MIND STEP

MODELLING INDIVIDUAL DECISIONS TO SUPPORT THE EUROPEAN POLICIES RELATED TO AGRICULTURE

Deliverable D2.5: Final version for Interfaces

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ACRONYMS

AgroDataCube	AgroDataCube provides a large collection of both open data and derived data for use in agri-food applications
API	Application Programming Interface
FADN	Farm Accountancy Data Network
fadnUtils	R package to easily load and manipulate FADN data
FSS	Farm Structure Survey
GLOBIOM	Global Biosphere Management Model
globiomvis	R package assists with visualizing GLOBIOM data
IIASA	International Institute for Applied Systems Analysis
Mapsspam2globiom	R package to facilitate the creation of country level crop distribution maps, which can be used as input by the IIASA's Global Biosphere Management Model (GLOBIOM)
URL	Uniform Resource Locator

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1. INTRODUCTION

This deliverable lists the R repositories that are developed to be used as interfaces for different databases of the models of MIND STEP. The repositories are work in progress and will be updated, improved or new repositories are developed at a later stage of this project or after the project's end. Some of these repositories work like R packages, some are a collection of R scripts which serve as use cases. The appendix lists the package like documentations of the fadnUtils, FSS, capriR and capriv repositories. For the remaining repositories, i.e. Mapsspam2globiom and globiomvis, a more detailed description of the package and their functions can be found behind the given URLs.

2. OVERVIEW OF R REPOSITORIES FOR INTERFACES OF DATABASES

In this chapter the developed repositories are listed in Table 1. We also provide the URL of the repositories, the database characteristic and in which chapter of the deliverable D2.2 a broader description can be found. The repository fadnUtils is an interface to work with farm accountancy data, e.g. FADN. The FSS repository contains functions to work with (German) farm structure survey data (FSS). The repositories capriR and capriv help to analyse results from the CAPRI model. The repository Fadntocapri gives a use case in which fadnUtils is applied. Crops and animals are translated from FADN code to CAPRI code and the NUTS2 regions are harmonised over the time series.[1] This is usefull to have a complete time series with respect to the regional resolution. For the bio-physical database AgroDataCube, a R repository was not developed so far. Therefore, a link to the web page is provided in which a documentation of the database itself and the API is given. The repositories Mapsspam2globiom and globiomvis provide an interface for the GLOBIOM model.

Table 1: Overview of R repositories for interfaces of databases

Name of package/repository	URL link to repository	Database characteristic	Link to Document
fadnUtils	https://gitlab.iiasa.ac.at/mind-step/fadnutilspackage	Economic databases 2.4	D2.2 Chapter 4
FSS	https://gitlab.iiasa.ac.at/mind-step/fss	Economic databases 2.4	D2.2 Chapter 4
capriR[1)]	https://gitlab.iiasa.ac.at/mind-step/capriR	Current models 2.6	D2.2 Chapter 2
capriv[1)]	https://gitlab.iiasa.ac.at/mind-step/capriv	Current models 2.6	D2.2 Chapter 2
fadntocapri[1)]	https://gitlab.iiasa.ac.at/mind-step/fadntocapri	Current models 2.6	Not mentioned in D2.2.
[2)]	https://agrodatacube.wur.nl/	Bio-physical databases 2.5	D2.2 Chapter 4
Mapsspam2globiom	https://iiasa.github.io/mapspam2globiom/	Current models 2.6	D2.2 Chapter 2 and 4

[1] The FADN data provided for the MIND STEP project have no over time harmonised NUTS2 clarification.

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globiomvis	https://iiasa.github.io/globiomvis	Current models 2.6	D2.2 Chapter 2 and 4

Note: 1) – newly added compared to D2.4. 2) - no specific package or repository as interface developed to be part of IIASA GitLab so far.

Source: Own compilation.

3. ACKNOWLEDGEMENTS

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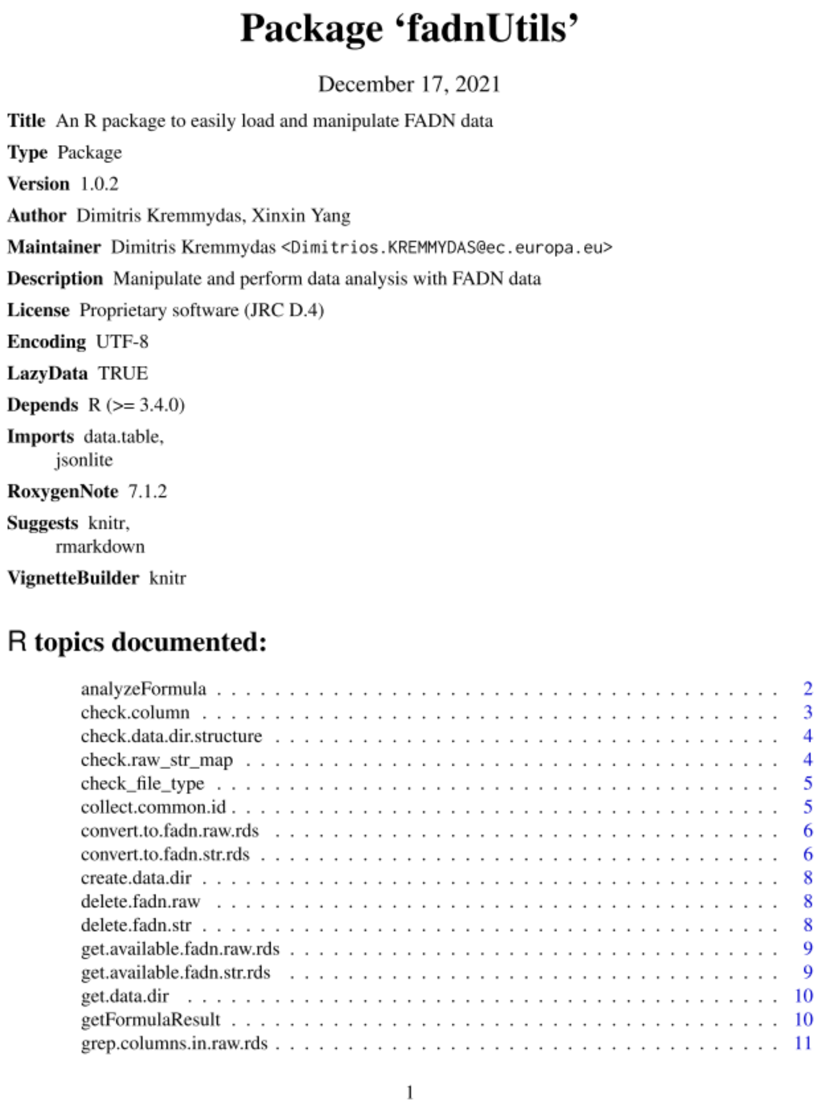
APPENDIX

3.1. Repository ‘fadnUtils’



Package ‘fadnUtils’

December 17, 2021

Title An R package to easily load and manipulate FADN data

Type Package

Version 1.0.2

Author Dimitris Kremmydas, Xinxin Yang

Maintainer Dimitris Kremmydas `<Dimitrios.KREMMYDAS@ec.europa.eu>`

Description Manipulate and perform data analysis with FADN data

License Proprietary software (JRC D.4)

Encoding UTF-8

LazyData TRUE

Depends R (>= 3.4.0)

Imports data.table,
jsonlite

RoxygenNote 7.1.2

Suggests knitr,
rmarkdown

VignetteBuilder knitr

R topics documented:

1

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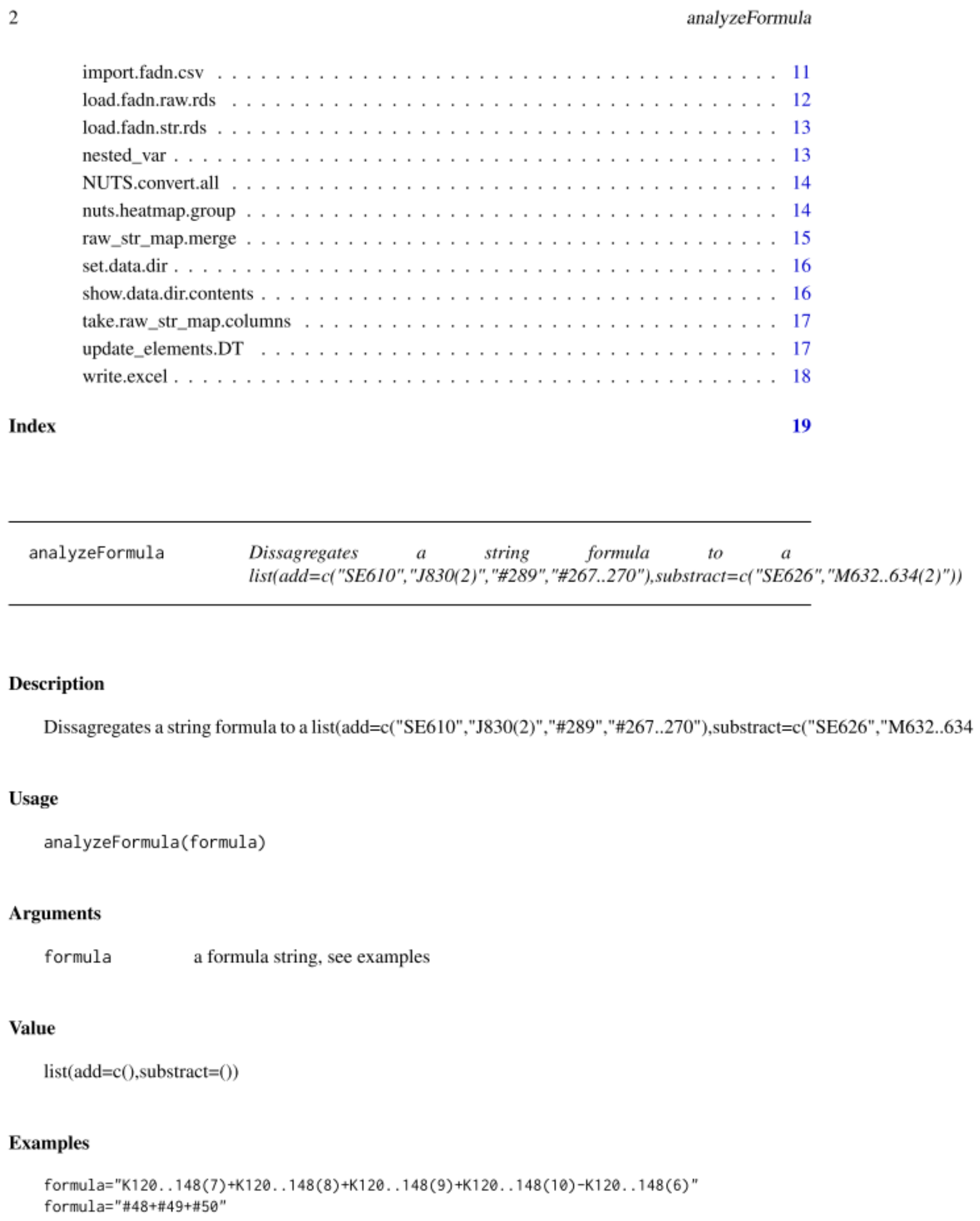

`analyzeFormula` *Dissagregates a string formula to a list(add=c("SE610","J830(2)","#289","#267..270"),substract=c("SE626","M632..634(2)"))*

Description

Dissagregates a string formula to a list(add=c("SE610","J830(2)","#289","#267..270"),substract=c("SE626","M632..634

Usage

```
analyzeFormula(formula)
```

Arguments

`formula`	a formula string, see examples

Value

list(add=c(),substract=())

Examples

```
formula="K120..148(7)+K120..148(8)+K120..148(9)+K120..148(10)-K120..148(6)"
formula="#48+#49+#50"
```

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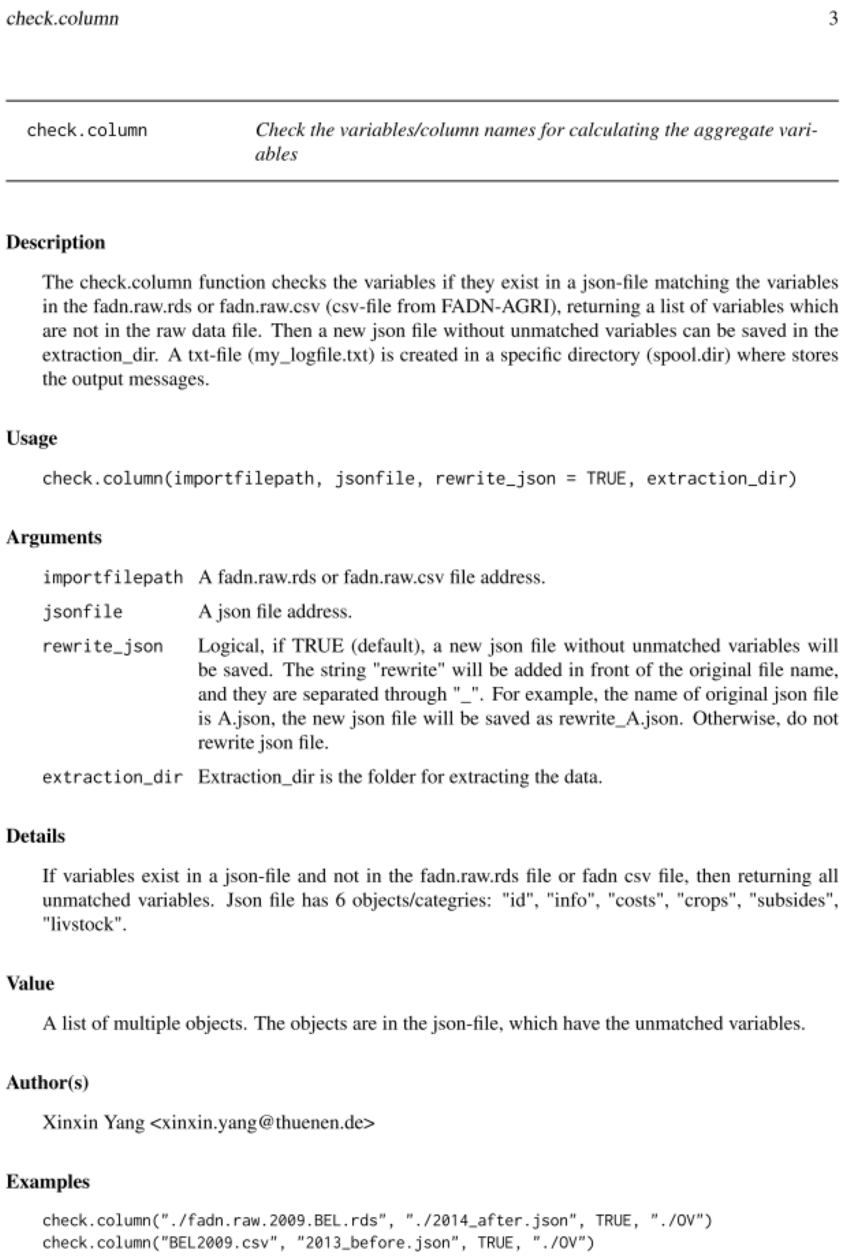


`check.column` *Check the variables/column names for calculating the aggregate variables*

Description

The check.column function checks the variables if they exist in a json-file matching the variables in the fadn.raw.rds or fadn.raw.csv (csv-file from FADN-AGRI), returning a list of variables which are not in the raw data file. Then a new json file without unmatched variables can be saved in the extraction_dir. A txt-file (my_logfile.txt) is created in a specific directory (spool.dir) where stores the output messages.

Usage

```
check.column(importfilepath, jsonfile, rewrite_json = TRUE, extraction_dir)
```

Arguments

`importfilepath` A fadn.raw.rds or fadn.raw.csv file address.

`jsonfile` A json file address.

`rewrite_json` Logical, if TRUE (default), a new json file without unmatched variables will be saved. The string "rewrite" will be added in front of the original file name, and they are separated through "_". For example, the name of original json file is A.json, the new json file will be saved as rewrite_A.json. Otherwise, do not rewrite json file.

`extraction_dir` Extraction_dir is the folder for extracting the data.

Details

If variables exist in a json-file and not in the fadn.raw.rds file or fadn csv file, then returning all unmatched variables. Json file has 6 objects/categries: "id", "info", "costs", "crops", "subsides", "livstock".

Value

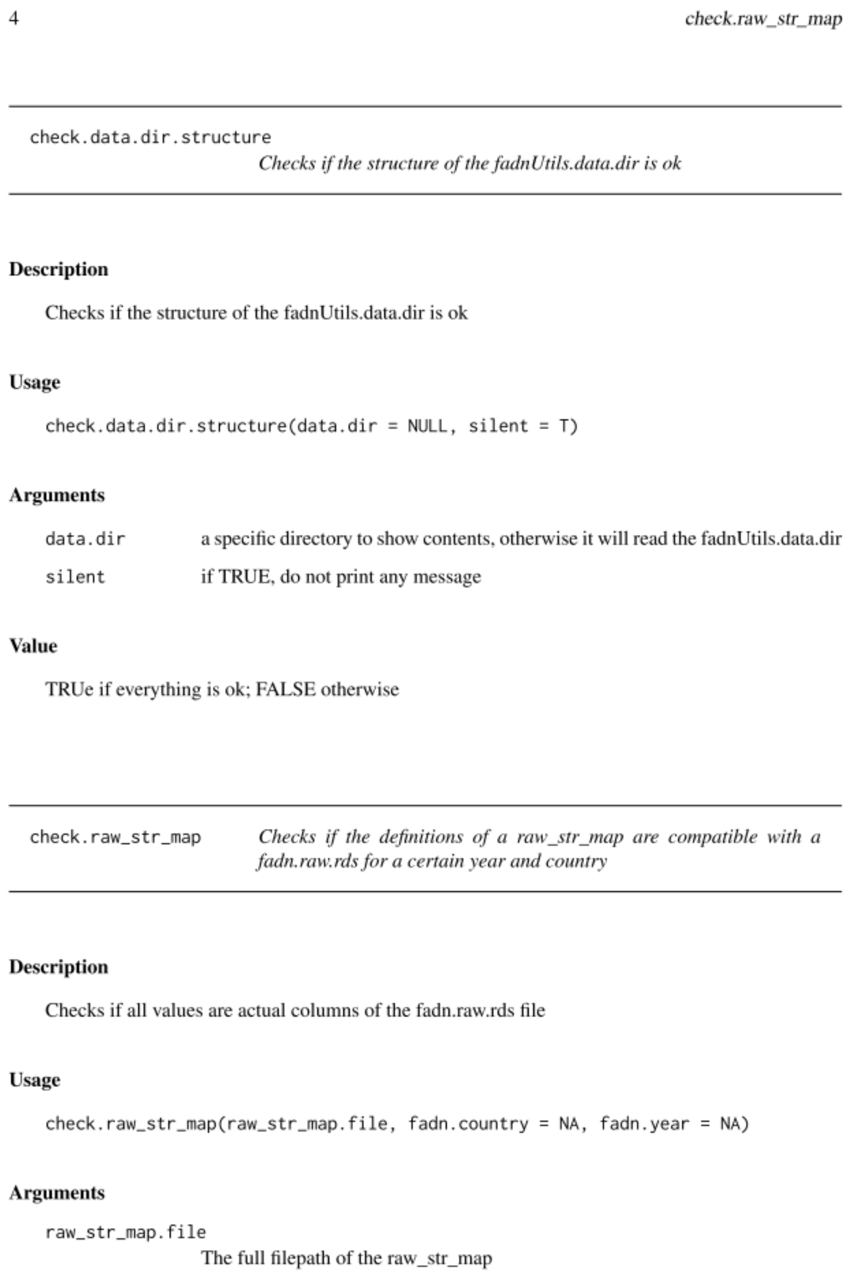
A list of multiple objects. The objects are in the json-file, which have the unmatched variables.

Author(s)

Xinxin Yang <xinxin.yang@thuenen.de>

Examples

```
check.column("./fadn.raw.2009.BEL.rds", "./2014_after.json", TRUE, "./OV")
check.column("BEL2009.csv", "2013_before.json", TRUE, "./OV")
```



check.data.dir.structure *Checks if the structure of the fadnUtils.data.dir is ok*

Description

Checks if the structure of the fadnUtils.data.dir is ok

Usage

```
check.data.dir.structure(data.dir = NULL, silent = T)
```

Arguments

`data.dir`	a specific directory to show contents, otherwise it will read the fadnUtils.data.dir
`silent`	if TRUE, do not print any message

Value

TRUe if everything is ok; FALSE otherwise

check.raw_str_map *Checks if the definitions of a raw_str_map are compatible with a fadn.raw.rds for a certain year and country*

Description

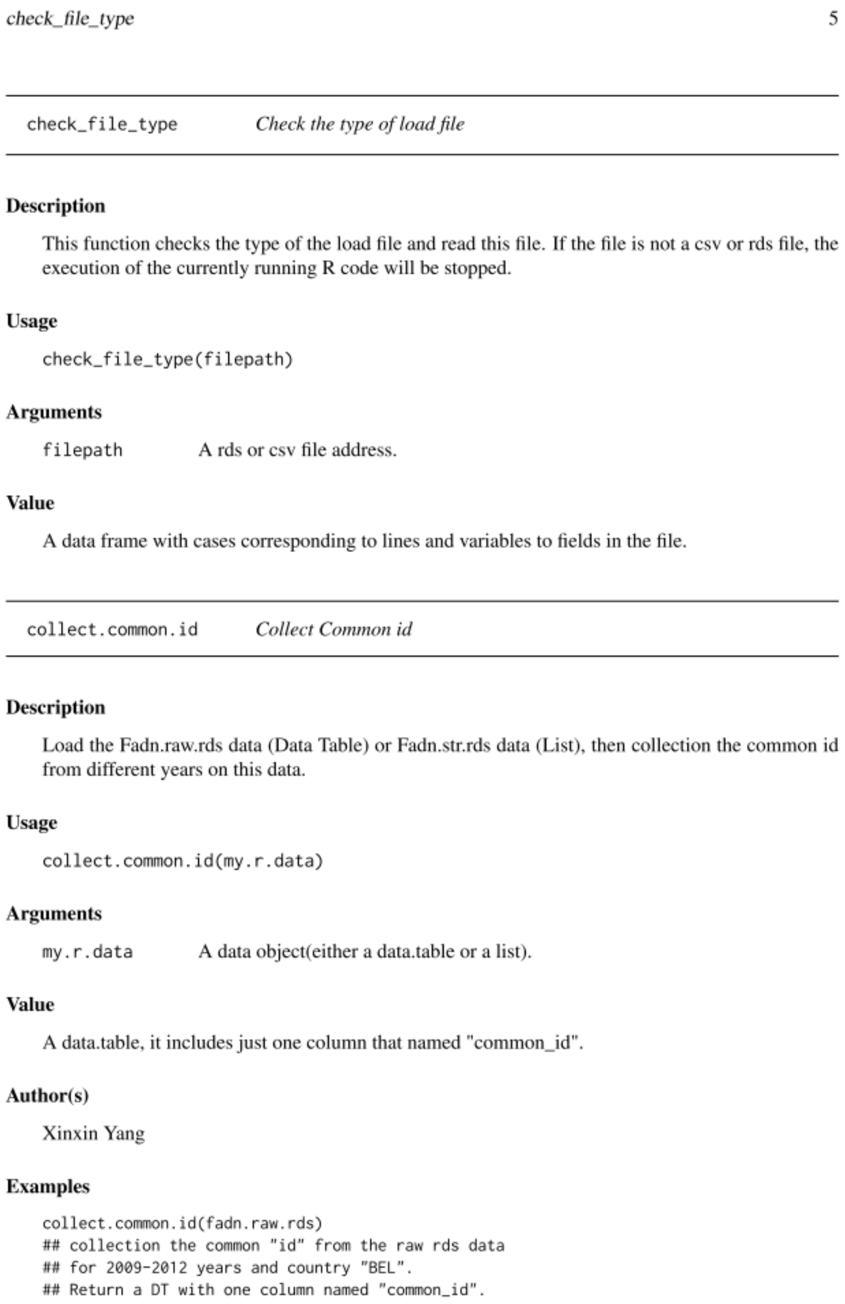
Checks if all values are actual columns of the fadn.raw.rds file

Usage

```
check.raw_str_map(raw_str_map.file, fadn.country = NA, fadn.year = NA)
```

Arguments

`raw_str_map.file`	The full filepath of the raw_str_map



`check_file_type` *Check the type of load file*

Description

This function checks the type of the load file and read this file. If the file is not a csv or rds file, the execution of the currently running R code will be stopped.

Usage

```
check_file_type(filepath)
```

Arguments

`filepath`	A rds or csv file address.

Value

A data frame with cases corresponding to lines and variables to fields in the file.

`collect.common.id` *Collect Common id*

Description

Load the Fadn.raw.rds data (Data Table) or Fadn.str.rds data (List), then collection the common id from different years on this data.

