Package: mrvalidation (via r-universe)

October 16, 2024

Type Package

Title madrat data preparation for validation purposes

Version 2.61.5

Date 2024-10-16

Description Package contains routines to prepare data for validation
exercises.

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URL https://github.com/pik-piam/mrvalidation,

https://doi.org/10.5281/zenodo.4317826

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

Depends madrat (>= 2.11.3), magclass (>= 3.17), mrcommons (>= 1.41.0),
mrdrivers (>= 0.2.2), mrfactors (>= 0.4.0), mrfaocore (>=
1.0.0), mrlandcore (>= 1.0.0), mrmagpie (>= 1.48.0), GDPuc (>=
1.3.0), R (>= 2.10.0)

Imports dplyr, magpiesets, mstools (>= 0.5.1), ncdf4, openxlsx, purrr,
raster, readxl, reshape2, rlang, stringr, tidyr, utils, withr,
rvest

Suggests covr

Encoding UTF-8

LazyData no

RoxygenNote 7.3.2

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

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

RemoteRef HEAD

RemoteSha 9052181d857196dbc2f86b8974afb5836b574476

Contents

mrvalidation-package   *mrvalidation: madrat data preparation for validation purposes*

Description

Package contains routines to prepare data for validation exercises.

Author(s)

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Authors:

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- Patrick von Jeetze

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- Jan Philipp Dietrich

- Marcos Alves

See Also

Useful links:

- https://github.com/pik-piam/mrvalidation

- doi:10.5281/zenodo.4317826

- Report bugs at https://github.com/pik-piam/mrvalidation/issues

calcGMIA   *calcGMIA*

Description

Filling gaps in the Historical area equipped for irrigation from GMIA.

Usage

```
calcGMIA()
```

Value

list of magpie object with data and weight

Author(s)

Stephen Wirth, Anne Biewald

Examples

```
## Not run:
a <- calcOutput("GMIA", aggregate = "regglo")

## End(Not run)
```

calcNitrogenSurplusByCrop
                          calcNitrogenSurplusByCrop

Description

calculates the crop-specific nitrogen losses and the balanceflow for countries with unrealistically high nitrogen uptake efficiencies

Usage

```
calcNitrogenSurplusByCrop(
  indicator = "total",
  deposition = "Nsurplus2",
  cellular = FALSE
)
```

Arguments

`indicator`	total: estimates the inputs per total crop production; by_area estimates the inputs per area harvested
`deposition`	if FALSE, deposition is not accounted for in the distribution. Use FALSE to avoid circularities in calcNitrogenBudget
`cellular`	cellular disaggreagation or national values

Value

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

Author(s)

Benjamin Leon Bodirsky

See Also

[`calcNitrogenBudgetCropland`](#)

Examples

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

## End(Not run)
```

---

calcValidAAI	*calcValidAAI*

Description

Returns historical area actually irrigated.

Usage

```
calcValidAAI(datasource = "LUH2v2")
```

Arguments

`datasource`	Currently available: `"LUH2v2"` and `"GMIA"`

Value

list of magpie object with data and weight

Author(s)

Stephen Wirth, Anne Biewald

---

calcValidAEI   *calcValidAEI*

Description

Returns historical area equipped for irrigation.

Usage

```
calcValidAEI(datasource = "LUH2v2")
```

Arguments

datasource   Currently available: `"LUH2v2"`, `"HID"`, `"GMIA"` and `"Mehta2022"`

Value

list of magpie object with data and weight

Author(s)

Stephen Wirth, Anne Biewald, Felicitas Beier

---

calcValidAgEmployment *calcValidAgEmployment*

Description

number of people employed in agriculture (crop+livestock production)

Usage

```
calcValidAgEmployment(datasource = "ILO", dataVersionILO = "Aug24")
```

Arguments

datasource   ILO for reporting aggregated employment in crop+livestock production, or ILO_FAO, which uses the same aggregated employment data from ILO, but applies FAO value of production shares to disaggregated between employment in crop and in livestock production.

dataVersionILO   "" for the oldest version, or "monthYear" (e.g. "Aug23") for a newer version

Value

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

Author(s)

Debbora Leip

Examples

```
## Not run:
calcOutput("ValidAgEmployment", datasource="ILO")

## End(Not run)
```

---

calcValidAgFFGDP	*calcValidAgFFGDP*

Description

validation for agricultural, fisheries, forestry value added gdp (Million 17USD)

Usage

```
calcValidAgFFGDP(datasource = "WDI")
```

Arguments

datasource   datasource for validation (WDI)

Value

List of magpie object with results on country level, no weight, unit and description.

Author(s)

David Chen

Examples

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

## End(Not run)
```

---

calcValidAgGDP   *calcValidAgGDP*

Description

Validation for agricultural value added gdp (Million 05USD)

Usage

```
calcValidAgGDP(datasource = "FAO")
```

Arguments

datasource   datasource for validation. Options FAO and FAO-consum

Value

List of magpie object with results on country level, no weight, unit and description.

