Package: mrvalidnitrogen (via r-universe)

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Type Package

Title madrat data preparation for validation purposes of nitrogen budgets

Version 1.6.6

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Description Package contains routines to prepare data for validation exercises.

Depends R(>= 2.10.0), magclass(>= 3.17), madrat(>= 1.31), mrvalidation(>= 2.31), utils

Imports magpiesets, reshape2

Suggests testthat, covr

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URL https://github.com/pik-piam/mrvalidnitrogen

BugReports https://github.com/pik-piam/mrvalidnitrogen/issues

LazyData no

Encoding UTF-8

RoxygenNote 7.2.3

Repository https://pik-piam.r-universe.dev

RemoteUrl https://github.com/pik-piam/mrvalidnitrogen

RemoteRef HEAD

RemoteSha d5a6aab0d067a384cd2d7493c9794f0f91fd35be

Contents

`calcFertP` *Calculate Fertilizer of Phosphor*

Description

Provides FertP data for Phosphor.No changes to the content have been done.

Usage

```
calcFertP()
```

Value

Fertilizer data for Phosphor and corresonding weights as a list of two MAgPIE objects

Author(s)

Lavinia Baumstark

Examples

```
## Not run:
calcOutput("FertP")


## End(Not run)
```

calcNitrogenBudgetLivestock

calcNitrogenBudgetLivestock

Description

Calculates Nitrogen Budgets for the livestock sector on country levels.

Usage

```
calcNitrogenBudgetLivestock()
```

Value

List of magpie object with results on country level, weight on country level, unit and description.

Author(s)

Benjamin Leon Bodirsky

Examples

```
## Not run:
calcOutput("NitrogenBudgetLivestock")

## End(Not run)
```

calcNutrientBudgetFoodProcessing

calcNutrientBudgetFoodProcessing

Description

Fooduse before processing, after processing and food processing loss

Usage

```
calcNutrientBudgetFoodProcessing()
```

Value

List of magpie objects with results on country level, weight on country level, unit and description.

Author(s)

Benjamin Leon Bodirsky

Examples

```
## Not run:
calcOutput("NutrientBudgetFoodProcessing")

## End(Not run)
```

---

calcNutrientWasteBudget *calcNutrientWasteBudget*

Description

Estimate waste flows of nutrients from differents sources, including Household waste, slaughter-waste and Processingwaste

Usage

```
calcNutrientWasteBudget(nutrient = "nr")
```

Arguments

nutrient	The nutrient in which the results shall be reported.

Value

List of magpie objects with results on country level, weight on country level, unit and description.

Author(s)

Benjamin Leon Bodirsky

Examples

```
## Not run:
calcOutput("NutrientWasteBudget")

## End(Not run)
```

calcValidNitrogenAtmosphericDeposition
calcValidNitrogenAtmosphericDeposition

Description

Validation Script for Atmospheric nitrogen deposition

Usage

```
calcValidNitrogenAtmosphericDeposition(datasource = "CEDS")
```

Arguments

datasource	Bodirsky for own calculations based on Dentener et al, CEDS et al and self-calcualted emissions

Value

List of magpie objects with results on country level, weight on country level, unit and description.

Author(s)

Benjamin Leon Bodirsky

Examples

```
## Not run:
calcOutput("ValidNitrogenAtmosphericDeposition")

## End(Not run)
```

calcValidNitrogenBudgetNonagland
calcValidNitrogenBudgetNonagland

Description

Validation Script for Nitrogen Budgets on Non-Agricultural Land

Usage

```
calcValidNitrogenBudgetNonagland(datasource = "Bodirsky")
```

Arguments

datasource	Bodirsky for own calculations

Value

List of magpie objects with results on country level, weight on country level, unit and description.

Author(s)

Benjamin Leon Bodirsky

Examples

```
## Not run:
calcOutput("ValidNitrogenBudgetNonagland")

## End(Not run)
```

---

calcValidNitrogenBudgetOcean

calcValidNitrogenBudgetOcean

Description

Validation Script for Nitrogen Budgets for Oceans

Usage

```
calcValidNitrogenBudgetOcean(datasource = "Bodirsky")
```

Arguments

datasource	Bodirsky for own calculations

Value

List of magpie objects with results on country level, weight on country level, unit and description.