Usage

```
collect.common.id(my.r.data)
```

Arguments

`my.r.data`	A data object(either a data.table or a list).

Value

A data.table, it includes just one column that named "common_id".

Author(s)

Xinxin Yang

Examples

```
collect.common.id(fadn.raw.rds)
## collection the common "id" from the raw rds data
## for 2009-2012 years and country "BEL".
## Return a DT with one column named "common_id".
```

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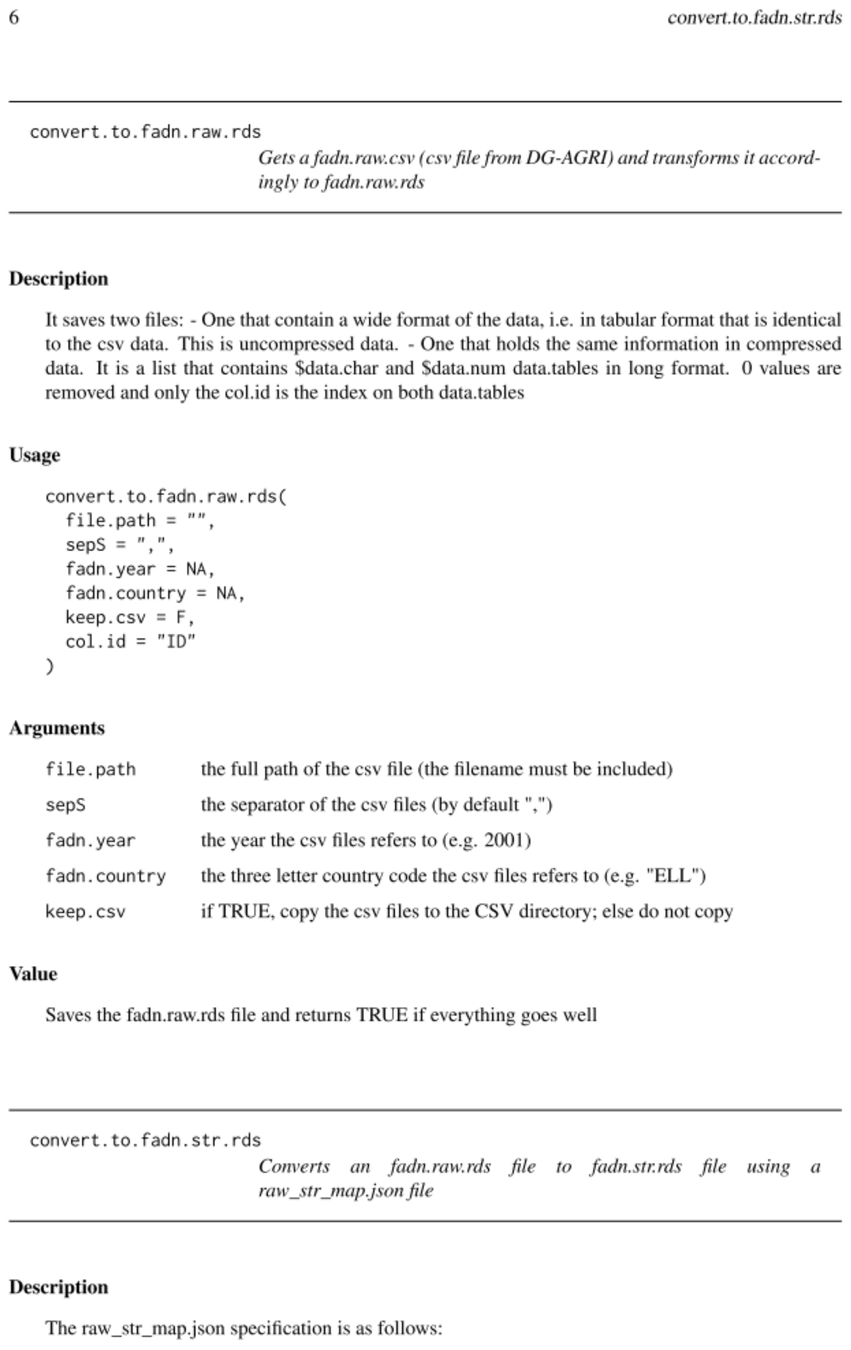


```
convert.to.fadn.raw.rds
```
Gets a fadn.raw.csv (csv file from DG-AGRI) and transforms it accordingly to fadn.raw.rds

Description

It saves two files: - One that contain a wide format of the data, i.e. in tabular format that is identical to the csv data. This is uncompressed data. - One that holds the same information in compressed data. It is a list that contains $data.char and $data.num data.tables in long format. 0 values are removed and only the col.id is the index on both data.tables

Usage

```
convert.to.fadn.raw.rds(
  file.path = "",
  sepS = ",",
  fadn.year = NA,
  fadn.country = NA,
  keep.csv = F,
  col.id = "ID"
)
```

Arguments

`file.path`	the full path of the csv file (the filename must be included)
`sepS`	the separator of the csv files (by default ",")
`fadn.year`	the year the csv files refers to (e.g. 2001)
`fadn.country`	the three letter country code the csv files refers to (e.g. "ELL")
`keep.csv`	if TRUE, copy the csv files to the CSV directory; else do not copy

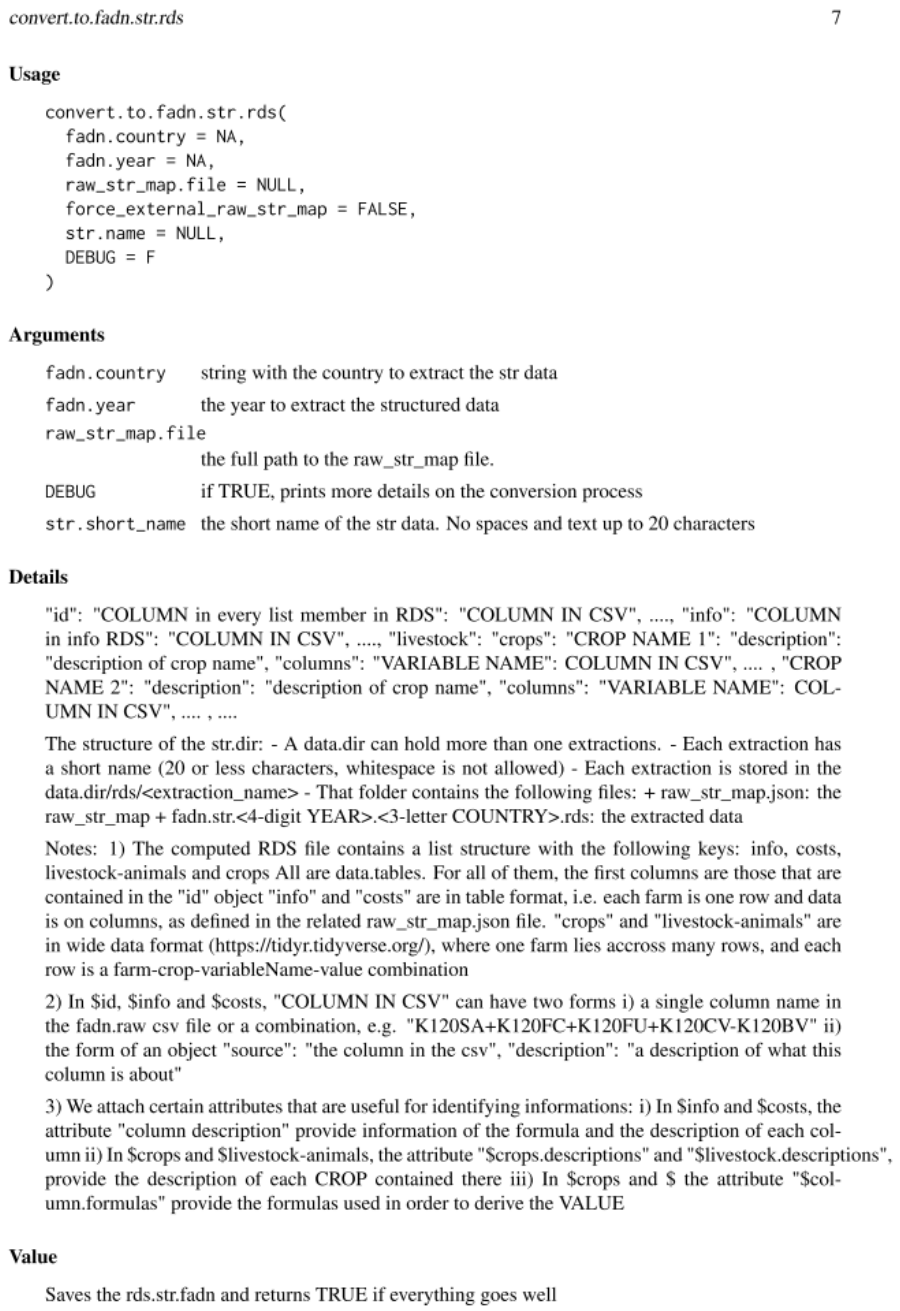
Value

Saves the fadn.raw.rds file and returns TRUE if everything goes well

```
convert.to.fadn.str.rds
```
Converts an fadn.raw.rds file to fadn.str.rds file using a raw_str_map.json file

Description

The raw_str_map.json specification is as follows:



Usage

```
convert.to.fadn.str.rds(
  fadn.country = NA,
  fadn.year = NA,
  raw_str_map.file = NULL,
  force_external_raw_str_map = FALSE,
  str.name = NULL,
  DEBUG = F
)
```

Arguments

`fadn.country`	string with the country to extract the str data
`fadn.year`	the year to extract the structured data
`raw_str_map.file`	the full path to the raw_str_map file.
`DEBUG`	if TRUE, prints more details on the conversion process
`str.short_name`	the short name of the str data. No spaces and text up to 20 characters

Details

"id": "COLUMN in every list member in RDS": "COLUMN IN CSV", ..., "info": "COLUMN in info RDS": "COLUMN IN CSV", ..., "livestock": "crops": "CROP NAME 1": "description": "description of crop name", "columns": "VARIABLE NAME": COLUMN IN CSV", ... , "CROP NAME 2": "description": "description of crop name", "columns": "VARIABLE NAME": COLUMN IN CSV", ... , ...

The structure of the str.dir: - A data.dir can hold more than one extractions. - Each extraction has a short name (20 or less characters, whitespace is not allowed) - Each extraction is stored in the data.dir/rds/<extraction_name> - That folder contains the following files: + raw_str_map.json: the raw_str_map + fadn.str.<4-digit YEAR>.<3-letter COUNTRY>.rds: the extracted data

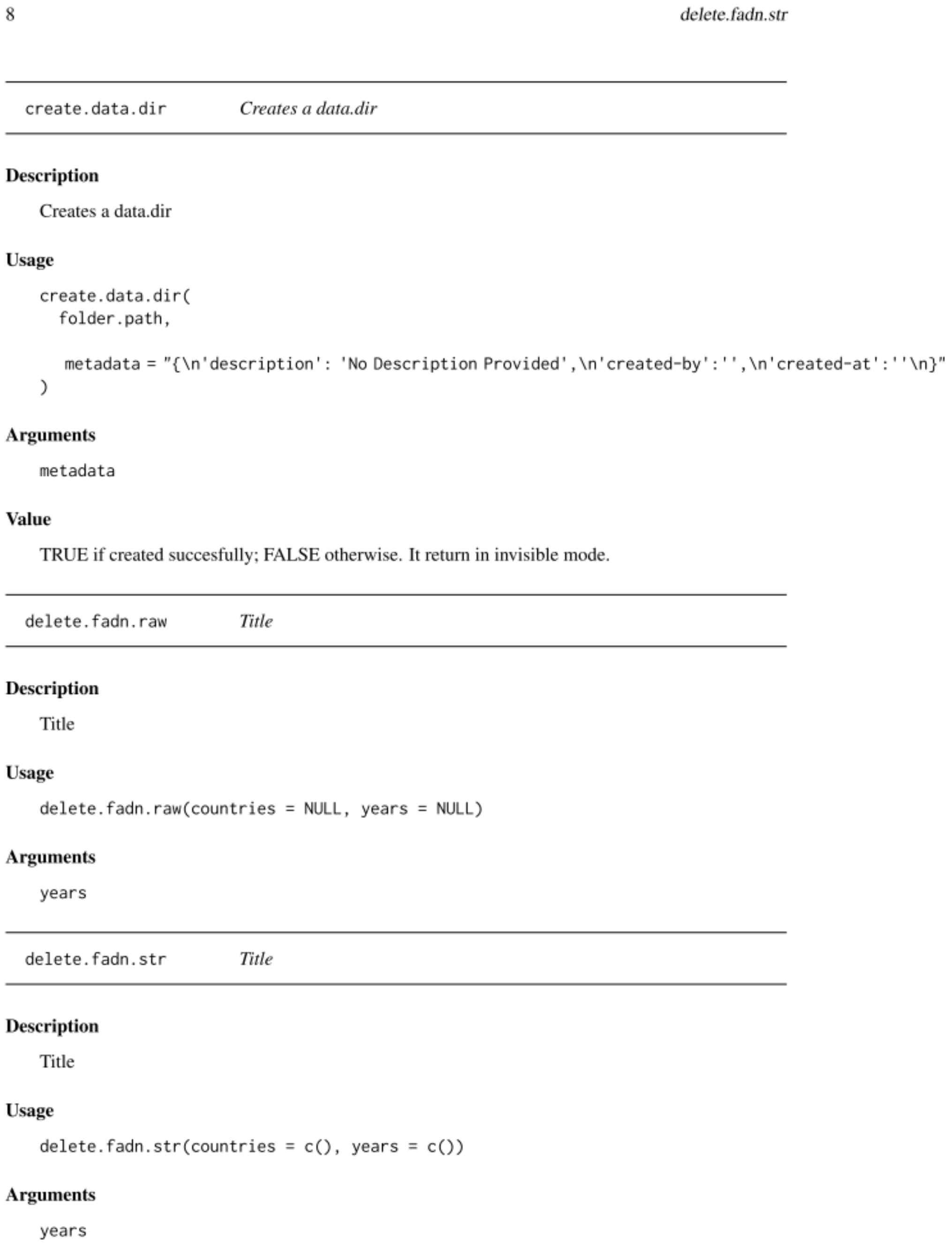
Notes: 1) The computed RDS file contains a list structure with the following keys: info, costs, livestock-animals and crops All are data.tables. For all of them, the first columns are those that are contained in the "id" object "info" and "costs" are in table format, i.e. each farm is one row and data is on columns, as defined in the related raw_str_map.json file. "crops" and "livestock-animals" are in wide data format (https://tidyr.tidyverse.org/), where one farm lies accross many rows, and each row is a farm-crop-variableName-value combination

2) In $id, $info and $costs, "COLUMN IN CSV" can have two forms i) a single column name in the fadn.raw csv file or a combination, e.g. "K120SA+K120FC+K120FU+K120CV-K120BV" ii) the form of an object "source": "the column in the csv", "description": "a description of what this column is about"

3) We attach certain attributes that are useful for identifying informations: i) In $info and $costs, the attribute "column description" provide information of the formula and the description of each column ii) In $crops and $livestock-animals, the attribute "$crops.descriptions" and "$livestock.descriptions", provide the description of each CROP contained there iii) In $crops and $ the attribute "$column.formulas" provide the formulas used in order to derive the VALUE

Value

Saves the rds.str.fadn and returns TRUE if everything goes well



8 *delete.fadn.str*

`create.data.dir` *Creates a data.dir*

Description

Creates a data.dir

Usage

```
create.data.dir(
  folder.path,

   metadata = "{\n'description': 'No Description Provided',\n'created-by':'',\n'created-at':''\n}"
)
```

Arguments

`metadata`

Value

TRUE if created succesfully; FALSE otherwise. It return in invisible mode.

`delete.fadn.raw` *Title*

Description

Title

Usage

```
delete.fadn.raw(countries = NULL, years = NULL)
```

Arguments

`years`

`delete.fadn.str` *Title*

Description

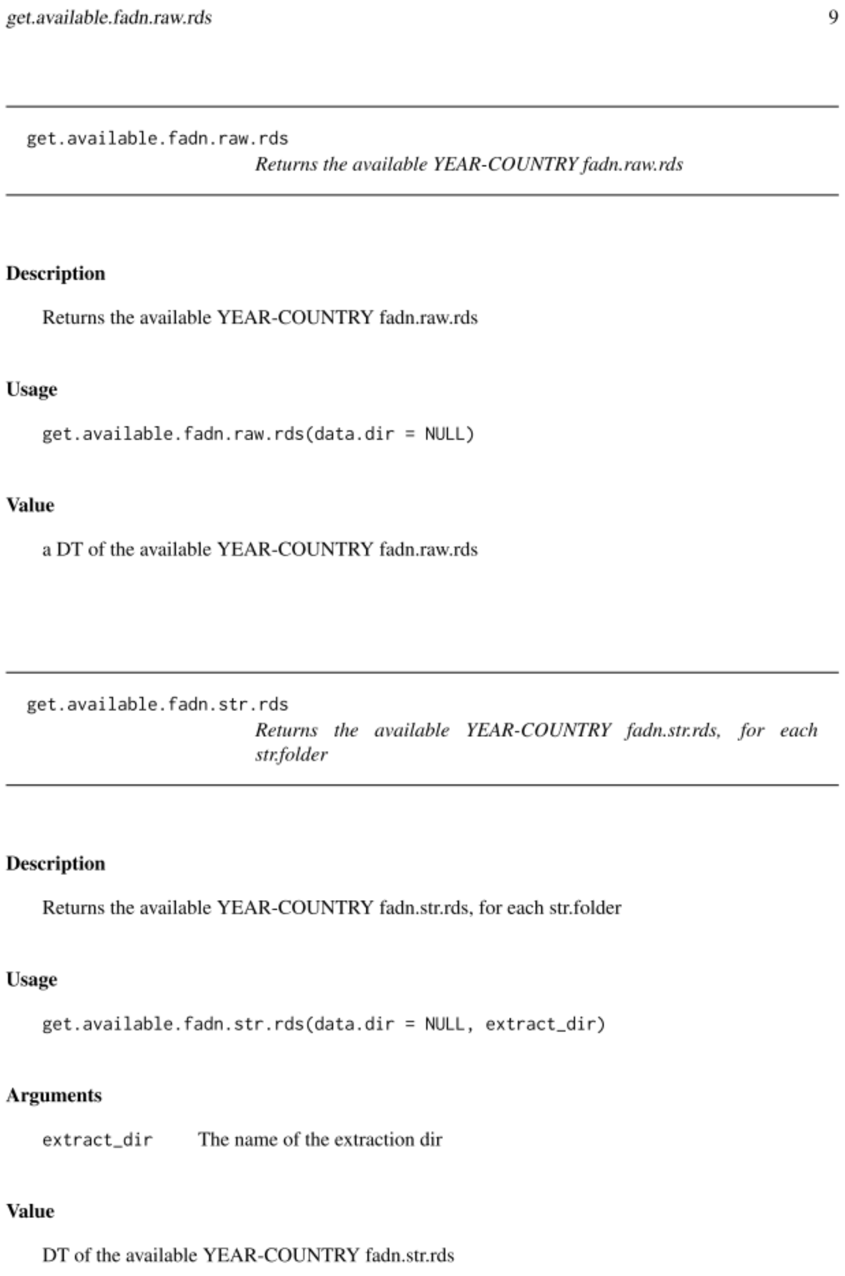
Title

Usage

```
delete.fadn.str(countries = c(), years = c())
```

Arguments

`years`



`get.available.fadn.raw.rds` *Returns the available YEAR-COUNTRY fadn.raw.rds*

Description

Returns the available YEAR-COUNTRY fadn.raw.rds

Usage

```
get.available.fadn.raw.rds(data.dir = NULL)
```

Value

a DT of the available YEAR-COUNTRY fadn.raw.rds

`get.available.fadn.str.rds` *Returns the available YEAR-COUNTRY fadn.str.rds, for each str.folder*

Description

Returns the available YEAR-COUNTRY fadn.str.rds, for each str.folder

Usage

```
get.available.fadn.str.rds(data.dir = NULL, extract_dir)
```

Arguments

`extract_dir`	The name of the extraction dir

Value

DT of the available YEAR-COUNTRY fadn.str.rds

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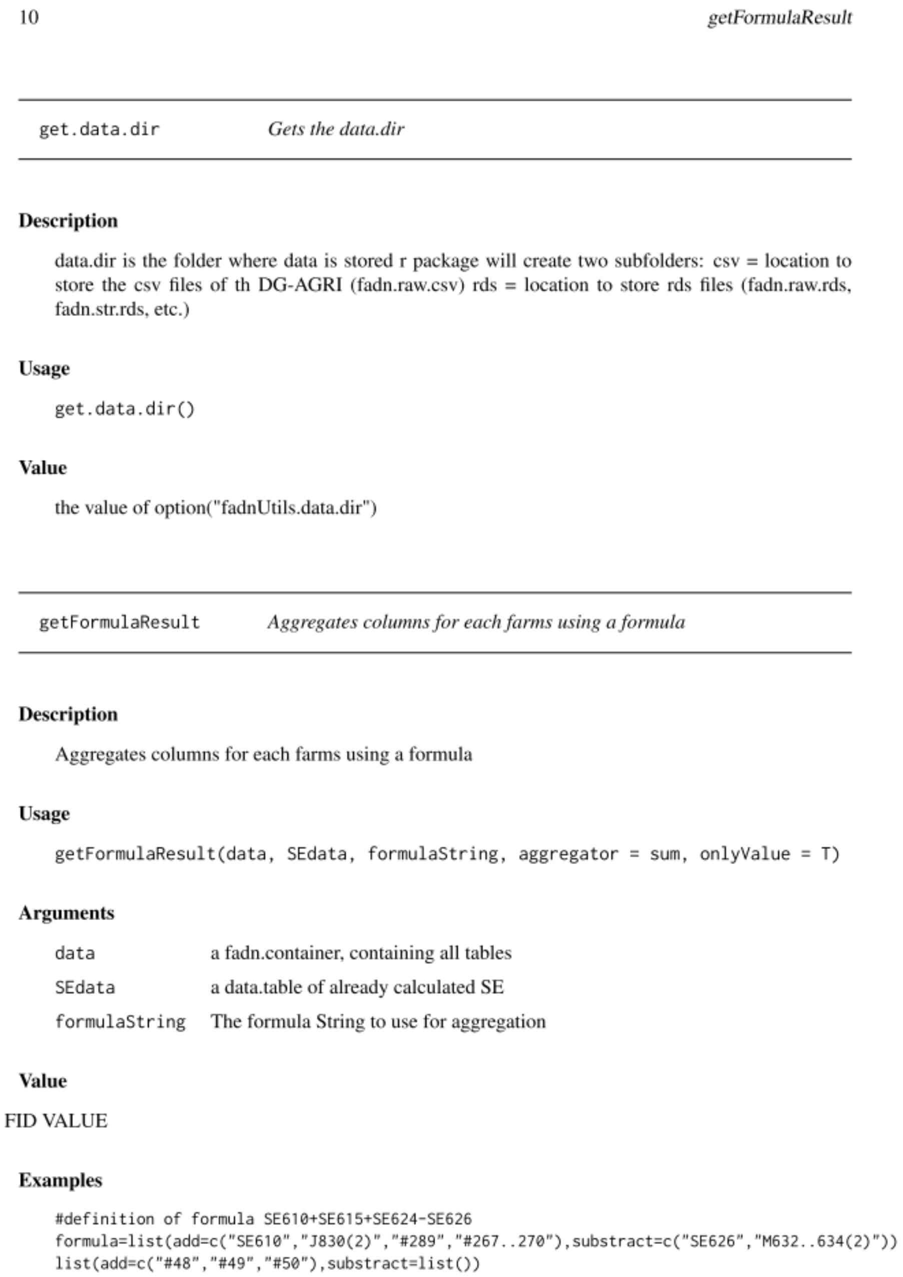

`get.data.dir` *Gets the data.dir*

Description

data.dir is the folder where data is stored r package will create two subfolders: csv = location to store the csv files of th DG-AGRI (fadn.raw.csv) rds = location to store rds files (fadn.raw.rds, fadn.str.rds, etc.)