Author(s)

Edna J. Molina Bacca

Examples

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

## End(Not run)
```

---

calcValidAgriResearchIntensity
                     calcValidAgriResearchIntensity

Description

calculates the validation data for TC as Ag R&D investments

Usage

```
calcValidAgriResearchIntensity(datasource = "Pardey")
```

Arguments

datasource   Datasource of validation data.

Value

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

Author(s)

David Chen

Examples

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

## End(Not run)
```

---

calcValidAnnualCarbonLTS

calcValidAnnualCarbonLTS

Description

Returns historical Emissions stored in wood products

Usage

```
calcValidAnnualCarbonLTS(datasource = "Lauk_et_al")
```

Arguments

datasource   Currently available ″Lauk_et_al″ or ″Johnston_Radeloff″ or ″Johnston_Radeloff_P″
(p = projection)

Value

List of magpie object with Emissions in wood products

Author(s)

Abhijeet Mishra

---

calcValidBII   *calcValidBII*

Description

validation for the Biodiversity Intactness Index (BII)

Usage

```
calcValidBII()
```

Value

Country-level MAgPIE object

Author(s)

Michael Crawford

Examples

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

## End(Not run)
```

---

calcValidCarbon   *calcValidCarbon*

Description

calculates the validation data for carbon pools

Usage

```
calcValidCarbon(
  datasource = "LPJmL4_for_MAgPIE_44ac93de:GSWP3-W5E5:historical"
)
```

Arguments

datasource   Datasources for validation data

Value

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

Author(s)

Kristine Karstens

Examples

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

## End(Not run)
```

---

calcValidCMIP6   *calcValidCMIP6*

Description

validation for the MAGICC warming output, showing average temperature for the different RCPs

Usage

```
calcValidCMIP6()
```

Value

GLO MAgPIE object containing average warming per RCP

Author(s)

Michael Crawford

Examples

```
## Not run:
   calcOutput("calcValidCMIP6")

## End(Not run)
```

---

calcValidConsumptionValue
                    calcValidConsumptionValue

Description

Validation for consumption Value

Usage

```
calcValidConsumptionValue(datasource = "FAO")
```

Arguments

datasource   datasource for validation (FAO)

Value

List of magpie object with results on country level, no weight, unit and description.

Author(s)

Edna J. Molina Bacca

Examples

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

## End(Not run)
```

---

calcValidCostsAEI   *calcValidCostsAEI*

Description

provides the validation data for irrigation investment costs

Usage

```
calcValidCostsAEI(datasource = "IMPACT")
```

Arguments

datasource   Datasource of validation data

Value

magpie object on country level, unit and description

Author(s)

Felicitas Beier

Examples

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

## End(Not run)
```

---

calcValidCostsCapStocks

calcValidCostsCapStocks

Description

Returns historical values for capital related costs

Usage

```
calcValidCostsCapStocks(datasource = "FAO")
```

Arguments

datasource   datasource for validation. FAO Value of Production dataset.

Value

List of magpie object with results on country level, no weight, unit and description.

Author(s)

Edna J. Molina Bacca

Examples

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

## End(Not run)
```

---

calcValidCostsFertilizer

calcValidCostsFertilizer

Description

calculates validation data for fertilizer costs

Usage

```
calcValidCostsFertilizer(datasource = "FAO")
```

Arguments

datasource   Source of validation data.

Value

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

Author(s)

Debbora Leip

Examples

```
## Not run:
calcOutput("ValidCostsFertilizer", datasource = "FAO")

## End(Not run)
```

---

calcValidCostsLabor   *calcValidCostsLabor*

Description

calculates validation data for labor costs

Usage

```
calcValidCostsLabor(datasource = "Vittis")
```

Arguments

datasource   Datasource of validation data.

Value

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

Author(s)

Debbora Leip

Examples

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

## End(Not run)
```

---

calcValidCostsOverall   *calcValidCostsOverall*

Description

Returns historical values of the overall value of production for the Agricultural, Forestry sectors, and fisheries (mio.17USD)

Usage

```
calcValidCostsOverall(datasource = "FAO")
```

Arguments

datasource   datasource for validation. FAO Value of Production dataset.

Value

List of magpie object with results on country level, no weight, unit and description.

Author(s)

Edna J. Molina Bacca

Examples

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

## End(Not run)
```

---

calcValidCostsTC   *calcValidCostsTC*

Description

calculates the validation data for TC as Ag R&D investments

Usage

```
calcValidCostsTC(datasource = "Pardey")
```

Arguments

datasource   Datasource of validation data.

Value

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

Author(s)

David Chen

Examples

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

## End(Not run)
```

---

calcValidCostsTransport
                                 calcValidCostsTransport

Description

calculates the validation data for transport costs

Usage

```
calcValidCostsTransport(datasource = "GTAPtransport")
```

Arguments

datasource   Datasource of validation data

Value

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

Author(s)

David Chen

Examples

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

## End(Not run)
```

---

calcValidCroparea	*calcValidCroparea*

Description

Returns historical areas of individual crops. These are derived by correcting harvested areas to match to physical cropland areas. Both these datasets are from FAO. Output is meant to be used for model validation. Ostberg2023 is a slightly modified version of https://gmd.copernicus.org/articles/16/3375/2023/gmd-16-3375-2023-assets.html

Usage

```
calcValidCroparea(datasource = "FAO", detail = FALSE)
```

Arguments

datasource	Currently only "FAO" available
detail	how much detail?

Value

list of magpie object with data and weight

Author(s)

Benjamin Bodirsky, Ulrich Kreidenweis

---

calcValidCropareaDiversity

calcValidCropareaDiversity

Description

calculates validation for croparea diversity index. As opposed to CropareaDiversityIndex from magpie4 due to lack of data fallow land is not considered

Usage

```
calcValidCropareaDiversity(index = "shannon", groupdiv = "agg1")
```

Arguments

index	can be "shannon", "gini" or "invsimpson" for different types of diversitiy indices
groupdiv	should crop groups be split up into several individual items or not? Choose either FALSE or different (dis)aggregation methods "agg1", "agg2"

Value

MAgPIE object (unit depends on attributes)

Author(s)

Patrick v. Jeetze, Benjamin Leon Bodirsky

Examples

