

```
(t-rex) stew@SC-McD:~/code/gh/T-reX$ python src/T-reX/main.py
Using environment variable BRIGHTWAY2_DIR for data directory:
/home/stew/brightway2data
```

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~ ~ ~ ~ ~
** Starting the T-reX tool **
~ ~ ~ ~ ~
=====
```

Skipping existing ecoinvent_cutoff_3.9_remind_SSP2-Base_2020...

Creating 33 new future databases...

```
{'model': 'remind', 'pathway': 'SSP2-Base', 'year': 2025}
{'model': 'remind', 'pathway': 'SSP2-Base', 'year': 2030}
{'model': 'remind', 'pathway': 'SSP2-Base', 'year': 2035}
{'model': 'remind', 'pathway': 'SSP2-Base', 'year': 2040}
{'model': 'remind', 'pathway': 'SSP2-Base', 'year': 2045}
{'model': 'remind', 'pathway': 'SSP2-Base', 'year': 2050}
{'model': 'remind', 'pathway': 'SSP2-Base', 'year': 2055}
{'model': 'remind', 'pathway': 'SSP2-Base', 'year': 2060}
{'model': 'remind', 'pathway': 'SSP2-Base', 'year': 2065}
{'model': 'remind', 'pathway': 'SSP2-Base', 'year': 2070}
{'model': 'remind', 'pathway': 'SSP2-Base', 'year': 2075}
{'model': 'remind', 'pathway': 'SSP2-Base', 'year': 2080}
{'model': 'remind', 'pathway': 'SSP2-Base', 'year': 2085}
{'model': 'remind', 'pathway': 'SSP2-Base', 'year': 2090}
{'model': 'remind', 'pathway': 'SSP2-Base', 'year': 2095}
{'model': 'remind', 'pathway': 'SSP2-Base', 'year': 2100}
{'model': 'remind', 'pathway': 'SSP2-PkBudg500', 'year': 2020}
{'model': 'remind', 'pathway': 'SSP2-PkBudg500', 'year': 2025}
{'model': 'remind', 'pathway': 'SSP2-PkBudg500', 'year': 2030}
{'model': 'remind', 'pathway': 'SSP2-PkBudg500', 'year': 2035}
{'model': 'remind', 'pathway': 'SSP2-PkBudg500', 'year': 2040}
{'model': 'remind', 'pathway': 'SSP2-PkBudg500', 'year': 2045}
{'model': 'remind', 'pathway': 'SSP2-PkBudg500', 'year': 2050}
{'model': 'remind', 'pathway': 'SSP2-PkBudg500', 'year': 2055}
{'model': 'remind', 'pathway': 'SSP2-PkBudg500', 'year': 2060}
{'model': 'remind', 'pathway': 'SSP2-PkBudg500', 'year': 2065}
{'model': 'remind', 'pathway': 'SSP2-PkBudg500', 'year': 2070}
{'model': 'remind', 'pathway': 'SSP2-PkBudg500', 'year': 2075}
{'model': 'remind', 'pathway': 'SSP2-PkBudg500', 'year': 2080}
{'model': 'remind', 'pathway': 'SSP2-PkBudg500', 'year': 2085}
{'model': 'remind', 'pathway': 'SSP2-PkBudg500', 'year': 2090}
{'model': 'remind', 'pathway': 'SSP2-PkBudg500', 'year': 2095}
{'model': 'remind', 'pathway': 'SSP2-PkBudg500', 'year': 2100}
```

*** Starting FutureScenarios.py ***

Using premise version (1, 8, 1)

Project SSP2-cutoff already exists, we will use it

** Using: ecoinvent-3.9.1-cutoff**

** Processing scenario set 1 of 4, batch size 9 **

////////// EXTRACTING SOURCE DATABASE //////////

Cannot find cached database. Will create one now for next time...

Traceback (most recent call last):

File "/home/stew/code/gh/T-reX/src/T-reX/main.py", line 412, in <module>

run()

File "/home/stew/code/gh/T-reX/src/T-reX/main.py", line 126, in run

MakeFutureScenarios()

File "/home/stew/code/gh/T-reX/src/T-reX/FutureScenarios.py", line 276, in MakeFutureScenarios

FutureScenarios(scenario_list)

File "/home/stew/code/gh/T-reX/src/T-reX/FutureScenarios.py", line 224, in FutureScenario

s

ndb = pm.NewDatabase(
 ^^^^^^^^^^^^^^^^^

```

=====
** Starting the T-reX tool **
=====

```

```
{ 'model': 'remind', 'pathway': 'SSP2-Base', 'year': 2020 }
{ 'model': 'remind', 'pathway': 'SSP2-Base', 'year': 2025 }
{ 'model': 'remind', 'pathway': 'SSP2-Base', 'year': 2030 }
{ 'model': 'remind', 'pathway': 'SSP2-Base', 'year': 2035 }
{ 'model': 'remind', 'pathway': 'SSP2-Base', 'year': 2040 }
{ 'model': 'remind', 'pathway': 'SSP2-Base', 'year': 2045 }
{ 'model': 'remind', 'pathway': 'SSP2-Base', 'year': 2050 }
{ 'model': 'remind', 'pathway': 'SSP2-Base', 'year': 2055 }
{ 'model': 'remind', 'pathway': 'SSP2-Base', 'year': 2060 }
{ 'model': 'remind', 'pathway': 'SSP2-Base', 'year': 2065 }
{ 'model': 'remind', 'pathway': 'SSP2-Base', 'year': 2070 }
{ 'model': 'remind', 'pathway': 'SSP2-Base', 'year': 2075 }
{ 'model': 'remind', 'pathway': 'SSP2-Base', 'year': 2080 }
{ 'model': 'remind', 'pathway': 'SSP2-Base', 'year': 2085 }
{ 'model': 'remind', 'pathway': 'SSP2-Base', 'year': 2090 }
{ 'model': 'remind', 'pathway': 'SSP2-Base', 'year': 2095 }
{ 'model': 'remind', 'pathway': 'SSP2-Base', 'year': 2100 }
{ 'model': 'remind', 'pathway': 'SSP2-PkBudg500', 'year': 2020 }
{ 'model': 'remind', 'pathway': 'SSP2-PkBudg500', 'year': 2025 }
{ 'model': 'remind', 'pathway': 'SSP2-PkBudg500', 'year': 2030 }
{ 'model': 'remind', 'pathway': 'SSP2-PkBudg500', 'year': 2035 }
{ 'model': 'remind', 'pathway': 'SSP2-PkBudg500', 'year': 2040 }
{ 'model': 'remind', 'pathway': 'SSP2-PkBudg500', 'year': 2045 }
{ 'model': 'remind', 'pathway': 'SSP2-PkBudg500', 'year': 2050 }
{ 'model': 'remind', 'pathway': 'SSP2-PkBudg500', 'year': 2055 }
{ 'model': 'remind', 'pathway': 'SSP2-PkBudg500', 'year': 2060 }
{ 'model': 'remind', 'pathway': 'SSP2-PkBudg500', 'year': 2065 }
{ 'model': 'remind', 'pathway': 'SSP2-PkBudg500', 'year': 2070 }
{ 'model': 'remind', 'pathway': 'SSP2-PkBudg500', 'year': 2075 }
```

```
{'model': 'remind', 'pathway': 'SSP2-PkBudg500', 'year': 2080}
{'model': 'remind', 'pathway': 'SSP2-PkBudg500', 'year': 2085}
{'model': 'remind', 'pathway': 'SSP2-PkBudg500', 'year': 2090}
{'model': 'remind', 'pathway': 'SSP2-PkBudg500', 'year': 2095}
{'model': 'remind', 'pathway': 'SSP2-PkBudg500', 'year': 2100}
*** Starting FutureScenarios.py ***
    Using premise version (1, 8, 1)
Project SSP2-cutoff already exists, we will use it

** Using: ecoinvent-3.9.1-cutoff**

** Processing scenario set 1 of 4, batch size 9 **

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Cannot find cached database. Will create one now for next time...
Traceback (most recent call last):
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  File "/home/stew/code/gh/T-reX/src/T-reX/main.py", line 126, in run
    MakeFutureScenarios()
  File "/home/stew/code/gh/T-reX/src/T-reX/FutureScenarios.py", line 276, in MakeFutureScenarios
    FutureScenarios(scenario_list)
  File "/home/stew/code/gh/T-reX/src/T-reX/FutureScenarios.py", line 224, in FutureScenarios
    ndb = pm.NewDatabase(
          ^^^^^^^^^^^^^
  File "/home/stew/venvs/t-rex/lib/python3.11/site-packages/premise/ecoinvent_modification.py", line 587, in __init__
    self.database = self.__find_cached_db(
                    ^^^^^^^^^^^^^^^^^^^^^
  File "/home/stew/venvs/t-rex/lib/python3.11/site-packages/premise/ecoinvent_modification.py", line 667, in __find_cached_db
    database = self.__clean_database(keep_uncertainty_data=keep_uncertainty_data)
               ^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^
  File "/home/stew/venvs/t-rex/lib/python3.11/site-packages/premise/ecoinvent_modification.py", line 709, in __clean_database
    return DatabaseCleaner(
           ^^^^^^^^^^^^^^^
  File "/home/stew/venvs/t-rex/lib/python3.11/site-packages/premise/clean_datasets.py", line 149, in __init__
    raise NameError(
NameError: The database selected is empty. Make sure the name is correct
(t-rex) stew@SC-McD:~/code/gh/T-reX$ python
Python 3.11.6 (main, Oct 8 2023, 05:06:43) [GCC 13.2.0] on linux
Type "help", "copyright", "credits" or "license" for more information.
>>> bd.projects.purge_deleted_directories()
Traceback (most recent call last):
  File "<stdin>", line 1, in <module>
NameError: name 'bd' is not defined. Did you mean: 'id'?
>>> import bw2data as bd
Using environment variable BRIGHTWAY2_DIR for data directory:
/home/stew/brightway2data
>>> bd.projects.purge_deleted_directories()
1
>>> quit()
(t-rex) stew@SC-McD:~/code/gh/T-reX$ python src/T-reX/main.py
Using environment variable BRIGHTWAY2_DIR for data directory:
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** Starting the T-reX tool **
~ ~ ~ ~ ~
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Creating 34 new future databases...

```
{'model': 'remind', 'pathway': 'SSP2-Base', 'year': 2020}
{'model': 'remind', 'pathway': 'SSP2-Base', 'year': 2025}
{'model': 'remind', 'pathway': 'SSP2-Base', 'year': 2030}
{'model': 'remind', 'pathway': 'SSP2-Base', 'year': 2035}
{'model': 'remind', 'pathway': 'SSP2-Base', 'year': 2040}
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{'model': 'remind', 'pathway': 'SSP2-Base', 'year': 2095}
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{'model': 'remind', 'pathway': 'SSP2-PkBudg500', 'year': 2025}
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{'model': 'remind', 'pathway': 'SSP2-PkBudg500', 'year': 2100}
```

*** Starting FutureScenarios.py ***

Using premise version (1, 8, 1)

Project SSP2-cutoff already exists, we will use it

** Using: ecoinvent-3.9.1-cutoff**

** Processing scenario set 1 of 4, batch size 9 **

////////// EXTRACTING SOURCE DATABASE //////////

Cannot find cached database. Will create one now for next time...

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File "/home/stew/code/gh/T-reX/src/T-reX/main.py", line 412, in <module>

run()

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File "/home/stew/code/gh/T-reX/src/T-reX/FutureScenarios.py", line 224, in FutureScenario

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ndb = pm.NewDatabase(
^^^^^^^^^^^^^^^^

File "/home/stew/venvs/t-rex/lib/python3.11/site-packages/premise/ecoinvent_modification.py", line 587, in __init__

self.database = self.__find_cached_db(
^^^^^^^^^^^^^^^^

File "/home/stew/venvs/t-rex/lib/python3.11/site-packages/premise/ecoinvent_modification.py", line 667, in __find_cached_db

database = self.__clean_database(keep_uncertainty_data=keep_uncertainty_data)
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File "/home/stew/venvs/t-rex/lib/python3.11/site-packages/premise/ecoinvent_modification.py", line 709, in __clean_database

return DatabaseCleaner(
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File "/home/stew/venvs/t-rex/lib/python3.11/site-packages/premise/clean_datasets.py", line 149, in __init__
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Python 3.11.6 (main, Oct 8 2023, 05:06:43) [GCC 13.2.0] on linux
Type "help", "copyright", "credits" or "license" for more information.
>>> import premise as pm
Using environment variable BRIGHTWAY2_DIR for data directory:
/home/stew/brightway2data
>>> pm.clea
pm.clean_datasets pm.clear_cache()
>>> pm.clear_cache()
Cache folder cleared!
>>> pm.clean_datasets
<module 'premise.clean_datasets' from '/home/stew/venvs/t-rex/lib/python3.11/site-packages/premise/clean_datasets.py'>
>>> pm.clean_datasets()
Traceback (most recent call last):
  File "<stdin>", line 1, in <module>
TypeError: 'module' object is not callable
>>> quit()
(t-rex) stew@SC-McD:~/code/gh/T-reX$ python src/T-reX/main.py
Using environment variable BRIGHTWAY2_DIR for data directory:
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** Starting the T-reX tool **
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Creating 34 new future databases...

