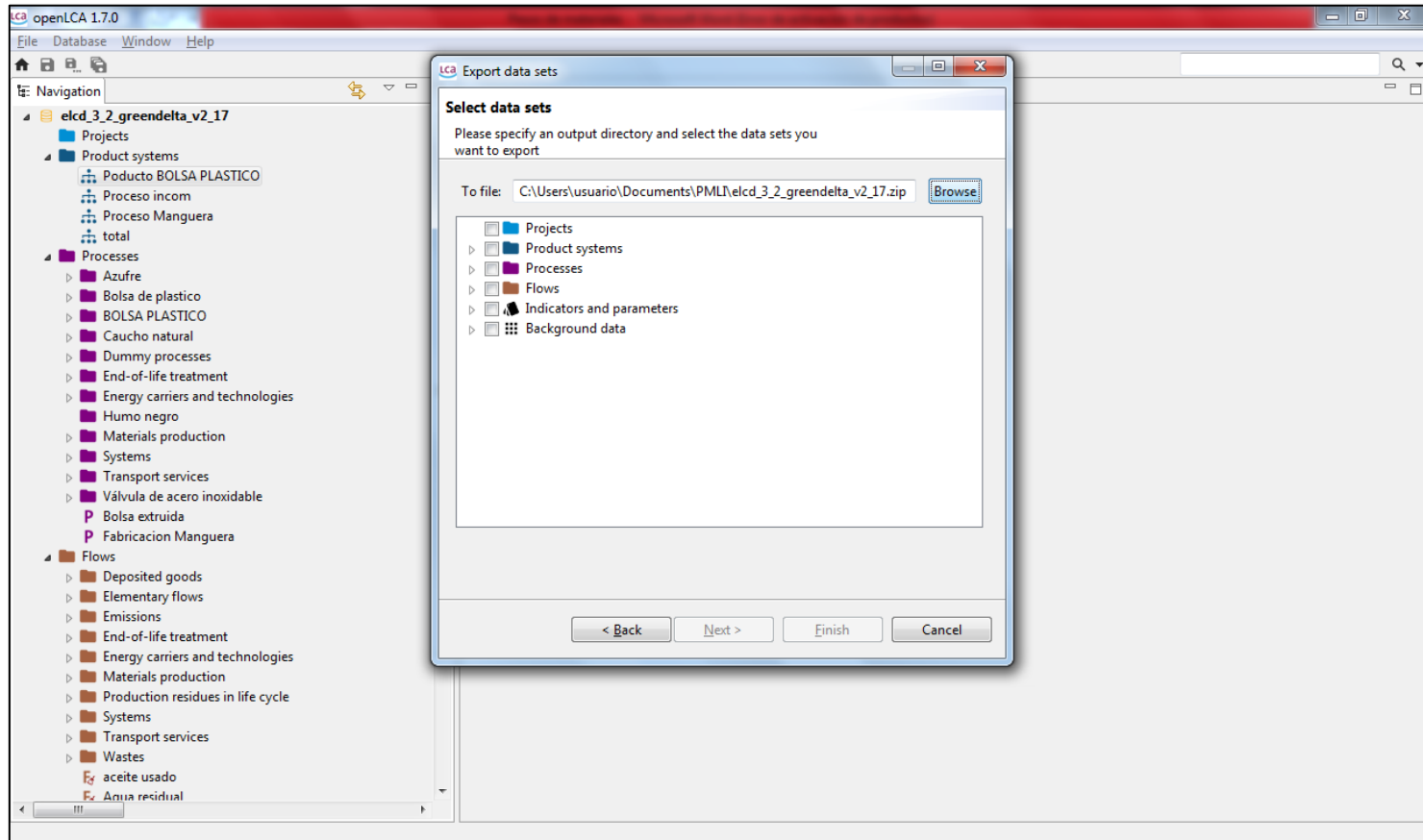
1. Cerrar todo dentro del cuadro de trabajo del programa y dirigirse a la opción de “File”, dar Clic en Exportar o “Export”