```
## Not run:
x <- calcOutput("ValidCropareaDiversity", index = "shannon", groupdiv = "agg1", aggregate = FALSE)

## End(Not run)
```

---

calcValidCumulativeCarbonLTS

calcValidCumulativeCarbonLTS

Description

Returns historical Emissions stored in wood products

Usage

```
calcValidCumulativeCarbonLTS(datasource = "Johnston_Radeloff")
```

Arguments

datasource	Currently available "Johnston_Radeloff"

Value

List of magpie object with Emissions in wood products

Author(s)

Abhijeet Mishra

---

calcValidDemand   *calcValidDemand*

Description

calculates the validation data for the utilization of agricultural products for food, feed, bioenergy, seed, material, processing, or waste

Usage

```
calcValidDemand(datasource = "FAO", detail = TRUE, nutrient = "dm")
```

Arguments

datasource	Datasource of validation data.
detail	if FALSE, only larger product categories are reported
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, Isabelle Weindl

See Also

[calcFoodSupplyPast](#), [calcValidLivestockShare](#)

Examples

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

## End(Not run)
```

---

calcValidDemandBioenergy

calcValidDemandBioenergy

Description

Returns future projections of bioenergy demand

Usage

```
calcValidDemandBioenergy()
```

Value

list of magpie object with data and weight

Author(s)

Florian Humpenoeder

---

calcValidEmisLucGasser

calcValidEmisLucGasser

Description

Returns historical LUC emissions

Usage

```
calcValidEmisLucGasser(subtype = "bookkeeping")
```

Arguments

subtype   Available subtypes are:

- historical:
    - Gasser_2020
    - LUH2_GCB_2019
    - FRA_2015
    - bookkeeping

Value

list of magpie object with data and weight

Author(s)

Abhijeet Mishra

---

calcValidEmisLucGlo   *calcValidEmisLucGlo*

Description

Returns historical and projected water usage from different sources

Usage

```
calcValidEmisLucGlo(subtype = "Canadell_2007")
```

Arguments

subtype   Available subtypes are:
- historical:
  - Canadell_2007
  - Friedlingstein_2010
  - Harris_2013
  - Houghton_2012
  - RCP

Value

list of magpie object with data and weight

Author(s)

Florian Humpenoeder

---

calcValidEmisLucGloGasser

                         calcValidEmisLucGloGasser

Description

Returns historical LUC emissions

Usage

```
calcValidEmisLucGloGasser(subtype = "Gasser_2020")
```

Arguments

subtype   Available subtypes are:

- historical:
    - Gasser_2020
    - LUH2_GCB_2019
    - FRA_2015

Value

list of magpie object with data and weight

Author(s)

Abhijeet Mishra

---

calcValidEmissions   *calcValidEmissions*

Description

validation fo emissions

Usage

```
calcValidEmissions(datasource = "CEDS")
```

Arguments

datasource   The Emission Inventory that shall be used. For futher information, best see
                 mrcommons function calcEmissionInventory. Options are e.g. CEDS, com-
                 bined_CEDS_IPCC (including own estimates where available), IPCC(own esti-
                 mates), Nsurplus (own estimates)

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("ValidEmissions")

## End(Not run)
```

---

calcValidEmissionsAFOLU

ValidEmissionsAFOLU

Description

validation for total and cumulative AFOLU emissions in CO2eq

Usage

```
calcValidEmissionsAFOLU(datasource = "FAO", cumulative = FALSE)
```

Arguments

datasource	current options are "FAO" and "EDGAR_LU"
cumulative	cumulative from y2000

Value

MAgPIE object with emissions in CO2eq

Author(s)

Michael Crawford

Examples

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

## End(Not run)
```

---

calcValidEmissionsPeatland

calcValidEmissionsPeatland

Description

Validation data for peatland emissions in CO2eq, taken from the article: Leifeld, J., Menichetti, L. The underappreciated potential of peatlands in global climate change mitigation strategies. Nat Commun 9, 1071 (2018). https://doi.org/10.1038/s41467-018-03406-6

Usage

```
calcValidEmissionsPeatland()
```

Value

Global-level MAgPIE object with peatlands emissions in CO2eq for the year 2015

Author(s)

Michael Crawford

Examples

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

## End(Not run)
```

---

calcValidFactorReqShares

calcValidFactorReqShares

Description

calculates the validation data for labor and capital requirement shares in agriculture (currently the same shares for crop and livestock production based on USDA data)

Usage

```
calcValidFactorReqShares(subtype = "crop")
```

Arguments

subtype   for which to report requirement shares, either "crop" or "livestock"

Value

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

Author(s)

Debbora Leip

Examples

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

## End(Not run)
```

calcValidFeed   *calcValidFeed*

Description

calculates the validation data for feed demand by animal type

Usage

```
calcValidFeed(datasource = "FAO", detail = TRUE, nutrient = "dm")
```

Arguments

datasource	Datasource of validation data.
detail	if FALSE, only larger product categories are reported
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

[calcFoodSupplyPast](#), [calcValidLivestockShare](#)

Examples

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

## End(Not run)
```

calcValidFeedConversion

calcValidFeedConversion

Description

calculates various feed indicators

Usage

```
calcValidFeedConversion(livestockSystem = TRUE, subtractBalanceflow = FALSE)
```

Arguments

livestockSystem

> if TRUE, ruminant meat and milk are aggregated, and poultry meat and egg are aggregated

subtractBalanceflow

> if TRUE, balanceflow is subtracted so that the feed conversion reflects our feed-basket calucaltions. If FALSE, it reflects the FAO values and the pasture demand

Value

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

Author(s)

Benjamin Leon Bodirsky, github Copilot

See Also

[calcFoodSupplyPast](), [calcValidLivestockShare]()

Examples

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

## End(Not run)
```

```
calcValidFoodExpenditure
```
calcValidFoodExpenditure

Description

validation for foode expenditure

Usage

```
calcValidFoodExpenditure(detail = FALSE)
```

Arguments

detail   if FALSE, only major food commoditiy groups are shown.