Usage

```
get.data.dir()
```

Value

the value of option("fadnUtils.data.dir")

`getFormulaResult` *Aggregates columns for each farms using a formula*

Description

Aggregates columns for each farms using a formula

Usage

```
getFormulaResult(data, SEdata, formulaString, aggregator = sum, onlyValue = T)
```

Arguments

`data`	a fadn.container, containing all tables
`SEdata`	a data.table of already calculated SE
`formulaString`	The formula String to use for aggregation

Value

FID VALUE

Examples

```
#definition of formula SE610+SE615+SE624-SE626
formula=list(add=c("SE610","J830(2)","#289","#267..270"),substract=c("SE626","M632..634(2)"))
list(add=c("#48","#49","#50"),substract=list())
```

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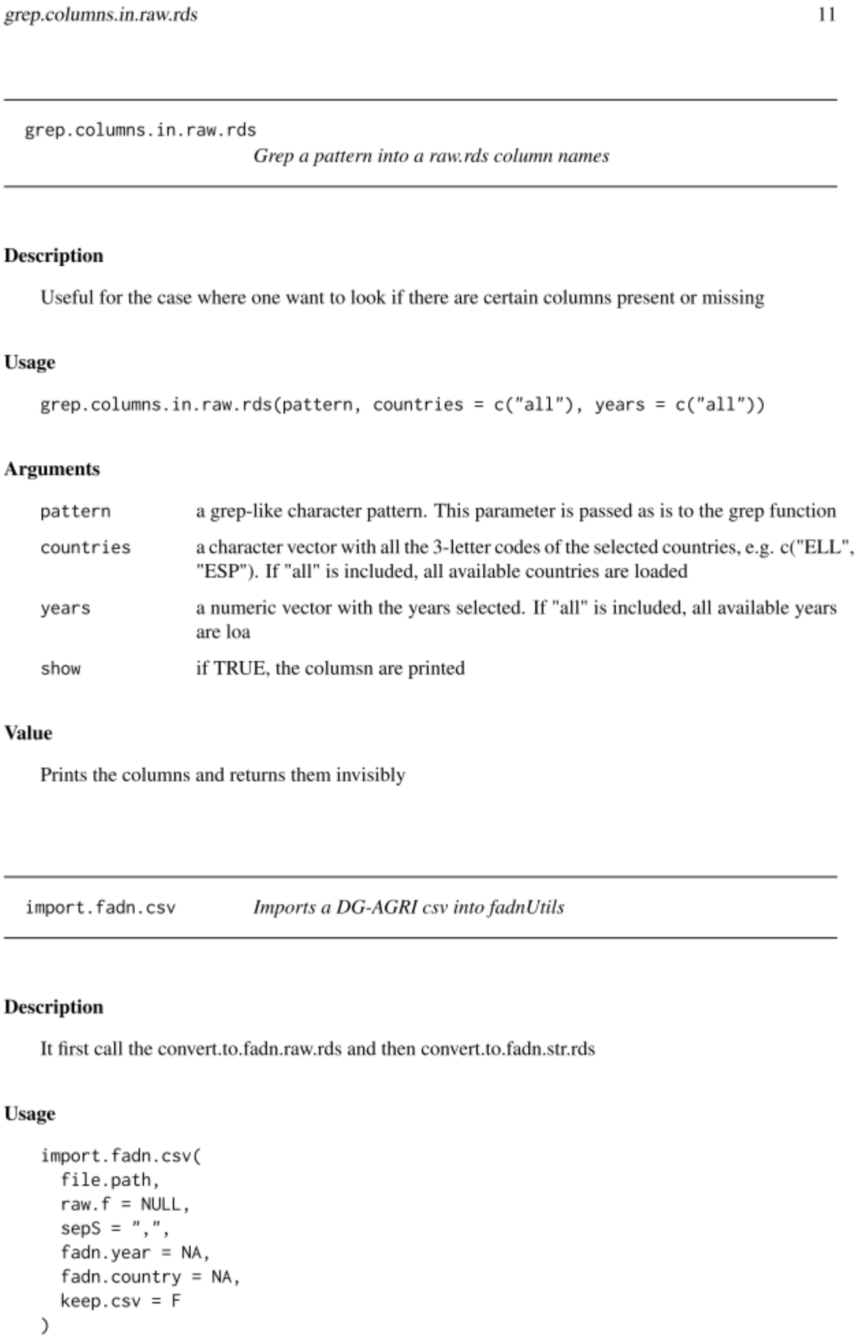

grep.columns.in.raw.rds 11

grep.columns.in.raw.rds *Grep a pattern into a raw.rds column names*

Description

Useful for the case where one want to look if there are certain columns present or missing

Usage

```
grep.columns.in.raw.rds(pattern, countries = c("all"), years = c("all"))
```

Arguments

`pattern`	a grep-like character pattern. This parameter is passed as is to the grep function
`countries`	a character vector with all the 3-letter codes of the selected countries, e.g. c("ELL", "ESP"). If "all" is included, all available countries are loaded
`years`	a numeric vector with the years selected. If "all" is included, all available years are loa
`show`	if TRUE, the columsn are printed

Value

Prints the columns and returns them invisibly

import.fadn.csv *Imports a DG-AGRI csv into fadnUtils*

Description

It first call the convert.to.fadn.raw.rds and then convert.to.fadn.str.rds

Usage

```
import.fadn.csv(
  file.path,
  raw.f = NULL,
  sepS = ",",
  fadn.year = NA,
  fadn.country = NA,
  keep.csv = F
)
```

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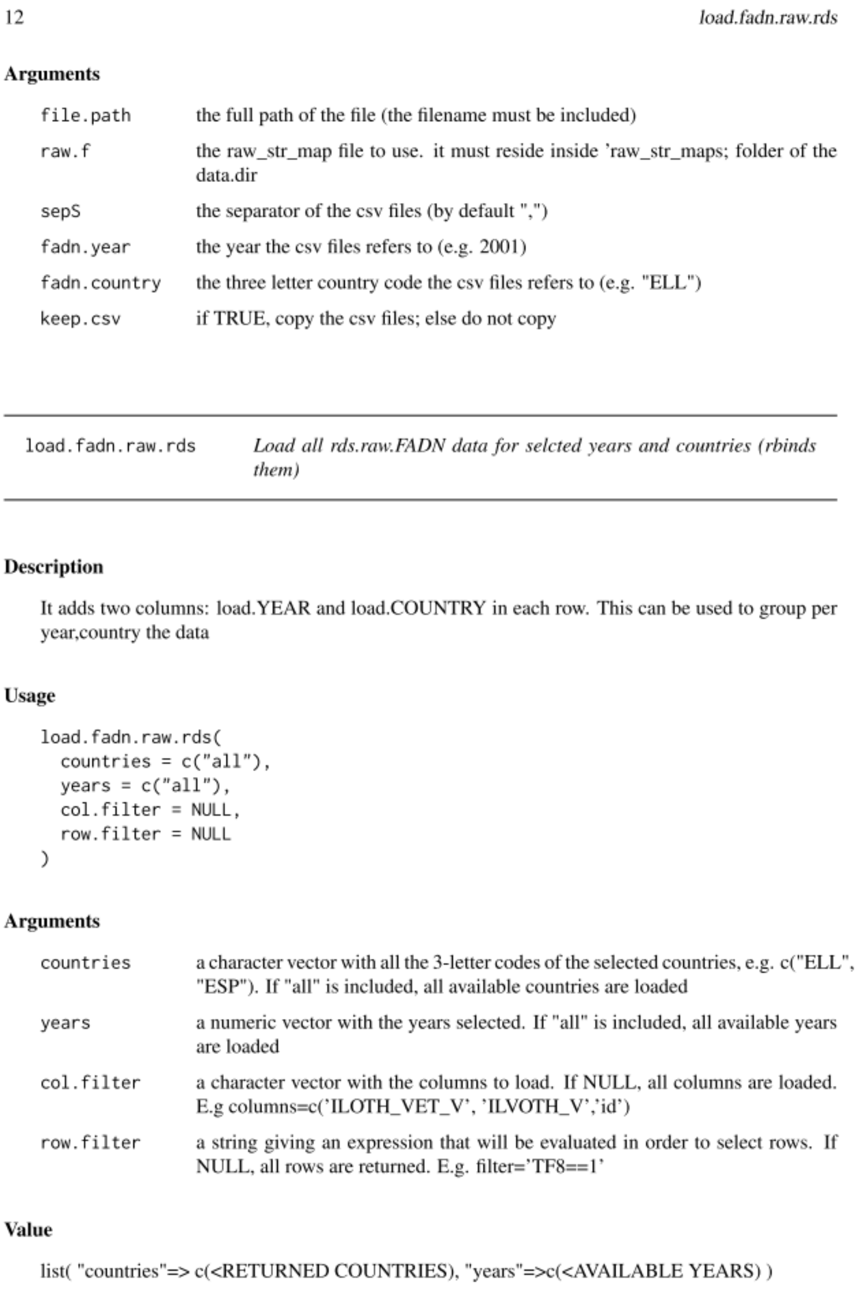

12 *load.fadn.raw.rds*

Arguments

`file.path`	the full path of the file (the filename must be included)
`raw.f`	the raw_str_map file to use. it must reside inside 'raw_str_maps; folder of the data.dir
`sepS`	the separator of the csv files (by default ",")
`fadn.year`	the year the csv files refers to (e.g. 2001)
`fadn.country`	the three letter country code the csv files refers to (e.g. "ELL")
`keep.csv`	if TRUE, copy the csv files; else do not copy

`load.fadn.raw.rds` *Load all rds.raw.FADN data for selcted years and countries (rbinds them)*

Description

It adds two columns: load.YEAR and load.COUNTRY in each row. This can be used to group per year,country the data

Usage

```
load.fadn.raw.rds(
  countries = c("all"),
  years = c("all"),
  col.filter = NULL,
  row.filter = NULL
)
```

Arguments

`countries`	a character vector with all the 3-letter codes of the selected countries, e.g. c("ELL", "ESP"). If "all" is included, all available countries are loaded
`years`	a numeric vector with the years selected. If "all" is included, all available years are loaded
`col.filter`	a character vector with the columns to load. If NULL, all columns are loaded. E.g columns=c('ILOTH_VET_V', 'ILVOTH_V','id')
`row.filter`	a string giving an expression that will be evaluated in order to select rows. If NULL, all rows are returned. E.g. filter='TF8==1'

Value

list("countries"=> c(<RETURNED COUNTRIES), "years"=>c(<AVAILABLE YEARS))

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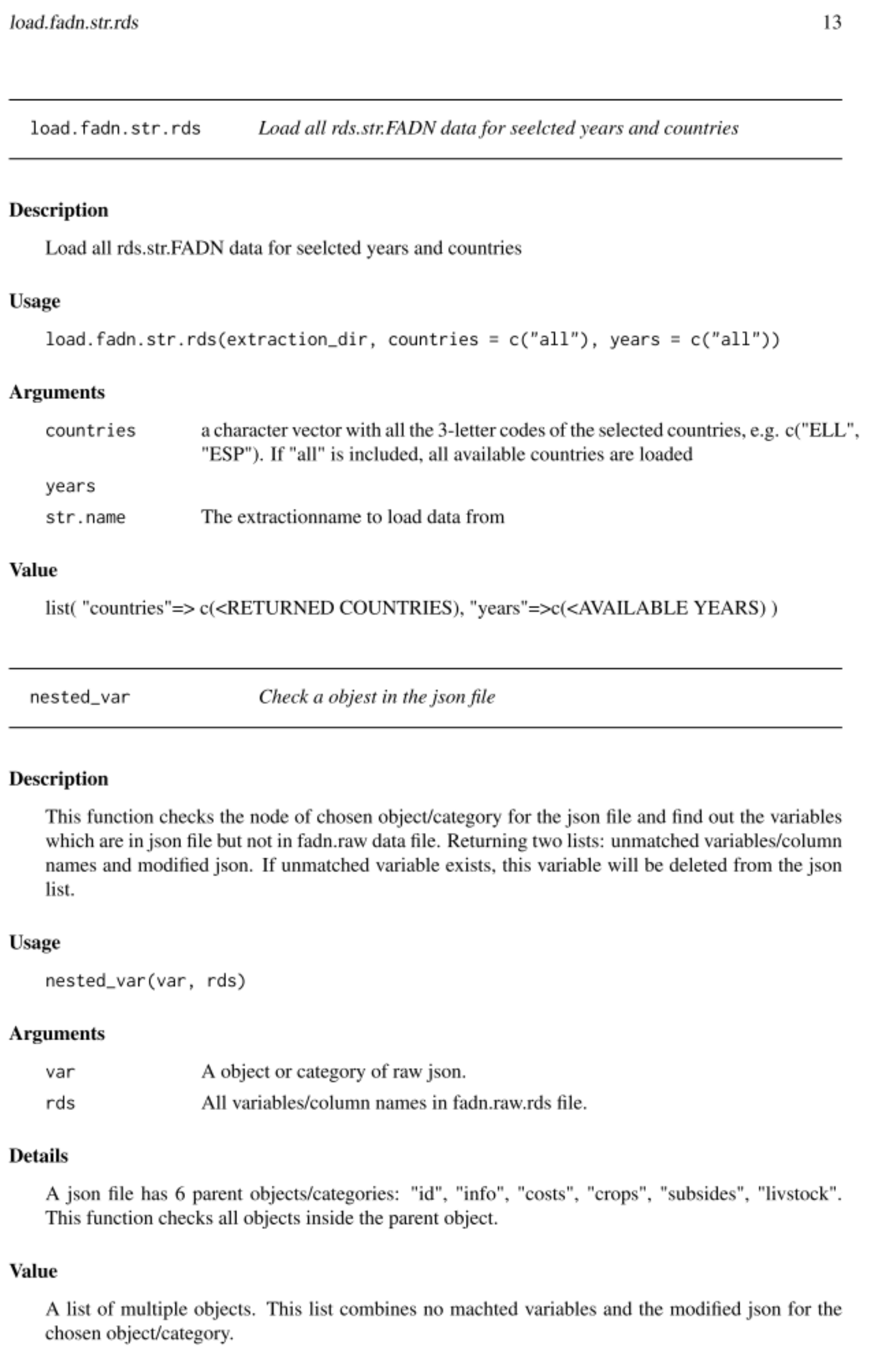

`load.fadn.str.rds` *Load all rds.str.FADN data for seelcted years and countries*

Description

Load all rds.str.FADN data for seelcted years and countries

Usage

```
load.fadn.str.rds(extraction_dir, countries = c("all"), years = c("all"))
```

Arguments

`countries` a character vector with all the 3-letter codes of the selected countries, e.g. c("ELL", "ESP"). If "all" is included, all available countries are loaded

`years`

`str.name` The extractionname to load data from

Value

list("countries"=> c(<RETURNED COUNTRIES), "years"=>c(<AVAILABLE YEARS))

`nested_var` *Check a objest in the json file*

Description

This function checks the node of chosen object/category for the json file and find out the variables which are in json file but not in fadn.raw data file. Returning two lists: unmatched variables/column names and modified json. If unmatched variable exists, this variable will be deleted from the json list.

Usage

```
nested_var(var, rds)
```

Arguments

`var` A object or category of raw json.

`rds` All variables/column names in fadn.raw.rds file.

Details

A json file has 6 parent objects/categories: "id", "info", "costs", "crops", "subsides", "livstock". This function checks all objects inside the parent object.

Value

A list of multiple objects. This list combines no machted variables and the modified json for the chosen object/category.

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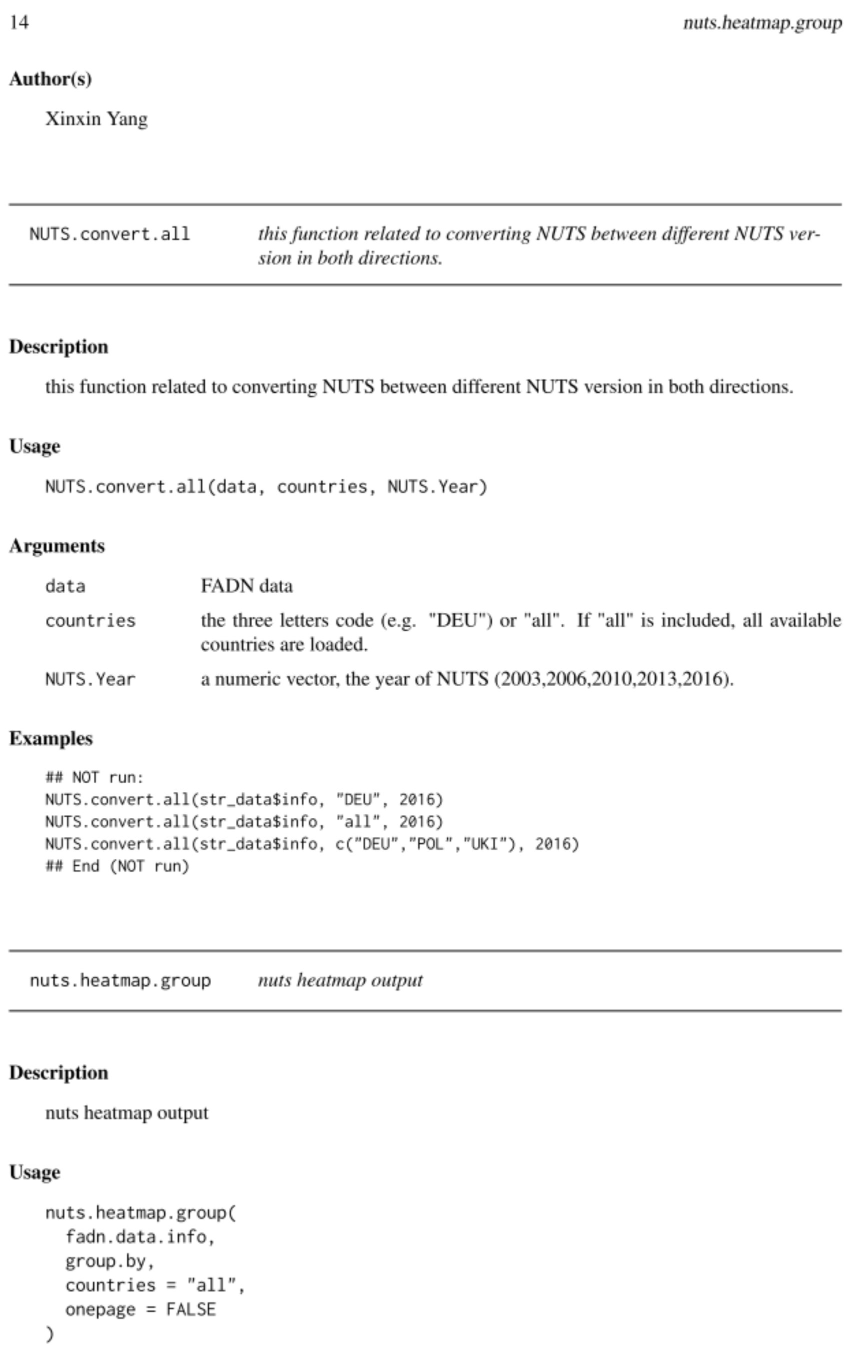


Author(s)

Xinxin Yang

`NUTS.convert.all` *this function related to converting NUTS between different NUTS version in both directions.*

Description

this function related to converting NUTS between different NUTS version in both directions.

Usage

```
NUTS.convert.all(data, countries, NUTS.Year)
```

Arguments

`data`	FADN data
`countries`	the three letters code (e.g. "DEU") or "all". If "all" is included, all available countries are loaded.
`NUTS.Year`	a numeric vector, the year of NUTS (2003,2006,2010,2013,2016).

Examples

```
## NOT run:
NUTS.convert.all(str_data$info, "DEU", 2016)
NUTS.convert.all(str_data$info, "all", 2016)
NUTS.convert.all(str_data$info, c("DEU","POL","UKI"), 2016)
## End (NOT run)
```

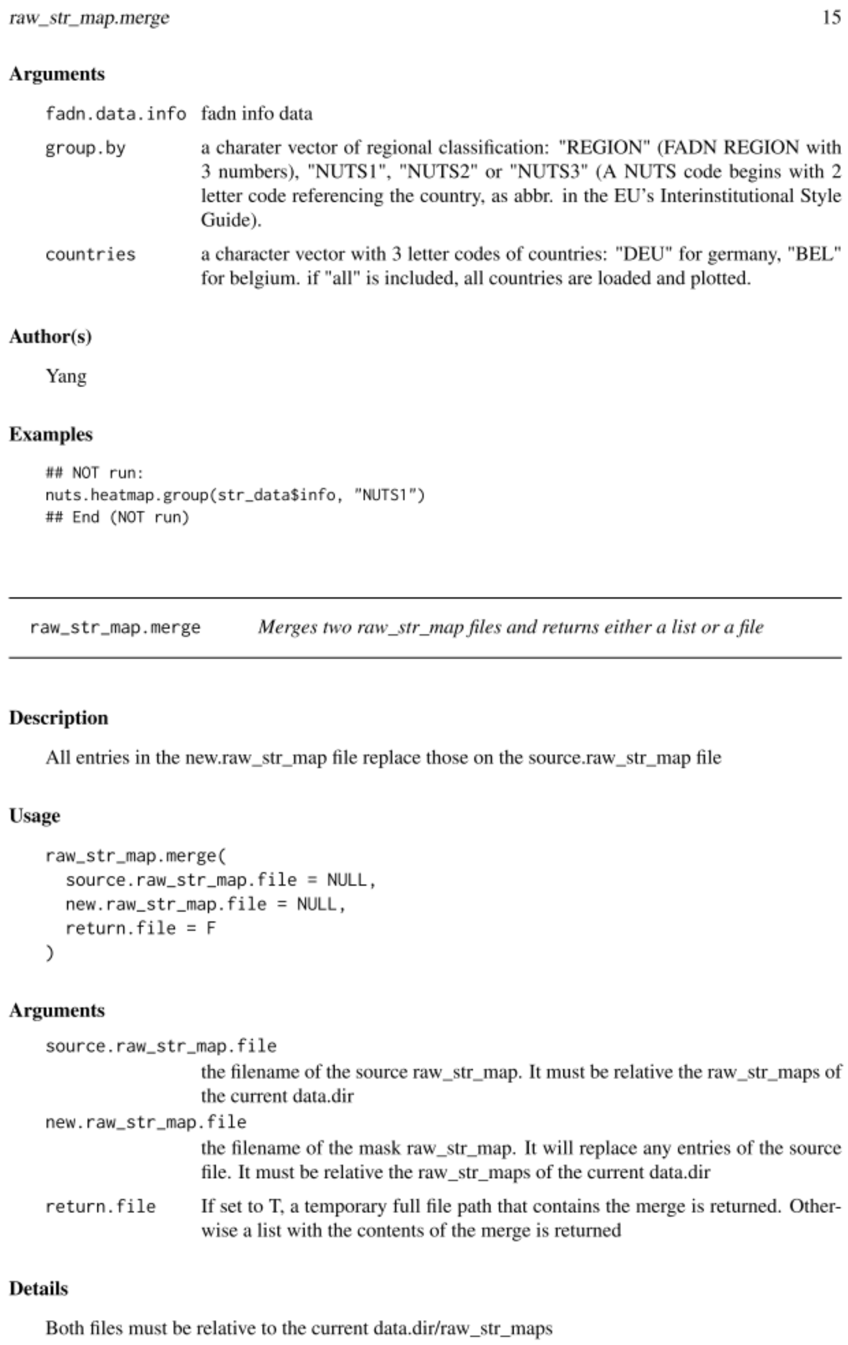
`nuts.heatmap.group` *nuts heatmap output*

Description

nuts heatmap output

Usage

```
nuts.heatmap.group(
  fadn.data.info,
  group.by,
  countries = "all",
  onepage = FALSE
)
```



Arguments

`fadn.data.info` fadn info data

`group.by` a charater vector of regional classification: "REGION" (FADN REGION with 3 numbers), "NUTS1", "NUTS2" or "NUTS3" (A NUTS code begins with 2 letter code referencing the country, as abbr. in the EU's Interinstitutional Style Guide).

`countries` a character vector with 3 letter codes of countries: "DEU" for germany, "BEL" for belgium. if "all" is included, all countries are loaded and plotted.