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```

```
*** Starting FutureScenarios.py ***
    Using premise version (1, 8, 1)
Project SSP2-cutoff already exists, we will use it

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** Processing scenario set 1 of 4, batch size 9 **

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  File "/home/stew/venvs/t-rex/lib/python3.11/site-packages/premise/ecoinvent_modification.py", line 667, in __find_cached_db
    database = self.__clean_database(keep_uncertainty_data=keep_uncertainty_data)
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  File "/home/stew/venvs/t-rex/lib/python3.11/site-packages/premise/ecoinvent_modification.py", line 709, in __clean_database
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Type "help", "copyright", "credits" or "license" for more information.
>>> import premise as pm
Using environment variable BRIGHTWAY2_DIR for data directory:
/home/stew/brightway2data
>>> import bw2data as bd
>>> bd.projects.report()
[('SSP2-cutoff', 0, 8.21e-05), ('SSP2LT-cutoff', 29, 30.122514403), ('default', 2, 1.411005214)]
>>> bd.projects.report()
[('SSP2-cutoff', 0, 8.21e-05), ('SSP2LT-cutoff', 29, 30.122514403), ('default', 2, 1.411005214)]
>>> bd.project.current
Traceback (most recent call last):
  File "<stdin>", line 1, in <module>
AttributeError: module 'bw2data.project' has no attribute 'current'
>>> bd.project.current()
Traceback (most recent call last):
  File "<stdin>", line 1, in <module>
AttributeError: module 'bw2data.project' has no attribute 'current'
>>> bd.projecta.current()
Traceback (most recent call last):
  File "<stdin>", line 1, in <module>
AttributeError: module 'bw2data' has no attribute 'projecta'. Did you mean: 'project'?
>>> bd.projects.current()
Traceback (most recent call last):
  File "<stdin>", line 1, in <module>
TypeError: 'str' object is not callable
```


Applying strategy: migrate_exchanges
Applying strategy: migrate_datasets
Applying strategy: migrate_exchanges
Applying strategy: migrate_datasets
Applying strategy: migrate_exchanges
Remove uncertainty data.
Extracted 1 worksheets in 0.01 seconds
Migrating to 3.8 first
Applying strategy: migrate_datasets
Applying strategy: migrate_exchanges
Applying strategy: migrate_datasets
Applying strategy: migrate_exchanges
Applying strategy: migrate_datasets
Applying strategy: migrate_exchanges
Remove uncertainty data.
Extracted 1 worksheets in 0.01 seconds
Migrating to 3.8 first
Applying strategy: migrate_datasets
Applying strategy: migrate_exchanges
Applying strategy: migrate_datasets
Applying strategy: migrate_exchanges
Applying strategy: migrate_datasets
Applying strategy: migrate_exchanges
Remove uncertainty data.
Extracted 1 worksheets in 0.01 seconds
Remove uncertainty data.
Extracted 1 worksheets in 0.01 seconds
Migrating to 3.8 first
Applying strategy: migrate_datasets
Applying strategy: migrate_exchanges
Applying strategy: migrate_datasets
Applying strategy: migrate_exchanges
Applying strategy: migrate_datasets
Applying strategy: migrate_exchanges
Remove uncertainty data.
Extracted 1 worksheets in 0.01 seconds
Remove uncertainty data.
Extracted 7 worksheets in 0.03 seconds
Migrating to 3.8 first
Applying strategy: migrate_datasets
Applying strategy: migrate_exchanges
Applying strategy: migrate_datasets
Applying strategy: migrate_exchanges
Remove uncertainty data.
Extracted 1 worksheets in 0.02 seconds
Migrating to 3.8 first
Applying strategy: migrate_datasets
Applying strategy: migrate_exchanges
Applying strategy: migrate_datasets
Applying strategy: migrate_exchanges
Remove uncertainty data.
Extracted 1 worksheets in 0.01 seconds
Migrating to 3.8 first
Applying strategy: migrate_datasets
Applying strategy: migrate_exchanges
Applying strategy: migrate_datasets
Applying strategy: migrate_exchanges
Remove uncertainty data.
Extracted 1 worksheets in 0.02 seconds
Migrating to 3.8 first
Applying strategy: migrate_datasets
Applying strategy: migrate_exchanges
Applying strategy: migrate_datasets
Applying strategy: migrate_exchanges
Remove uncertainty data.
Extracted 1 worksheets in 0.01 seconds
Remove uncertainty data.
Extracted 1 worksheets in 0.36 seconds

Migrating to 3.8 first
Applying strategy: migrate_datasets
Applying strategy: migrate_exchanges
Applying strategy: migrate_datasets
Applying strategy: migrate_exchanges
Applying strategy: migrate_datasets
Applying strategy: migrate_exchanges
Remove uncertainty data.
The following datasets to import already exist in the source database. They will not be imported

Location	File	Name	Reference product	Loc
LO	lci-PV.xlsx	fluorspar production, 97% purity	fluorspar, 97% purity	G
		metallization paste production, back side	metallization paste, back side	R
ER	lci-PV.xlsx	metallization paste production, back side, aluminum	metallization paste, back side	R
		metallization paste production, front side	metallization paste, front side	R
ER	lci-PV.xlsx	photovoltaic module production, building-integrated	photovoltaic module, building-	R
		photovoltaic module production, building-integrated	photovoltaic module, building-	R
ER	lci-PV.xlsx	photovoltaic mounting system production, for facade	photovoltaic mounting system,	R
		photovoltaic mounting system production, for flat-	photovoltaic mounting system,	R
ER	lci-PV.xlsx	photovoltaic mounting system production, for slant	photovoltaic mounting system,	R
		photovoltaic panel factory construction	photovoltaic panel factory	G
US	lci-PV.xlsx	polyvinylfluoride production	polyvinylfluoride	
		polyvinylfluoride production, dispersion	polyvinylfluoride, dispersion	
US	lci-PV.xlsx	polyvinylfluoride, film production	polyvinylfluoride, film	
		silicon production, metallurgical grade	silicon, metallurgical grade	
US	lci-PV.xlsx	vinyl fluoride production	vinyl fluoride	
		wafer factory construction	wafer factory	

Extracted 1 worksheets in 0.05 seconds
Remove uncertainty data.
Extracted 1 worksheets in 0.01 seconds
Remove uncertainty data.
Extracted 1 worksheets in 0.02 seconds
Remove uncertainty data.
Extracted 1 worksheets in 0.02 seconds
Migrating to 3.8 first
Applying strategy: migrate_datasets
Applying strategy: migrate_exchanges
Applying strategy: migrate_datasets
Applying strategy: migrate_exchanges
Applying strategy: migrate_datasets
Applying strategy: migrate_exchanges
Remove uncertainty data.
Extracted 1 worksheets in 0.01 seconds
Migrating to 3.8 first
Applying strategy: migrate_datasets

T-reX_example_terminal_output.txtFri Mar 08 14:39:41 202410

Applying strategy: migrate_exchanges
Applying strategy: migrate_datasets
Applying strategy: migrate_exchanges
Applying strategy: migrate_datasets
Applying strategy: migrate_exchanges
Remove uncertainty data.
The following datasets to import already exist in the source database. They will not be imp
orted

Location	Name	File	Reference product	Location
	carbon dioxide, captured at cement production plan	carbon dioxide, captured and r		R
	ER	lci-synfuels-from-methanol-from-cement-plant.xlsx		

Extracted 1 worksheets in 0.01 seconds
Migrating to 3.8 first
Applying strategy: migrate_datasets
Applying strategy: migrate_exchanges
Applying strategy: migrate_datasets
Applying strategy: migrate_exchanges
Applying strategy: migrate_datasets
Applying strategy: migrate_exchanges
Remove uncertainty data.
Extracted 1 worksheets in 0.02 seconds
Migrating to 3.8 first
Applying strategy: migrate_datasets
Applying strategy: migrate_exchanges
Applying strategy: migrate_datasets
Applying strategy: migrate_exchanges
Applying strategy: migrate_datasets
Applying strategy: migrate_exchanges
Remove uncertainty data.
The following datasets to import already exist in the source database. They will not be imp
orted

File	Name	Reference product	Location
	methanol distillation, hydrogen from coal gasifica	methanol, purified	RER
	i-synfuels-from-methanol-from-coal.xlsx		lc
	methanol synthesis, hydrogen from coal gasificatio	methanol, unpurified	RER
	i-synfuels-from-methanol-from-coal.xlsx		lc

Extracted 1 worksheets in 0.02 seconds
Migrating to 3.8 first
Applying strategy: migrate_datasets
Applying strategy: migrate_exchanges
Applying strategy: migrate_datasets
Applying strategy: migrate_exchanges
Applying strategy: migrate_datasets
Applying strategy: migrate_exchanges
Remove uncertainty data.
Extracted 1 worksheets in 0.01 seconds
Migrating to 3.8 first
Applying strategy: migrate_datasets
Applying strategy: migrate_exchanges
Applying strategy: migrate_datasets
Applying strategy: migrate_exchanges
Applying strategy: migrate_datasets
Applying strategy: migrate_exchanges
Remove uncertainty data.

Extracted 1 worksheets in 0.01 seconds
Migrating to 3.8 first
Applying strategy: migrate_datasets
Applying strategy: migrate_exchanges
Applying strategy: migrate_datasets
Applying strategy: migrate_exchanges
Applying strategy: migrate_datasets
Applying strategy: migrate_exchanges
Remove uncertainty data.
Extracted 1 worksheets in 0.01 seconds
Migrating to 3.8 first
Applying strategy: migrate_datasets
Applying strategy: migrate_exchanges
Applying strategy: migrate_datasets
Applying strategy: migrate_exchanges
Applying strategy: migrate_datasets
Applying strategy: migrate_exchanges
Remove uncertainty data.
Extracted 1 worksheets in 0.01 seconds
Migrating to 3.8 first
Applying strategy: migrate_datasets
Applying strategy: migrate_exchanges
Applying strategy: migrate_datasets
Applying strategy: migrate_exchanges
Applying strategy: migrate_datasets
Applying strategy: migrate_exchanges
Remove uncertainty data.
Extracted 1 worksheets in 0.00 seconds
Remove uncertainty data.
Extracted 1 worksheets in 0.01 seconds
Remove uncertainty data.
Extracted 1 worksheets in 0.01 seconds
Migrating to 3.8 first
Applying strategy: migrate_datasets
Applying strategy: migrate_exchanges
Applying strategy: migrate_datasets
Applying strategy: migrate_exchanges
Applying strategy: migrate_datasets
Applying strategy: migrate_exchanges
Remove uncertainty data.
Extracted 5 worksheets in 0.14 seconds
Migrating to 3.8 first
Applying strategy: migrate_datasets
Applying strategy: migrate_exchanges
Applying strategy: migrate_datasets
Applying strategy: migrate_exchanges
Applying strategy: migrate_datasets
Applying strategy: migrate_exchanges
Remove uncertainty data.
Extracted 1 worksheets in 0.02 seconds
Migrating to 3.8 first
Applying strategy: migrate_datasets
Applying strategy: migrate_exchanges
Applying strategy: migrate_datasets
Applying strategy: migrate_exchanges
Applying strategy: migrate_datasets
Applying strategy: migrate_exchanges
Remove uncertainty data.
Extracted 1 worksheets in 0.01 seconds
Migrating to 3.8 first
Applying strategy: migrate_datasets
Applying strategy: migrate_exchanges
Applying strategy: migrate_datasets
Applying strategy: migrate_exchanges
Applying strategy: migrate_datasets
Applying strategy: migrate_exchanges
Remove uncertainty data.
Extracted 1 worksheets in 0.01 seconds

Migrating to 3.8 first
Applying strategy: migrate_datasets
Applying strategy: migrate_exchanges
Applying strategy: migrate_datasets
Applying strategy: migrate_exchanges
Applying strategy: migrate_datasets
Applying strategy: migrate_exchanges
Remove uncertainty data.
Extracted 1 worksheets in 0.01 seconds
Migrating to 3.8 first
Applying strategy: migrate_datasets
Applying strategy: migrate_exchanges
Applying strategy: migrate_datasets
Applying strategy: migrate_exchanges
Applying strategy: migrate_datasets
Applying strategy: migrate_exchanges
Remove uncertainty data.
Extracted 1 worksheets in 0.01 seconds
Migrating to 3.8 first
Applying strategy: migrate_datasets
Applying strategy: migrate_exchanges
Applying strategy: migrate_datasets
Applying strategy: migrate_exchanges
Applying strategy: migrate_datasets
Applying strategy: migrate_exchanges
Remove uncertainty data.
Extracted 1 worksheets in 0.03 seconds
Migrating to 3.8 first
Applying strategy: migrate_datasets
Applying strategy: migrate_exchanges
Applying strategy: migrate_datasets
Applying strategy: migrate_exchanges
Applying strategy: migrate_datasets
Applying strategy: migrate_exchanges
Remove uncertainty data.
Extracted 1 worksheets in 0.01 seconds
Migrating to 3.8 first
Applying strategy: migrate_datasets
Applying strategy: migrate_exchanges
Applying strategy: migrate_datasets
Applying strategy: migrate_exchanges
Remove uncertainty data.
Extracted 1 worksheets in 0.07 seconds
Migrating to 3.8 first
Applying strategy: migrate_datasets
Applying strategy: migrate_exchanges
Applying strategy: migrate_datasets
Applying strategy: migrate_exchanges
Remove uncertainty data.
Extracted 1 worksheets in 0.01 seconds
Migrating to 3.8 first
Applying strategy: migrate_datasets
Applying strategy: migrate_exchanges
Applying strategy: migrate_datasets
Applying strategy: migrate_exchanges
Remove uncertainty data.
Extracted 1 worksheets in 0.01 seconds
Migrating to 3.8 first
Applying strategy: migrate_datasets
Applying strategy: migrate_exchanges
Applying strategy: migrate_datasets
Applying strategy: migrate_exchanges
Remove uncertainty data.
Extracted 1 worksheets in 0.02 seconds
Remove uncertainty data.
Extracted 1 worksheets in 0.01 seconds
Remove uncertainty data.
Extracted 2 worksheets in 0.01 seconds

Migrating to 3.8 first
Applying strategy: migrate_datasets
Applying strategy: migrate_exchanges
Applying strategy: migrate_datasets
Applying strategy: migrate_exchanges
Remove uncertainty data.
Extracted 1 worksheets in 0.02 seconds
Remove uncertainty data.
Data cached. It is advised to restart your workflow at this point.
This allows premise to use the cached data instead, which results in
a faster workflow.
Done!

////////// EXTRACTING IAM DATA //////////

Done!

`update_all()` will skip the following steps:

update_two_wheelers(), update_cars(), and update_buses()

If you want to update these steps, please run them separately afterwards.

Cannot find the IAM location for IE from IAM model remind.

Cannot find the IAM location for CM from IAM model remind.

Cannot find the IAM location for IE from IAM model remind.

Cannot find the IAM location for CM from IAM model remind.

Cannot find the IAM location for IE from IAM model remind.

Cannot find the IAM location for CM from IAM model remind.

Cannot find the IAM location for IE from IAM model remind.

Cannot find the IAM location for CM from IAM model remind.

Cannot find the IAM location for IE from IAM model remind.

Cannot find the IAM location for CM from IAM model remind.

Cannot find the IAM location for IE from IAM model remind.

Cannot find the IAM location for CM from IAM model remind.