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("ValidFoodExpenditure")

## End(Not run)
```

```
calcValidFoodExpenditureShare
```
calcValidFoodExpenditureShare

Description

validation for food expenditure share

Usage

```
calcValidFoodExpenditureShare(detail = FALSE)
```

Arguments

detail   if FALSE, only major food commoditiy groups are shown.

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("ValidFoodExpenditureShare")

## End(Not run)
```

---

calcValidGini   *calcValidGini*

Description

Returns historical development of Gini Coefficient

Usage

```
calcValidGini()
```

Value

list of magpie object with data and weight.

Author(s)

David M Chen

---

calcValidGlobalCarbonBudget
                              ValidGlobalCarbonBudget

Description

validation for total and cumulative land emissions from the Global Carbon Budget, including all
bookkeeping models

Usage

```
calcValidGlobalCarbonBudget(cumulative = FALSE)
```

Arguments

cumulative   cumulative from y2000

Value

a MAgPIE object

Author(s)

Michael Crawford

Examples

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

## End(Not run)
```

---

calcValidGlobalSurfaceTemp

calcValidGlobalSurfaceTemp

Description

validation for the global surface temperature anomaly

Usage

```
calcValidGlobalSurfaceTemp()
```

Value

global MAgPIE object

Author(s)

Michael Crawford

Examples

```
## Not run:
   calcOutput("ValidGlobalSurfaceTemp", aggregate = FALSE)

## End(Not run)
```

calcValidGrassLSUha   *calcValidGrassLSUha*

Description

calculates the validation data for production of grass from managed pastures and rangelands separetely

Usage

```
calcValidGrassLSUha(datasource = "MAgPIEown")
```

Arguments

datasource   Currently available: "MAgPIEown"

Value

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

Author(s)

Marcos Alves

See Also

[calcFAOmassbalance](#),

Examples

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

## End(Not run)
```

calcValidGrassSoilCarbon

                    calcValidGrassSoilCarbon

Description

calculates the validation data for grasslands

Usage

```
calcValidGrassSoilCarbon(
  datasource = "ISIMIP3b:IPSL-CM6A-LR:ssp126:1965-2100",
  model = "9eaf9b",
  lpjml
)
```

Arguments

datasource	Datasources for validation data
model	trained model ID
lpjml	lpjml version

Value

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

Author(s)

Marcos Alves

Examples

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

## End(Not run)
```

---

calcValidGridCroparea   *calcValidGridCroparea*

Description

reports Croparea by crops on 0.5 degree grid in physical area

Usage

```
calcValidGridCroparea()
```

Value

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

Author(s)

Benjamin Leon Bodirsky

See Also

fullMADRATTOLPJML

Examples

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

## End(Not run)
```

---

calcValidGridCroplandNitrogenInputs
calcValidGridCroplandNitrogenInputs

Description

reports Nitrogen Inputs by crop type on 0.5 degree grid

Usage

```
calcValidGridCroplandNitrogenInputs()
```

Value

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

Author(s)

Benjamin Leon Bodirsky

See Also

fullMADRATTOLPJML

Examples

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

## End(Not run)
```

calcValidGridCroplandNitrogenSurplus
calcValidGrid

Description

reports Cropland Nitrogen Surplus and a Balanceflow that balances for unrealistically high nitrogen use efficiencies on 0.5 degree grid

Usage

```
calcValidGridCroplandNitrogenSurplus()
```

Value

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

Author(s)

Benjamin Leon Bodirsky

See Also

[full`MADRATTOLPJML`](fullMADRATTOLPJML)

Examples

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

## End(Not run)
```

calcValidGridCroplandNitrogenWithdrawals
calcValidGridCroplandNitrogenWithdrawals

Description

reports Cropland Nitrogen Withdrawals from soils on 0.5 degree grid

Usage

```
calcValidGridCroplandNitrogenWithdrawals(irrigation = FALSE)
```

Arguments

irrigation   FALSE for the sum of irrigated and rainfed, FALSE for seperated categories,
                    'rainfed' or 'irrigated for single categories

Value

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

Author(s)

Benjamin Leon Bodirsky

See Also

fullMADRATTOLPJML

Examples

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

## End(Not run)
```

---

calcValidGridLand   *calcValidGridLand*

Description

reports the main Land types on 0.5 degree grid

Usage

```
calcValidGridLand()
```

Value

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

Author(s)

Benjamin Leon Bodirsky

See Also

fullMADRATTOLPJML

Examples

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

## End(Not run)
```

---

calcValidGridNitrogenBudgetCropland

calcValidGridNitrogenBudgetCropland

Description

reports Nitrogen Budget for Croplands on 0.5 degree grid

Usage

```
calcValidGridNitrogenBudgetCropland()
```

Value

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

Author(s)

Benjamin Leon Bodirsky

See Also

fullMADRATTOLPJML

Examples

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

## End(Not run)
```

calcValidGridNitrogenBudgetNonagland
calcValidGridNitrogenBudgetNonagland

Description

reports Nitrogen Budget for non-agricultural land types on 0.5 degree grid

Usage