Author(s)

Yang

Examples

```
## NOT run:
nuts.heatmap.group(str_data$info, "NUTS1")
## End (NOT run)
```

`raw_str_map.merge` *Merges two raw_str_map files and returns either a list or a file*

Description

All entries in the new.raw_str_map file replace those on the source.raw_str_map file

Usage

```
raw_str_map.merge(
  source.raw_str_map.file = NULL,
  new.raw_str_map.file = NULL,
  return.file = F
)
```

Arguments

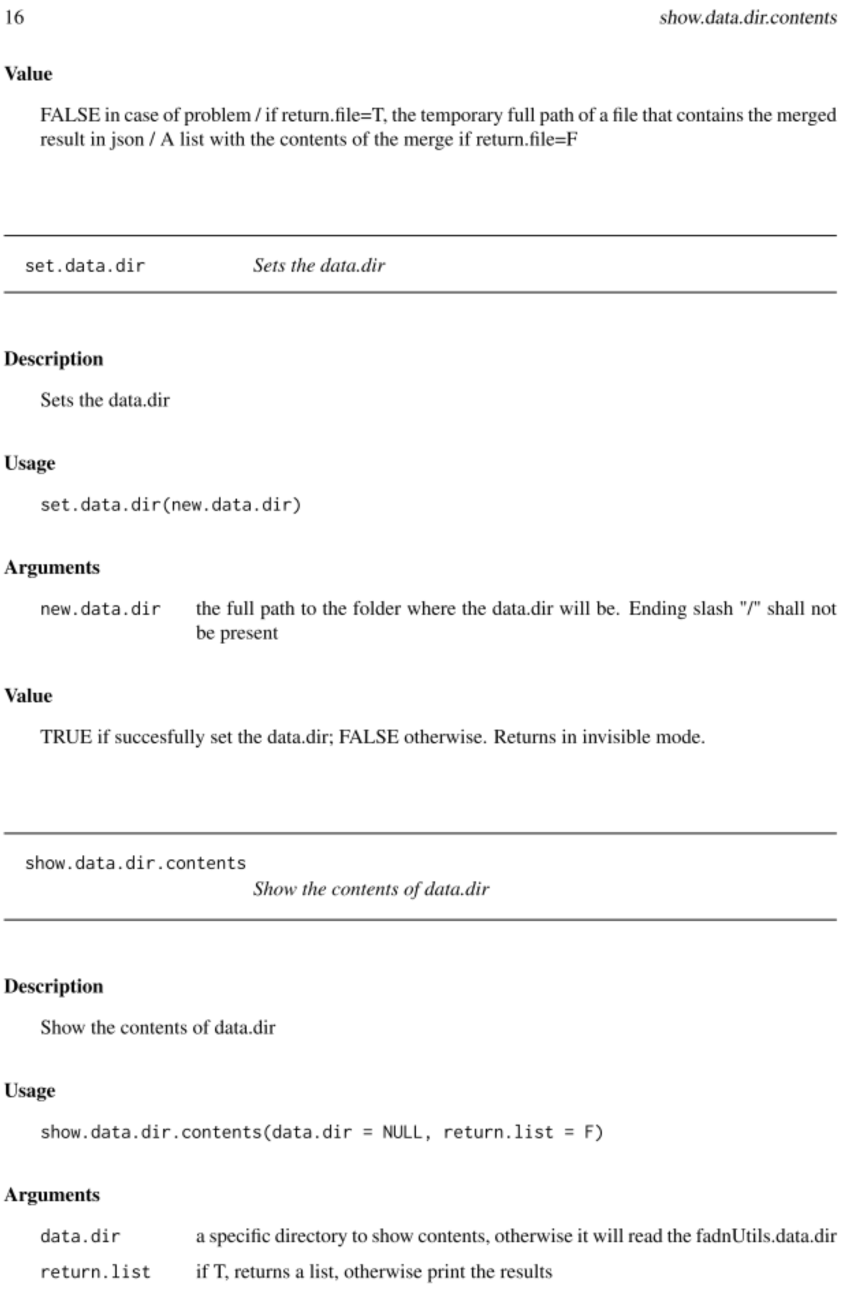
`source.raw_str_map.file`
the filename of the source raw_str_map. It must be relative the raw_str_maps of the current data.dir

`new.raw_str_map.file`
the filename of the mask raw_str_map. It will replace any entries of the source file. It must be relative the raw_str_maps of the current data.dir

`return.file` If set to T, a temporary full file path that contains the merge is returned. Otherwise a list with the contents of the merge is returned

Details

Both files must be relative to the current data.dir/raw_str_maps



Value

FALSE in case of problem / if return.file=T, the temporary full path of a file that contains the merged result in json / A list with the contents of the merge if return.file=F

`set.data.dir` *Sets the data.dir*

Description

Sets the data.dir

Usage

```
set.data.dir(new.data.dir)
```

Arguments

`new.data.dir`	the full path to the folder where the data.dir will be. Ending slash "/" shall not be present

Value

TRUE if succesfully set the data.dir; FALSE otherwise. Returns in invisible mode.

`show.data.dir.contents` *Show the contents of data.dir*

Description

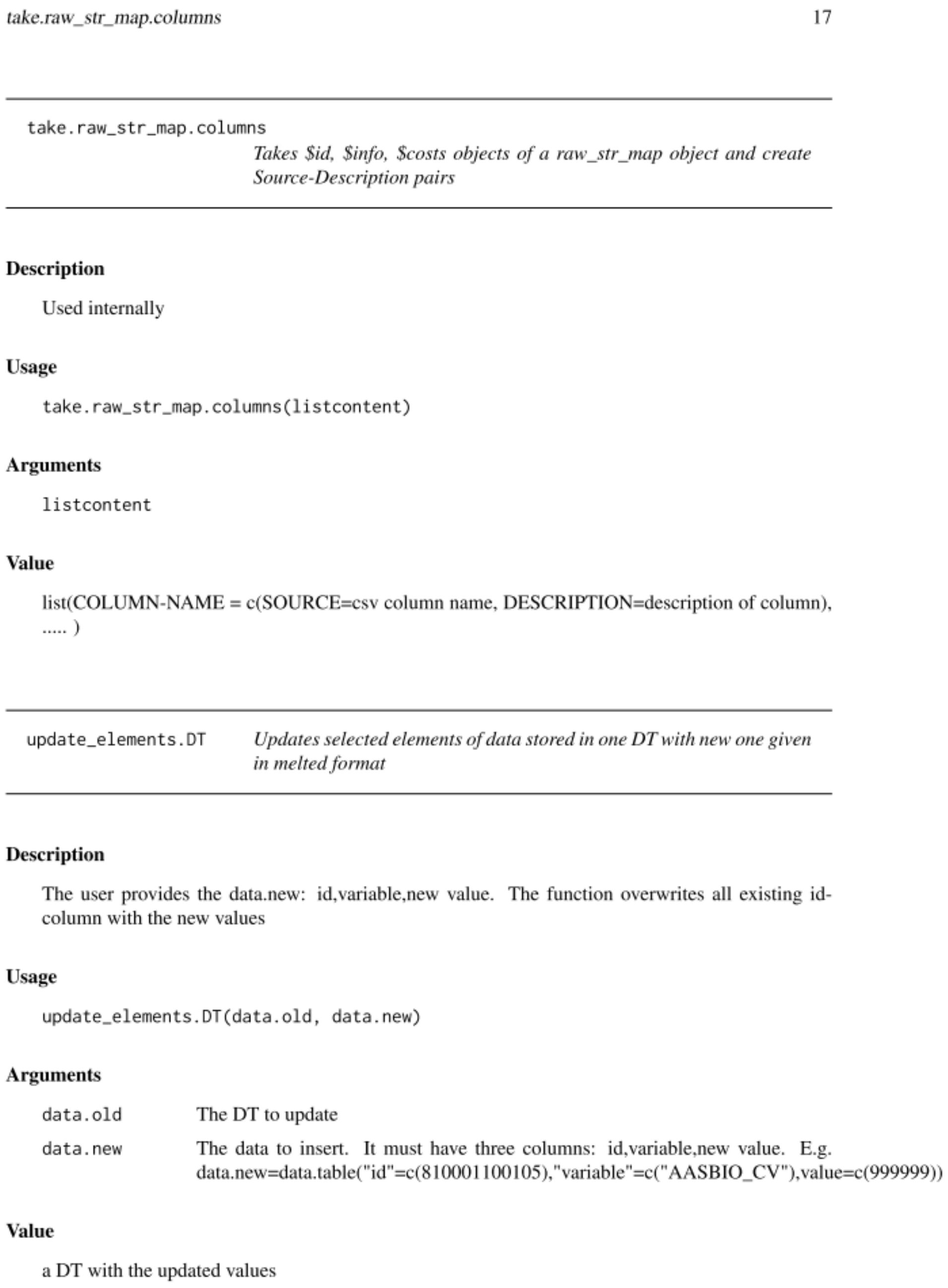
Show the contents of data.dir

Usage

```
show.data.dir.contents(data.dir = NULL, return.list = F)
```

Arguments

`data.dir`	a specific directory to show contents, otherwise it will read the fadnUtils.data.dir
`return.list`	if T, returns a list, otherwise print the results



`take.raw_str_map.columns` *Takes $id, $info, $costs objects of a raw_str_map object and create Source-Description pairs*

Description

Used internally

Usage

```
take.raw_str_map.columns(listcontent)
```

Arguments

`listcontent`

Value

list(COLUMN-NAME = c(SOURCE=csv column name, DESCRIPTION=description of column), ...)

`update_elements.DT` *Updates selected elements of data stored in one DT with new one given in melted format*

Description

The user provides the data.new: id,variable,new value. The function overwrites all existing id-column with the new values

Usage

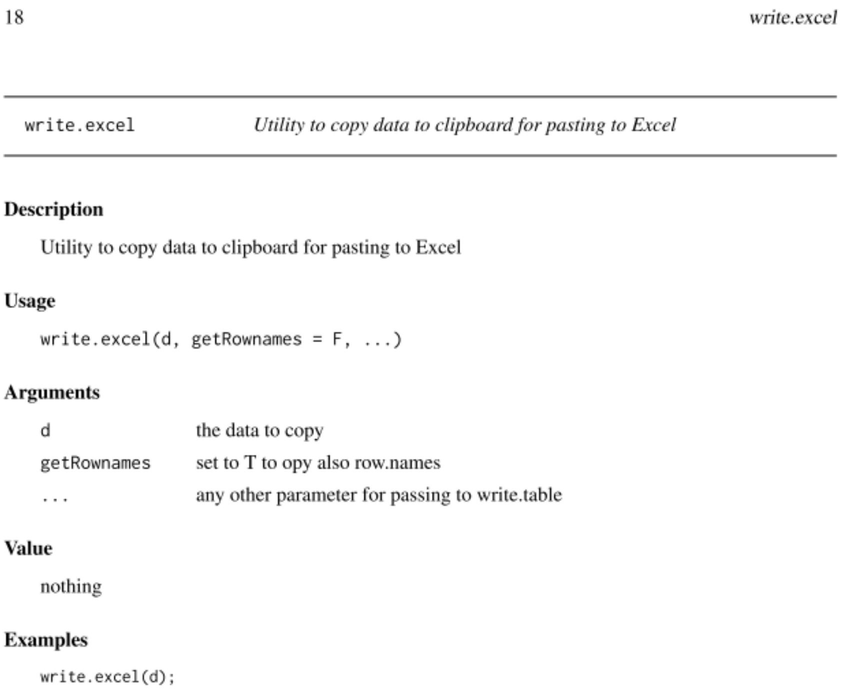
```
update_elements.DT(data.old, data.new)
```

Arguments

`data.old`	The DT to update
`data.new`	The data to insert. It must have three columns: id,variable,new value. E.g. data.new=data.table("id"=c(810001100105),"variable"=c("AASBIO_CV"),value=c(999999))

Value

a DT with the updated values



`write.excel` *Utility to copy data to clipboard for pasting to Excel*

Description

Utility to copy data to clipboard for pasting to Excel

Usage

```
write.excel(d, getRownames = F, ...)
```

Arguments

`d`	the data to copy
`getRownames`	set to T to opy also row.names
`...`	any other parameter for passing to write.table

Value

nothing

Examples

```
write.excel(d);
```

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement N° 817566.

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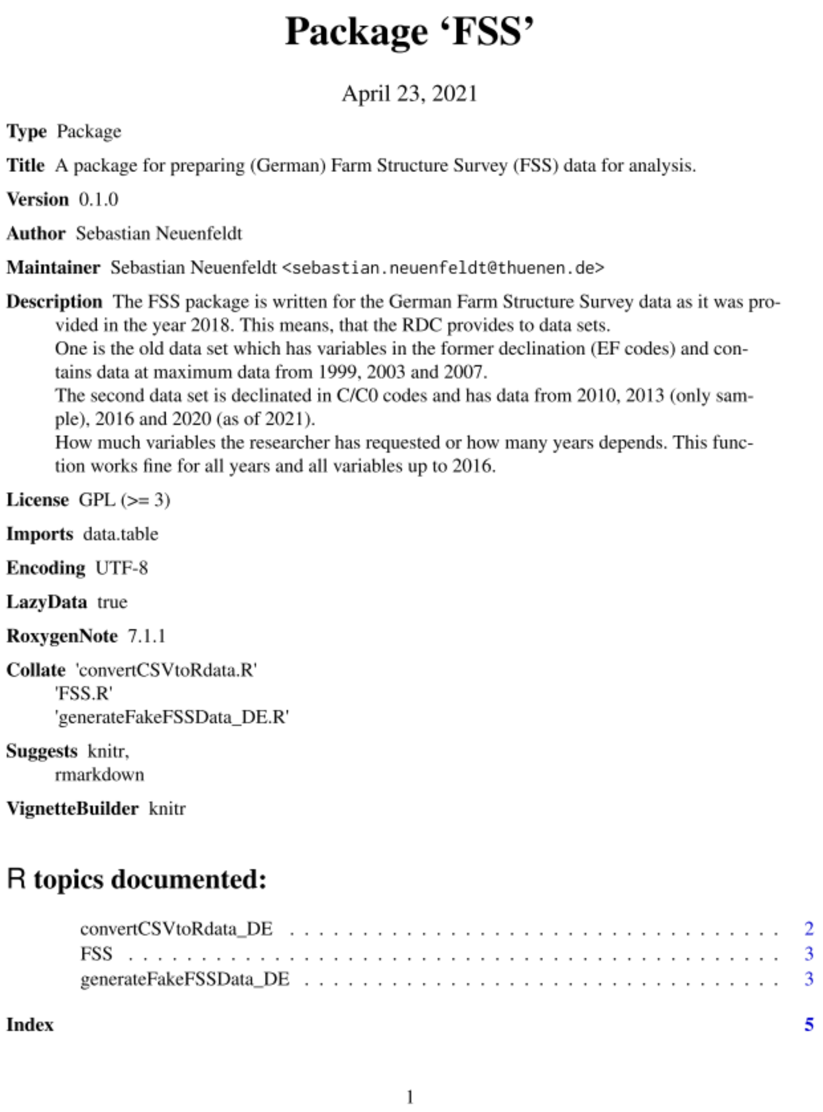
3.2. Repository ‘FSS’



Package ‘FSS’

April 23, 2021

Type Package

Title A package for preparing (German) Farm Structure Survey (FSS) data for analysis.

Version 0.1.0

Author Sebastian Neuenfeldt

Maintainer Sebastian Neuenfeldt <sebastian.neuenfeldt@thuenen.de>

Description The FSS package is written for the German Farm Structure Survey data as it was provided in the year 2018. This means, that the RDC provides to data sets.
One is the old data set which has variables in the former declination (EF codes) and contains data at maximum data from 1999, 2003 and 2007.
The second data set is declinated in C/C0 codes and has data from 2010, 2013 (only sample), 2016 and 2020 (as of 2021).
How much variables the researcher has requested or how many years depends. This function works fine for all years and all variables up to 2016.

License GPL (>= 3)

Imports data.table

Encoding UTF-8

LazyData true

RoxygenNote 7.1.1

Collate 'convertCSVtoRdata.R'
'FSS.R'
'generateFakeFSSData_DE.R'

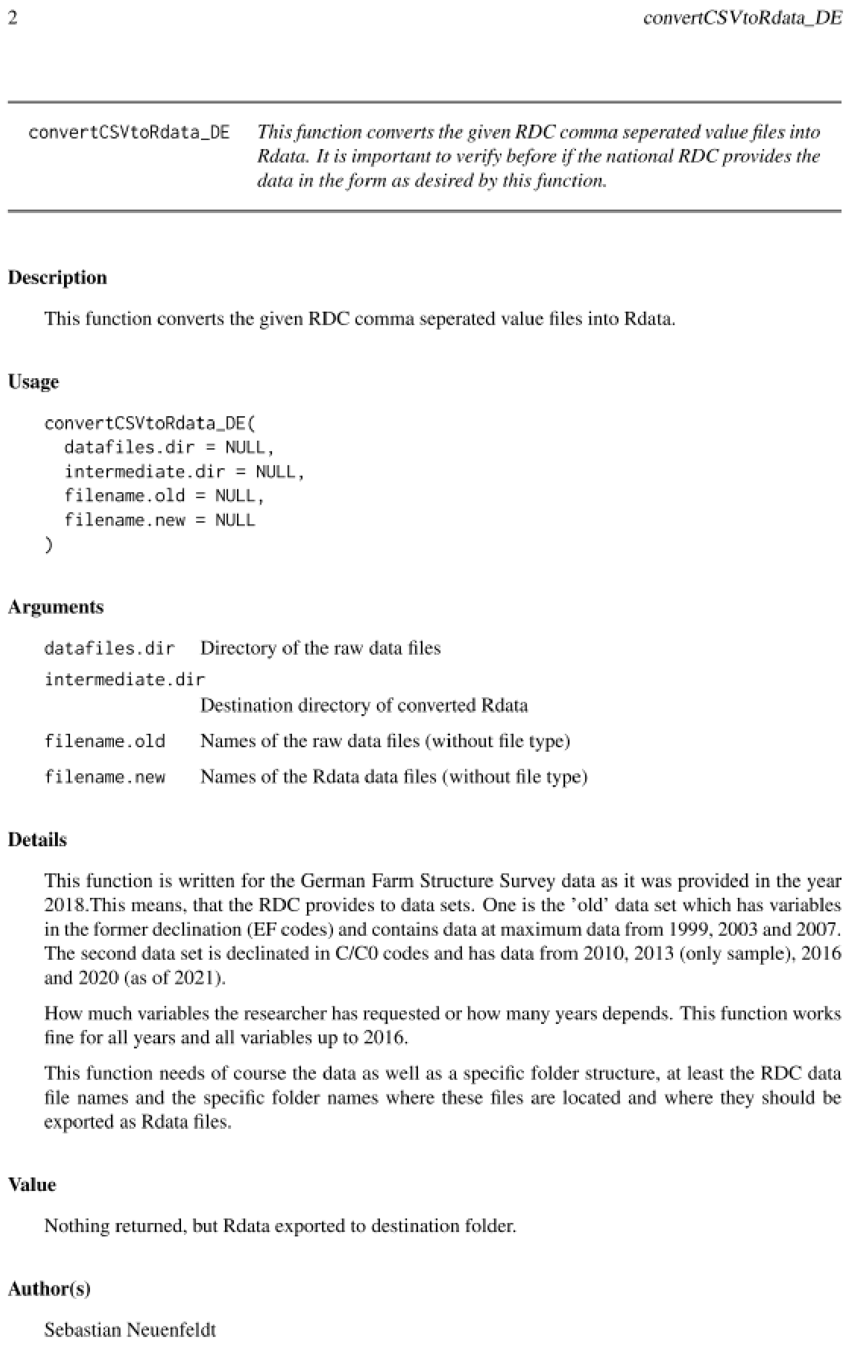
Suggests knitr,
rmarkdown

VignetteBuilder knitr

R topics documented:

1

This project has received funding from the European Union’s Horizon 2020 research and innovation programme under grant agreement N° 817566.



2 *convertCSVtoRdata_DE*

`convertCSVtoRdata_DE`	*This function converts the given RDC comma seperated value files into Rdata. It is important to verify before if the national RDC provides the data in the form as desired by this function.*

Description

This function converts the given RDC comma seperated value files into Rdata.

Usage

```
convertCSVtoRdata_DE(
  datafiles.dir = NULL,
  intermediate.dir = NULL,
  filename.old = NULL,
  filename.new = NULL
)
```

Arguments

`datafiles.dir`	Directory of the raw data files
`intermediate.dir`	Destination directory of converted Rdata
`filename.old`	Names of the raw data files (without file type)
`filename.new`	Names of the Rdata data files (without file type)

Details

This function is written for the German Farm Structure Survey data as it was provided in the year 2018.This means, that the RDC provides to data sets. One is the 'old' data set which has variables in the former declination (EF codes) and contains data at maximum data from 1999, 2003 and 2007. The second data set is declinated in C/C0 codes and has data from 2010, 2013 (only sample), 2016 and 2020 (as of 2021).

How much variables the researcher has requested or how many years depends. This function works fine for all years and all variables up to 2016.

This function needs of course the data as well as a specific folder structure, at least the RDC data file names and the specific folder names where these files are located and where they should be exported as Rdata files.

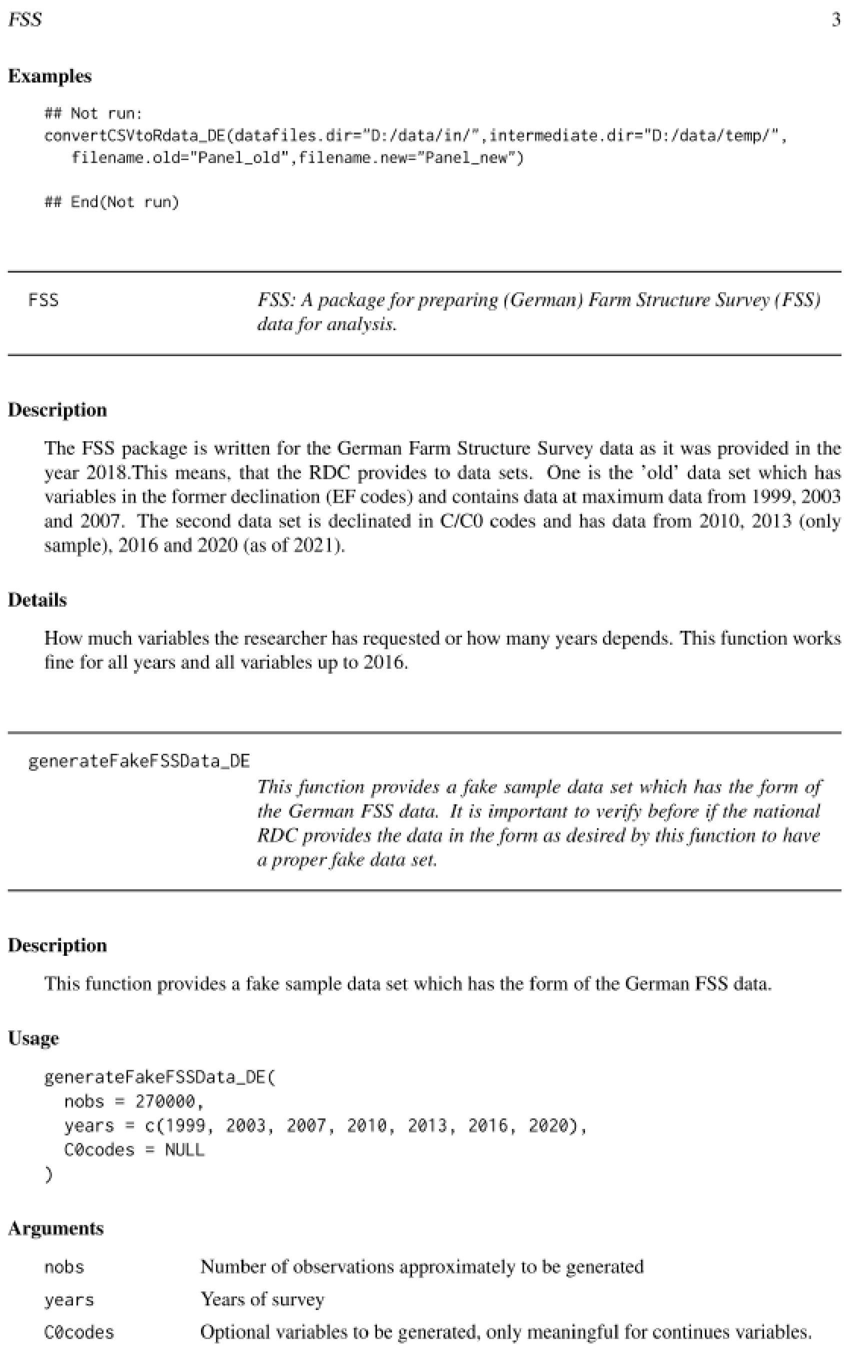
Value

Nothing returned, but Rdata exported to destination folder.

Author(s)

Sebastian Neuenfeldt

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement N° 817566.



FSS 3

Examples

```
## Not run:
convertCSVtoRdata_DE(datafiles.dir="D:/data/in/",intermediate.dir="D:/data/temp/",
   filename.old="Panel_old",filename.new="Panel_new")

## End(Not run)
```

`FSS` *FSS: A package for preparing (German) Farm Structure Survey (FSS) data for analysis.*

Description

The FSS package is written for the German Farm Structure Survey data as it was provided in the year 2018.This means, that the RDC provides to data sets. One is the 'old' data set which has variables in the former declination (EF codes) and contains data at maximum data from 1999, 2003 and 2007. The second data set is declinated in C/C0 codes and has data from 2010, 2013 (only sample), 2016 and 2020 (as of 2021).

Details

How much variables the researcher has requested or how many years depends. This function works fine for all years and all variables up to 2016.

`generateFakeFSSData_DE` *This function provides a fake sample data set which has the form of the German FSS data. It is important to verify before if the national RDC provides the data in the form as desired by this function to have a proper fake data set.*

Description

This function provides a fake sample data set which has the form of the German FSS data.