Cannot find the IAM location for IE from IAM model remind.

Cannot find the IAM location for CM from IAM model remind.

Cannot find the IAM location for IE from IAM model remind.

Cannot find the IAM location for CM from IAM model remind.

Cannot find the IAM location for IE from IAM model remind.

Cannot find the IAM location for CM from IAM model remind.

Error: Could not find equivalent for IAI Area, Asia, without China and GCC.

Write new database(s) to Brightway.

Cannot find the IAM location for IE from IAM model remind.

Cannot find the IAM location for CM from IAM model remind.

Traceback (most recent call last):

File "/home/stew/code/gh/T-reX/src/T-reX/main.py", line 412, in <module>

run()

File "/home/stew/code/gh/T-reX/src/T-reX/main.py", line 126, in run

MakeFutureScenarios()

File "/home/stew/code/gh/T-reX/src/T-reX/FutureScenarios.py", line 276, in MakeFutureScenarios

FutureScenarios(scenario_list)

File "/home/stew/code/gh/T-reX/src/T-reX/FutureScenarios.py", line 252, in FutureScenarios

ndb.write_db_to_brightway()

File "/home/stew/venvs/t-rex/lib/python3.11/site-packages/premise/ecoinvent_modification.py", line 1451, in write_db_to_brightway

scenario, cache = _prepare_database(
^^^^^^^^^^^^^^^^^^^^

File "/home/stew/venvs/t-rex/lib/python3.11/site-packages/premise/export.py", line 1068, in _prepare_database

scenario["database"], scenario_cache = prepare_db_for_export(
^^^^^^^^^^^^^^^^^^^^

File "/home/stew/venvs/t-rex/lib/python3.11/site-packages/premise/export.py", line 982, in prepare_db_for_export

base = BaseTransformation(
^^^^^^^^^^^^^^^^^^^^

File "/home/stew/venvs/t-rex/lib/python3.11/site-packages/premise/transformation.py", line 288, in __init__

self.ecoinvent_to_iam_loc: Dict[str, str] = {
^

File "/home/stew/venvs/t-rex/lib/python3.11/site-packages/premise/transformation.py", line

```
e 289, in <dictcomp>
    loc: self.geo.ecoinvent_to_iam_location(loc)
        ^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^
File "/home/stew/venvs/t-rex/lib/python3.11/site-packages/premise/geomap.py", line 166, i
n ecoinvent_to_iam_location
    raise ValueError(f"Could not find equivalent for {location}.")
ValueError: Could not find equivalent for IAI Area, Asia, without China and GCC.
(t-rex) stew@SC-McD:~/code/gh/T-rex$ pip install premise==
ERROR: Ignored the following versions that require a different python version: 1.5.0a0 Requi
res-Python >=3.9,<3.11; 1.5.0a1 Requires-Python >=3.9,<3.11; 1.5.0a3 Requires-Python >=3.9
,<3.11; 1.5.0a4 Requires-Python >=3.9,<3.11; 1.5.0a5 Requires-Python >=3.9,<3.11; 1.5.0a6 R
equires-Python >=3.9,<3.11; 1.5.0a7 Requires-Python >=3.9,<3.11; 1.5.0a8 Requires-Python >=
3.9,<3.11; 1.5.0b1 Requires-Python >=3.9,<3.11; 1.5.0b10 Requires-Python >=3.9,<3.11; 1.5.0
b2 Requires-Python >=3.9,<3.11; 1.5.0b3 Requires-Python >=3.9,<3.11; 1.5.0b4 Requires-Pytho
n >=3.9,<3.11; 1.5.0b5 Requires-Python >=3.9,<3.11; 1.5.0b6 Requires-Python >=3.9,<3.11; 1.
5.0b7 Requires-Python >=3.9,<3.11; 1.5.0b8 Requires-Python >=3.9,<3.11; 1.5.0b9 Requires-Py
thon >=3.9,<3.11; 1.5.1 Requires-Python >=3.9,<3.11; 1.5.2 Requires-Python >=3.9,<3.11; 1.5
.3 Requires-Python >=3.9,<3.11; 1.5.4 Requires-Python >=3.9,<3.11; 1.5.5 Requires-Python >=
3.9,<3.11; 1.5.6 Requires-Python >=3.9,<3.11; 1.5.7 Requires-Python >=3.9,<3.11; 1.5.8 Requ
ires-Python >=3.9,<3.11; 1.5.9 Requires-Python >=3.9,<3.11; 1.6.0 Requires-Python >=3.9,<3.
11; 1.6.1 Requires-Python >=3.9,<3.11; 1.6.2 Requires-Python >=3.9,<3.11; 1.6.3 Requires-Py
thon >=3.9,<3.11; 1.6.4 Requires-Python >=3.9,<3.11; 1.6.5 Requires-Python >=3.9,<3.11; 1.6
.6 Requires-Python >=3.9,<3.11; 1.6.7 Requires-Python >=3.9,<3.11; 1.6.8 Requires-Python >=
3.9,<3.11; 1.6.9 Requires-Python >=3.9,<3.11; 1.7.0 Requires-Python >=3.9,<3.11; 1.7.1 Requ
ires-Python >=3.9,<3.11; 1.7.2 Requires-Python >=3.9,<3.11; 1.7.3 Requires-Python >=3.9,<3.
11; 1.7.4 Requires-Python >=3.9,<3.11; 1.7.5 Requires-Python >=3.9,<3.11; 1.7.6 Requires-Py
thon >=3.9,<3.11; 1.7.8 Requires-Python >=3.9,<3.11; 1.7.9 Requires-Python >=3.9,<3.11
ERROR: Could not find a version that satisfies the requirement premise== (from versions: 1.
8.0, 1.8.1, 1.8.2.dev0, 1.8.2.dev1, 1.8.2.dev2, 1.8.2.dev3, 1.8.2.dev4, 1.8.2.dev5, 1.8.2.d
ev6, 1.8.2.dev7, 2.0.0.dev0, 2.0.0.dev1, 2.0.0.dev2, 2.0.0.dev3, 2.0.0.dev4, 2.0.0, 2.0.1)
ERROR: No matching distribution found for premise==
(t-rex) stew@SC-McD:~/code/gh/T-rex$ pip install premise==2.0.1
Collecting premise==2.0.1
  Downloading premise-2.0.1-py3-none-any.whl.metadata (8.3 kB)
Requirement already satisfied: bottleneck in /home/stew/venvs/t-rex/lib/python3.11/site-pac
kages (from premise==2.0.1) (1.3.8)
Requirement already satisfied: bw2data in /home/stew/venvs/t-rex/lib/python3.11/site-packag
es (from premise==2.0.1) (3.6.6)
Requirement already satisfied: bw2io>=0.8.10 in /home/stew/venvs/t-rex/lib/python3.11/site-
packages (from premise==2.0.1) (0.8.12)
Requirement already satisfied: constructive-geometries>=0.9.5 in /home/stew/venvs/t-rex/lib
/python3.11/site-packages (from premise==2.0.1) (0.9.5)
Requirement already satisfied: cryptography in /home/stew/venvs/t-rex/lib/python3.11/site-p
ackages (from premise==2.0.1) (42.0.5)
Requirement already satisfied: datapackage in /home/stew/venvs/t-rex/lib/python3.11/site-pa
ckages (from premise==2.0.1) (1.15.2)
Requirement already satisfied: numpy in /home/stew/venvs/t-rex/lib/python3.11/site-packages
 (from premise==2.0.1) (1.26.4)
Requirement already satisfied: pandas in /home/stew/venvs/t-rex/lib/python3.11/site-package
s (from premise==2.0.1) (2.1.4)
Requirement already satisfied: platformdirs in /home/stew/venvs/t-rex/lib/python3.11/site-p
ackages (from premise==2.0.1) (4.2.0)
Requirement already satisfied: premise-gwp in /home/stew/venvs/t-rex/lib/python3.11/site-pa
ckages (from premise==2.0.1) (0.9.6)
Requirement already satisfied: prettytable in /home/stew/venvs/t-rex/lib/python3.11/site-pa
ckages (from premise==2.0.1) (3.10.0)
Requirement already satisfied: pyarrow in /home/stew/venvs/t-rex/lib/python3.11/site-packag
es (from premise==2.0.1) (15.0.1)
Requirement already satisfied: pycountry in /home/stew/venvs/t-rex/lib/python3.11/site-pack
ages (from premise==2.0.1) (23.12.11)
Requirement already satisfied: pyYaml in /home/stew/venvs/t-rex/lib/python3.11/site-package
s (from premise==2.0.1) (6.0.1)
Requirement already satisfied: requests in /home/stew/venvs/t-rex/lib/python3.11/site-packa
ges (from premise==2.0.1) (2.31.0)
Requirement already satisfied: schema in /home/stew/venvs/t-rex/lib/python3.11/site-package
s (from premise==2.0.1) (0.7.5)
Requirement already satisfied: sparse>=0.14.0 in /home/stew/venvs/t-rex/lib/python3.11/site
-packages (from premise==2.0.1) (0.15.1)
```

[illegible]

site-packages (from requests->premise==2.0.1) (2.0.7)
Requirement already satisfied: certifi>=2017.4.17 in /home/stew/venvs/t-rex/lib/python3.11/site-packages (from requests->premise==2.0.1) (2024.2.2)
Requirement already satisfied: numba>=0.49 in /home/stew/venvs/t-rex/lib/python3.11/site-packages (from sparse>=0.14.0->premise==2.0.1) (0.59.0)
Requirement already satisfied: python-json-logger in /home/stew/venvs/t-rex/lib/python3.11/site-packages (from wurst>=0.4->premise==2.0.1) (2.0.7)
Requirement already satisfied: toolz in /home/stew/venvs/t-rex/lib/python3.11/site-packages (from wurst>=0.4->premise==2.0.1) (0.12.1)
Requirement already satisfied: cffi>=1.12 in /home/stew/venvs/t-rex/lib/python3.11/site-packages (from cryptography->premise==2.0.1) (1.16.0)
Requirement already satisfied: six>=1.10 in /home/stew/venvs/t-rex/lib/python3.11/site-packages (from datapackage->premise==2.0.1) (1.16.0)
Requirement already satisfied: click>=6.7 in /home/stew/venvs/t-rex/lib/python3.11/site-packages (from datapackage->premise==2.0.1) (8.1.7)
Requirement already satisfied: chardet>=3.0 in /home/stew/venvs/t-rex/lib/python3.11/site-packages (from datapackage->premise==2.0.1) (5.2.0)
Requirement already satisfied: jsonschema>=2.5 in /home/stew/venvs/t-rex/lib/python3.11/site-packages (from datapackage->premise==2.0.1) (4.21.1)
Requirement already satisfied: jsonpointer>=1.10 in /home/stew/venvs/t-rex/lib/python3.11/site-packages (from datapackage->premise==2.0.1) (2.4)
Requirement already satisfied: tableschema>=1.12.1 in /home/stew/venvs/t-rex/lib/python3.11/site-packages (from datapackage->premise==2.0.1) (1.20.2)
Requirement already satisfied: tabulator>=1.29 in /home/stew/venvs/t-rex/lib/python3.11/site-packages (from datapackage->premise==2.0.1) (1.53.5)
Requirement already satisfied: python-dateutil>=2.8.2 in /home/stew/venvs/t-rex/lib/python3.11/site-packages (from pandas->premise==2.0.1) (2.9.0.post0)
Requirement already satisfied: pytz>=2020.1 in /home/stew/venvs/t-rex/lib/python3.11/site-packages (from pandas->premise==2.0.1) (2024.1)
Requirement already satisfied: tzdata>=2022.1 in /home/stew/venvs/t-rex/lib/python3.11/site-packages (from pandas->premise==2.0.1) (2024.1)
Requirement already satisfied: wcwidth in /home/stew/venvs/t-rex/lib/python3.11/site-packages (from prettytable->premise==2.0.1) (0.2.13)
Requirement already satisfied: contextlib2>=0.5.5 in /home/stew/venvs/t-rex/lib/python3.11/site-packages (from schema->premise==2.0.1) (21.6.0)
Requirement already satisfied: packaging>=22 in /home/stew/venvs/t-rex/lib/python3.11/site-packages (from xarray->premise==2.0.1) (23.2)
Requirement already satisfied: pycparser in /home/stew/venvs/t-rex/lib/python3.11/site-packages (from cffi>=1.12->cryptography->premise==2.0.1) (2.21)
Requirement already satisfied: attrs>=22.2.0 in /home/stew/venvs/t-rex/lib/python3.11/site-packages (from jsonschema>=2.5->datapackage->premise==2.0.1) (23.2.0)
Requirement already satisfied: jsonschema-specifications>=2023.03.6 in /home/stew/venvs/t-rex/lib/python3.11/site-packages (from jsonschema>=2.5->datapackage->premise==2.0.1) (2023.12.1)
Requirement already satisfied: referencing>=0.28.4 in /home/stew/venvs/t-rex/lib/python3.11/site-packages (from jsonschema>=2.5->datapackage->premise==2.0.1) (0.33.0)
Requirement already satisfied: rpyds-py>=0.7.1 in /home/stew/venvs/t-rex/lib/python3.11/site-packages (from jsonschema>=2.5->datapackage->premise==2.0.1) (0.18.0)
Requirement already satisfied: llvmlite<0.43,>=0.42.0dev0 in /home/stew/venvs/t-rex/lib/python3.11/site-packages (from numba>=0.49->sparse>=0.14.0->premise==2.0.1) (0.42.0)
Requirement already satisfied: cached-property>=1.5 in /home/stew/venvs/t-rex/lib/python3.11/site-packages (from tableschema>=1.12.1->datapackage->premise==2.0.1) (1.5.2)
Requirement already satisfied: isodate>=0.5.4 in /home/stew/venvs/t-rex/lib/python3.11/site-packages (from tableschema>=1.12.1->datapackage->premise==2.0.1) (0.6.1)
Requirement already satisfied: rfc3986>=1.1.0 in /home/stew/venvs/t-rex/lib/python3.11/site-packages (from tableschema>=1.12.1->datapackage->premise==2.0.1) (2.0.0)
Requirement already satisfied: boto3>=1.9 in /home/stew/venvs/t-rex/lib/python3.11/site-packages (from tabulator>=1.29->datapackage->premise==2.0.1) (1.34.58)
Requirement already satisfied: ijson>=3.0.3 in /home/stew/venvs/t-rex/lib/python3.11/site-packages (from tabulator>=1.29->datapackage->premise==2.0.1) (3.2.3)
Requirement already satisfied: jsonlines>=1.1 in /home/stew/venvs/t-rex/lib/python3.11/site-packages (from tabulator>=1.29->datapackage->premise==2.0.1) (4.0.0)
Requirement already satisfied: sqlalchemy>=0.9.6 in /home/stew/venvs/t-rex/lib/python3.11/site-packages (from tabulator>=1.29->datapackage->premise==2.0.1) (2.0.28)
Requirement already satisfied: linear-tsv>=1.0 in /home/stew/venvs/t-rex/lib/python3.11/site-packages (from tabulator>=1.29->datapackage->premise==2.0.1) (1.1.0)
Requirement already satisfied: et-xmlfile in /home/stew/venvs/t-rex/lib/python3.11/site-packages (from openpyxl->bw2io>=0.8.10->premise==2.0.1) (1.1.0)