Author(s)

Benjamin Leon Bodirsky

Examples

```
## Not run:
calcOutput("ValidNitrogenBudgetOcean")

## End(Not run)
```

calcValidNitrogenPollution *calcValidNitrogenPollution*

Description

Validation Script for Nitrogen Budgets on Croplands

Usage

```
calcValidNitrogenPollution(datasource = "Nsurplus")
```

Arguments

datasource	Bodirsky for own calculations, FAO for some N related parameters published in FAOSTAT.

Value

List of magpie objects with results on country level, weight on country level, unit and description.

Author(s)

Benjamin Leon Bodirsky

Examples

```
## Not run:
calcOutput("ValidNitrogenPollution")

## End(Not run)
```

calcValidNutrientBudgetFoodProcessing *calcValidNutrientBudgetFoodProcessing*

Description

Validation Script for Nitrogen Budgets for Food Processing (processing from fooduse to food, not processing from one product to another)

Usage

```
calcValidNutrientBudgetFoodProcessing(
  datasource = "Bodirsky",
  nutrient = "nr",
  detail = FALSE
)
```

Arguments

datasource	Bodirsky for own calculations
nutrient	The nutrient in which the results shall be reported.
detail	shall the funciton reportinghelper provide detailed commodities or only commodity groups?

Value

List of magpie objects with results on country level, weight on country level, unit and description.

Author(s)

Benjamin Leon Bodirsky

Examples

```
## Not run:
calcOutput("ValidNutrientBudgetFoodProcessing")

## End(Not run)
```

---

calcValidNutrientBudgetFoodWasteAndSewage

calcValidNutrientBudgetFoodWasteAndSewage

Description

Validation Script for Nitrogen Budgets for Livestock production

Usage

```
calcValidNutrientBudgetFoodWasteAndSewage(
  datasource = "Bodirsky",
  nutrient = "nr"
)
```

Arguments

datasource	Bodirsky for own calculations
nutrient	The nutrient in which the results shall be reported.

Value

List of magpie objects with results on country level, weight on country level, unit and description.

Author(s)

Benjamin Leon Bodirsky

See Also

calcValidNutrientBudgetSewage

Examples

```
## Not run:
calcOutput("ValidNutrientBudgetFoodWasteAndSewage")

## End(Not run)
```

---

calcValidNutrientBudgetLivestock

calcValidNutrientBudgetLivestock

Description

Validation Script for Nitrogen Budgets for Livestock production

Usage

```
calcValidNutrientBudgetLivestock(datasource = "Bodirsky", nutrient = "nr")
```

Arguments

datasource	Bodirsky for own calculations
nutrient	The nutrient in which the results shall be reported.

Value

List of magpie objects with results on country level, weight on country level, unit and description.

Author(s)

Benjamin Leon Bodirsky

Examples

```
## Not run:
calcOutput("ValidNutrientBudgetLivestock")

## End(Not run)
```

---

calcValidNutrientBudgetSewage
calcValidNutrientBudgetSewage

Description

Validation Script for Nitrogen and Phosphorus Budgets in Sewage Systems

Usage

```
calcValidNutrientBudgetSewage(datasource = "Bodirsky", nutrient = "nr")
```

Arguments

datasource	Bodirsky for own calculations, Lassaletta2014 for a country dataset from Lassaletta, L., G. Billen, B. Grizzetti, J. Angalde, and J. Garnier. 2014. 50 Year Trends in Nitrogen Use Efficiency of World Cropping Systems: The Relationship between Yield and Nitrogen Input to Pasture. Environmental Research Letters. FAO for some N related parameters published in FAOSTAT.
nutrient	nitrogen (nr) or phosphorus (p)

Value

List of magpie objects with results on country level, weight on country level, unit and description.

Author(s)

Benjamin Leon Bodirsky

Examples

```
## Not run:
calcOutput("ValidNutrientBudgetSewage")

## End(Not run)
```

calcValidNutrientWasteBudget *calcValidNutrientWasteBudget*

Description

Report waste flows of nutrients from differents sources, including Household waste, slaughterwaste and Processingwaste

Usage

```
calcValidNutrientWasteBudget(datasource = "Bodirsky", nutrient = "nr")
```

Arguments

datasource	Bodirsky for own calculations
nutrient	The nutrient in which the results shall be reported.

Value

List of magpie objects with results on country level, weight on country level, unit and description.

Author(s)

Benjamin Leon Bodirsky

See Also

calcValidNutrientBudgetSewage

Examples

```
## Not run:
calcOutput("ValidNutrientWasteBudget")

## End(Not run)
```

calcValidPlanetaryBoundariesNitrogen *calcValidPlanetaryBoundariesNitrogen*

Description

Provides comparison for the planetary boundary indicators for nitrogen

Usage

```
calcValidPlanetaryBoundariesNitrogen(datasource = "Rockstroem2009")
```

Arguments

datasource	datasource to compare to. Historical trajectories of the indicators, or the planetary boundary by the Rockstroem Paper 2009 or the Steffen et al paper 2015.