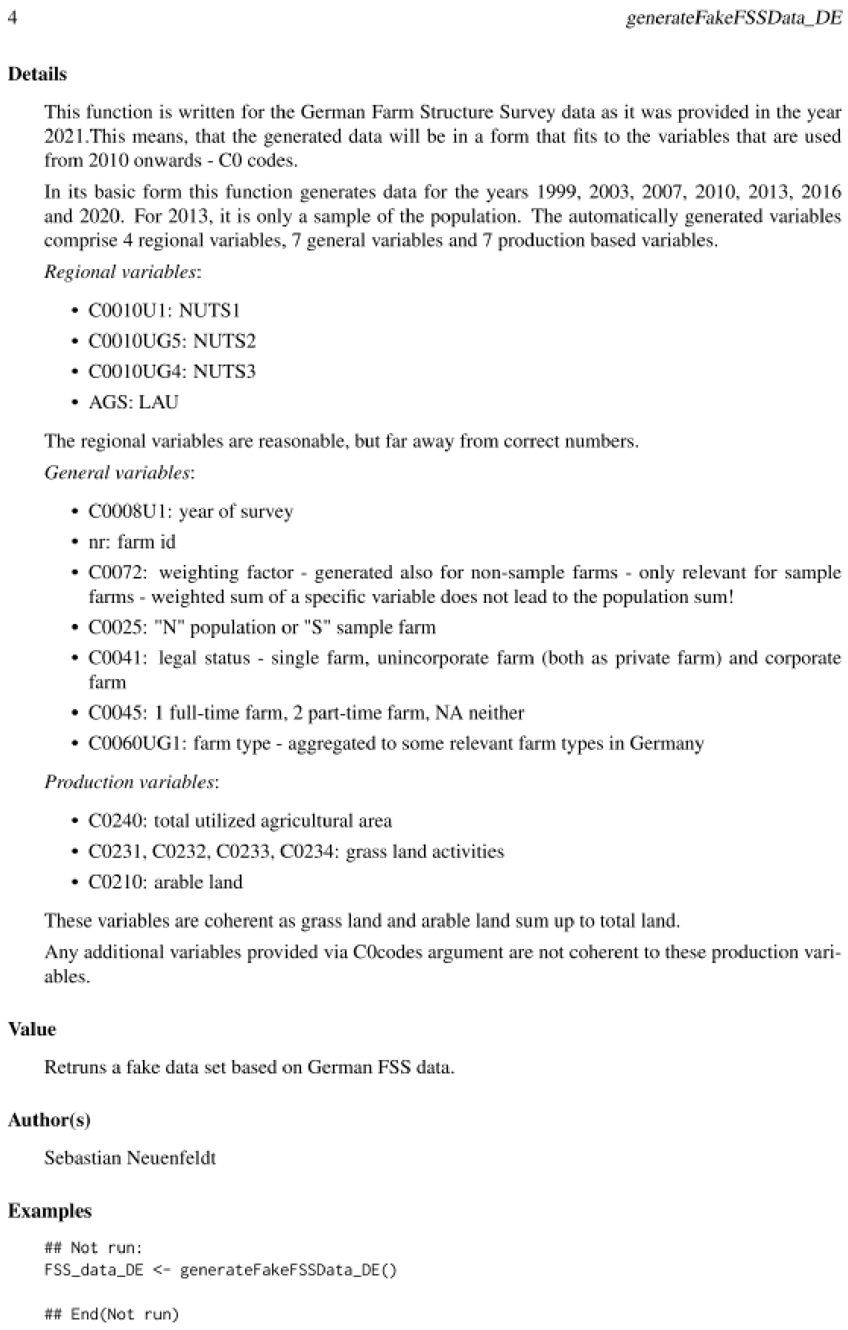
Usage

```
generateFakeFSSData_DE(
  nobs = 270000,
  years = c(1999, 2003, 2007, 2010, 2013, 2016, 2020),
  C0codes = NULL
)
```

Arguments

`nobs`	Number of observations approximately to be generated
`years`	Years of survey
`C0codes`	Optional variables to be generated, only meaningful for continues variables.

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement N° 817566.



Details

This function is written for the German Farm Structure Survey data as it was provided in the year 2021.This means, that the generated data will be in a form that fits to the variables that are used from 2010 onwards - C0 codes.

In its basic form this function generates data for the years 1999, 2003, 2007, 2010, 2013, 2016 and 2020. For 2013, it is only a sample of the population. The automatically generated variables comprise 4 regional variables, 7 general variables and 7 production based variables.

Regional variables:

- C0010U1: NUTS1
- C0010UG5: NUTS2
- C0010UG4: NUTS3
- AGS: LAU

The regional variables are reasonable, but far away from correct numbers.

General variables:

- C0008U1: year of survey
- nr: farm id
- C0072: weighting factor - generated also for non-sample farms - only relevant for sample farms - weighted sum of a specific variable does not lead to the population sum!
- C0025: "N" population or "S" sample farm
- C0041: legal status - single farm, unincorporate farm (both as private farm) and corporate farm
- C0045: 1 full-time farm, 2 part-time farm, NA neither
- C0060UG1: farm type - aggregated to some relevant farm types in Germany

Production variables:

- C0240: total utilized agricultural area
- C0231, C0232, C0233, C0234: grass land activities
- C0210: arable land

These variables are coherent as grass land and arable land sum up to total land.

Any additional variables provided via C0codes argument are not coherent to these production variables.

Value

Retruns a fake data set based on German FSS data.

Author(s)

Sebastian Neuenfeldt

Examples

```
## Not run:
FSS_data_DE <- generateFakeFSSData_DE()

## End(Not run)
```

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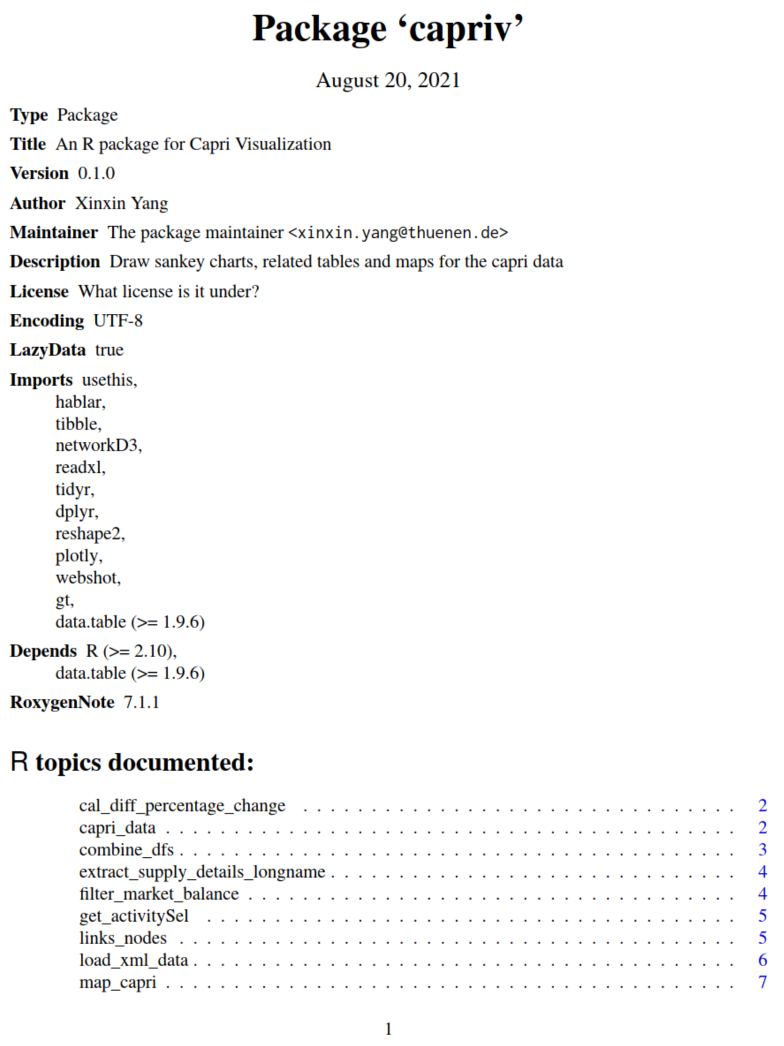
3.3. Repository ‘capriV’



Package ‘capriv’

August 20, 2021

Type Package

Title An R package for Capri Visualization

Version 0.1.0

Author Xinxin Yang

Maintainer The package maintainer <`xinxin.yang@thuenen.de`>

Description Draw sankey charts, related tables and maps for the capri data

License What license is it under?

Encoding UTF-8

LazyData true

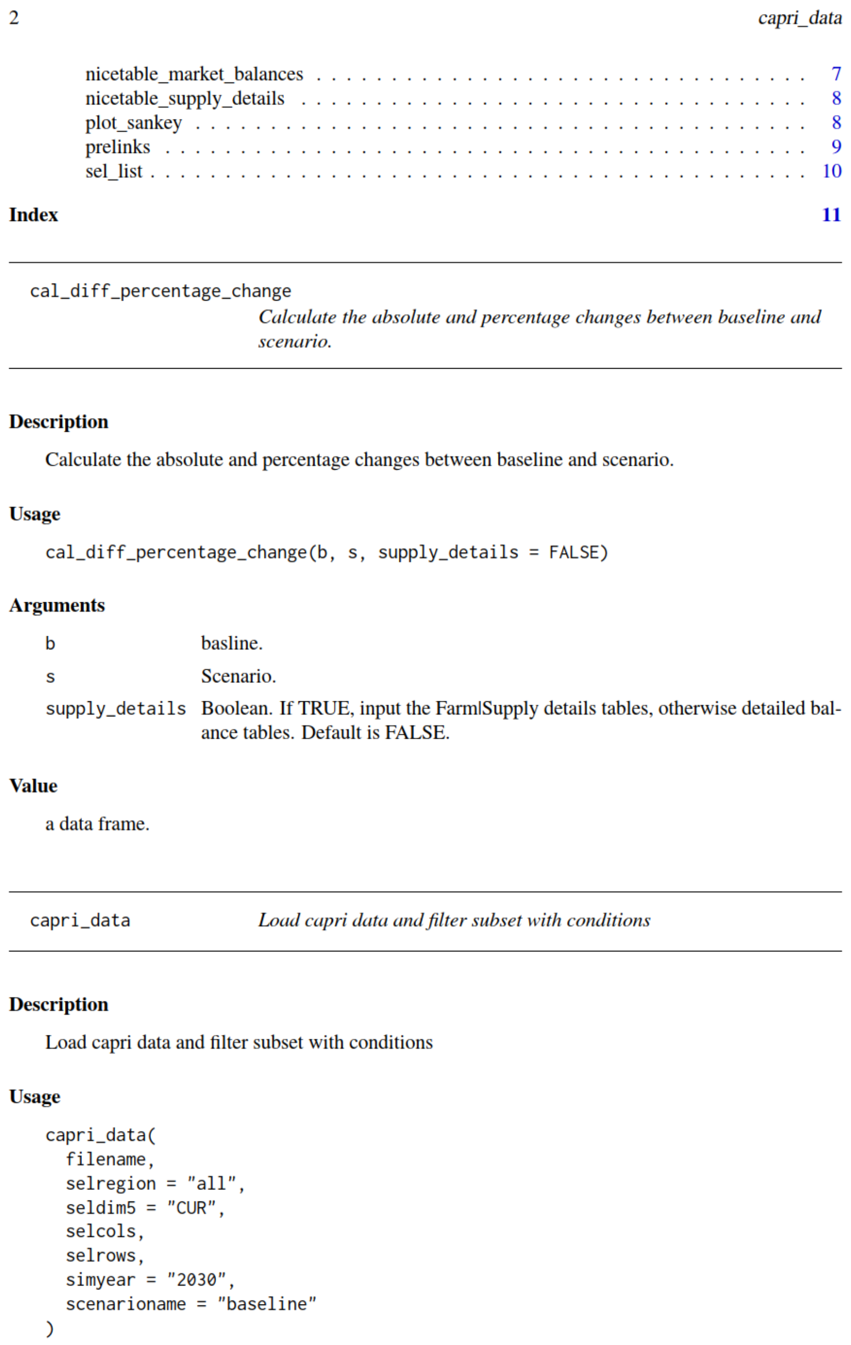
Imports usethis,
hablar,
tibble,
networkD3,
readxl,
tidyr,
dplyr,
reshape2,
plotly,
webshot,
gt,
data.table (>= 1.9.6)

Depends R (>= 2.10),
data.table (>= 1.9.6)

RoxygenNote 7.1.1

R topics documented:

This project has received funding from the European Union’s Horizon 2020
research and innovation programme under grant agreement N° 817566.



`cal_diff_percentage_change` *Calculate the absolute and percentage changes between baseline and scenario.*

Description

Calculate the absolute and percentage changes between baseline and scenario.

Usage

```
cal_diff_percentage_change(b, s, supply_details = FALSE)
```

Arguments

`b`	basline.
`s`	Scenario.
`supply_details`	Boolean. If TRUE, input the Farm|Supply details tables, otherwise detailed balance tables. Default is FALSE.

Value

a data frame.

`capri_data` *Load capri data and filter subset with conditions*

Description

Load capri data and filter subset with conditions

Usage

```
capri_data(
  filename,
  selregion = "all",
  seldim5 = "CUR",
  selcols,
  selrows,
  simyear = "2030",
  scenarioname = "baseline"
)
```

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement N° 817566.

Arguments

`filename`	Name of gdx file.
`selregion`	Charactoer vector of regions, default = "all.
`seldim5`	Selection of the elements in the fifth dimension of the CAPRI data cube. By default it is the empty element.
`selcols`	Selection of columns in the CAPRI data cube.
`selrows`	Selection of rows in the CAPRI data cube.
`simyear`	Simulation year to be loaded/filtered.
`scenarioname`	Name of the scenario.

Value

selected data frame.

Examples

```
benchmark <- capri_data(filename = paste0(gdx.dir,"/",benchmark),
                        selregion = "all",
                        seldim5 = "",
                        selcols = prod,
                        selrows = "LEVL" ,
                        simyear = "2030",
                        scenarioname = "benchmark")
```

`combine_dfs` *combine two dfs*

Description

combine two dfs

Usage

```
combine_dfs(df1, df2, SidebySide = FALSE)
```

Arguments

`df1`	a df contains links and nodes.
`df2`	a df contains links and nodes.
`SidebySide`	Boolean.

Value

the combined df

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement N° 817566.

`extract_supply_details_longname` *extract supply details with selected activities.*

Description

extract supply details with selected activities.

Usage

```
extract_supply_details_longname(
  region_list = "EU27yr19",
  dimdef_activity,
  activitySel = "Activities",
  scenario_list,
  folder
)
```

Arguments

`region_list`	vector character
`activitySel`	character
`scenario_list`	Name of the scenario
`folder`	a directory

Value

supply details with longname

`filter_market_balance` *Get market balances with seleceted commodities (long names / short names).*

Description

Get market balances with seleceted commodities (long names / short names).

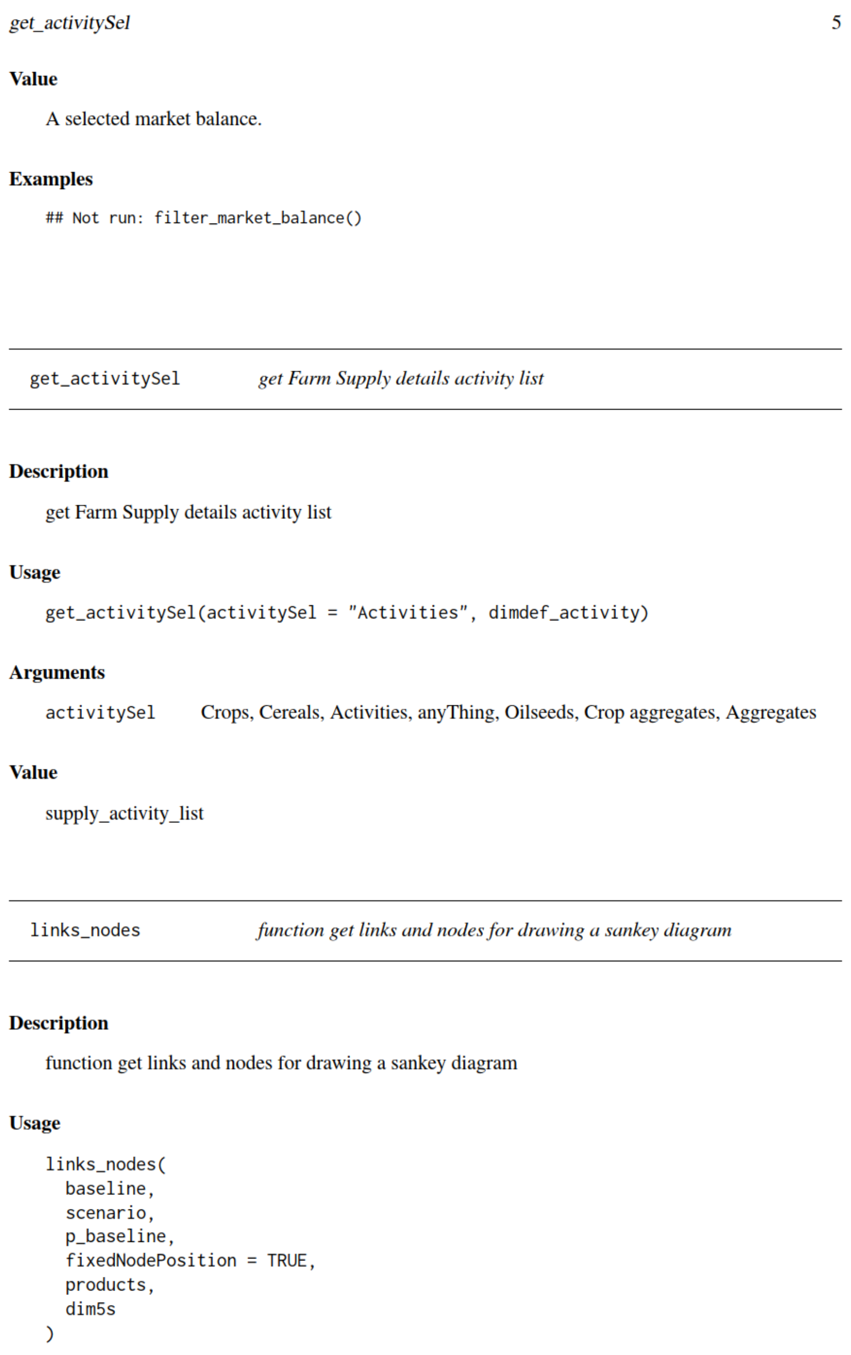
Usage

```
filter_market_balance(df, select_products, products)
```

Arguments

`df`	market balance.
`select_products`	A list of commodities for which the market balances should be derived.
`products`	all rows in the capri data from dimdefs.xml

This project has received funding from the European Union's Horizon 2020
research and innovation programme under grant agreement N° 817566.



Value

A selected market balance.

Examples

```
## Not run: filter_market_balance()
```

`get_activitySel` *get Farm Supply details activity list*

Description

get Farm Supply details activity list

Usage

```
get_activitySel(activitySel = "Activities", dimdef_activity)
```

Arguments

`activitySel`	Crops, Cereals, Activities, anyThing, Oilseeds, Crop aggregates, Aggregates

Value

supply_activity_list

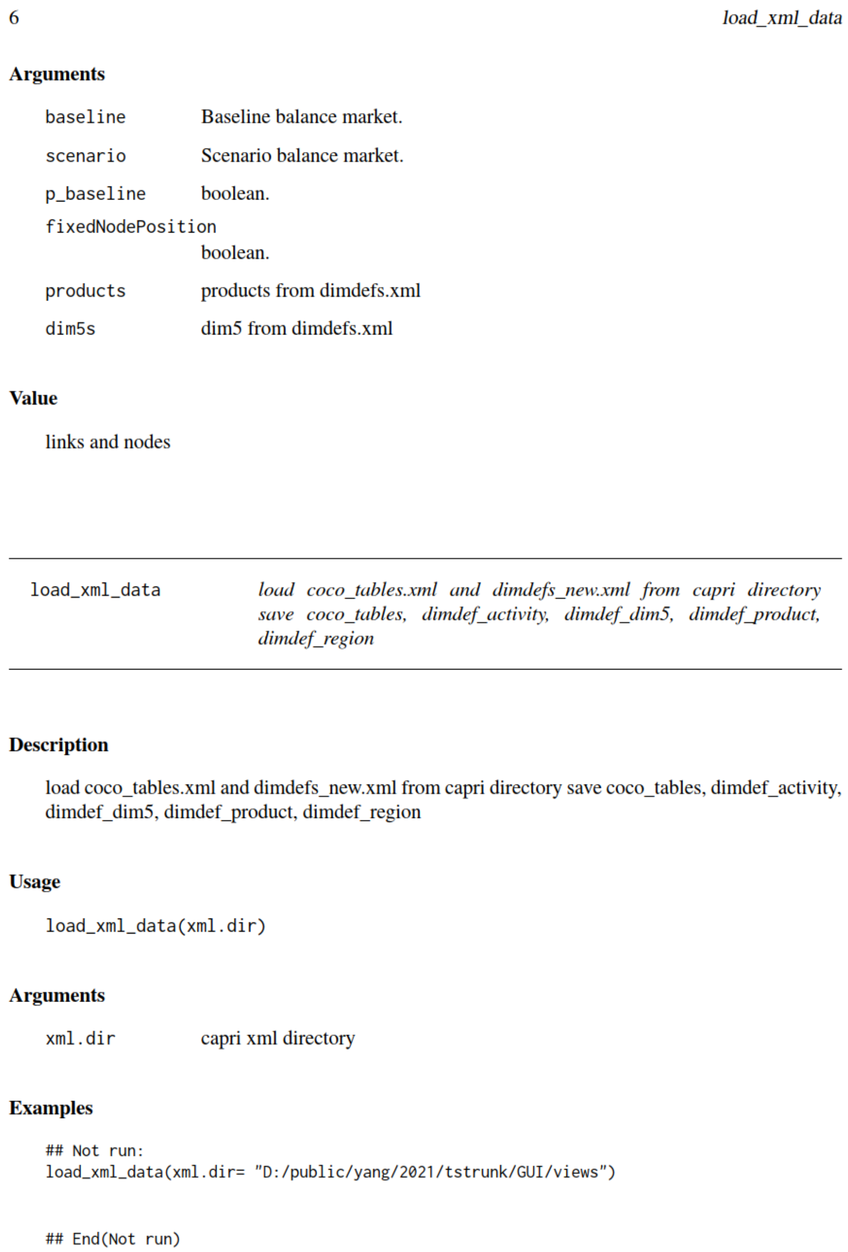
`links_nodes` *function get links and nodes for drawing a sankey diagram*

Description

function get links and nodes for drawing a sankey diagram

Usage

```
links_nodes(
  baseline,
  scenario,
  p_baseline,
  fixedNodePosition = TRUE,
  products,
  dim5s
)
```



Arguments

`baseline`	Baseline balance market.
`scenario`	Scenario balance market.
`p_baseline`	boolean.
`fixedNodePosition`	boolean.
`products`	products from dimdefs.xml
`dim5s`	dim5 from dimdefs.xml

Value

links and nodes

`load_xml_data` *load coco_tables.xml and dimdefs_new.xml from capri directory save coco_tables, dimdef_activity, dimdef_dim5, dimdef_product, dimdef_region*

Description

load coco_tables.xml and dimdefs_new.xml from capri directory save coco_tables, dimdef_activity, dimdef_dim5, dimdef_product, dimdef_region

Usage

```
load_xml_data(xml.dir)
```

Arguments

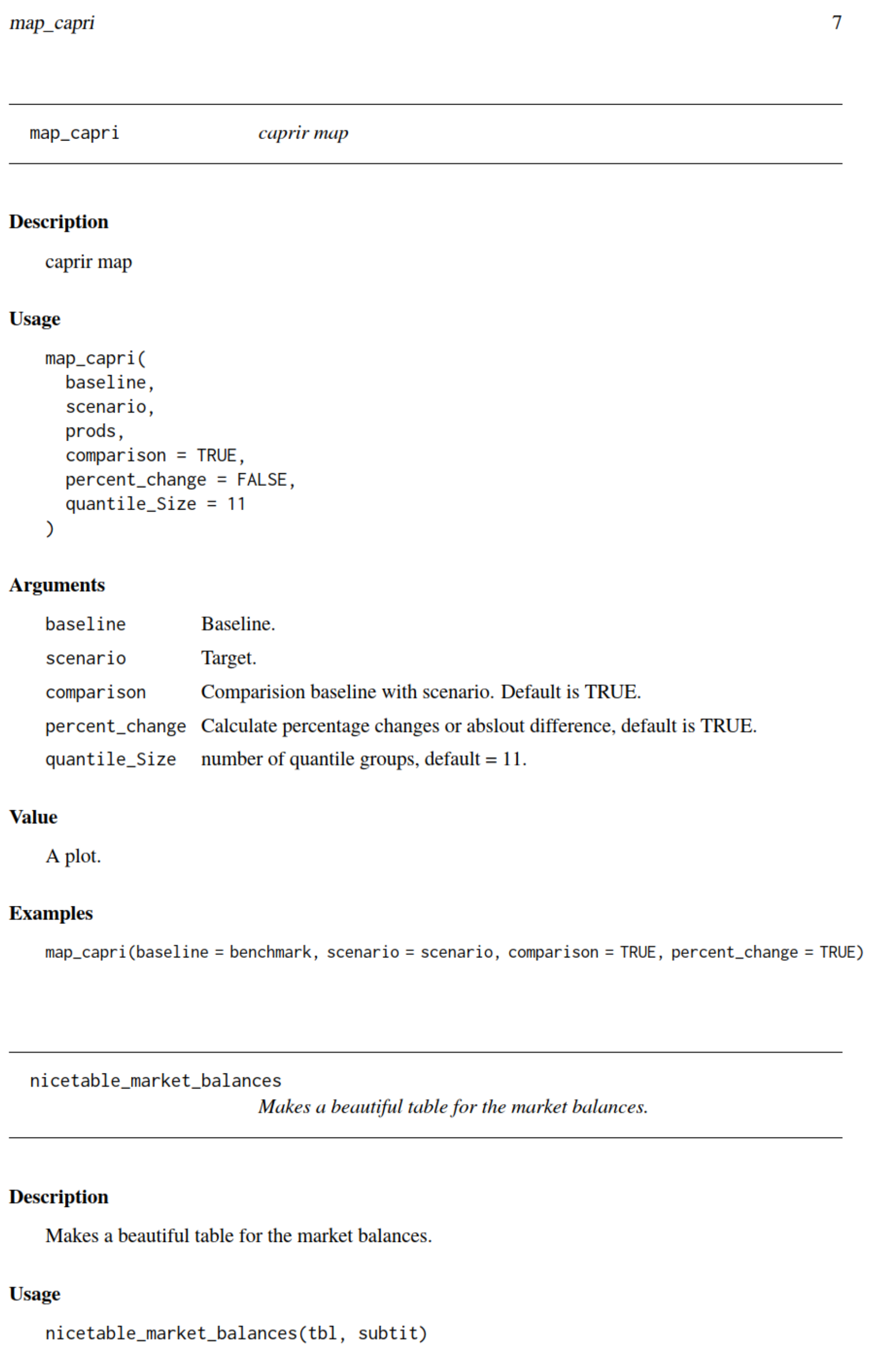
`xml.dir`	capri xml directory

Examples

```
## Not run:
load_xml_data(xml.dir= "D:/public/yang/2021/tstrunk/GUI/views")


## End(Not run)
```

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement N° 817566.