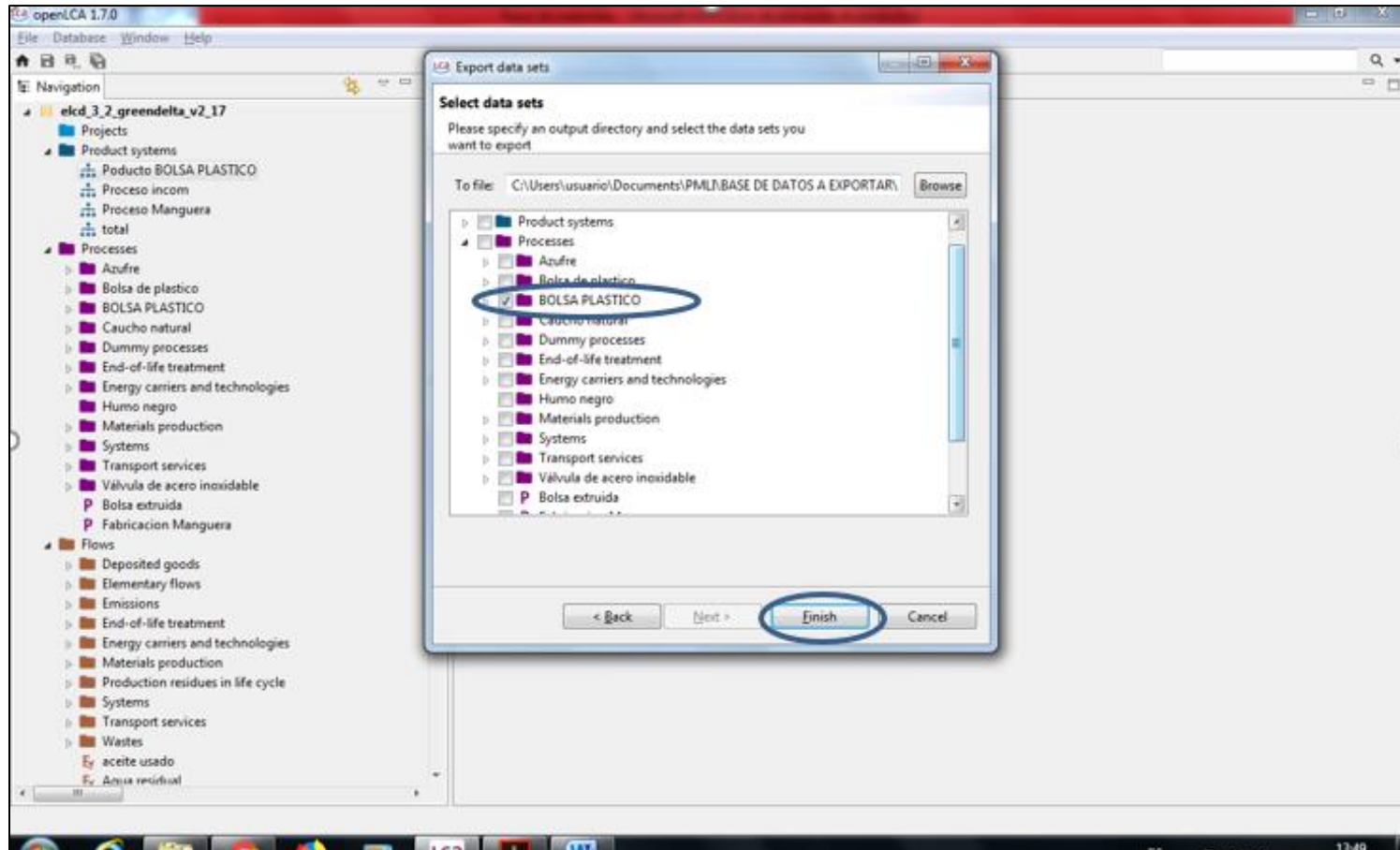
2. Seleccionar como base de datos JSON-LD.