```
calcValidGridNitrogenBudgetNonagland()
```

Value

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

Author(s)

Benjamin Leon Bodirsky

See Also

[fullMADRATTOLPJML](#)

Examples

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

## End(Not run)
```

calcValidGridNitrogenBudgetPasture
calcValidGridNitrogenBudgetPasture

Description

reports Nitrogen Budgets for Pastures on 0.5 degree grid

Usage

```
calcValidGridNitrogenBudgetPasture()
```

Value

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

Author(s)

Benjamin Leon Bodirsky

See Also

[fullMADRATTOLPJML](#)

Examples

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

## End(Not run)
```

```
calcValidGridNutrientAWMS
```
                        calcValidGridNutrientAWMS

Description

reports Nutrient load in animal waste management on 0.5 degree grid

Usage

```
calcValidGridNutrientAWMS(nutrient = c("nr", "c"))
```

Arguments

nutrient   can be c, nr, p, k. For p and k, no losses are assumed in confinements.

Value

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

Author(s)

Kristine Karstens, Benjamin Leon Bodirsky

See Also

[fullMADRATTOLPJML](#)

Examples

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

## End(Not run)
```

---

calcValidGridNutrientLossesAWMS

calcValidGridNutrientLossesAWMS

Description

reports Nutrient Losses in animal waste management on 0.5 degree grid

Usage

```
calcValidGridNutrientLossesAWMS(nutrient = c("nr", "c"))
```

Arguments

nutrient   can be c, nr, p, k. For p and k, no losses are assumed in confinements.

Value

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

Author(s)

Benjamin Leon Bodirsky

Examples

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

## End(Not run)
```

---

calcValidGridResidueDemand

calcValidGridResidueDemand

Description

reports aboveground Crop Residue Demand on 0.5 degree grid

Usage

```
calcValidGridResidueDemand()
```

Value

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

Author(s)

Benjamin Leon Bodirsky

See Also

[fullMADRATTOLPJML](#)

Examples

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

## End(Not run)
```

---

calcValidGridSOCStocks

calcValidGridSOCStocks

Description

calculates the validation data for the gridded soil carbon pools

Usage

```
calcValidGridSOCStocks(
  datasource = "LPJ_IPCC2006",
  baseyear = 1995,
  intensive = FALSE
)
```

Arguments

datasource	Datasources for validation data, e.g. LPJ_IPCC2006, LPJmL_natural, ...
baseyear	baseyear for calculating soil carbon stock change (for LPJ_IPCC2006 only)
intensive	If FALSE (default) total stocks will be returned; otherwise (TRUE) carbon densities.

Value

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

Author(s)

Kristine Karstens

Examples

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

## End(Not run)
```

---

calcValidGridYields *calcValidGridYields*

Description

reports Yields on 0.5 degree grid

Usage

```
calcValidGridYields(datasource = "downscaledFAO", future = NULL)
```

Arguments

datasource	downscaledFAO or calibratedFAO
future	if NULL no future values are returned (default). specify climate scenario (gcm:rcp), if future is needed

Value

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

Author(s)

Benjamin Leon Bodirsky

See Also

fullMADRATTOLPJML

Examples

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

## End(Not run)
```

---

calcValidGrowingStock   *calcValidGrowingStock*

Description

Returns historical FRA 2015 growing stock in mio m3 per ha

Usage

```
calcValidGrowingStock(datasource = "FAO")
```

Arguments

datasource   Currently only available for the "FAO" source

Value

List of magpie object with growing stock

Author(s)

Abhijeet Mishra

---

calcValidGS   *calcValidGS*

Description

Returns historical FRA 2020 growing stock in million m3

Usage

```
calcValidGS(datasource = "FAO", indicator = "relative")
```

Arguments

datasource   Currently only available for the "FAO" source
indicator   type of indicator (relative or absolute)

Value

List of magpie object with growing stock

Author(s)

Abhijeet Mishra

---

calcValidHourlyLaborCosts

calcValidHourlyLaborCosts

Description

hourly labor costs in crop+livestock production

Usage

```
calcValidHourlyLaborCosts(
  datasource = "ILO_completed",
  dataVersionILO = "Aug24"
)
```

Arguments

datasource   Available datasources are:

- ILO_raw : ILO hourly labor costs data
- ILO_completed : ILO hourly labor costs data completed with a regression with GDP pc MER
- USDA_FA0_raw : USDA/FAO hourly labor costs data
- USDA_FA0_completed : USDA/FAO hourly labor costs data completed with a regression with GDP pc MER

dataVersionILO   "" for the oldest version, or "monthYear" (e.g. "Aug23") for a newer version

Value

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

Author(s)

Debbora Leip

Examples

```
## Not run:
calcOutput("ValidHourlyLaborCosts", datasource = "ILO_completed")

## End(Not run)
```

---

calcValidIncome   *calcValidIncome*

Description

Returns historical development of income and future projections of income dynamics

Usage

```
calcValidIncome(datasource = "WDI-MI_SSPs-MI")
```

Arguments

datasource   To switch between historical values of James et al (default) or with future projections for different scenarios (James_OECD_Nakicenovic)

Value

list of magpie object with data and weight. Since intensive and extensive variables are mixed please keep the mixed_aggregation

Author(s)

Florian Humpenoeder, Abhijeet Mishra, Kristine Karstens

---

calcValidKcal   *calcValidKcal*

Description

calculates the validation data for calorie food supply

Usage

```
calcValidKcal(datasource = "FAO", nutrient = "kcal", detail = TRUE)
```