`map_capri` *caprir map*

Description

caprir map

Usage

```
map_capri(
  baseline,
  scenario,
  prods,
  comparison = TRUE,
  percent_change = FALSE,
  quantile_Size = 11
)
```

Arguments

`baseline`	Baseline.
`scenario`	Target.
`comparison`	Comparision baseline with scenario. Default is TRUE.
`percent_change`	Calculate percentage changes or abslout difference, default is TRUE.
`quantile_Size`	number of quantile groups, default = 11.

Value

A plot.

Examples

```
map_capri(baseline = benchmark, scenario = scenario, comparison = TRUE, percent_change = TRUE)
```

`nicetable_market_balances` *Makes a beautiful table for the market balances.*

Description

Makes a beautiful table for the market balances.

Usage

```
nicetable_market_balances(tbl, subtit)
```

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement N° 817566.

Arguments

`tbl`	A tbl data frame.
`subtit`	A character vector.

Value

a beautiful table.

`nicetable_supply_details` *makes Beautiful Table for the farm supply details*

Description

makes Beautiful Table for the farm supply details

Usage

```
nicetable_supply_details(tbl, subtit, vector_list, abs = 0, percent_change = 0)
```

Arguments

`tbl`	A tbl data frame.
`subtit`	A character vector, subtitle for the output table.
`vector_list`	Vector List in abs_col <- c("diff_supply", "diff_yield", "diff_level","diff_gross_value_added") per_col <- c("supply", "yield", "level","gross_value_added", "volume") "all", ""
`abs`	A num.
`percent_change`	a num

Value

a beautiful table.

`plot_sankey` *function draws sankey diagram and saves html pages for sankey*

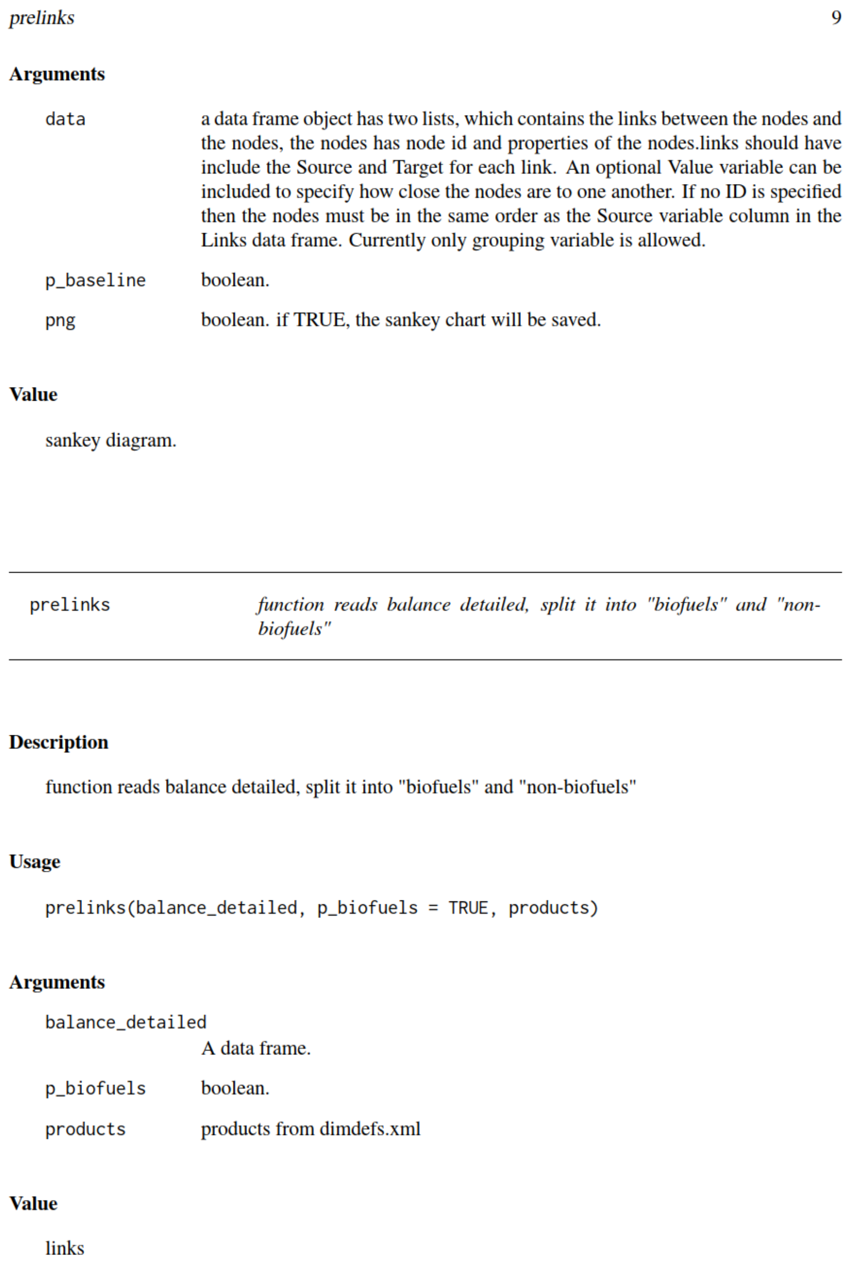
Description

function draws sankey diagram and saves html pages for sankey

Usage

```
plot_sankey(data, p_baseline, png, outdata.dir)
```

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement N° 817566.



prelinks 9

Arguments

`data` a data frame object has two lists, which contains the links between the nodes and the nodes, the nodes has node id and properties of the nodes.links should have include the Source and Target for each link. An optional Value variable can be included to specify how close the nodes are to one another. If no ID is specified then the nodes must be in the same order as the Source variable column in the Links data frame. Currently only grouping variable is allowed.

`p_baseline` boolean.

`png` boolean. if TRUE, the sankey chart will be saved.

Value

sankey diagram.

`prelinks` *function reads balance detailed, split it into "biofuels" and "non-biofuels"*

Description

function reads balance detailed, split it into "biofuels" and "non-biofuels"

Usage

```
prelinks(balance_detailed, p_biofuels = TRUE, products)
```

Arguments

`balance_detailed` A data frame.

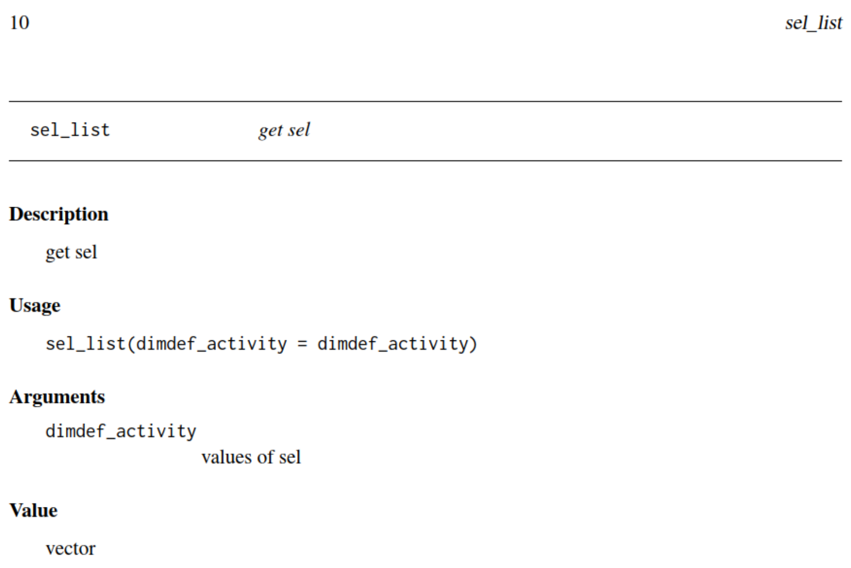
`p_biofuels` boolean.

`products` products from dimdefs.xml

Value

links

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement N° 817566.



sel_list *get sel*

Description

get sel

Usage

```
sel_list(dimdef_activity = dimdef_activity)
```

Arguments

`dimdef_activity`
values of sel

Value

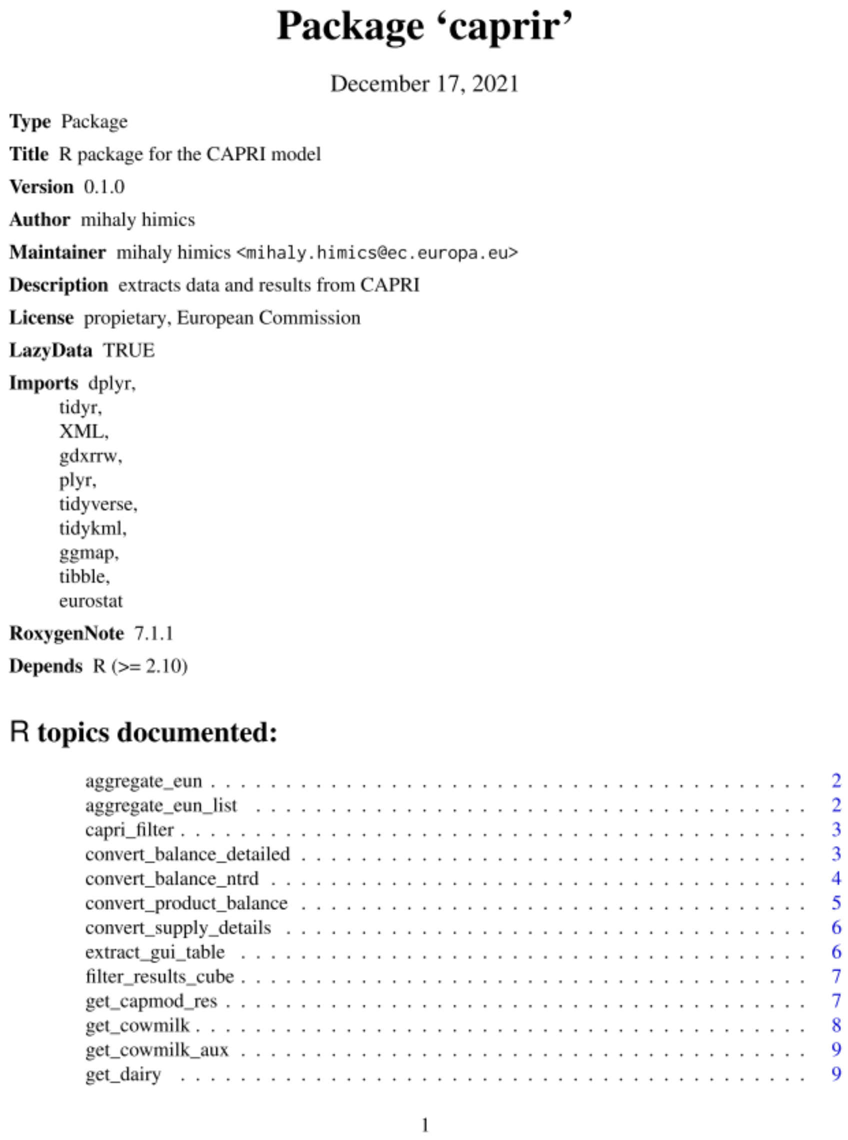
vector

This project has received funding from the European Union’s Horizon 2020 research and innovation programme under grant agreement N° 817566.

Index

This project has received funding from the European Union’s Horizon 2020 research and innovation programme under grant agreement N° 817566.

3.4. Repository ‘capriR’



Package ‘caprir’

December 17, 2021

Type Package

Title R package for the CAPRI model

Version 0.1.0

Author mihaly himics

Maintainer mihaly himics `<mihaly.himics@ec.europa.eu>`

Description extracts data and results from CAPRI

License propietary, European Commission

LazyData TRUE

Imports dplyr,
tidyr,
XML,
gdxrrw,
plyr,
tidyverse,
tidykml,
ggmap,
tibble,
eurostat

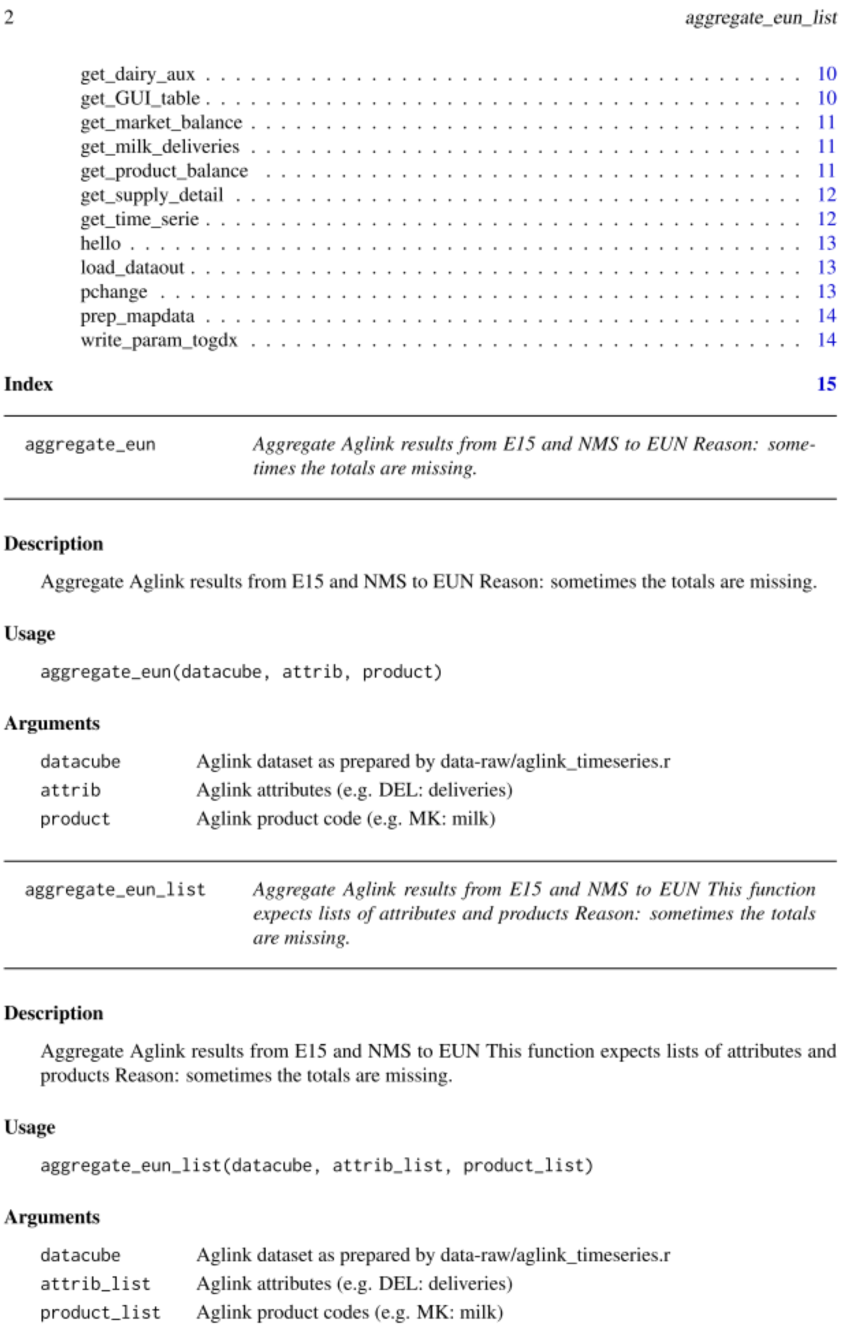
RoxygenNote 7.1.1

Depends R (>= 2.10)

R topics documented:

1

This project has received funding from the European Union’s Horizon 2020 research and innovation programme under grant agreement N° 817566.



`aggregate_eun` *Aggregate Aglink results from E15 and NMS to EUN Reason: sometimes the totals are missing.*

Description

Aggregate Aglink results from E15 and NMS to EUN Reason: sometimes the totals are missing.

Usage

```
aggregate_eun(datacube, attrib, product)
```

Arguments

`datacube`	Aglink dataset as prepared by data-raw/aglink_timeseries.r
`attrib`	Aglink attributes (e.g. DEL: deliveries)
`product`	Aglink product code (e.g. MK: milk)

`aggregate_eun_list` *Aggregate Aglink results from E15 and NMS to EUN This function expects lists of attributes and products Reason: sometimes the totals are missing.*

Description

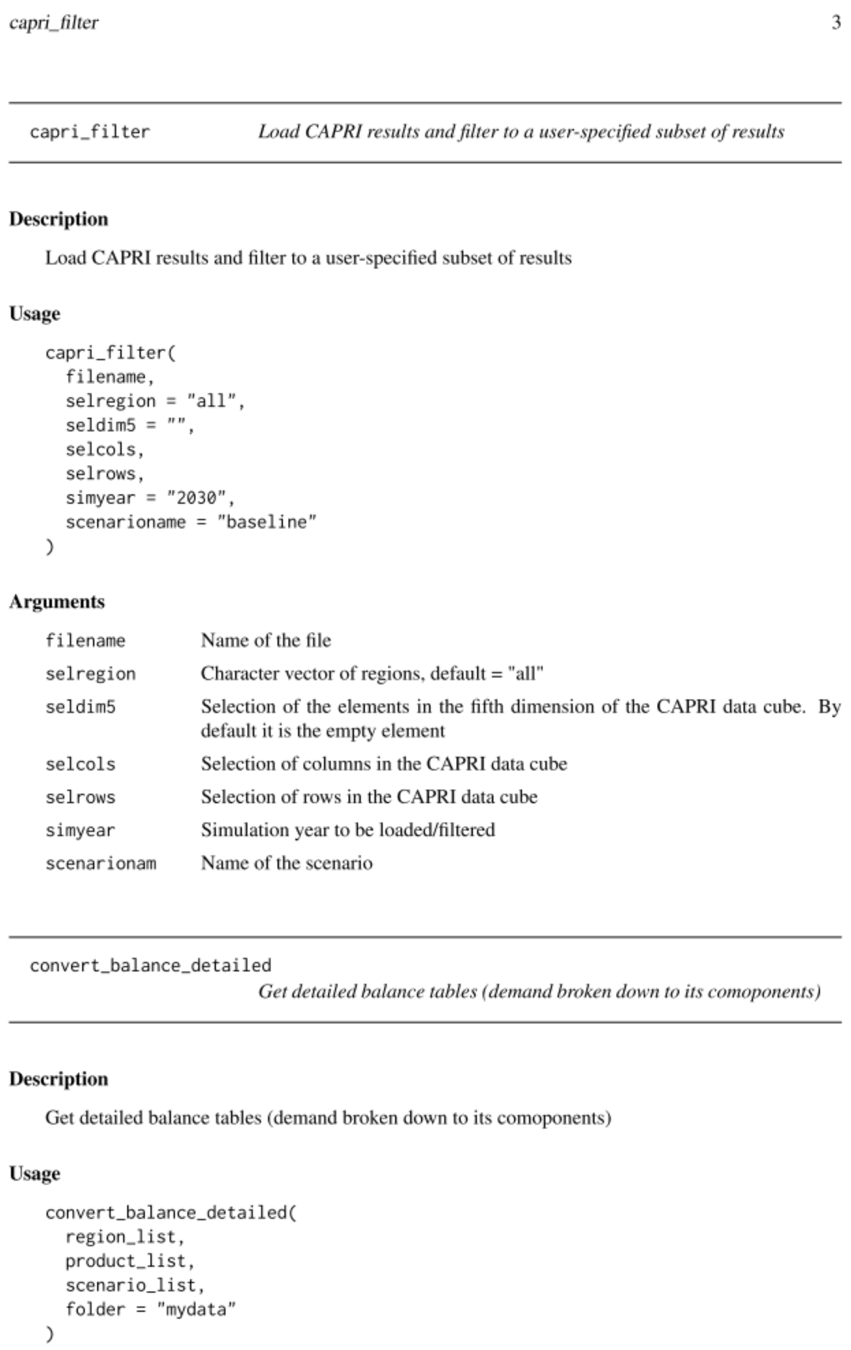
Aggregate Aglink results from E15 and NMS to EUN This function expects lists of attributes and products Reason: sometimes the totals are missing.