3. Dar clic sobre “Browse” y seleccionar la carpeta donde desea usted guardar el archivo.

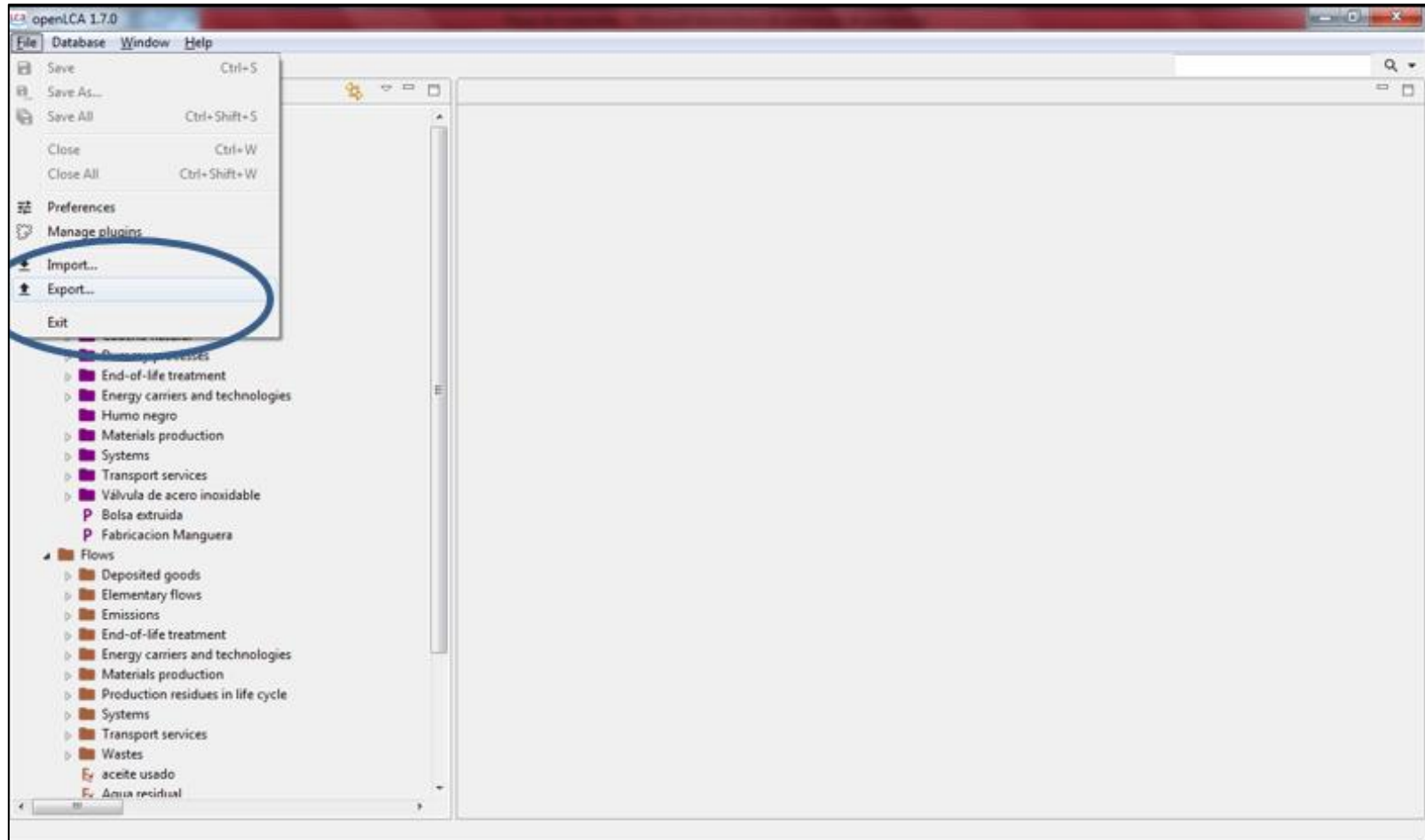