[illegible]

\201\189.4\189.4 kB 1.1 MB/s eta 0:00:00

```
Installing collected packages: unfold, premise
```

```
Attempting uninstall: premise
```

```
Found existing installation: premise 1.8.1
```

Uninstalling premise-1.8.1:

Successfully uninstalled premise-1.8.1

```
Successfully installed premise-2.0.1 unfold-1.1.9
```

```
(t-rex) stew@SC-McD:~/code/gh/T-reX$ python src/T-reX/main.py
```

Using environment variable BRIGHTWAY2_DIR for data directory:

```
/home/stew/brightway2data
```

```
~~~~~
** Starting the T-reX tool **
~~~~~
```

```
*** Starting FutureScenarios.py ***
```

Using premise version (2, 0, 1)

Deleted existing project SSP2-cut-off

Created new project SSP2-cutoff from default

Cache folder cleared!

```
** Using: ecoinvent-3.9.1-cutoff**
```

```
** Processing scenario set 1 of 1, batch size 9 **
```

- Extracting source database

```
Cannot find cached database. Will create one now for next time...
```

Getting activity data

[illegible]

Adding exchange data to activities

[illegible]

Filling out exchange data

00:01<00:00, 17447.30it/s]

```
Set missing location of datasets to global scope.
```

Set missing location of production exchanges to scope of dataset.

Correct missing location of technosphere exchanges.

Correct missing flow categories for biosphere exchanges

Remove empty exchanges.

- Extracting inventories

Cannot find cached inventories. Will create them now for next time...

Importing default inventories...

Extracted 1 worksheets in 0.07 seconds

Migrating to 3.8 first

```

Applying strategy: migrate_datasets
Applying strategy: migrate_exchanges
Applying strategy: migrate_datasets
Applying strategy: migrate_exchanges
Applying strategy: migrate_datasets
Applying strategy: migrate_exchanges
Extracted 1 worksheets in 0.01 seconds
Migrating to 3.8 first
Applying strategy: migrate_datasets
Applying strategy: migrate_exchanges
Applying strategy: migrate_datasets
Applying strategy: migrate_exchanges
Applying strategy: migrate_datasets
Applying strategy: migrate_exchanges
Extracted 1 worksheets in 0.01 seconds
Migrating to 3.8 first
Applying strategy: migrate_datasets
Applying strategy: migrate_exchanges
Applying strategy: migrate_datasets
Applying strategy: migrate_exchanges
Applying strategy: migrate_datasets
Applying strategy: migrate_exchanges
Extracted 1 worksheets in 0.01 seconds
Extracted 1 worksheets in 0.01 seconds
Migrating to 3.8 first
Applying strategy: migrate_datasets
Applying strategy: migrate_exchanges
Applying strategy: migrate_datasets
Applying strategy: migrate_exchanges
Applying strategy: migrate_datasets
Applying strategy: migrate_exchanges
Extracted 1 worksheets in 0.01 seconds
Extracted 7 worksheets in 0.02 seconds
Migrating to 3.8 first
Applying strategy: migrate_datasets
Applying strategy: migrate_exchanges
Applying strategy: migrate_datasets
Applying strategy: migrate_exchanges
Extracted 1 worksheets in 0.02 seconds
Migrating to 3.8 first
Applying strategy: migrate_datasets
Applying strategy: migrate_exchanges
Applying strategy: migrate_datasets
Applying strategy: migrate_exchanges
Extracted 1 worksheets in 0.01 seconds
Migrating to 3.8 first
Applying strategy: migrate_datasets
Applying strategy: migrate_exchanges
Applying strategy: migrate_datasets
Applying strategy: migrate_exchanges
Extracted 1 worksheets in 0.02 seconds
Migrating to 3.8 first
Applying strategy: migrate_datasets
Applying strategy: migrate_exchanges
Applying strategy: migrate_datasets
Applying strategy: migrate_exchanges
Extracted 1 worksheets in 0.01 seconds
Extracted 1 worksheets in 0.29 seconds
Migrating to 3.8 first
Applying strategy: migrate_datasets
Applying strategy: migrate_exchanges
Applying strategy: migrate_datasets
Applying strategy: migrate_exchanges
Applying strategy: migrate_datasets
Applying strategy: migrate_exchanges
The following datasets to import already exist in the source database. They will not be imported

```

+-----+ + Name Reference product Location File +-----+-----+-----+-----+			
fluorspar production, 97% puri	fluorspar, 97% purity	GLO	lci-PV.xlsx
metallization paste production	metallization paste, back side	RER	lci-PV.xlsx
metallization paste production	metallization paste, back side	RER	lci-PV.xlsx
metallization paste production	metallization paste, front sid	RER	lci-PV.xlsx
photovoltaic module production	photovoltaic module, building-	RER	lci-PV.xlsx
photovoltaic module production	photovoltaic module, building-	RER	lci-PV.xlsx
photovoltaic mounting system p	photovoltaic mounting system,	RER	lci-PV.xlsx
photovoltaic mounting system p	photovoltaic mounting system,	RER	lci-PV.xlsx
photovoltaic mounting system p	photovoltaic mounting system,	RER	lci-PV.xlsx
photovoltaic panel factory con	photovoltaic panel factory	GLO	lci-PV.xlsx
polyvinylfluoride production	polyvinylfluoride	US	lci-PV.xlsx
polyvinylfluoride production,	polyvinylfluoride, dispersion	US	lci-PV.xlsx
polyvinylfluoride, film produc	polyvinylfluoride, film	US	lci-PV.xlsx
silicon production, metallurgi	silicon, metallurgical grade	NO	lci-PV.xlsx
vinyl fluoride production	vinyl fluoride	US	lci-PV.xlsx
wafer factory construction	wafer factory	DE	lci-PV.xlsx
+-----+-----+-----+-----+			
+ Extracted 1 worksheets in 0.04 seconds Extracted 1 worksheets in 0.01 seconds Extracted 1 worksheets in 0.02 seconds Extracted 1 worksheets in 0.01 seconds Migrating to 3.8 first Applying strategy: migrate_datasets Applying strategy: migrate_exchanges Applying strategy: migrate_datasets Applying strategy: migrate_exchanges Applying strategy: migrate_datasets Applying strategy: migrate_exchanges Extracted 1 worksheets in 0.01 seconds Migrating to 3.8 first Applying strategy: migrate_datasets Applying strategy: migrate_exchanges Applying strategy: migrate_datasets Applying strategy: migrate_exchanges Applying strategy: migrate_datasets Applying strategy: migrate_exchanges The following datasets to import already exist in the source database. They will not be imp orted			
+-----+-----+-----+-----+			
+-----+-----+-----+-----+			
File	Name	Reference product	Location File
+-----+-----+-----+-----+			
+-----+-----+-----+-----+			
carbon dioxide, captured at ce	carbon dioxide, captured and r	RER	lci-synfuels
-from-methanol-fro			

```

-----+-----+-----+-----+
Extracted 1 worksheets in 0.01 seconds
Migrating to 3.8 first
Applying strategy: migrate_datasets
Applying strategy: migrate_exchanges
Applying strategy: migrate_datasets
Applying strategy: migrate_exchanges
Applying strategy: migrate_datasets
Applying strategy: migrate_exchanges
Extracted 1 worksheets in 0.01 seconds
Migrating to 3.8 first
Applying strategy: migrate_datasets
Applying strategy: migrate_exchanges
Applying strategy: migrate_datasets
Applying strategy: migrate_exchanges
Applying strategy: migrate_datasets
Applying strategy: migrate_exchanges
The following datasets to import already exist in the source database. They will not be imported
-----+-----+-----+-----+
-----+
|           Name           | Reference product | Location |           File           |
-----+-----+-----+-----+
| methanol distillation, hydroge | methanol, purified | RER      | lci-synfuels-from-methanol-fro |
| methanol synthesis, hydrogen f | methanol, unpurified | RER      | lci-synfuels-from-methanol-fro |
-----+-----+-----+-----+
-----+
Extracted 1 worksheets in 0.01 seconds
Migrating to 3.8 first
Applying strategy: migrate_datasets
Applying strategy: migrate_exchanges
Applying strategy: migrate_datasets
Applying strategy: migrate_exchanges
Applying strategy: migrate_datasets
Applying strategy: migrate_exchanges
Extracted 1 worksheets in 0.02 seconds
Migrating to 3.8 first
Applying strategy: migrate_datasets
Applying strategy: migrate_exchanges
Applying strategy: migrate_datasets
Applying strategy: migrate_exchanges
Applying strategy: migrate_datasets
Applying strategy: migrate_exchanges
Extracted 1 worksheets in 0.01 seconds
Migrating to 3.8 first
Applying strategy: migrate_datasets
Applying strategy: migrate_exchanges
Applying strategy: migrate_datasets
Applying strategy: migrate_exchanges
Applying strategy: migrate_datasets
Applying strategy: migrate_exchanges
Extracted 1 worksheets in 0.01 seconds
Migrating to 3.8 first
Applying strategy: migrate_datasets
Applying strategy: migrate_exchanges
Applying strategy: migrate_datasets
Applying strategy: migrate_exchanges
Applying strategy: migrate_datasets
Applying strategy: migrate_exchanges
Extracted 1 worksheets in 0.00 seconds
Migrating to 3.8 first
Applying strategy: migrate_datasets
Applying strategy: migrate_exchanges

```

Applying strategy: migrate_datasets
Applying strategy: migrate_exchanges
Applying strategy: migrate_datasets
Applying strategy: migrate_exchanges
Extracted 1 worksheets in 0.00 seconds
Extracted 1 worksheets in 0.01 seconds
Extracted 1 worksheets in 0.01 seconds
Migrating to 3.8 first
Applying strategy: migrate_datasets
Applying strategy: migrate_exchanges
Applying strategy: migrate_datasets
Applying strategy: migrate_exchanges
Applying strategy: migrate_datasets
Applying strategy: migrate_exchanges
The following datasets to import already exist in the source database. They will not be imported

File	Name	Reference product	Location
-from-methanol-fro	methanol production facility,	methanol production facility,	RER lci-synfuels

Extracted 1 worksheets in 0.00 seconds
Migrating to 3.8 first
Applying strategy: migrate_datasets
Applying strategy: migrate_exchanges
Applying strategy: migrate_datasets
Applying strategy: migrate_exchanges
Applying strategy: migrate_datasets
Applying strategy: migrate_exchanges
Extracted 5 worksheets in 0.11 seconds
Migrating to 3.8 first
Applying strategy: migrate_datasets
Applying strategy: migrate_exchanges
Applying strategy: migrate_datasets
Applying strategy: migrate_exchanges
Applying strategy: migrate_datasets
Applying strategy: migrate_exchanges
Extracted 1 worksheets in 0.01 seconds
Migrating to 3.8 first
Applying strategy: migrate_datasets
Applying strategy: migrate_exchanges
Applying strategy: migrate_datasets
Applying strategy: migrate_exchanges
Applying strategy: migrate_datasets
Applying strategy: migrate_exchanges
Extracted 1 worksheets in 0.01 seconds
Migrating to 3.8 first
Applying strategy: migrate_datasets
Applying strategy: migrate_exchanges
Applying strategy: migrate_datasets
Applying strategy: migrate_exchanges
Applying strategy: migrate_datasets
Applying strategy: migrate_exchanges
Extracted 1 worksheets in 0.01 seconds
Migrating to 3.8 first
Applying strategy: migrate_datasets
Applying strategy: migrate_exchanges
Applying strategy: migrate_datasets
Applying strategy: migrate_exchanges
Applying strategy: migrate_datasets
Applying strategy: migrate_exchanges
Extracted 1 worksheets in 0.01 seconds
Migrating to 3.8 first