Value

List of magpie objects with results on country level, weight on country level, unit and description.

Author(s)

Benjamin Leon Bodirsky

Examples

```
## Not run:
calcOutput("ValidPlanetaryBoundariesNitrogen",datasource="Rockstroem2009",aggregate=FALSE)

## End(Not run)
```

calcValidSNUpE *calcValidSNUpE*

Description

Validation Script for Soil Nitrogen Uptake Efficiency (see Bodirsky 2012 for a definition)

Usage

```
calcValidSNUpE(datasource = "Bodirsky")
```

Arguments

datasource	Bodirsky for own calculations, Lassaletta2014 for a country dataset from Lassaletta, L., G. Billen, B. Grizzetti, J. Angalde, and J. Garnier. 2014. 50 Year Trends in Nitrogen Use Efficiency of World Cropping Systems: The Relationship between Yield and Nitrogen Input to Cropland. Environmental Research Letters.

Value

List of magpie objects with results on country level, weight on country level, unit and description.

Author(s)

Benjamin Leon Bodirsky

---

calcWasteDistrib *calcWasteDistrib*

Description

rule-based distribution of waste by composition type to disposal type. returns list of magpie object, share of total disposal

Usage

```
calcWasteDistrib()
```

Value

Magpie object of waste types to waste distribution, percentage

Author(s)

David Chen

Examples

```
## Not run:  a <- calcOutput(type="WasteDistrib")
```

`calcWasteGen` *calcWasteGen*

Description

Calculates waste generation based on WhataWaste2.0 data, based on gdp regressions and calibrated to real data multiplicatively

Usage

```
calcWasteGen(pc = TRUE, form = "LogLog")
```

Arguments

`pc`	per capita (kg/capita) or total (Mt)
`form`	Functional form of predicted waste generation

Value

magpie object of total waste generation

Author(s)

David Chen

`calcWasteProj` *calcWasteProj*

Description

Calculates all waste projections, multiplies shares properly by pc or total generation quantities

Usage

```
calcWasteProj(pc = TRUE, SSP = "SSP2")
```

Arguments

`pc`	per capita (kg/capita) or total (Mt)
`SSP`	SSP scenario

Value

magpie object of waste projections by treatment and type #' @importFrom tidyverse spread select inner_join filter #' @importFrom tidyr unite #' @importFrom DirichletReg DR_data DirichReg predict

Author(s)

David Chen

`fullVALIDHISTORICALNITROGENBUDGETS` *fullVALIDHISTORICALNITROGENBUDGETS*

Description

creates historical outputs of nitrogen budgets

Usage

```
fullVALIDHISTORICALNITROGENBUDGETS(aggregate = "glo")
```

Arguments

`aggregate`	setting for aggregate, e.g.: TRUE, FALSE, "glo"

Value

magpie object

Author(s)

Benjamin Leon Bodirsky

See Also

`calcValidNitrogenPollution`

Examples

```
## Not run:
fullVALIDHISTORICALNITROGENBUDGETS()

## End(Not run)
```

readAmmoniaProductionUSGS *readAmmoniaProductionUSGS*

Description

Function to read the the global Ammonia Production from USGS Website https://minerals.usgs.gov/minerals/pubs/commodity/nitrogen/

Usage

```
readAmmoniaProductionUSGS()
```

Value

A MAgPIE-Object containing global Ammonia production from the USGS

Examples

```
## Not run:
a <- readSouce("AmmoniaProductionUSGS")

## End(Not run)
```

readVanDerWerf2010 *readVanDerWerf2010*

Description

Reads a dataset containing values for global fire emissions. Source: van der Werf G. R., Randerson J. T., Giglio L., Collatz G. J., Mu M., Kasibhatla P. S., Morton D. C., DeFries R. S., Jin Y., van Leeuwen T. T.: Global fire emissions and the contribution of deforestation, savanna, forest, agricultural, and peat fires (1997-2009)

Usage

```
readVanDerWerf2010()
```

Value

A MAgPIE object containing emissionfactors per burned dry matter for different causes.

Author(s)

Stephen Wirth

Examples

```
  ## Not run:
    x <- readSource("VanDerWerf2010")

## End(Not run)
```

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