4. Seleccionar el o los procesos que desea exportar y finalizar

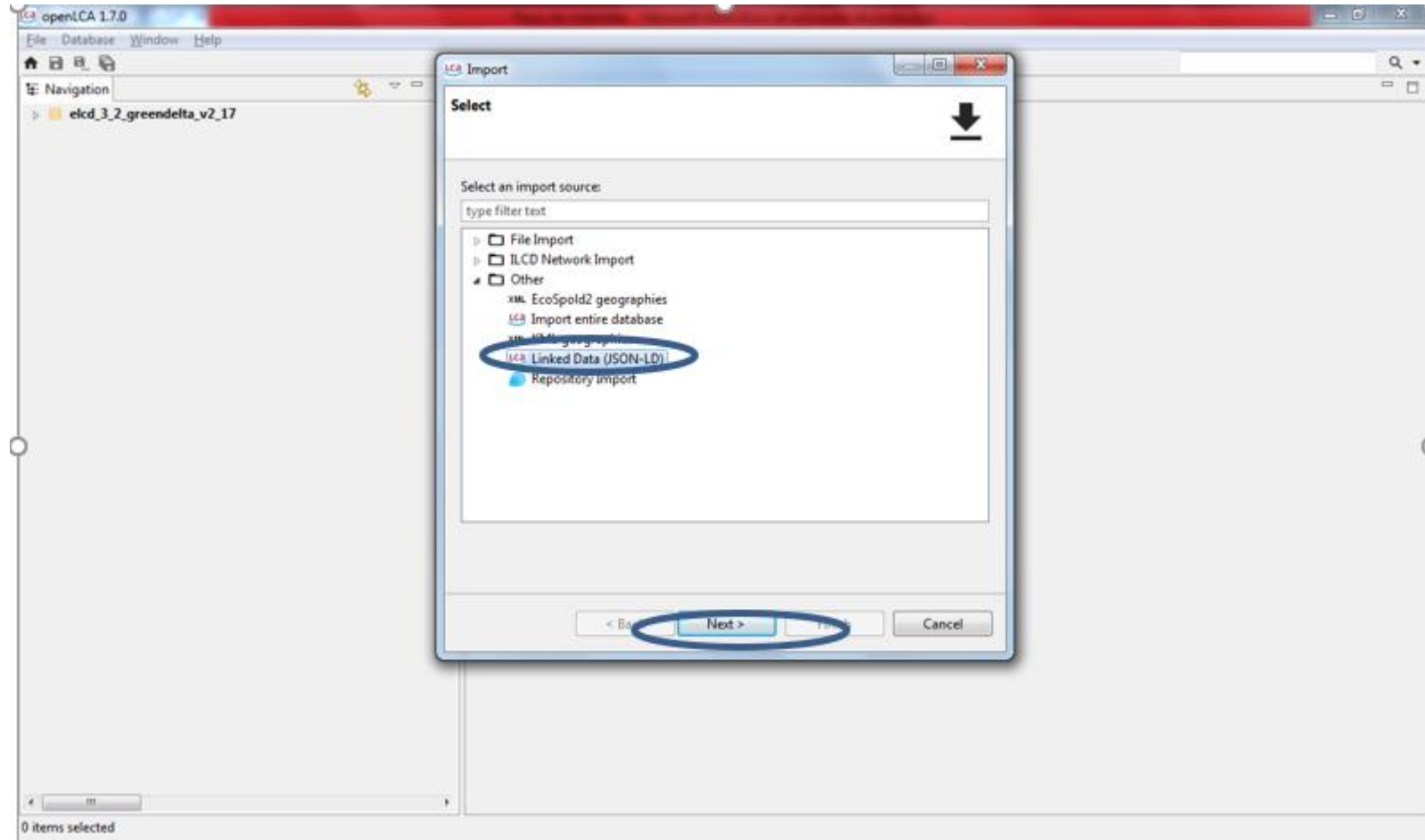


4.6.2 Importación de información