Applying strategy: migrate_datasets
Applying strategy: migrate_exchanges
Applying strategy: migrate_datasets
Applying strategy: migrate_exchanges
Applying strategy: migrate_datasets
Applying strategy: migrate_exchanges
Extracted 1 worksheets in 0.01 seconds
Migrating to 3.8 first
Applying strategy: migrate_datasets
Applying strategy: migrate_exchanges
Applying strategy: migrate_datasets
Applying strategy: migrate_exchanges
Applying strategy: migrate_datasets
Applying strategy: migrate_exchanges
Extracted 1 worksheets in 0.01 seconds
Migrating to 3.8 first
Applying strategy: migrate_datasets
Applying strategy: migrate_exchanges
Applying strategy: migrate_datasets
Applying strategy: migrate_exchanges
Applying strategy: migrate_datasets
Applying strategy: migrate_exchanges
Extracted 1 worksheets in 0.02 seconds
Migrating to 3.8 first
Applying strategy: migrate_datasets
Applying strategy: migrate_exchanges
Applying strategy: migrate_datasets
Applying strategy: migrate_exchanges
Applying strategy: migrate_datasets
Applying strategy: migrate_exchanges
Extracted 1 worksheets in 0.01 seconds
Migrating to 3.8 first
Applying strategy: migrate_datasets
Applying strategy: migrate_exchanges
Applying strategy: migrate_datasets
Applying strategy: migrate_exchanges
Extracted 1 worksheets in 0.05 seconds
Migrating to 3.8 first
Applying strategy: migrate_datasets
Applying strategy: migrate_exchanges
Applying strategy: migrate_datasets
Applying strategy: migrate_exchanges
Extracted 1 worksheets in 0.01 seconds
Migrating to 3.8 first
Applying strategy: migrate_datasets
Applying strategy: migrate_exchanges
Applying strategy: migrate_datasets
Applying strategy: migrate_exchanges
Extracted 1 worksheets in 0.01 seconds
Migrating to 3.8 first
Applying strategy: migrate_datasets
Applying strategy: migrate_exchanges
Applying strategy: migrate_datasets
Applying strategy: migrate_exchanges
Extracted 1 worksheets in 0.02 seconds
Extracted 1 worksheets in 0.01 seconds
Extracted 2 worksheets in 0.01 seconds
Migrating to 3.8 first
Applying strategy: migrate_datasets
Applying strategy: migrate_exchanges
Applying strategy: migrate_datasets
Applying strategy: migrate_exchanges
Extracted 1 worksheets in 0.01 seconds
Extracted 1 worksheets in 0.01 seconds
Extracted 1 worksheets in 0.01 seconds
Extracted 1 worksheets in 0.04 seconds
Extracted 1 worksheets in 0.01 seconds
Extracted 1 worksheets in 0.01 seconds

```
Migrating to 3.8 first
Applying strategy: migrate_datasets
Applying strategy: migrate_exchanges
Applying strategy: migrate_datasets
Applying strategy: migrate_exchanges
Data cached. It is advised to restart your workflow at this point.
This allows premise to use the cached data instead, which results in
a faster workflow.
- Fetching IAM data
Done!
Error: 'NewDatabase' object has no attribute 'update_all'
Write new database(s) to Brightway.
Running all checks...
Running all checks...
Running all checks...
Running all checks...
Writing activities to SQLite3 database:
0% [#####] 100% | ETA: 00:00:00
Total time elapsed: 00:00:20
Title: Writing activities to SQLite3 database:
  Started: 03/08/2024 11:58:11
  Finished: 03/08/2024 11:58:31
  Total time elapsed: 00:00:20
  CPU %: 99.80
  Memory %: 8.94
Created database: ecoinvent_cutoff_3.9_remind_SSP2-Base_2020
Writing activities to SQLite3 database:
0% [#####] 100% | ETA: 00:00:00
Total time elapsed: 00:00:24
Title: Writing activities to SQLite3 database:
  Started: 03/08/2024 11:59:36
  Finished: 03/08/2024 12:00:00
  Total time elapsed: 00:00:24
  CPU %: 99.80
  Memory %: 9.04
Created database: ecoinvent_cutoff_3.9_remind_SSP2-Base_2025
Writing activities to SQLite3 database:
0% [#####] 100% | ETA: 00:00:00
Total time elapsed: 00:00:24
Title: Writing activities to SQLite3 database:
  Started: 03/08/2024 12:01:21
  Finished: 03/08/2024 12:01:45
  Total time elapsed: 00:00:24
  CPU %: 99.70
  Memory %: 9.16
Created database: ecoinvent_cutoff_3.9_remind_SSP2-PkBudg500_2020
Writing activities to SQLite3 database:
0% [#####] 100% | ETA: 00:00:00
Total time elapsed: 00:00:21
Title: Writing activities to SQLite3 database:
  Started: 03/08/2024 12:02:58
  Finished: 03/08/2024 12:03:20
  Total time elapsed: 00:00:21
  CPU %: 99.60
  Memory %: 9.26
Created database: ecoinvent_cutoff_3.9_remind_SSP2-PkBudg500_2025
Generate scenario report.
Report saved under /home/stew/code/gh/T-reX/data/premise/export/scenario_report.
Generate change report.
Report saved under /home/stew/code/gh/T-reX/data/premise.
Adding ('IPCC 2021', 'climate change', 'GWP 100a, incl. H and bio CO2')
Applying strategy: csv_restore_tuples
Applying strategy: csv_numerize
Applying strategy: csv_drop_unknown
Applying strategy: set_biosphere_type
Applying strategy: drop_unspecified_subcategories
Applying strategy: link_iterable_by_fields
Applying strategy: drop_falsey_uncertainty_fields_but_keep_zeros
```



```
Applying strategy: convert_uncertainty_types_to_integers
Applied 8 strategies in 0.08 seconds
Wrote 1 LCIA methods with 255 characterization factors
Adding ('IPCC 2021', 'climate change', 'GWP 100a, incl. H')
Applying strategy: csv_restore_tuples
Applying strategy: csv_numerize
Applying strategy: csv_drop_unknown
Applying strategy: set_biosphere_type
Applying strategy: drop_unspecified_subcategories
Applying strategy: link_iterable_by_fields
Applying strategy: drop_falsey_uncertainty_fields_but_keep_zeros
Applying strategy: convert_uncertainty_types_to_integers
Applied 8 strategies in 0.07 seconds
Wrote 1 LCIA methods with 248 characterization factors
Adding ('IPCC 2021', 'climate change', 'GWP 20a, incl. H and bio CO2')
Applying strategy: csv_restore_tuples
Applying strategy: csv_numerize
Applying strategy: csv_drop_unknown
Applying strategy: set_biosphere_type
Applying strategy: drop_unspecified_subcategories
Applying strategy: link_iterable_by_fields
Applying strategy: drop_falsey_uncertainty_fields_but_keep_zeros
Applying strategy: convert_uncertainty_types_to_integers
Applied 8 strategies in 0.07 seconds
Wrote 1 LCIA methods with 255 characterization factors
Adding ('IPCC 2021', 'climate change', 'GWP 20a, incl. H')
Applying strategy: csv_restore_tuples
Applying strategy: csv_numerize
Applying strategy: csv_drop_unknown
Applying strategy: set_biosphere_type
Applying strategy: drop_unspecified_subcategories
Applying strategy: link_iterable_by_fields
Applying strategy: drop_falsey_uncertainty_fields_but_keep_zeros
Applying strategy: convert_uncertainty_types_to_integers
Applied 8 strategies in 0.07 seconds
Wrote 1 LCIA methods with 248 characterization factors
***** Done! *****
```

Starting T-reX for 5/5 databases in project SSP2-cutoff

```
-----
ecoinvent-3.9.1-cutoff
ecoinvent_cutoff_3.9_remind_SSP2-Base_2020
ecoinvent_cutoff_3.9_remind_SSP2-Base_2025
ecoinvent_cutoff_3.9_remind_SSP2-PkBudg500_2020
ecoinvent_cutoff_3.9_remind_SSP2-PkBudg500_2025
```

* Project SSP2-cutoff will be copied to a new project: T-reX-SSP2-cutoff

```
-----
** Pre-processing database (1/5): ecoinvent-3.9.1-cutoff**
```

```
{'project_base': 'SSP2-cutoff', 'project_T_reX': 'T-reX-SSP2-cutoff', 'db_name': 'ecoinvent-3.9.1-cutoff', 'db_T_reX_name': 'biosphere-T-reX'}
```

```
=====
Starting T-reX for ecoinvent-3.9.1-cutoff
=====
```

*** Starting ExplodeDatabase ***

ExplodeDatabase uses wurst to open a bw2 database, explodes the exchanges for each process, and then returns a pickle file with a DataFrame list of all activities

** db: ecoinvent-3.9.1-cutoff, in project: T-reX-SSP2-cutoff will be processed

** Opening the sausage...

[illegible]

```
('market for aluminium', 'aluminium')
('market for antimony', 'antimony')
('market for bauxite', 'bauxite')
('market for beryllium', 'beryllium')
('market for bismuth', 'bismuth')
('market for cadmium', 'cadmium')
('market for calcium borates', 'borates')
('market for cement', 'cement')
('market for cerium', 'cerium')
('market for chromium', 'chromium')
('market for cobalt', 'cobalt')
('market for coke', 'coke')
('market for copper', 'copper')
('market for dysprosium', 'dysprosium')
('market for erbium', 'erbium')
('market for europium', 'europium')
('market for electricity', 'electricity')
('market for ferroniobium', 'niobium')
('market for fluorspar', 'fluorspar')
('market for gadolinium', 'gadolinium')
('market for gallium', 'gallium')
('market for gold', 'gold')
('market for graphite', 'graphite')
('market for hafnium', 'hafnium')
('market for hard coal', 'coal (black)')
('market for helium', 'helium')
('market for holmium', 'holmium')
('market for hydrogen', 'hydrogen')
('market for indium', 'indium')
('market for latex', 'latex')
('market for lead', 'lead')
('market for lignite', 'coal (brown)')
('market for lithium', 'lithium')
('market for magnesium', 'magnesium')
('market for natural gas', 'natural gas')
('market for nickel', 'nickel')
('market for palladium', 'palladium')
('market for petroleum', 'petroleum')
('market for phosphate', 'phosphate rock')
('market for platinum', 'platinum')
('market for rare earth', 'rare earth')
('market for rhodium', 'rhodium')
('market for sand', 'sand')
('market for selenium', 'selenium')
('market for scandium', 'scandium')
('market for silicon', 'silicon')
('market for silver', 'silver')
('market for sodium borates', 'borates')
('market for strontium', 'strontium')
('market for tantalum', 'tantalum')
('market for tellurium', 'tellurium')
('market for tin', 'tin')
('market for titanium', 'titanium')
('market for uranium', 'uranium')
('market for tungsten', 'tungsten')
('market for vanadium', 'vanadium')
('market for vegetable oil', 'vegetable oil')
('market for tap water', 'water')
('market for water', 'water')
('market for zinc', 'zinc')
('market for zirconium', 'zirconium')
```

* 1070 material markets were found:

	name	material_group	location
470	market for aluminium alloy, AlLi	aluminium	GLO
569	market for aluminium alloy, AlMg3	aluminium	GLO
518	market for aluminium alloy, metal matrix compo...	aluminium	GLO
764	market for aluminium around steel bi-metal str...	aluminium	GLO

448	market for aluminium around steel bi-metal wir...	aluminium	GLO
...
1011	market for zinc slag	zinc	GLO
347	market for zinc sulfide	zinc	GLO
813	market for zirconium oxide	zirconium	GLO
748	market for zirconium sponge, nuclear-grade	zirconium	GLO
125	market for zirconium tetrachloride	zirconium	GLO

[1070 rows x 3 columns]

* Extracting classifications...

Saved activities list to csv:

/home/stew/code/gh/T-reX/data/SearchMaterialResults/ecoinvent-3.9.1-cutoff/material_activities.csv

*** Searching for material exchanges in ecoinvent-3.9.1-cutoff ***

*** Loading pickle to dataframe ***

There were 52480 matching exchanges found in ecoinvent-3.9.1-cutoff

Saved material exchanges to csv:

/home/stew/code/gh/T-reX/data/SearchMaterialResults/ecoinvent-3.9.1-cutoff/material_exchanges.csv

*** Grouping material exchanges by material group

1822 : aluminium
26 : antimony
24 : bauxite
1 : beryllium
15 : borates
17 : cadmium
2575 : cement
2 : cerium
410 : chromium
1556 : coal (black)
499 : coal (brown)
166 : cobalt
68 : coke
915 : copper
1 : dysprosium
23823 : electricity
1 : erbium
1 : europium
22 : fluorspar
1 : gadolinium
3 : gallium
10 : gold
30 : graphite
43 : helium
1 : holmium
377 : hydrogen
13 : indium
49 : latex
184 : lead
43 : lithium
250 : magnesium
5804 : natural gas
342 : nickel
22 : palladium
503 : petroleum
207 : phosphate rock
164 : platinum
37 : rare earth
11 : rhodium

```

553 : sand
    1 : scandium
    9 : selenium
358 : silicon
    46 : silver
    27 : strontium
    3 : tantalum
    2 : tellurium
103 : tin
454 : titanium
    5 : tungsten
136 : uranium
    34 : vegetable oil
10145 : water
    557 : zinc
    9 : zirconium

```

**** Pre-processing database (2/5): ecoinvent_cutoff_3.9_remind_SSP2-Base_2020****

```
{ 'project_base': 'SSP2-cutoff', 'project_T_reX': 'T-reX-SSP2-cutoff', 'db_name': 'ecoinvent_cutoff_3.9_remind SSP2-Base 2020', 'db T_reX_name': 'biosphere T-reX' }
```

Starting T-reX for ecoinvent_cutoff_3.9_remind_SSP2-Base_2020

```
*** Starting ExplodeDatabase ***
```

ExplodeDatabase uses wurst to open a bw2 database, explodes the exchanges for each process, and then returns a pickle file with a DataFrame list of all activities

```
** db: ecoinvent_cutoff_3.9_remind_SSP2-Base_2020, in project: T-reX-SSP2-cutoff will be processed
```

```
** Opening the sausage...
```

Getting activity data

[illegible]

Adding exchange data to activities

[illegible]

Filling out exchange data

[illegible]

```
*** Extracting activities from db...
```

```
*** Exploding exchanges from activities...
```

*** Pickling...

Pickle is: 52 MB

*** The sausage <ecoinvent_cutoff_3.9_remind_SSP2-Base_2020> was exploded and pickled. Rejoice!

*** Starting SearchWaste ***

*** Loading pickle to dataframe ***

*** Searching for waste exchanges ***

WasteFootprint_digestion	kilogram	4
WasteFootprint_composting	kilogram	14
WasteFootprint_open burning	kilogram	535
WasteFootprint_incineration	kilogram	1954
WasteFootprint_recycling	kilogram	71
WasteFootprint_landfill	kilogram	1530
WasteFootprint_hazardous	kilogram	1583
** No results for WasteFootprint_radioactive-kilogram		
WasteFootprint_carbon dioxide	kilogram	119
WasteFootprint_total	kilogram	28467
WasteFootprint_digestion	cubic meter	6
** No results for WasteFootprint_composting-cubic meter		
** No results for WasteFootprint_open burning-cubic meter		
WasteFootprint_incineration	cubic meter	2
** No results for WasteFootprint_recycling-cubic meter		
WasteFootprint_landfill	cubic meter	2
WasteFootprint_hazardous	cubic meter	308
WasteFootprint_radioactive	cubic meter	308
** No results for WasteFootprint_carbon dioxide-cubic meter		
WasteFootprint_total	cubic meter	4226