Usage

```
aggregate_eun_list(datacube, attrib_list, product_list)
```

Arguments

`datacube`	Aglink dataset as prepared by data-raw/aglink_timeseries.r
`attrib_list`	Aglink attributes (e.g. DEL: deliveries)
`product_list`	Aglink product codes (e.g. MK: milk)



`capri_filter` *Load CAPRI results and filter to a user-specified subset of results*

Description

Load CAPRI results and filter to a user-specified subset of results

Usage

```
capri_filter(
  filename,
  selregion = "all",
  seldim5 = "",
  selcols,
  selrows,
  simyear = "2030",
  scenarioname = "baseline"
)
```

Arguments

`filename`	Name of the file
`selregion`	Character vector of regions, default = "all"
`seldim5`	Selection of the elements in the fifth dimension of the CAPRI data cube. By default it is the empty element
`selcols`	Selection of columns in the CAPRI data cube
`selrows`	Selection of rows in the CAPRI data cube
`simyear`	Simulation year to be loaded/filtered
`scenarionam`	Name of the scenario

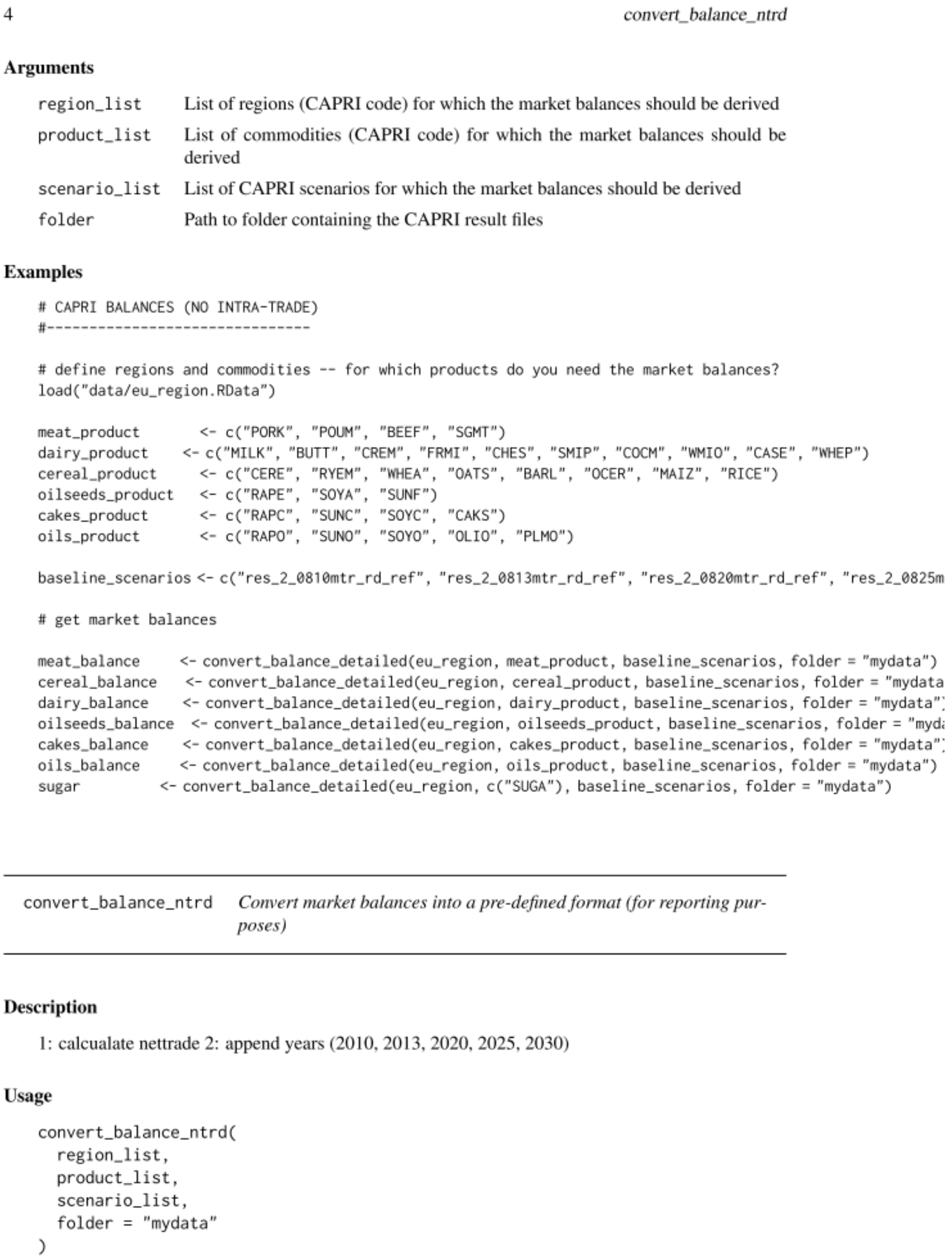
`convert_balance_detailed` *Get detailed balance tables (demand broken down to its comoponents)*

Description

Get detailed balance tables (demand broken down to its comoponents)

Usage

```
convert_balance_detailed(
  region_list,
  product_list,
  scenario_list,
  folder = "mydata"
)
```



Arguments

`region_list`	List of regions (CAPRI code) for which the market balances should be derived
`product_list`	List of commodities (CAPRI code) for which the market balances should be derived
`scenario_list`	List of CAPRI scenarios for which the market balances should be derived
`folder`	Path to folder containing the CAPRI result files

Examples

```
# CAPRI BALANCES (NO INTRA-TRADE)
#--------------------------------

# define regions and commodities -- for which products do you need the market balances?
load("data/eu_region.RData")

meat_product       <- c("PORK", "POUM", "BEEF", "SGMT")
dairy_product     <- c("MILK", "BUTT", "CREM", "FRMI", "CHES", "SMIP", "COCM", "WMIO", "CASE", "WHEP")
cereal_product     <- c("CERE", "RYEM", "WHEA", "OATS", "BARL", "OCER", "MAIZ", "RICE")
oilseeds_product   <- c("RAPE", "SOYA", "SUNF")
cakes_product      <- c("RAPC", "SUNC", "SOYC", "CAKS")
oils_product       <- c("RAPO", "SUNO", "SOYO", "OLIO", "PLMO")

baseline_scenarios <- c("res_2_0810mtr_rd_ref", "res_2_0813mtr_rd_ref", "res_2_0820mtr_rd_ref", "res_2_0825m

# get market balances

meat_balance     <- convert_balance_detailed(eu_region, meat_product, baseline_scenarios, folder = "mydata")
cereal_balance    <- convert_balance_detailed(eu_region, cereal_product, baseline_scenarios, folder = "mydata
dairy_balance     <- convert_balance_detailed(eu_region, dairy_product, baseline_scenarios, folder = "mydata")
oilseeds_balance  <- convert_balance_detailed(eu_region, oilseeds_product, baseline_scenarios, folder = "myda
cakes_balance     <- convert_balance_detailed(eu_region, cakes_product, baseline_scenarios, folder = "mydata")
oils_balance     <- convert_balance_detailed(eu_region, oils_product, baseline_scenarios, folder = "mydata")
sugar          <- convert_balance_detailed(eu_region, c("SUGA"), baseline_scenarios, folder = "mydata")
```

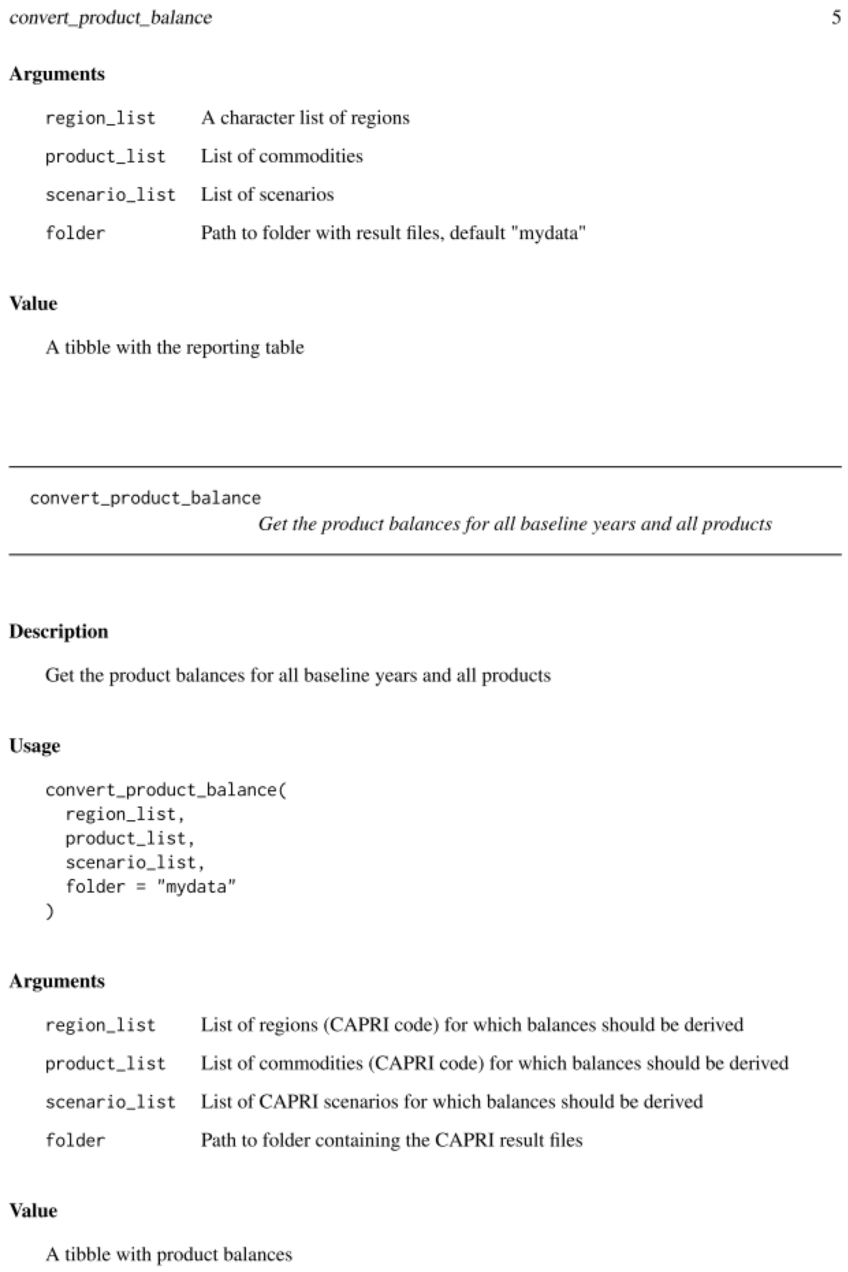
`convert_balance_ntrd` *Convert market balances into a pre-defined format (for reporting purposes)*

Description

1: calcualate nettrade 2: append years (2010, 2013, 2020, 2025, 2030)

Usage

```
convert_balance_ntrd(
  region_list,
  product_list,
  scenario_list,
  folder = "mydata"
)
```



Arguments

`region_list`	A character list of regions
`product_list`	List of commodities
`scenario_list`	List of scenarios
`folder`	Path to folder with result files, default "mydata"

Value

A tibble with the reporting table

`convert_product_balance` *Get the product balances for all baseline years and all products*

Description

Get the product balances for all baseline years and all products

Usage

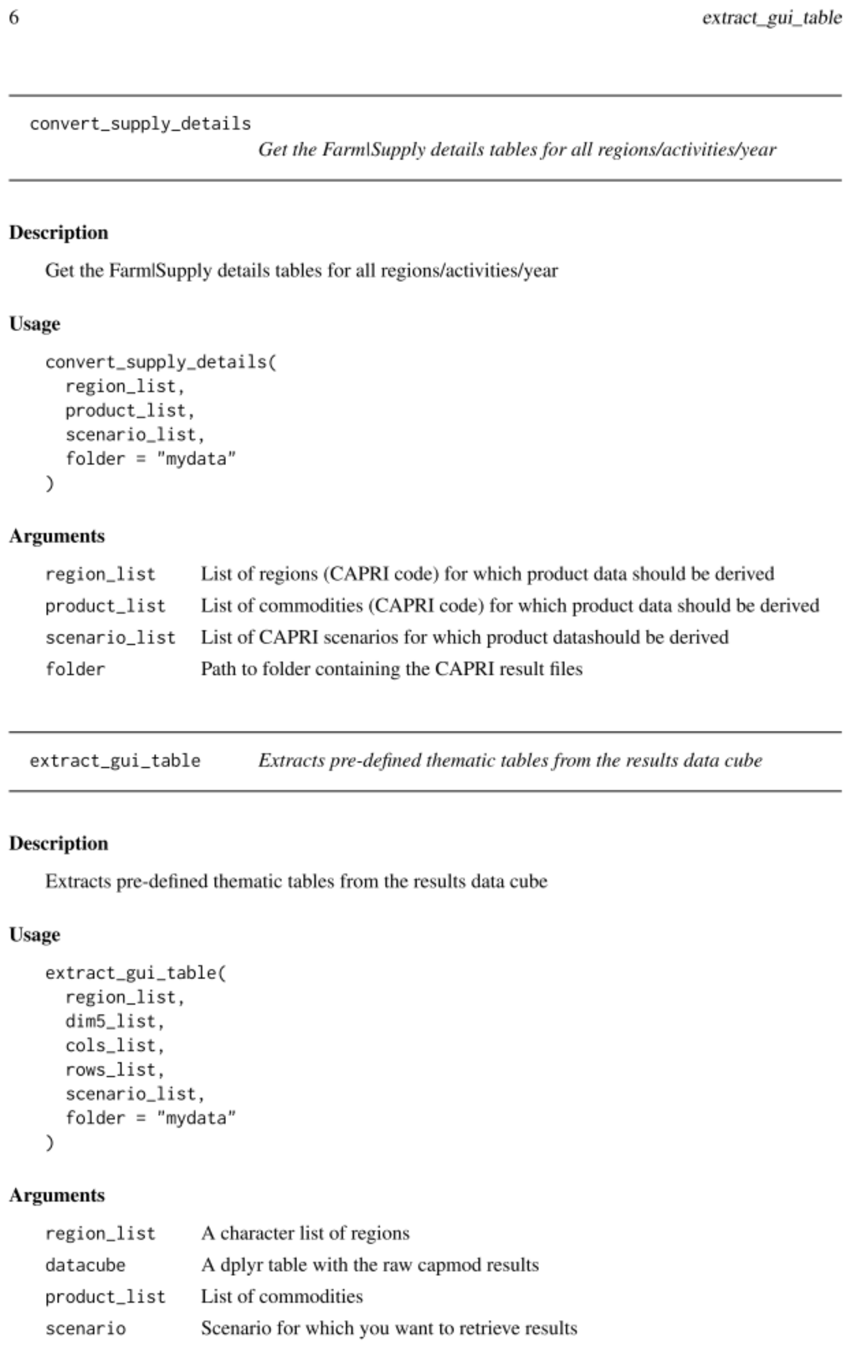
```
convert_product_balance(
  region_list,
  product_list,
  scenario_list,
  folder = "mydata"
)
```

Arguments

`region_list`	List of regions (CAPRI code) for which balances should be derived
`product_list`	List of commodities (CAPRI code) for which balances should be derived
`scenario_list`	List of CAPRI scenarios for which balances should be derived
`folder`	Path to folder containing the CAPRI result files

Value

A tibble with product balances



`convert_supply_details` *Get the Farm|Supply details tables for all regions/activities/year*

Description

Get the Farm|Supply details tables for all regions/activities/year

Usage

```
convert_supply_details(
  region_list,
  product_list,
  scenario_list,
  folder = "mydata"
)
```

Arguments

`region_list`	List of regions (CAPRI code) for which product data should be derived
`product_list`	List of commodities (CAPRI code) for which product data should be derived
`scenario_list`	List of CAPRI scenarios for which product datashould be derived
`folder`	Path to folder containing the CAPRI result files

`extract_gui_table` *Extracts pre-defined thematic tables from the results data cube*

Description

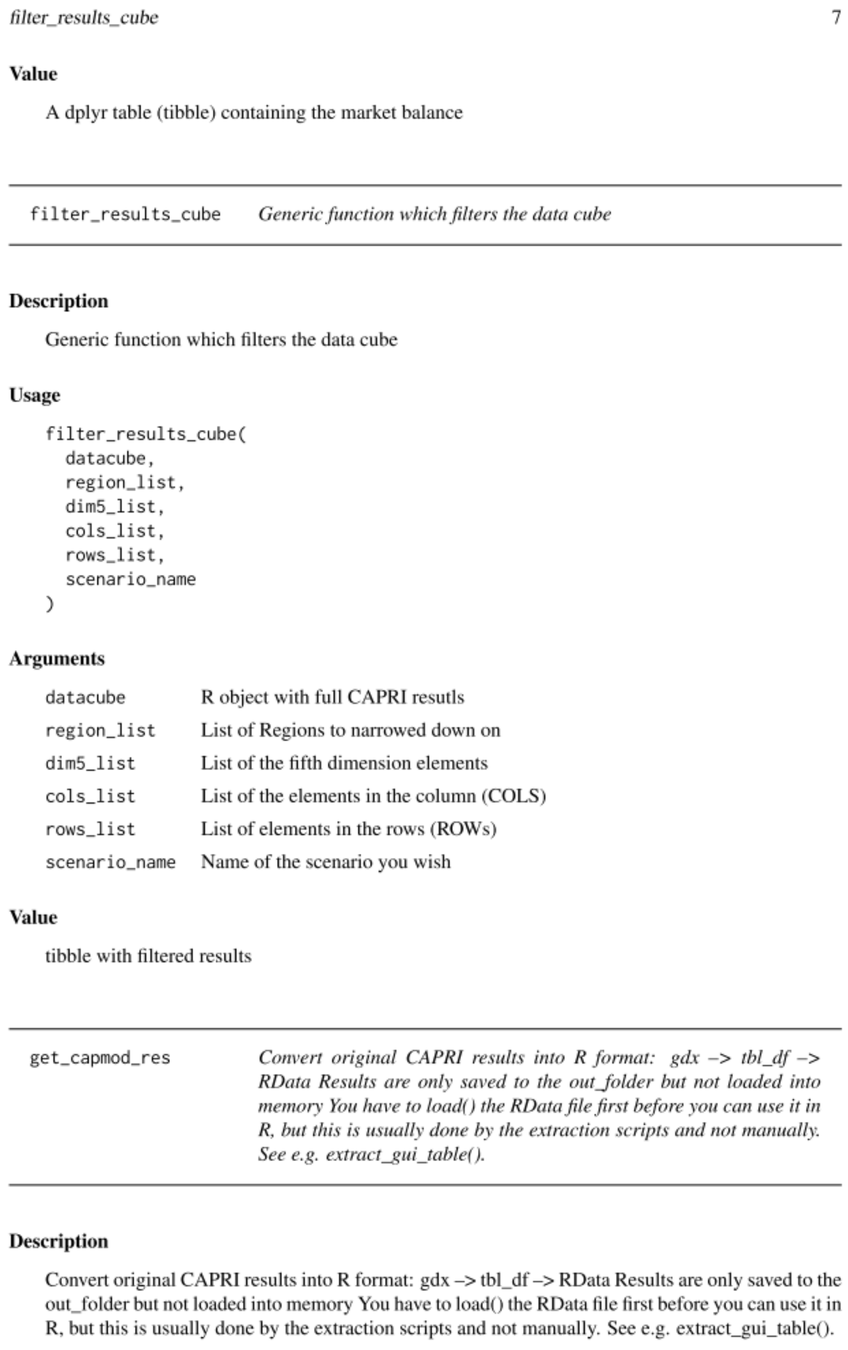
Extracts pre-defined thematic tables from the results data cube

Usage

```
extract_gui_table(
  region_list,
  dim5_list,
  cols_list,
  rows_list,
  scenario_list,
  folder = "mydata"
)
```

Arguments

`region_list`	A character list of regions
`datacube`	A dplyr table with the raw capmod results
`product_list`	List of commodities
`scenario`	Scenario for which you want to retrieve results



Value

A dplyr table (tibble) containing the market balance

`filter_results_cube` *Generic function which filters the data cube*

Description

Generic function which filters the data cube

Usage

```
filter_results_cube(
  datacube,
  region_list,
  dim5_list,
  cols_list,
  rows_list,
  scenario_name
)
```

Arguments

`datacube`	R object with full CAPRI resutls
`region_list`	List of Regions to narrowed down on
`dim5_list`	List of the fifth dimension elements
`cols_list`	List of the elements in the column (COLS)
`rows_list`	List of elements in the rows (ROWs)
`scenario_name`	Name of the scenario you wish

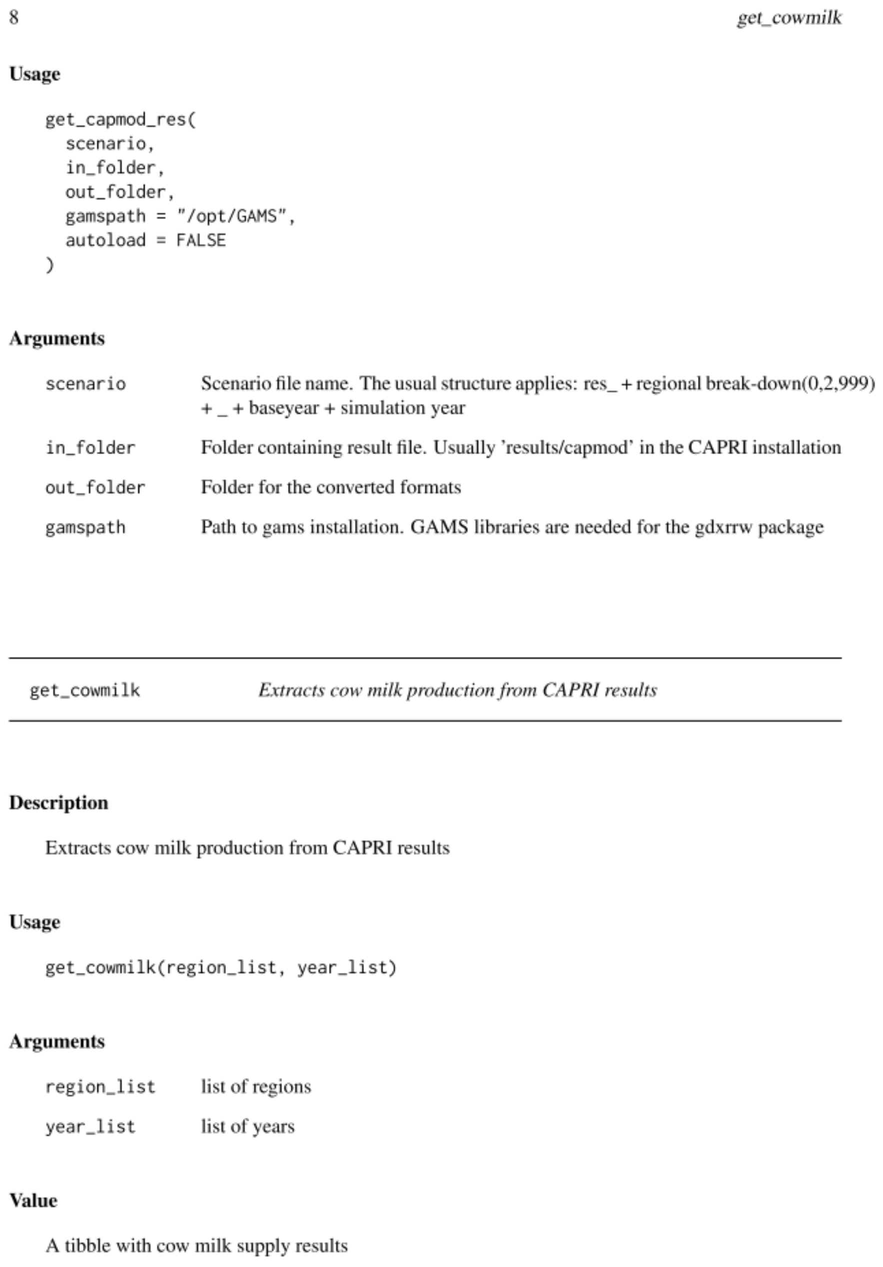
Value

tibble with filtered results

`get_capmod_res` *Convert original CAPRI results into R format: gdx –> tbl_df –> RData Results are only saved to the out_folder but not loaded into memory You have to load() the RData file first before you can use it in R, but this is usually done by the extraction scripts and not manually. See e.g. extract_gui_table().*

Description

Convert original CAPRI results into R format: gdx –> tbl_df –> RData Results are only saved to the out_folder but not loaded into memory You have to load() the RData file first before you can use it in R, but this is usually done by the extraction scripts and not manually. See e.g. extract_gui_table().