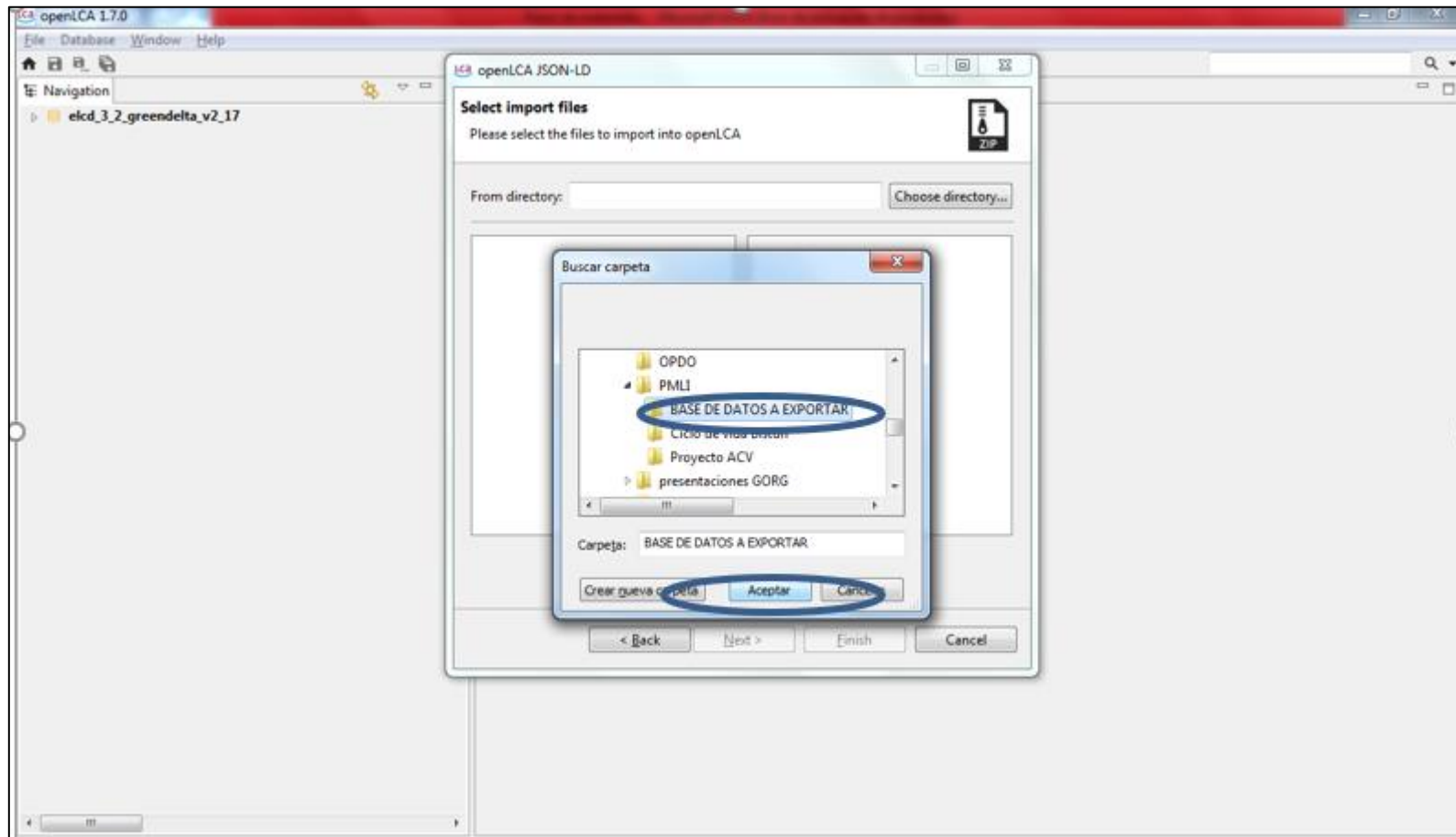
1. Dar clic en importar , teniendo todo cerrado en el cuadro de trabajo del programa.