Arguments

datasource   Datasource of validation data. If "FAO", we use FAO calories with FAO population data (slightly diverges from original data as the convert script for example splits up countries for the past). If "FAOmassbalance" we use calories from the FAO massbalance calculations, and divide them by our standard population.

nutrient   kcal or protein

detail   if FALSE, only larger product categories are reported

Value

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

Author(s)

Benjamin Leon Bodirsky, Kristine Karstens

See Also

[calcFoodSupplyPast](), [calcValidLivestockShare]()

Examples

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

## End(Not run)
```

---

calcValidLand   *calcValidLand*

Description

Returns historical cropland, pasture and forest area from FAOSTAT that can be used for model validation.

Usage

```
calcValidLand(datasource = "MAgPIEown")
```

Arguments

datasource   Currently available: "FAO", "LUH2v2", "MAgPIEown" and "SSPResults"

Value

list of magpie object with data and weight

Author(s)

Ulrich Kreidenweis, Benjamin Bodirsky, Abhijeet Mishra, Mishko Stevanovic, Kristine Karstens

calcValidLandChange *calcValidLandChange*

Description

Returns historical changes of cropland, pasture and forest area from LUH2 and FAOSTAT that can be used for model validation.

Usage

```
calcValidLandChange(baseyear = 1995, datasource = "MAgPIEown")
```

Arguments

baseyear   baseyear for calculating land-use change

datasource   Currently available: "FAO", "LUH2v2", "MAgPIEown" and "SSPResults"

Value

list of magpie object with data and weight

Author(s)

Florian Humpenoeder

calcValidLivestockDemStructure
calcValidLivestockDemStructure

Description

calculates the validation data for the share of different livestock products (excluding fish) in total livestock calorie food supply

Usage

```
calcValidLivestockDemStructure(datasource = "FAO")
```

Arguments

datasource   Datasource of validation data. If "FAO", we use FAO calories with FAO population data (slightly diverges from original data as the convert script for example splits up countries for the past).

Value

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

Author(s)

Isabelle Weindl

See Also

[calcFoodSupplyPast](#), [calcValidLivestockShare](#)

Examples

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

## End(Not run)
```

---

calcValidLivestockShare

calcValidLivestockShare

Description

calculates the validation data for the share of livestock products (including fish) in total calorie food supply

Usage

```
calcValidLivestockShare(datasource = "FAO")
```

Arguments

datasource   Datasource of validation data. If "FAO", we use FAO calories with FAO popula-
                tion data (slightly diverges from original data as the convert script for example
                splits up countries for the past). In the case of "PopulationPast", we also use
                FAO calorie values, but divide them by our standard population

Value

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

Author(s)

Benjamin Leon Bodirsky

See Also

[calcFoodSupplyPast](#), [calcValidKcal](#)

Examples

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

## End(Not run)
```

---

calcValidLSUdensity   *calcValidLSUdensity*

Description

Calculates historical rangelands intensity use.

Usage

```
calcValidLSUdensity()
```

Value

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

Author(s)

Marcos Alves

Examples

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

## End(Not run)
```

---

calcValidManure   *calcValidManure*

Description

Validates the esitmates on excretion and manure management

Usage

```
calcValidManure(datasource = "Bodirsky")
```

Arguments

datasource   own: own estimation for the past based on feed intake, IPCC: standard excretion factors, FAO: FAO estimates

Value

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

Author(s)

Benjamin Leon Bodirsky

See Also

calcExcretion, calcExcretionIPCC

Examples

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

## End(Not run)
```

---

calcValidNitrogenBudgetCropland
                        calcValidNitrogenBudgetCropland

Description

Validation Script for Nitrogen Budgets on Croplands

Usage

```
calcValidNitrogenBudgetCropland(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. 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

See Also

[calcNitrogenBudgetCropland](#)

Examples

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

## End(Not run)
```

---

calcValidNitrogenBudgetNonagland
calcValidNitrogenBudgetNonagland

Description

reports nitrogen budget for non-agricultural land types

Usage

```
calcValidNitrogenBudgetNonagland()
```

Value

MAgPIE object with results on the iso level, unweighted, unit, and description

Author(s)

Michael Crawford

Examples

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

## End(Not run)
```

---

calcValidNitrogenBudgetPasture

calcValidNitrogenBudgetPasture

Description

Validation Script for Nitrogen Budgets on Pastures

Usage

```
calcValidNitrogenBudgetPasture(datasource = "Bodirsky")
```

Arguments

datasource   Bodirsky for own calculations, Lassaletta2014 for a country dataset from Las-
                    saletta, L., G. Billen, B. Grizzetti, J. Angalde, and J. Garnier. 2014. 50 Year
                    Trends in Nitrogen Use Efficiency of World Cropping Systems: The Relation-
                    ship between Yield and Nitrogen Input to Pasture. Environmental Research Let-
                    ters. 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

See Also

[calcNitrogenBudgetCropland](#)

Examples

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

## End(Not run)
```

calcValidNitrogenSurplus

calcValidNitrogenSurplus

Description

reports nutrient surplus for all land types

Usage

```
calcValidNitrogenSurplus()
```

Value

MAgPIE object with results on the iso level, unweighted, unit, and description

Author(s)

Michael Crawford

Examples

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

## End(Not run)
```

calcValidPopulation *calcValidPopulation*

Description

Returns historical development of population and future projections of population dynamics