*** Finished searching for waste exchanges ***

*** Starting SearchMaterial ***

*** Loading pickle to dataframe ***

*** Loading activities

from database: ecoinvent_cutoff_3.9_remind_SSP2-Base_2020

in project: T-reX-SSP2-cutoff

```
** Materials (61) | (activity, group)
('market for aluminium', 'aluminium')
('market for antimony', 'antimony')
('market for bauxite', 'bauxite')
('market for beryllium', 'beryllium')
('market for bismuth', 'bismuth')
('market for cadmium', 'cadmium')
('market for calcium borates', 'borates')
('market for cement', 'cement')
('market for cerium', 'cerium')
('market for chromium', 'chromium')
('market for cobalt', 'cobalt')
('market for coke', 'coke')
('market for copper', 'copper')
('market for dysprosium', 'dysprosium')
('market for erbium', 'erbium')
('market for europium', 'europium')
('market for electricity', 'electricity')
('market for ferroniobium', 'niobium')
('market for fluorspar', 'fluorspar')
('market for gadolinium', 'gadolinium')
('market for gallium', 'gallium')
('market for gold', 'gold')
('market for graphite', 'graphite')
('market for hafnium', 'hafnium')
('market for hard coal', 'coal(black)')
('market for helium', 'helium')
('market for holmium', 'holmium')
```

```
('market for hydrogen,', 'hydrogen')
('market for indium', 'indium')
('market for latex', 'latex')
('market for lead', 'lead')
('market for lignite', 'coal (brown)')
('market for lithium', 'lithium')
('market for magnesium', 'magnesium')
('market for natural gas,', 'natural gas')
('market for nickel', 'nickel')
('market for palladium', 'palladium')
('market for petroleum', 'petroleum')
('market for phosphate', 'phosphate rock')
('market for platinum', 'platinum')
('market for rare earth', 'rare earth')
('market for rhodium', 'rhodium')
('market for sand', 'sand')
('market for selenium', 'selenium')
('market for scandium', 'scandium')
('market for silicon', 'silicon')
('market for silver', 'silver')
('market for sodium borates', 'borates')
('market for strontium', 'strontium')
('market for tantalum', 'tantalum')
('market for tellurium', 'tellurium')
('market for tin', 'tin')
('market for titanium', 'titanium')
('market for uranium', 'uranium')
('market for tungsten', 'tungsten')
('market for vanadium', 'vanadium')
('market for vegetable oil,', 'vegetable oil')
('market for tap water', 'water')
('market for water,', 'water')
('market for zinc', 'zinc')
('market for zirconium', 'zirconium')
```

* 1074 material markets were found:

	name	material_group	location
2	market for aluminium alloy, AlLi	aluminium	GLO
689	market for aluminium alloy, AlMg3	aluminium	GLO
8	market for aluminium alloy, metal matrix compo...	aluminium	GLO
313	market for aluminium around steel bi-metal str...	aluminium	GLO
125	market for aluminium around steel bi-metal wir...	aluminium	GLO
..
773	market for zinc slag	zinc	GLO
59	market for zinc sulfide	zinc	GLO
647	market for zirconium oxide	zirconium	GLO
607	market for zirconium sponge, nuclear-grade	zirconium	GLO
630	market for zirconium tetrachloride	zirconium	GLO

[1074 rows x 3 columns]

* Extracting classifications...

Error for activity: market for lithium hydroxide, battery grade, classification: nan

Inferring from reference product base: "lithium hydroxide", from reference product "lithium hydroxide, battery grade"

Error for activity: market for graphite, battery grade, classification: nan

Inferring from reference product base: "graphite", from reference product "graphite, battery grade"

Error for activity: market for lithium carbonate, battery grade, classification: nan

Inferring from reference product base: "lithium carbonate", from reference product "lithium carbonate, battery grade"

Error for activity: market for hard coal power plant, classification: nan

Inferring from reference product base: "hard coal pulverised power plant 500MW", from reference product "hard coal pulverised power plant 500MW"

Saved activities list to csv:

/home/stew/code/gh/T-reX/data/SearchMaterialResults/ecoinvent_cutoff_3.9_remind_SSP2-Base_2020/material_activities.csv

*** Searching for material exchanges in ecoinvent_cutoff_3.9_remind_SSP2-Base_2020 ***

*** Loading pickle to dataframe ***

There were 53557 matching exchanges found in ecoinvent_cutoff_3.9_remind_SSP2-Base_2020

Saved material exchanges to csv:

/home/stew/code/gh/T-reX/data/SearchMaterialResults/ecoinvent_cutoff_3.9_remind_SSP2-Base_2020/material_exchanges.csv

*** Grouping material exchanges by material group

1926 : aluminium
26 : antimony
24 : bauxite
1 : beryllium
15 : borates
17 : cadmium
2598 : cement
3 : cerium
425 : chromium
1573 : coal (black)
508 : coal (brown)
166 : cobalt
71 : coke
1065 : copper
1 : dysprosium
24074 : electricity
1 : erbium
1 : europium
22 : fluorspar
1 : gadolinium
4 : gallium
10 : gold
33 : graphite
46 : helium
1 : holmium
391 : hydrogen
13 : indium
50 : latex
211 : lead
52 : lithium
264 : magnesium
5825 : natural gas
369 : nickel
23 : palladium
504 : petroleum
207 : phosphate rock
170 : platinum
37 : rare earth
11 : rhodium
560 : sand
1 : scandium
9 : selenium
364 : silicon
50 : silver
28 : strontium
3 : tantalum
2 : tellurium
111 : tin
457 : titanium
5 : tungsten
140 : uranium
37 : vegetable oil

WasteFootprint_digestion	kilogram	4
WasteFootprint_composting	kilogram	14

WasteFootprint_open burning	kilogram	535
WasteFootprint_incineration	kilogram	1954
WasteFootprint_recycling	kilogram	71
WasteFootprint_landfill	kilogram	1530
WasteFootprint_hazardous	kilogram	1583
** No results for WasteFootprint_radioactive-kilogram		
WasteFootprint_carbon dioxide	kilogram	119
WasteFootprint_total	kilogram	28467
WasteFootprint_digestion	cubic meter	6
** No results for WasteFootprint_composting-cubic meter		
** No results for WasteFootprint_open burning-cubic meter		
WasteFootprint_incineration	cubic meter	2
** No results for WasteFootprint_recycling-cubic meter		
WasteFootprint_landfill	cubic meter	2
WasteFootprint_hazardous	cubic meter	308
WasteFootprint_radioactive	cubic meter	308
** No results for WasteFootprint_carbon dioxide-cubic meter		
WasteFootprint_total	cubic meter	4226

*** Finished searching for waste exchanges ***

*** Starting SearchMaterial ***

*** Loading pickle to dataframe ***

*** Loading activities

from database: ecoinvent_cutoff_3.9_remind_SSP2-Base_2025

in project: T-reX-SSP2-cutoff

** Materials (61) | (activity, group)

- ('market for aluminium', 'aluminium')
- ('market for antimony', 'antimony')
- ('market for bauxite', 'bauxite')
- ('market for beryllium', 'beryllium')
- ('market for bismuth', 'bismuth')
- ('market for cadmium', 'cadmium')
- ('market for calcium borates', 'borates')
- ('market for cement', 'cement')
- ('market for cerium', 'cerium')
- ('market for chromium', 'chromium')
- ('market for cobalt', 'cobalt')
- ('market for coke', 'coke')
- ('market for copper', 'copper')
- ('market for dysprosium', 'dysprosium')
- ('market for erbium', 'erbium')
- ('market for europium', 'europium')
- ('market for electricity', 'electricity')
- ('market for ferroniobium', 'niobium')
- ('market for fluorspar', 'fluorspar')
- ('market for gadolinium', 'gadolinium')
- ('market for gallium', 'gallium')
- ('market for gold', 'gold')
- ('market for graphite', 'graphite')
- ('market for hafnium', 'hafnium')
- ('market for hard coal', 'coal (black)')
- ('market for helium', 'helium')
- ('market for holmium', 'holmium')
- ('market for hydrogen', 'hydrogen')
- ('market for indium', 'indium')
- ('market for latex', 'latex')
- ('market for lead', 'lead')
- ('market for lignite', 'coal (brown)')
- ('market for lithium', 'lithium')
- ('market for magnesium', 'magnesium')
- ('market for natural gas', 'natural gas')
- ('market for nickel', 'nickel')
- ('market for palladium', 'palladium')
- ('market for petroleum', 'petroleum')
- ('market for phosphate', 'phosphate rock')
- ('market for platinum', 'platinum')

```
('market for rare earth', 'rare earth')
('market for rhodium', 'rhodium')
('market for sand', 'sand')
('market for selenium', 'selenium')
('market for scandium', 'scandium')
('market for silicon', 'silicon')
('market for silver', 'silver')
('market for sodium borates', 'borates')
('market for strontium', 'strontium')
('market for tantalum', 'tantalum')
('market for tellurium', 'tellurium')
('market for tin', 'tin')
('market for titanium', 'titanium')
('market for uranium', 'uranium')
('market for tungsten', 'tungsten')
('market for vanadium', 'vanadium')
('market for vegetable oil', 'vegetable oil')
('market for tap water', 'water')
('market for water', 'water')
('market for zinc', 'zinc')
('market for zirconium', 'zirconium')
```

* 1074 material markets were found:

	name	material_group	location
858	market for aluminium alloy, AlLi	aluminium	GLO
962	market for aluminium alloy, AlMg3	aluminium	GLO
261	market for aluminium alloy, metal matrix compo...	aluminium	GLO
584	market for aluminium around steel bi-metal str...	aluminium	GLO
597	market for aluminium around steel bi-metal wir...	aluminium	GLO
..
809	market for zinc slag	zinc	GLO
644	market for zinc sulfide	zinc	GLO
374	market for zirconium oxide	zirconium	GLO
481	market for zirconium sponge, nuclear-grade	zirconium	GLO
739	market for zirconium tetrachloride	zirconium	GLO

[1074 rows x 3 columns]

* Extracting classifications...

```
Error for activity: market for hard coal power plant, classification: nan
  Inferring from reference product base: "hard coal pulverised power plant 50
0MW", from reference product "hard coal pulverised power plant 500MW"
Error for activity: market for graphite, battery grade, classification: nan
  Inferring from reference product base: "graphite", from reference product "
graphite, battery grade"
Error for activity: market for lithium carbonate, battery grade, classification: na
n
  Inferring from reference product base: "lithium carbonate", from reference
product "lithium carbonate, battery grade"
Error for activity: market for lithium hydroxide, battery grade, classification: na
n
  Inferring from reference product base: "lithium hydroxide", from reference
product "lithium hydroxide, battery grade"
```

Saved activities list to csv:

/home/stew/code/gh/T-reX/data/SearchMaterialResults/ecoinvent_cutoff_3.9_remind_SSP2-Base_2025/material_activities.csv

*** Searching for material exchanges in ecoinvent_cutoff_3.9_remind_SSP2-Base_2025 ***

*** Loading pickle to dataframe ***

There were 53557 matching exchanges found in ecoinvent_cutoff_3.9_remind_SSP2-Base_2025

Saved material exchanges to csv:

/home/stew/code/gh/T-reX/data/SearchMaterialResults/ecoinvent_cutoff_3.9_remind_SSP2-Base_2025/material_exchanges.csv

*** Grouping material exchanges by material group

1926 : aluminium
26 : antimony
24 : bauxite
1 : beryllium
15 : borates
17 : cadmium
2598 : cement
3 : cerium
425 : chromium
1573 : coal (black)
508 : coal (brown)
166 : cobalt
71 : coke
1065 : copper
1 : dysprosium
24074 : electricity
1 : erbium
1 : europium
22 : fluorspar
1 : gadolinium
4 : gallium
10 : gold
33 : graphite
46 : helium
1 : holmium
391 : hydrogen
13 : indium
50 : latex
211 : lead
52 : lithium
264 : magnesium
5825 : natural gas
369 : nickel
23 : palladium
504 : petroleum
207 : phosphate rock
170 : platinum
37 : rare earth
11 : rhodium
560 : sand
1 : scandium
9 : selenium
364 : silicon
50 : silver
28 : strontium
3 : tantalum
2 : tellurium
111 : tin
457 : titanium
5 : tungsten
140 : uranium
37 : vegetable oil
10447 : water
593 : zinc
11 : zirconium

** Pre-processing database (4/5): ecoinvent_cutoff_3.9_remind_SSP2-PkBudg500_2020**

{'project_base': 'SSP2-cutoff', 'project_T_reX': 'T-reX-SSP2-cutoff', 'db_name': 'ecoinvent
_cutoff_3.9_remind_SSP2-PkBudg500_2020', 'db_T_reX_name': 'biosphere_T-reX'}

** No results for WasteFootprint recycling-cubic meter

WasteFootprint_landfill	cubic meter	2
WasteFootprint_hazardous	cubic meter	308
WasteFootprint_radioactive	cubic meter	308
** No results for WasteFootprint_carbon dioxide-cubic meter		
WasteFootprint_total	cubic meter	4226

*** Finished searching for waste exchanges ***

*** Starting SearchMaterial ***

*** Loading pickle to dataframe ***

*** Loading activities

from database: ecoinvent_cutoff_3.9_remind_SSP2-PkBudg500_2020

in project: T-reX-SSP2-cuttoff

** Materials (61) | (activity, group)

('market for aluminium', 'aluminium')

('market for antimony', 'antimony')

('market for bauxite', 'bauxite')

('market for beryllium', 'beryllium')

('market for bismuth', 'bismuth')

('market for cadmium', 'cadmium')

('market for calcium borates', 'borates')

('market for cement', 'cement')

('market for cerium', 'cerium')

('market for chromium', 'chromium')

('market for cobalt', 'cobalt')

('market for coke', 'coke')

('market for copper', 'copper')

('market for dysprosium', 'dysprosium')

('market for erbium', 'erbium')

('market for europium', 'europium')

('market for electricity', 'electricity')

('market for ferroniobium', 'niobium')

('market for fluorspar', 'fluorspar')

('market for gadolinium', 'gadolinium')

('market for gallium', 'gallium')

('market for gold', 'gold')

('market for graphite', 'graphite')

('market for hafnium', 'hafnium')

('market for hard coal', 'coal(black)')

('market for helium', 'helium')

('market for holmium', 'holmium')

('market for hydrogen', 'hydrogen')

('market for indium', 'indium')

('market for latex', 'latex')

('market for lead', 'lead')

('market for lignite', 'coal(brown)')

('market for lithium', 'lithium')

('market for magnesium', 'magnesium')

('market for natural gas', 'natural gas')

('market for nickel', 'nickel')