Usage

```
get_capmod_res(
  scenario,
  in_folder,
  out_folder,
  gamspath = "/opt/GAMS",
  autoload = FALSE
)
```

Arguments

`scenario`	Scenario file name. The usual structure applies: res_ + regional break-down(0,2,999) + _ + baseyear + simulation year
`in_folder`	Folder containing result file. Usually 'results/capmod' in the CAPRI installation
`out_folder`	Folder for the converted formats
`gamspath`	Path to gams installation. GAMS libraries are needed for the gdxrrw package

`get_cowmilk` *Extracts cow milk production from CAPRI results*

Description

Extracts cow milk production from CAPRI results

Usage

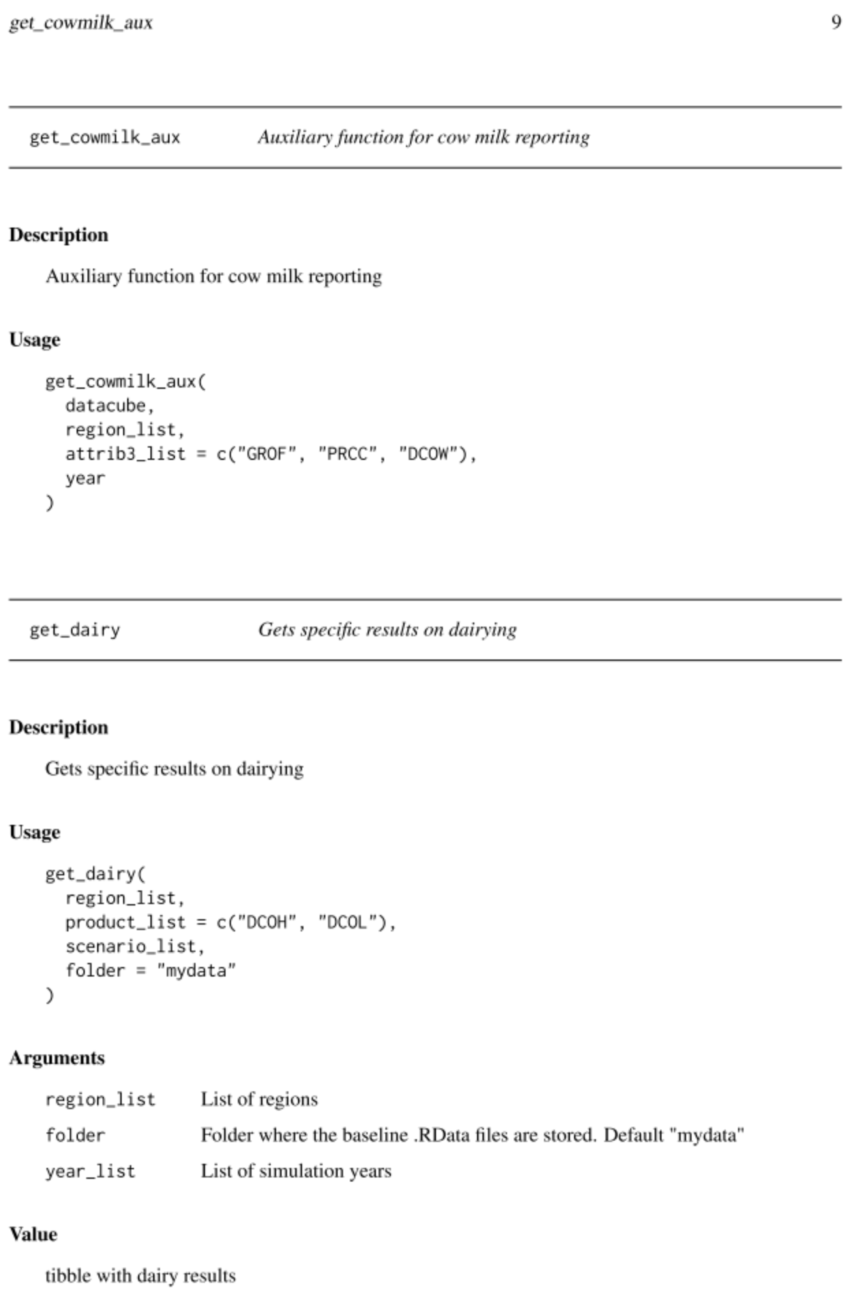
```
get_cowmilk(region_list, year_list)
```

Arguments

`region_list`	list of regions
`year_list`	list of years

Value

A tibble with cow milk supply results



`get_cowmilk_aux` *Auxiliary function for cow milk reporting*

Description

Auxiliary function for cow milk reporting

Usage

```
get_cowmilk_aux(
  datacube,
  region_list,
  attrib3_list = c("GROF", "PRCC", "DCOW"),
  year
)
```

`get_dairy` *Gets specific results on dairying*

Description

Gets specific results on dairying

Usage

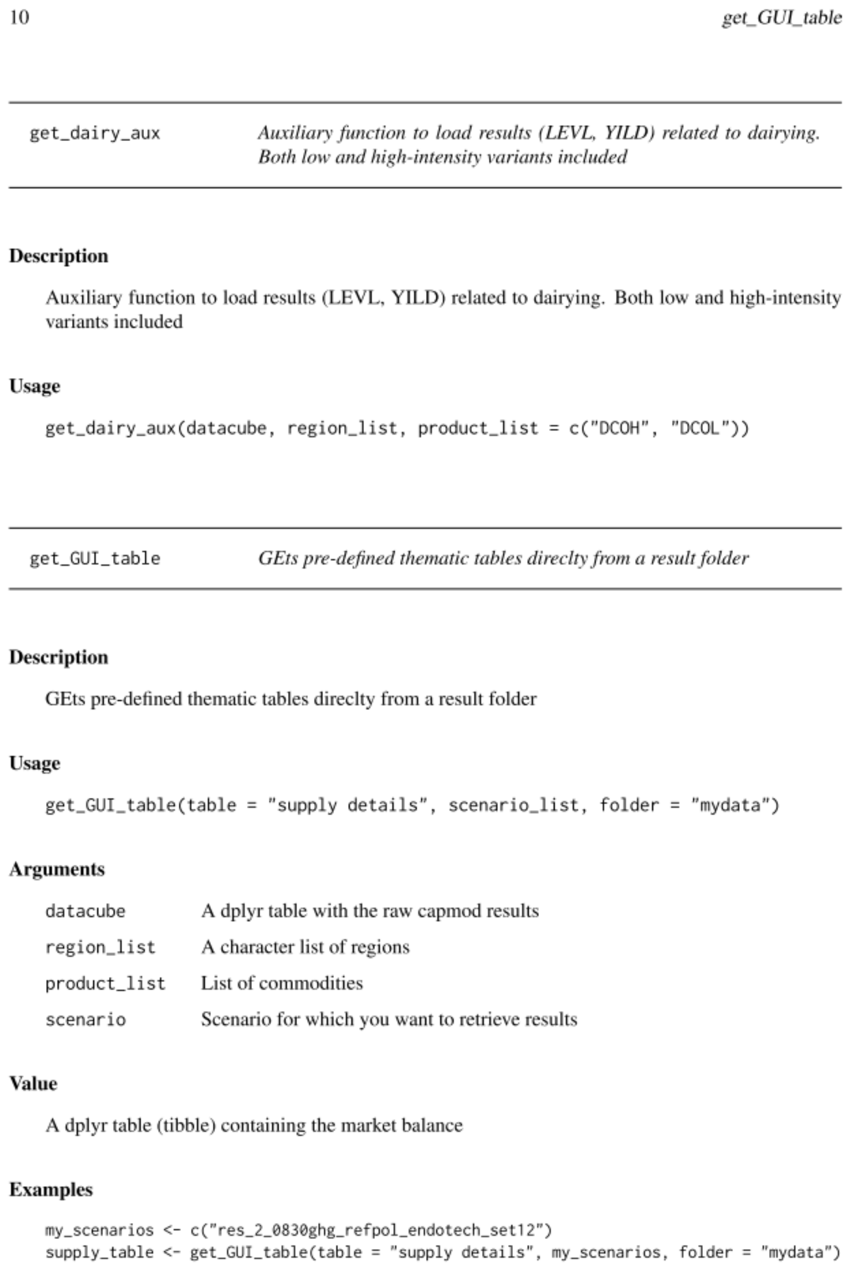
```
get_dairy(
  region_list,
  product_list = c("DCOH", "DCOL"),
  scenario_list,
  folder = "mydata"
)
```

Arguments

`region_list`	List of regions
`folder`	Folder where the baseline .RData files are stored. Default "mydata"
`year_list`	List of simulation years

Value

tibble with dairy results



`get_dairy_aux`	*Auxiliary function to load results (LEVL, YILD) related to dairying. Both low and high-intensity variants included*

Description

Auxiliary function to load results (LEVL, YILD) related to dairying. Both low and high-intensity variants included

Usage

```
get_dairy_aux(datacube, region_list, product_list = c("DCOH", "DCOL"))
```

`get_GUI_table`	*GEts pre-defined thematic tables direclty from a result folder*

Description

GEts pre-defined thematic tables direclty from a result folder

Usage

```
get_GUI_table(table = "supply details", scenario_list, folder = "mydata")
```

Arguments

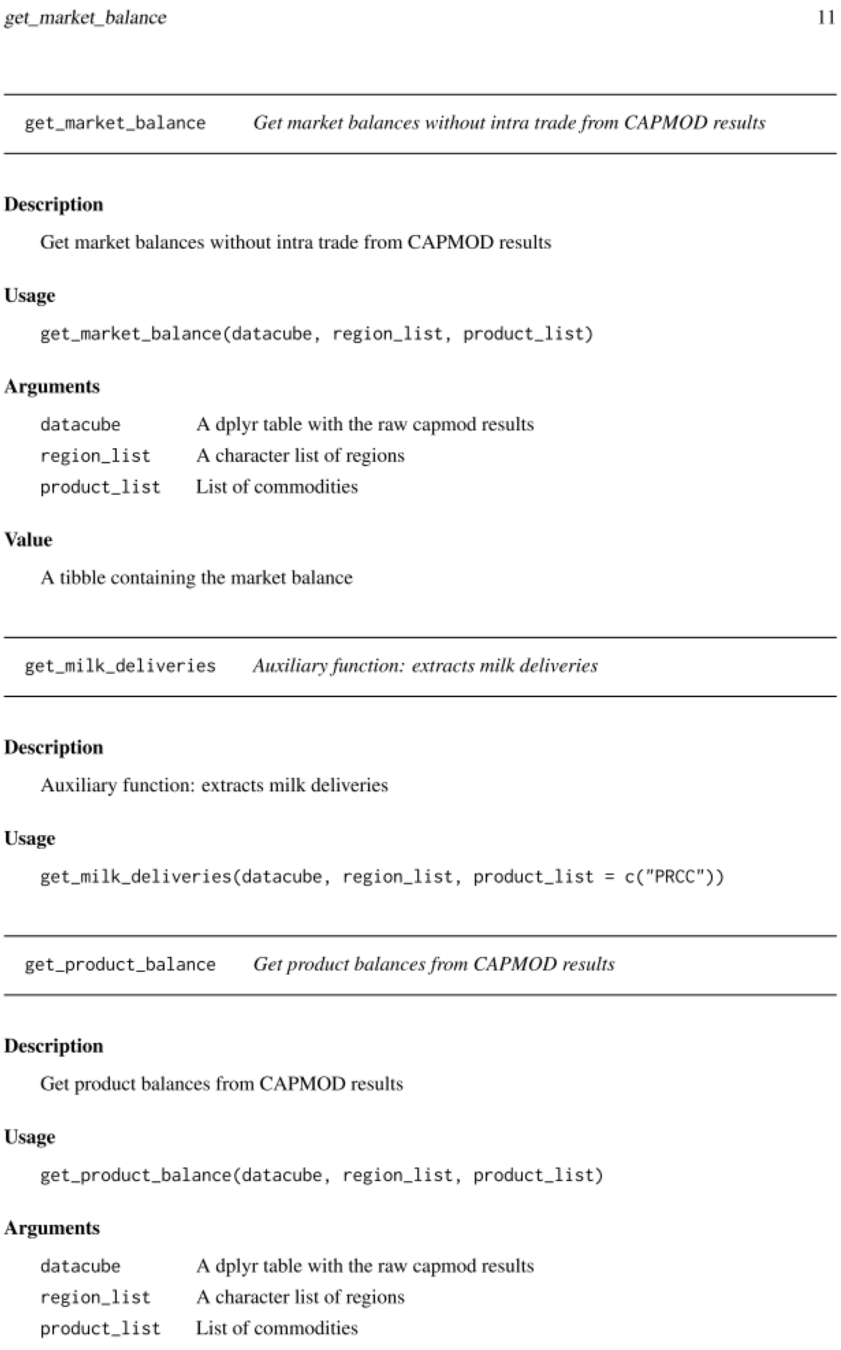
`datacube`	A dplyr table with the raw capmod results
`region_list`	A character list of regions
`product_list`	List of commodities
`scenario`	Scenario for which you want to retrieve results

Value

A dplyr table (tibble) containing the market balance

Examples

```
my_scenarios <- c("res_2_0830ghg_refpol_endotech_set12")
supply_table <- get_GUI_table(table = "supply details", my_scenarios, folder = "mydata")
```



`get_market_balance` *Get market balances without intra trade from CAPMOD results*

Description

Get market balances without intra trade from CAPMOD results

Usage

```
get_market_balance(datacube, region_list, product_list)
```

Arguments

`datacube`	A dplyr table with the raw capmod results
`region_list`	A character list of regions
`product_list`	List of commodities

Value

A tibble containing the market balance

`get_milk_deliveries` *Auxiliary function: extracts milk deliveries*

Description

Auxiliary function: extracts milk deliveries

Usage

```
get_milk_deliveries(datacube, region_list, product_list = c("PRCC"))
```

`get_product_balance` *Get product balances from CAPMOD results*

Description

Get product balances from CAPMOD results

Usage

```
get_product_balance(datacube, region_list, product_list)
```

Arguments

`datacube`	A dplyr table with the raw capmod results
`region_list`	A character list of regions
`product_list`	List of commodities

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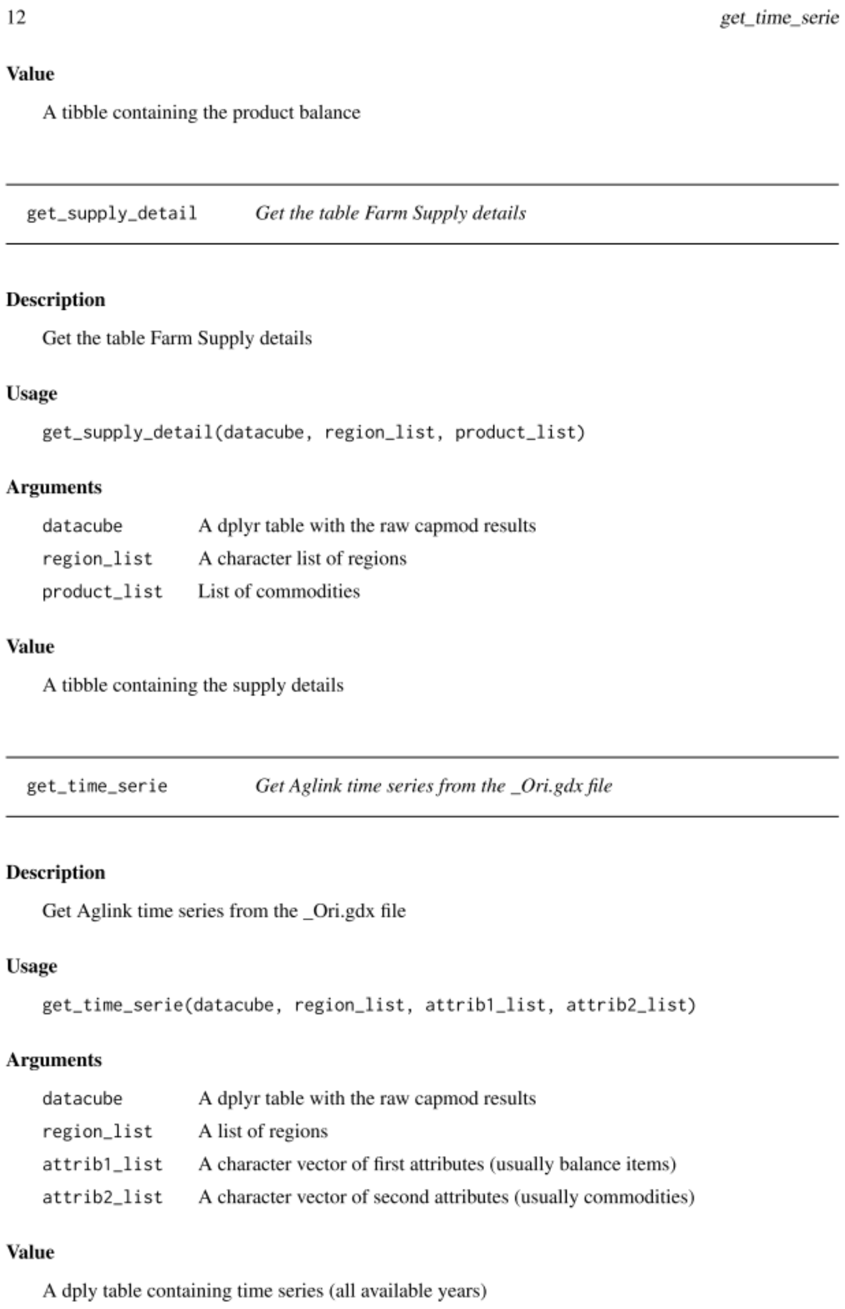


Value

A tibble containing the product balance

`get_supply_detail` *Get the table Farm Supply details*

Description

Get the table Farm Supply details

Usage

```
get_supply_detail(datacube, region_list, product_list)
```

Arguments

`datacube`	A dplyr table with the raw capmod results
`region_list`	A character list of regions
`product_list`	List of commodities

Value

A tibble containing the supply details

`get_time_serie` *Get Aglink time series from the _Ori.gdx file*

Description

Get Aglink time series from the _Ori.gdx file

Usage

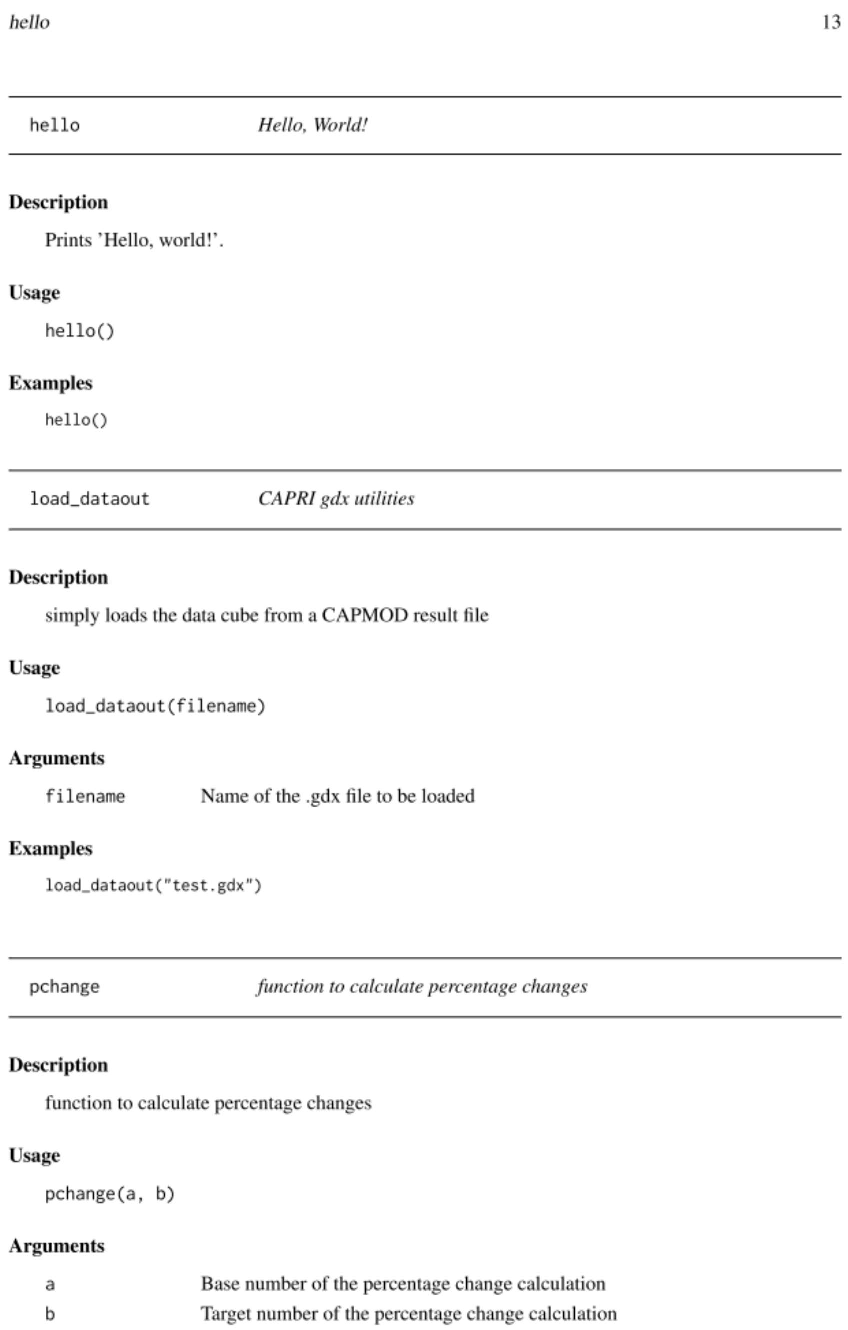
```
get_time_serie(datacube, region_list, attrib1_list, attrib2_list)
```

Arguments

`datacube`	A dplyr table with the raw capmod results
`region_list`	A list of regions
`attrib1_list`	A character vector of first attributes (usually balance items)
`attrib2_list`	A character vector of second attributes (usually commodities)

Value

A dply table containing time series (all available years)



`hello` *Hello, World!*

Description

Prints 'Hello, world!'.

Usage

```
hello()
```

Examples

```
hello()
```

`load_dataout` *CAPRI gdx utilities*

Description

simply loads the data cube from a CAPMOD result file

Usage

```
load_dataout(filename)
```

Arguments

`filename`	Name of the .gdx file to be loaded

Examples

```
load_dataout("test.gdx")
```

`pchange` *function to calculate percentage changes*

Description

function to calculate percentage changes

Usage

```
pchange(a, b)
```

Arguments

`a`	Base number of the percentage change calculation
`b`	Target number of the percentage change calculation

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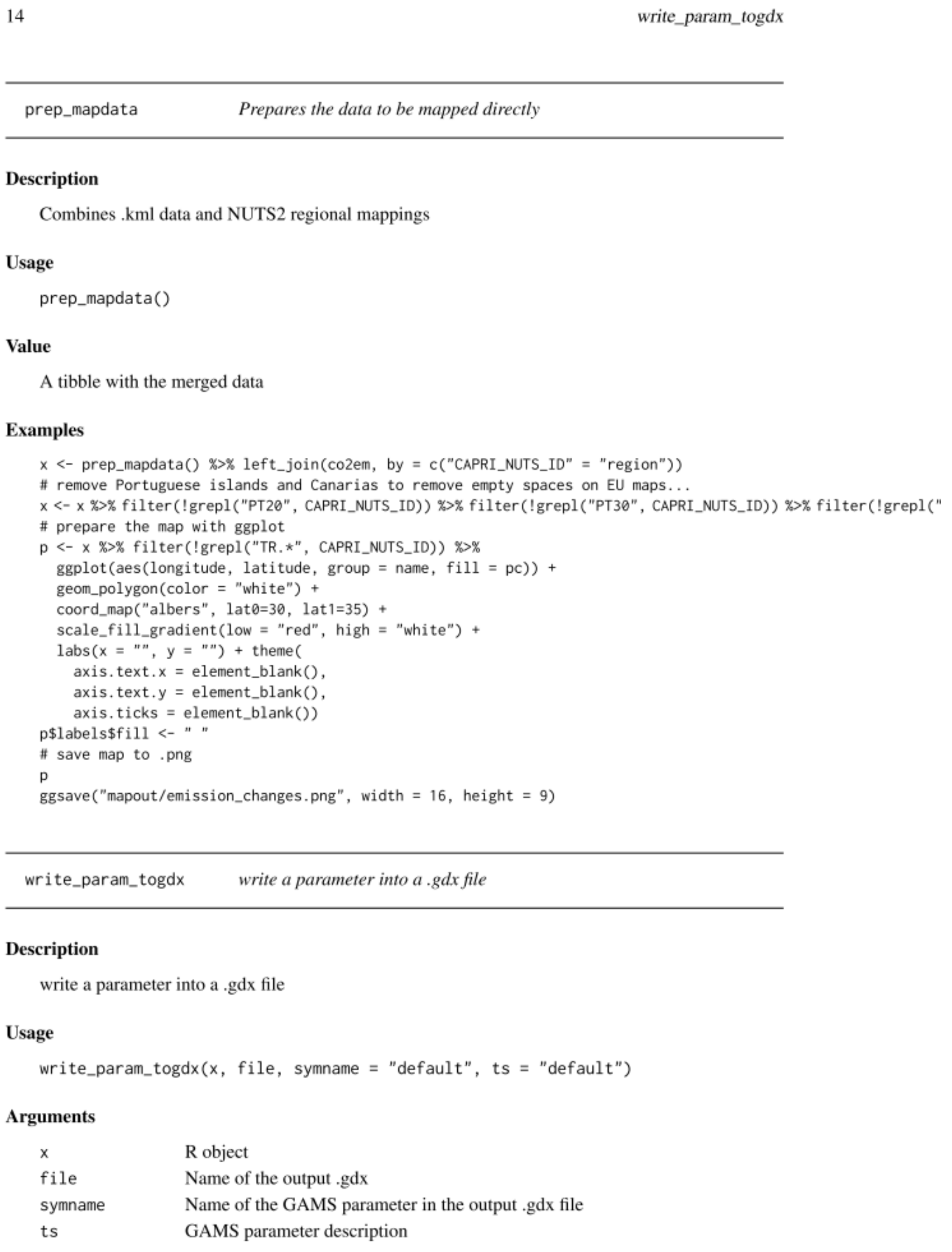

`prep_mapdata` *Prepares the data to be mapped directly*

Description

Combines .kml data and NUTS2 regional mappings

Usage

```
prep_mapdata()
```

Value

A tibble with the merged data

Examples

```
x <- prep_mapdata() %>% left_join(co2em, by = c("CAPRI_NUTS_ID" = "region"))
# remove Portuguese islands and Canarias to remove empty spaces on EU maps...
x <- x %>% filter(!grepl("PT20", CAPRI_NUTS_ID)) %>% filter(!grepl("PT30", CAPRI_NUTS_ID)) %>% filter(!grepl("
# prepare the map with ggplot
p <- x %>% filter(!grepl("TR.*", CAPRI_NUTS_ID)) %>%
  ggplot(aes(longitude, latitude, group = name, fill = pc)) +
  geom_polygon(color = "white") +
  coord_map("albers", lat0=30, lat1=35) +
  scale_fill_gradient(low = "red", high = "white") +
  labs(x = "", y = "") + theme(
    axis.text.x = element_blank(),
    axis.text.y = element_blank(),
    axis.ticks = element_blank())
p$labels$fill <- " "
# save map to .png
p
ggsave("mapout/emission_changes.png", width = 16, height = 9)
```

`write_param_togdx` *write a parameter into a .gdx file*

Description

write a parameter into a .gdx file

Usage

```
write_param_togdx(x, file, symname = "default", ts = "default")
```

Arguments

`x`	R object
`file`	Name of the output .gdx
`symname`	Name of the GAMS parameter in the output .gdx file
`ts`	GAMS parameter description

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