Usage

```
calcValidPopulation(
  PopulationPast = "WDI-UN_PopDiv-MI",
 PopulationFuture = c("SSPs-UN_PopDiv-MI", "SDPs-UN_PopDiv-MI", "SSP2EU-UN_PopDiv-MI"),
  TimeFromFindSet = TRUE
)
```

Arguments

`PopulationPast`   population past data source

`PopulationFuture`

                population future data source

`TimeFromFindSet`

                boolean deciding something

Value

list of magpie object with data and weight

Author(s)

Florian Humpenoeder, Jan Philipp Dietrich, David Chen

`calcValidPovertyLine`   *calcValidPovertyLine*

Description

Validation of poverty (head-count)

Usage

```
calcValidPovertyLine(datasource = "WBPoverty", subtype = "320PovertyLine")
```

Arguments

`datasource`	datasource for validation. Option: "WBPoverty" (world bank).
`subtype`	Poverty line criteria. Options:"320PovertyLine" (default), "550PovertyLine", "1p90 USDppp11/day"

Value

List of magpie object with results on country level, no weight, unit and description.

Author(s)

Edna J. Molina Bacca

Examples

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

## End(Not run)
```

calcValidPriceAgriculture

calcValidPriceAgriculture

Description

provides global prices from the IMPACT model projections, World Bank observations, and FAO obersvations for MAgPIE commodities in $2017/tDM

Usage

```
calcValidPriceAgriculture(datasource = "FAO")
```

Arguments

datasource   Options of the source of data: IMPACT3.2.2World_Price, FAO, FAOp and WBGEM.

Value

List with a magpie object with commodity prices on global and country level.

Author(s)

Mishko Stevanovic

See Also

[readIMPACT3.2.2World_Price](#)

Examples

```
## Not run:
calcOutput("ValidPriceAgriculture", datasource="IMPACT3.2.2World_Price", aggregate=FALSE)
calcOutput("ValidPriceAgriculture", datasource="FAO")

## End(Not run)
```

calcValidPriceBioenergy

calcValidPriceBioenergy

Description

Returns future projections of biomass prices

Usage

```
calcValidPriceBioenergy()
```

Value

list of magpie object with data and weight

Author(s)

Florian Humpenoeder

---

calcValidPriceGHG *calcValidPriceGHG*

Description

Validates MAgPIE GHG emission price input against SSP GHG emission price projections

Usage

```
calcValidPriceGHG(datasource = "SSPResults")
```

Arguments

datasource   Currently available: "SSPResults"

Author(s)

Amsalu W. Yalew, Benjamin Leon Bodirsky, Florian Humpenoeder

Examples

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

## End(Not run)
```

calcValidPriceIndex	*calcValidPriceIndex*

Description

provides global producer price index from FAO

Usage

```
calcValidPriceIndex(
  datasource = "FAO",
  value = "real",
  baseyear = "y2005",
  round = TRUE
)
```

Arguments

datasource	Options of the source of data: FAO.
value	real and nominal
baseyear	Baseyear for normalizing of price index.
round	Rounding of price index to intiger numbers. Default TRUE.

Value

List with a magpie object with global nominal and real price index.

Author(s)

Mishko Stevanovic

See Also

[readProdPrIndex](#)

Examples

```
## Not run:
a <- calcOutput("ValidPriceIndex", value = "real", aggregate = FALSE)

## End(Not run)
```

---

calcValidProcessing *calcValidProcessing*

Description

calculates the validation data for the share of inputs that go into processing processes, and the share of inputs that secondary products are composed of

Usage

```
calcValidProcessing(
  datasource = "FAO",
  detail = TRUE,
  nutrient = "dm",
  indicator = "primary_to_process"
)
```

Arguments

datasource	Datasource of validation data.
detail	if FALSE, only larger product categories are reported
nutrient	The nutrient in which the results shall be reported.
indicator	if "primary_to_process", returns the amount of primary product into processing. if "secondary_from_primary", gives primary into secondary.

Value

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

Author(s)

David Chen, Benjamin Leon Bodirsky

See Also

[calcFoodSupplyPast](), [calcValidLivestockShare]()

Examples

```
## Not run:
calcOutput("ValidProcessing", indicator = "secondary_from_primary")

## End(Not run)
```

calcValidProduction *calcValidProduction*

Description

calculates the validation data for production of agricultural products

Usage

```
calcValidProduction(datasource = "FAO", detail = TRUE, nutrient = "dm")
```

Arguments

datasource   Datasource of validation data.

detail   if FALSE, only larger product categories are reported

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

calcFAOmassbalance, calcValidDemand

Examples

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

## End(Not run)
```

calcValidResidues   *calcValidResidues*

Description

calculates the validation data for residues (biomass, field balance, demands)

Usage

```
calcValidResidues()
```

Value

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

Author(s)

Kristine Karstens

Examples

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

## End(Not run)
```

calcValidRotationLength
                              calcValidRotationLength

Description

calculates the validation data for MAgPIE rotation lengths in plantations

Usage

```
calcValidRotationLength(datasource = "FAO 2006")
```

Arguments

datasource   Datasources for validation data

Value

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

Author(s)

Abhijeet Mishra

Examples

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

## End(Not run)
```

---

calcValidSDG1	*calcValidSDG1*

Description

Returns historical SDG1 INDICATOR_POVERTY IN USD05/cap/yr

Usage

```
calcValidSDG1(datasource = "James")
```

Arguments

datasource   Currently only available for the "James" source

Value

List of magpie object with data and population

Author(s)

Edna J. Molina Bacca

---

calcValidSDG12	*calcValidSDG12*

Description

Returns historical SDG12 Indicators_Sustainable Production and Consumption

Usage