('market for palladium', 'palladium')

('market for petroleum', 'petroleum')

('market for phosphate', 'phosphate rock')

('market for platinum', 'platinum')

('market for rare earth', 'rare earth')

('market for rhodium', 'rhodium')

('market for sand', 'sand')

('market for selenium', 'selenium')

('market for scandium', 'scandium')

('market for silicon', 'silicon')

('market for silver', 'silver')

('market for sodium borates', 'borates')

('market for strontium', 'strontium')

('market for tantalum', 'tantalum')

('market for tellurium', 'tellurium')

('market for tin', 'tin')

('market for titanium', 'titanium')

```
('market for uranium', 'uranium')
('market for tungsten', 'tungsten')
('market for vanadium', 'vanadium')
('market for vegetable oil', 'vegetable oil')
('market for tap water', 'water')
('market for water', 'water')
('market for zinc', 'zinc')
('market for zirconium', 'zirconium')
```

* 1074 material markets were found:

	name	material_group	location
297	market for aluminium alloy, AlLi	aluminium	GLO
187	market for aluminium alloy, AlMg3	aluminium	GLO
661	market for aluminium alloy, metal matrix compo...	aluminium	GLO
832	market for aluminium around steel bi-metal str...	aluminium	GLO
599	market for aluminium around steel bi-metal wir...	aluminium	GLO
...
1001	market for zinc slag	zinc	GLO
2	market for zinc sulfide	zinc	GLO
400	market for zirconium oxide	zirconium	GLO
1036	market for zirconium sponge, nuclear-grade	zirconium	GLO
1072	market for zirconium tetrachloride	zirconium	GLO

[1074 rows x 3 columns]

* Extracting classifications...

```
Error for activity: market for graphite, battery grade, classification: nan
  Inferring from reference product base: "graphite", from reference product "
graphite, battery grade"
Error for activity: market for hard coal power plant, classification: nan
  Inferring from reference product base: "hard coal pulverised power plant 50
0MW", from reference product "hard coal pulverised power plant 500MW"
Error for activity: market for lithium hydroxide, battery grade, classification: na
n
  Inferring from reference product base: "lithium hydroxide", from reference
product "lithium hydroxide, battery grade"
Error for activity: market for lithium carbonate, battery grade, classification: na
n
  Inferring from reference product base: "lithium carbonate", from reference
product "lithium carbonate, battery grade"
```

Saved activities list to csv:

/home/stew/code/gh/T-reX/data/SearchMaterialResults/ecoinvent_cutoff_3.9_remind_SSP2-PkBudg500_2020/material_activities.csv

*** Searching for material exchanges in ecoinvent_cutoff_3.9_remind_SSP2-PkBudg500_2020 ***

*** Loading pickle to dataframe ***

There were 53557 matching exchanges found in ecoinvent_cutoff_3.9_remind_SSP2-PkBudg500_2020

Saved material exchanges to csv:

/home/stew/code/gh/T-reX/data/SearchMaterialResults/ecoinvent_cutoff_3.9_remind_SSP2-PkBudg500_2020/material_exchanges.csv

*** Grouping material exchanges by material group

```
1926 : aluminium
26 : antimony
24 : bauxite
1 : beryllium
15 : borates
17 : cadmium
2598 : cement
3 : cerium
425 : chromium
```

1573 : coal(black)
508 : coal(brown)
166 : cobalt
71 : coke
1065 : copper
1 : dysprosium
24074 : electricity
1 : erbium
1 : europium
22 : fluorspar
1 : gadolinium
4 : gallium
10 : gold
33 : graphite
46 : helium
1 : holmium
391 : hydrogen
13 : indium
50 : latex
211 : lead
52 : lithium
264 : magnesium
5825 : natural gas
369 : nickel
23 : palladium
504 : petroleum
207 : phosphate rock
170 : platinum
37 : rare earth
11 : rhodium
560 : sand
1 : scandium
9 : selenium
364 : silicon
50 : silver
28 : strontium
3 : tantalum
2 : tellurium
111 : tin
457 : titanium
5 : tungsten
140 : uranium
37 : vegetable oil
10447 : water
593 : zinc
11 : zirconium

** Pre-processing database (5/5): ecoinvent_cutoff_3.9_remind_SSP2-PkBudg500_2025**

{'project_base': 'SSP2-cutoff', 'project_T_reX': 'T-reX-SSP2-cutoff', 'db_name': 'ecoinvent
_cutoff_3.9_remind_SSP2-PkBudg500_2025', 'db_T_reX_name': 'biosphere_T-reX'}

=====
=====
Starting T-reX for ecoinvent_cutoff_3.9_remind_SSP2-PkBudg500_2025
=====

*** Starting ExplodeDatabase ***

ExplodeDatabase uses wurst to open a bw2 database, explodes the exchanges for each process,
and then returns a pickle file with a DataFrame list of all activities

** db: ecoinvent_cutoff_3.9_remind_SSP2-PkBudg500_2025, in project: T-reX-SSP2-cutoff will
be processed

in project: T-reX-SSP2-cutoff

```

** Materials (61) | (activity, group)
('market for aluminium', 'aluminium')
('market for antimony', 'antimony')
('market for bauxite', 'bauxite')
('market for beryllium', 'beryllium')
('market for bismuth', 'bismuth')
('market for cadmium', 'cadmium')
('market for calcium borates', 'borates')
('market for cement', 'cement')
('market for cerium', 'cerium')
('market for chromium', 'chromium')
('market for cobalt', 'cobalt')
('market for coke', 'coke')
('market for copper', 'copper')
('market for dysprosium', 'dysprosium')
('market for erbium', 'erbium')
('market for europium', 'europium')
('market for electricity', 'electricity')
('market for ferroniobium', 'niobium')
('market for fluorspar', 'fluorspar')
('market for gadolinium', 'gadolinium')
('market for gallium', 'gallium')
('market for gold', 'gold')
('market for graphite', 'graphite')
('market for hafnium', 'hafnium')
('market for hard coal', 'coal(black)')
('market for helium', 'helium')
('market for holmium', 'holmium')
('market for hydrogen', 'hydrogen')
('market for indium', 'indium')
('market for latex', 'latex')
('market for lead', 'lead')
('market for lignite', 'coal(brown)')
('market for lithium', 'lithium')
('market for magnesium', 'magnesium')
('market for natural gas', 'natural gas')
('market for nickel', 'nickel')
('market for palladium', 'palladium')
('market for petroleum', 'petroleum')
('market for phosphate', 'phosphate rock')
('market for platinum', 'platinum')
('market for rare earth', 'rare earth')
('market for rhodium', 'rhodium')
('market for sand', 'sand')
('market for selenium', 'selenium')
('market for scandium', 'scandium')
('market for silicon', 'silicon')
('market for silver', 'silver')
('market for sodium borates', 'borates')
('market for strontium', 'strontium')
('market for tantalum', 'tantalum')
('market for tellurium', 'tellurium')
('market for tin', 'tin')
('market for titanium', 'titanium')
('market for uranium', 'uranium')
('market for tungsten', 'tungsten')
('market for vanadium', 'vanadium')
('market for vegetable oil', 'vegetable oil')
('market for tap water', 'water')
('market for water', 'water')
('market for zinc', 'zinc')
('market for zirconium', 'zirconium')

```

* 1074 material markets were found:

		name	material_group	location
864	market for aluminium alloy, AlLi		aluminium	GLO

760	market for aluminium alloy, AlMg3	aluminium	GLO
22	market for aluminium alloy, metal matrix compo...	aluminium	GLO
57	market for aluminium around steel bi-metal str...	aluminium	GLO
637	market for aluminium around steel bi-metal wir...	aluminium	GLO
..
650	market for zinc slag	zinc	GLO
152	market for zinc sulfide	zinc	GLO
496	market for zirconium oxide	zirconium	GLO
906	market for zirconium sponge, nuclear-grade	zirconium	GLO
808	market for zirconium tetrachloride	zirconium	GLO

[1074 rows x 3 columns]

* Extracting classifications...

Error for activity: market for graphite, battery grade, classification: nan

Inferring from reference product base: "graphite", from reference product "graphite, battery grade"

Error for activity: market for lithium carbonate, battery grade, classification: nan

Inferring from reference product base: "lithium carbonate", from reference product "lithium carbonate, battery grade"

Error for activity: market for lithium hydroxide, battery grade, classification: nan

Inferring from reference product base: "lithium hydroxide", from reference product "lithium hydroxide, battery grade"

Error for activity: market for hard coal power plant, classification: nan

Inferring from reference product base: "hard coal pulverised power plant 500MW", from reference product "hard coal pulverised power plant 500MW"

Saved activities list to csv:

/home/stew/code/gh/T-reX/data/SearchMaterialResults/ecoinvent_cutoff_3.9_remind_SSP2-PkBudg500_2025/material_activities.csv

*** Searching for material exchanges in ecoinvent_cutoff_3.9_remind_SSP2-PkBudg500_2025 ***

*** Loading pickle to dataframe ***

There were 53557 matching exchanges found in ecoinvent_cutoff_3.9_remind_SSP2-PkBudg500_2025

Saved material exchanges to csv:

/home/stew/code/gh/T-reX/data/SearchMaterialResults/ecoinvent_cutoff_3.9_remind_SSP2-PkBudg500_2025/material_exchanges.csv

*** Grouping material exchanges by material group

1926	: aluminium
26	: antimony
24	: bauxite
1	: beryllium
15	: borates
17	: cadmium
2598	: cement
3	: cerium
425	: chromium
1573	: coal (black)
508	: coal (brown)
166	: cobalt
71	: coke
1065	: copper
1	: dysprosium
24074	: electricity
1	: erbium
1	: europium
22	: fluorspar
1	: gadolinium
4	: gallium

10 : gold
33 : graphite
46 : helium
1 : holmium
391 : hydrogen
13 : indium
50 : latex
211 : lead
52 : lithium
264 : magnesium
5825 : natural gas
369 : nickel
23 : palladium
504 : petroleum
207 : phosphate rock
170 : platinum
37 : rare earth
11 : rhodium
560 : sand
1 : scandium
9 : selenium
364 : silicon
50 : silver
28 : strontium
3 : tantalum
2 : tellurium
111 : tin
457 : titanium
5 : tungsten
140 : uranium
37 : vegetable oil
10447 : water
593 : zinc
11 : zirconium

*** Writing custom database file: biosphere_T-reX

*** Appending to existing custom database file: biosphere_T-reX

Appending: MaterialFootprint_aluminium
Appending: MaterialFootprint_antimony
Appending: MaterialFootprint_bauxite
Appending: MaterialFootprint_beryllium
Appending: MaterialFootprint_borates
Appending: MaterialFootprint_cadmium
Appending: MaterialFootprint_cement
Appending: MaterialFootprint_cerium
Appending: MaterialFootprint_chromium
Appending: MaterialFootprint_coal (black)
Appending: MaterialFootprint_coal (brown)
Appending: MaterialFootprint_cobalt
Appending: MaterialFootprint_coke
Appending: MaterialFootprint_copper
Appending: MaterialFootprint_dysprosium
Appending: MaterialFootprint_electricity
Appending: MaterialFootprint_erbium
Appending: MaterialFootprint_europium
Appending: MaterialFootprint_fluorspar
Appending: MaterialFootprint_gadolinium
Appending: MaterialFootprint_gallium
Appending: MaterialFootprint_gold
Appending: MaterialFootprint_graphite
Appending: MaterialFootprint_helium

Appending: MaterialFootprint_holmium
Appending: MaterialFootprint_hydrogen
Appending: MaterialFootprint_indium
Appending: MaterialFootprint_latex
Appending: MaterialFootprint_lead
Appending: MaterialFootprint_lithium
Appending: MaterialFootprint_magnesium
Appending: MaterialFootprint_natural gas
Appending: MaterialFootprint_nickel
Appending: MaterialFootprint_palladium
Appending: MaterialFootprint_petroleum
Appending: MaterialFootprint_phosphate rock
Appending: MaterialFootprint_platinum
Appending: MaterialFootprint_rare earth
Appending: MaterialFootprint_rhodium
Appending: MaterialFootprint_sand
Appending: MaterialFootprint_scandium
Appending: MaterialFootprint_selenium
Appending: MaterialFootprint_silicon
Appending: MaterialFootprint_silver
Appending: MaterialFootprint_strontium
Appending: MaterialFootprint_tantalum
Appending: MaterialFootprint_tellurium
Appending: MaterialFootprint_tin
Appending: MaterialFootprint_titanium
Appending: MaterialFootprint_tungsten
Appending: MaterialFootprint_uranium
Appending: MaterialFootprint_vegetable oil
Appending: MaterialFootprint_water
Appending: MaterialFootprint_zinc
Appending: MaterialFootprint_zirconium
Appending: WasteFootprint_carbondioxide-kilogram
Appending: WasteFootprint_composting-kilogram
Appending: WasteFootprint_digestion-cubicmeter
Appending: WasteFootprint_digestion-kilogram
Appending: WasteFootprint_hazardous-cubicmeter
Appending: WasteFootprint_hazardous-kilogram
Appending: WasteFootprint_incineration-cubicmeter
Appending: WasteFootprint_incineration-kilogram
Appending: WasteFootprint_landfill-cubicmeter
Appending: WasteFootprint_landfill-kilogram
Appending: WasteFootprint_openburning-kilogram
Appending: WasteFootprint_radioactive-cubicmeter
Appending: WasteFootprint_recycling-kilogram
Appending: WasteFootprint_total-cubicmeter
Appending: WasteFootprint_total-kilogram

** Added 70 entries to the xlsx for the custom waste and material database:
biosphere_T-reX

** Importing the custom database biosphere_T-reX**
to the brightway2 project: T-reX-SSP2-cutoff

** Running BW2io ExcelImporter **

Extracted 1 worksheets in 0.01 seconds
Applying strategy: csv_restore_tuples
Applying strategy: csv_restore_booleans
Applying strategy: csv_numerize
Applying strategy: csv_drop_unknown
Applying strategy: csv_add_missing_exchanges_section
Applying strategy: normalize_units
Applying strategy: normalize_biosphere_categories
Applying strategy: normalize_biosphere_names
Applying strategy: strip_biosphere_exc_locations
Applying strategy: set_code_by_activity_hash
Applying strategy: link_iterable_by_fields
Applying strategy: assign_only_product_as_production