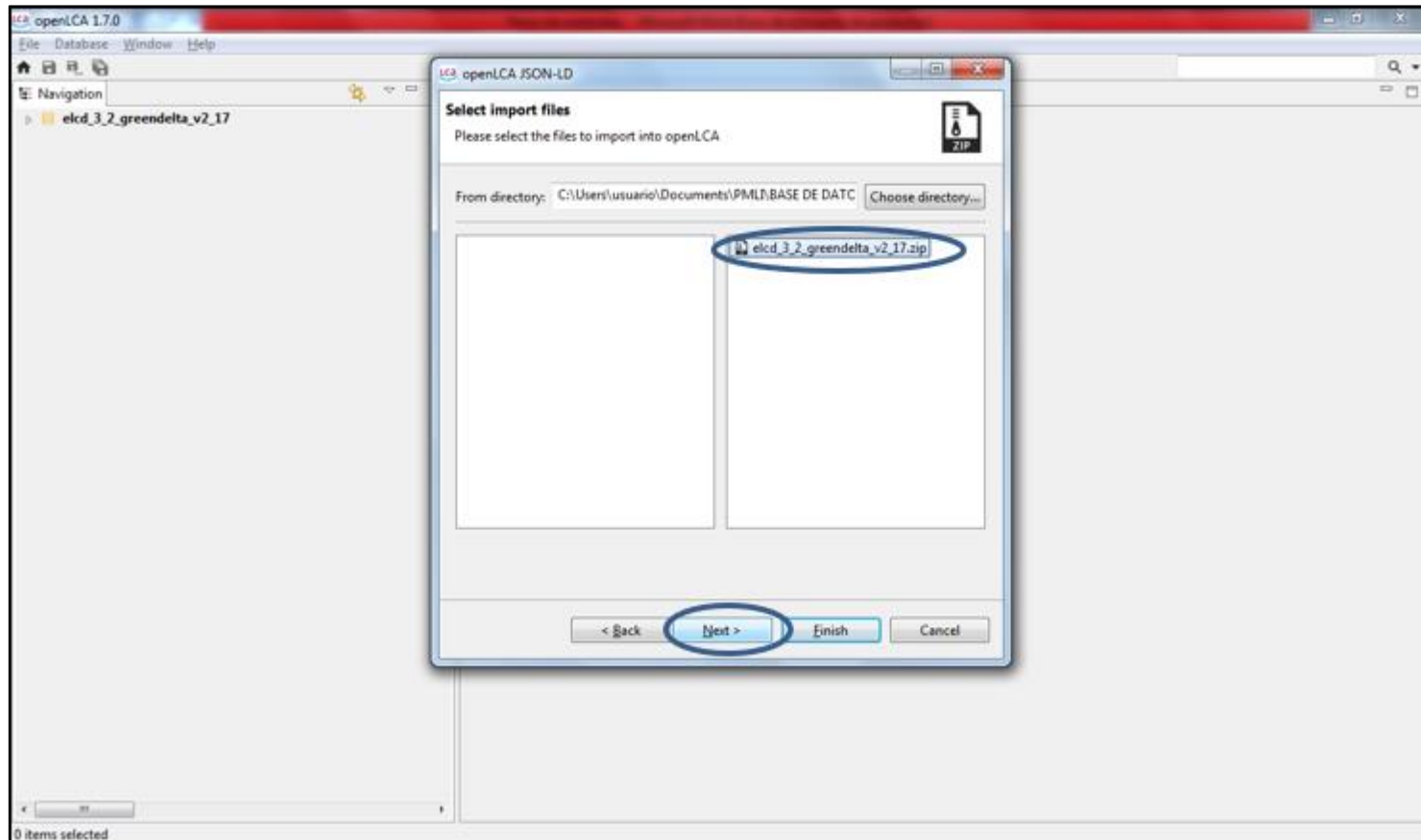
2. Seleccionar “Linked Data (JSON.LD)” seguido de “Next”



3. Dar clic sobre “Choose directory” y seleccionar la carpeta en donde está la base de datos guardada, debe tener la base de datos en una carpeta donde **solo** esté esa el documento que usted desea importar **sin descomprimir**.



4. Seleccionar los datos que quiere abrir seguido por la opción "Next".



5. Dar clic sobre la opción de “Update data sets with newer versions” seguido de “Finish” y su documento se abrirá en el programa.