Applying strategy: link_techosphere_by_activity_hash
Applying strategy: drop_falsey_uncertainty_fields_but_keep_zeros
Applying strategy: convert_uncertainty_types_to_integers
Applying strategy: convert_activity_parameters_to_list
Applied 16 strategies in 3.64 seconds
70 datasets
0 exchanges
0 unlinked exchanges

Writing activities to SQLite3 database:

0% [#####] 100% | ETA: 00:00:01

Total time elapsed: 00:00:00

Title: Writing activities to SQLite3 database:

Started: 03/08/2024 12:08:12

Finished: 03/08/2024 12:08:12

Total time elapsed: 00:00:00

CPU %: 0.00

Memory %: 9.17

Created database: biosphere_T-reX

** Database metadata **

format: Excel

depends: []

backend: sqlite

number: 70

modified: 2024-03-08T12:08:12.048726

searchable: True

processed: 2024-03-08T12:08:12.221762

*** Great success! ***

*** Running AddMethods() ***

('T-reX', 'Demand: Aluminium', 'Aluminium')
('T-reX', 'Demand: Antimony', 'Antimony')
('T-reX', 'Demand: Bauxite', 'Bauxite')
('T-reX', 'Demand: Beryllium', 'Beryllium')
('T-reX', 'Demand: Borates', 'Borates')
('T-reX', 'Demand: Cadmium', 'Cadmium')
('T-reX', 'Demand: Cement', 'Cement')
('T-reX', 'Demand: Cerium', 'Cerium')
('T-reX', 'Demand: Chromium', 'Chromium')
('T-reX', 'Demand: Coal (black)', 'Coal (black)')
('T-reX', 'Demand: Coal (brown)', 'Coal (brown)')
('T-reX', 'Demand: Cobalt', 'Cobalt')
('T-reX', 'Demand: Coke', 'Coke')
('T-reX', 'Demand: Copper', 'Copper')
('T-reX', 'Demand: Dysprosium', 'Dysprosium')
('T-reX', 'Demand: Electricity', 'Electricity')
('T-reX', 'Demand: Erbium', 'Erbium')
('T-reX', 'Demand: Europium', 'Europium')
('T-reX', 'Demand: Fluorspar', 'Fluorspar')
('T-reX', 'Demand: Gadolinium', 'Gadolinium')
('T-reX', 'Demand: Gallium', 'Gallium')
('T-reX', 'Demand: Gold', 'Gold')
('T-reX', 'Demand: Graphite', 'Graphite')
('T-reX', 'Demand: Helium', 'Helium')
('T-reX', 'Demand: Holmium', 'Holmium')
('T-reX', 'Demand: Hydrogen', 'Hydrogen')
('T-reX', 'Demand: Indium', 'Indium')
('T-reX', 'Demand: Latex', 'Latex')
('T-reX', 'Demand: Lead', 'Lead')
('T-reX', 'Demand: Lithium', 'Lithium')
('T-reX', 'Demand: Magnesium', 'Magnesium')
('T-reX', 'Demand: Natural gas', 'Natural gas')
('T-reX', 'Demand: Nickel', 'Nickel')
('T-reX', 'Demand: Palladium', 'Palladium')
('T-reX', 'Demand: Petroleum', 'Petroleum')

```
('T-reX', 'Demand: Phosphate rock', 'Phosphate rock')
('T-reX', 'Demand: Platinum', 'Platinum')
('T-reX', 'Demand: Rare earth', 'Rare earth')
('T-reX', 'Demand: Rhodium', 'Rhodium')
('T-reX', 'Demand: Sand', 'Sand')
('T-reX', 'Demand: Scandium', 'Scandium')
('T-reX', 'Demand: Selenium', 'Selenium')
('T-reX', 'Demand: Silicon', 'Silicon')
('T-reX', 'Demand: Silver', 'Silver')
('T-reX', 'Demand: Strontium', 'Strontium')
('T-reX', 'Demand: Tantalum', 'Tantalum')
('T-reX', 'Demand: Tellurium', 'Tellurium')
('T-reX', 'Demand: Tin', 'Tin')
('T-reX', 'Demand: Titanium', 'Titanium')
('T-reX', 'Demand: Tungsten', 'Tungsten')
('T-reX', 'Demand: Uranium', 'Uranium')
('T-reX', 'Demand: Vegetable oil', 'Vegetable oil')
('T-reX', 'Demand: Water', 'Water')
('T-reX', 'Demand: Zinc', 'Zinc')
('T-reX', 'Demand: Zirconium', 'Zirconium')
('T-reX', 'Waste: Carbondioxide combined', 'Carbondioxide (kg)')
('T-reX', 'Waste: Composting combined', 'Composting (kg)')
('T-reX', 'Waste: Digestion combined', 'Digestion (m3)')
('T-reX', 'Waste: Digestion combined', 'Digestion (kg)')
('T-reX', 'Waste: Hazardous combined', 'Hazardous (m3)')
('T-reX', 'Waste: Hazardous combined', 'Hazardous (kg)')
('T-reX', 'Waste: Incineration combined', 'Incineration (m3)')
('T-reX', 'Waste: Incineration combined', 'Incineration (kg)')
('T-reX', 'Waste: Landfill combined', 'Landfill (m3)')
('T-reX', 'Waste: Landfill combined', 'Landfill (kg)')
('T-reX', 'Waste: Openburning combined', 'Openburning (kg)')
('T-reX', 'Waste: Radioactive combined', 'Radioactive (m3)')
('T-reX', 'Waste: Recycling combined', 'Recycling (kg)')
('T-reX', 'Waste: Total combined', 'Total (m3)')
('T-reX', 'Waste: Total combined', 'Total (kg)')
```

*** Added 70 new methods ***

*** Preprocessing completed ***

```
Total databases:      5
Successfully processed: 5
Duration:              0:03:32 (h:m:s)
```

** Processing database (1/5): ecoinvent-3.9.1-cutoff**

Arguments:

```
{'project_base': 'SSP2-cutoff', 'project_T_reX': 'T-reX-SSP2-cutoff', 'db_name': 'ecoinvent-3.9.1-cutoff', 'db_T_reX_name': 'biosphere_T-reX'}
```

*** ExchangeEditor() is running for ecoinvent-3.9.1-cutoff ***

* Appending waste and material exchanges in biosphere_T-reX

```
- 1/69 : MaterialFootprint_aluminium | 100.0% | Progress
- 2/69 : MaterialFootprint_antimony | 100.0% | Progress
```

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

```
\210â\226\210â\226\210â\226\210â\226\210â\226\210 | 100.0% | Progre
- 61/70 : WasteFootprint_hazardous-kilogram | â\226\210â\226\210â\226\210â\226
\210â\226\210â\226\210â\226\210â\226\210â\226\210â\226\210â\226\210â\226\210â\226
\210â\226\210â\226\210â\226\210â\226\210â\226\210â\226\210â\226\210â\226\210â\226
\210â\226\210â\226\210â\226\210â\226\210â\226\210â\226\210 | 100.0% | Progre
- 62/70 : WasteFootprint_incineration-cubicmeter | â\226\210â\226\210â\226\210â\226
\210â\226\210â\226\210â\226\210â\226\210â\226\210â\226\210â\226\210â\226\210â\226
\210â\226\210â\226\210â\226\210â\226\210â\226\210â\226\210â\226\210â\226\210â\226
\210â\226\210â\226\210â\226\210â\226\210â\226\210â\226\210 | 100.0% | Progre
- 63/70 : WasteFootprint_incineration-kilogram | â\226\210â\226\210â\226\210â\226
\210â\226\210â\226\210â\226\210â\226\210â\226\210â\226\210â\226\210â\226\210â\226
\210â\226\210â\226\210â\226\210â\226\210â\226\210â\226\210â\226\210â\226\210â\226
\210â\226\210â\226\210â\226\210â\226\210â\226\210â\226\210 | 100.0% | Progre
- 64/70 : WasteFootprint_landfill-cubicmeter | â\226\210â\226\210â\226\210â\226
\210â\226\210â\226\210â\226\210â\226\210â\226\210â\226\210â\226\210â\226\210â\226
\210â\226\210â\226\210â\226\210â\226\210â\226\210â\226\210â\226\210â\226\210â\226
\210â\226\210â\226\210â\226\210â\226\210â\226\210â\226\210 | 100.0% | Progre
- 65/70 : WasteFootprint_landfill-kilogram | â\226\210â\226\210â\226\210â\226
\210â\226\210â\226\210â\226\210â\226\210â\226\210â\226\210â\226\210â\226\210â\226
\210â\226\210â\226\210â\226\210â\226\210â\226\210â\226\210â\226\210â\226\210â\226
\210â\226\210â\226\210â\226\210â\226\210â\226\210â\226\210 | 100.0% | Progre
- 66/70 : WasteFootprint_openburning-kilogram | â\226\210â\226\210â\226\210â\226
\210â\226\210â\226\210â\226\210â\226\210â\226\210â\226\210â\226\210â\226\210â\226
\210â\226\210â\226\210â\226\210â\226\210â\226\210â\226\210â\226\210â\226\210â\226
\210â\226\210â\226\210â\226\210â\226\210â\226\210â\226\210 | 100.0% | Progre
- 67/70 : WasteFootprint_radioactive-cubicmeter | â\226\210â\226\210â\226\210â\226
\210â\226\210â\226\210â\226\210â\226\210â\226\210â\226\210â\226\210â\226\210â\226
\210â\226\210â\226\210â\226\210â\226\210â\226\210â\226\210â\226\210â\226\210â\226
\210â\226\210â\226\210â\226\210â\226\210â\226\210â\226\210 | 100.0% | Progre
- 68/70 : WasteFootprint_recycling-kilogram | â\226\210â\226\210â\226\210â\226
\210â\226\210â\226\210â\226\210â\226\210â\226\210â\226\210â\226\210â\226\210â\226
\210â\226\210â\226\210â\226\210â\226\210â\226\210â\226\210â\226\210â\226\210â\226
\210â\226\210â\226\210â\226\210â\226\210â\226\210â\226\210 | 100.0% | Progre
- 69/70 : WasteFootprint_total-cubicmeter | â\226\210â\226\210â\226\210â\226
\210â\226\210â\226\210â\226\210â\226\210â\226\210â\226\210â\226\210â\226\210â\226
\210â\226\210â\226\210â\226\210â\226\210â\226\210â\226\210â\226\210â\226\210â\226
\210â\226\210â\226\210â\226\210â\226\210â\226\210â\226\210 | 100.0% | Progre
- 70/70 : WasteFootprint_total-kilogram | â\226\210â\226\210â\226\210â\226
\210â\226\210â\226\210â\226\210â\226\210â\226\210â\226\210â\226\210â\226\210â\226
\210â\226\210â\226\210â\226\210â\226\210â\226\210â\226\210â\226\210â\226\210â\226
\210â\226\210â\226\210â\226\210â\226\210â\226\210â\226\210 | 100.0% | Progre
*****
*****
```

```
*** ExchangeEditor() completed for ecoinvent_cutoff_3.9_remind_SSP2-Base_2020 in 0:27:39 (h
:m:s) ***
```

```
*****
*****
```

```
** Verifying database ecoinvent_cutoff_3.9_remind_SSP2-Base_2020 in project T-reX-SSP2-cuto
ff **
```

```
Score: -1.12e-09
Method: Vegetable oil
Activity: market for used air filter in exhaust air valve
Database: ecoinvent_cutoff_3.9_remind_SSP2-Base_2020
```

```
** Database verified successfully! **
```

```
*** Finished T-reX for ecoinvent_cutoff_3.9_remind_SSP2-Base_2020 ***
Duration: 0:28:07 (h:m:s)
*** Woah woah wee waa, great success!! ***
```


[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

** Verifying database ecoinvent_cutoff_3.9_remind_SSP2-PkBudg500_2025 in project T-reX-SSP2-cut
-cutoff **

Score: 2.07e-02

Method: Total (kg)

Activity: electricity production, nuclear, pressure water reactor

Database: ecoinvent_cutoff_3.9_remind_SSP2-PkBudg500_2025

** Database verified successfully! **

*** Finished T-reX for ecoinvent_cutoff_3.9_remind_SSP2-PkBudg500_2025 ***

Duration: 0:27:07 (h:m:s)

*** Woah woah wee waa, great success!! ***

*** Verifying all databases in the project **

** Verifying database ecoinvent-3.9.1-cut
-cutoff in project T-reX-SSP2-cut
-cutoff **

Score: 1.42e-03

Method: Total (kg)

Activity: heat and power co-generation, natural gas, combined cycle power plant, 40
0MW electricalDatabase: ecoinvent-3.9.1-cut
-cutoff

** Verifying database ecoinvent_cutoff_3.9_remind_SSP2-Base_2020 in project T-reX-SSP2-cut
-cutoff **

Score: 1.46e-10

Method: Gold

Activity: electricity, high voltage, production mix

Database: ecoinvent_cutoff_3.9_remind_SSP2-Base_2020

** Verifying database ecoinvent_cutoff_3.9_remind_SSP2-Base_2025 in project T-reX-SSP2-cut
-cutoff **

Score: 0.00e+00

Method: Holmium

Activity: market for heat, for reuse in municipal waste incineration only

Database: ecoinvent_cutoff_3.9_remind_SSP2-Base_2025

Score: 1.45e-13

Method: Rhodium

Activity: electricity production, photovoltaic, 3kWp slanted-roof installation, CdT
e, laminated, integrated

Database: ecoinvent_cutoff_3.9_remind_SSP2-Base_2025

** Verifying database ecoinvent_cutoff_3.9_remind_SSP2-PkBudg500_2020 in project T-reX-SSP2-cut
-cutoff **

Score: 3.21e-05
Method: Phosphate rock
Activity: electricity, high voltage, residual mix
Database: ecoinvent_cutoff_3.9_remind_SSP2-PkBudg500_2020

** Verifying database ecoinvent_cutoff_3.9_remind_SSP2-PkBudg500_2025 in project T-reX-SSP2-cut
-cutoff **

Score: 8.10e+00
Method: Water
Activity: coking
Database: ecoinvent_cutoff_3.9_remind_SSP2-PkBudg500_2025

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T-reX Completed

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Project: T-reX-SSP2-cut
Total Databases: 5
Successfully Processed: 5
Duration: 2:17:46 (h:m:s)

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