```
calcValidSDG12(datasource = "FAO")
```

Arguments

datasource   FAO

Value

List of magpie object with data and population

Author(s)

Edna J. Molina Bacca

---

calcValidSelfsuff   *calcValidSelfsuff*

Description

Validates self-sufficiency ration

Usage

```
calcValidSelfsuff(datasource = "FAO", detail = TRUE)
```

Arguments

datasource   Options of the source of data: FAO.

detail   Default is TRU. If FALSE, the subcategories of groups are not reported (e.g. "soy-
                  bean" within "oilcrops")

Value

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

Author(s)

Benjamin Leon Bodirsky, Mishko Stevanovic

Examples

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

## End(Not run)
```

calcValidSOCDensity   *calcValidSOCDensity*

Description

calculates the validation data for the soil carbon densities (including weights for aggregation)

Usage

```
calcValidSOCDensity(datasource = "GSOC")
```

Arguments

datasource   Datasources for validation data

Value

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

Author(s)

Kristine Karstens

See Also

[calcSOM](#) [calcValidSOCStocks](#)

Examples

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

## End(Not run)
```

calcValidSOCShare   *calcValidSOCShare*

Description

calculates the validation data for the soil carbon shares

Usage

```
calcValidSOCShare(datasource = "histSOCbudget")
```

Arguments

datasource   Datasources only "histSOCbudget"

Value

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

Author(s)

Kristine Karstens

Examples

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

## End(Not run)
```

---

calcValidSOCStocks   *calcValidSOCStocks*

Description

calculates the validation data for the soil carbon pools

Usage

```
calcValidSOCStocks(datasource = "histSOCbudget", baseyear = 1995)
```

Arguments

datasource   Datasources for validation data, e.g. LPJ_IPCC2006, LPJmL_natural

baseyear   baseyear for calculating soil carbon stock change

Value

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

Author(s)

Benjamin Leon Bodirsky, Kristine Karstens

See Also

[calcFoodSupplyPast](#), [calcValidLivestockShare](#)

Examples

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

## End(Not run)
```

---

calcValidSSPResults   *calcValidSSPResults*

Description

Convert SSPResults to reporting format

Usage

```
calcValidSSPResults()
```

Value

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

Author(s)

Kristine Karstens

See Also

convertSSPResults

Examples

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

## End(Not run)
```

---

calcValidTau *calcValidTau*

Description

Returns historical land use intensity estimates (tau).

Usage

```
calcValidTau(datasource = "FAO2012")
```

Arguments

datasource   Currently available: `"FAO2012"` (original data set) and `"FAOonline"` (projection
                of tau values from 1995 based on recent FAO yield projections.)

Value

tau time series

Author(s)

Jan Philipp Dietrich

---

calcValidTauPastr *ValidTauPastr*

Description

Calculates managed pastures Tau based on FAO yield trends for 1995.

Usage

```
calcValidTauPastr()
```

Value

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

Author(s)

Marcos Alves

Examples

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

## End(Not run)
```

---

calcValidTimber   *calcValidTimber*

Description

Returns historical timber demand in mio m3 per yr

Usage

```
calcValidTimber(datasource = "FAO")
```

Arguments

datasource   Currently only available for the "FAO" source

Value

List of magpie object with data and population

Author(s)

Abhijeet Mishra

---

calcValidTotalLaborCosts

                        calcValidTotalLaborCosts

Description

total labor costs in crop and livestock production

Usage

```
calcValidTotalLaborCosts(datasource = "USDA", dataVersionILO = "Aug24")
```

Arguments

datasource   "USDA" (which uses FAO VoP and USDA cost shares) or "ILO" (which is based
                  on ILO datasets and calibrated to the USDA/FAO approach, but includes costs
                  for some countries without VoP data) or "GTAP"

dataVersionILO   "" for the oldest version, or "monthYear" (e.g. "Aug23") for a newer version

Value

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

Author(s)

Debbora Leip

Examples

```
## Not run:
calcOutput("ValidTotalLaborCosts", datasource = "USDA")

## End(Not run)
```

---

calcValidTrade   *calcValidTrade*

Description

calculates the validation data for trade of agricultural products

Usage

```
calcValidTrade(
  datasource = "FAO",
  detail = TRUE,
  nutrient = "dm",
  net_trade = TRUE,
  equalized = TRUE
)
```

Arguments

datasource	Datasource of validation data.
detail	if FALSE, only larger product categories are reported
nutrient	The nutrient in which the results shall be reported.
net_trade	Net trade flows or total trade
equalized	numbers changed so that global production meets global demand (in reality different because of time-delay between exports and imports)

Value

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

Author(s)

Benjamin Leon Bodirsky, Xiaoxi Wang, David M Chen

See Also

[calcFAOmassbalance](), [calcValidDemand]()

Examples

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

## End(Not run)
```

---

calcValidVegfruitShare

calcValidVegfruitShare

Description

calculates the validation data for the share of vegetables, fruit and nuts products (including fish) in total calorie food supply

Usage

```
calcValidVegfruitShare(datasource = "FAO")
```

Arguments

datasource   Datasource of validation data. If "FAO", we use FAO calories with FAO population data (slightly diverges from original data as the convert script for example splits up countries for the past). In the case of "PopulationPast", we also use FAO calorie values, but divide them by our standard population

Value

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

Author(s)

Benjamin Leon Bodirsky

See Also

[calcFoodSupplyPast](), [calcValidKcal]()

Examples

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

## End(Not run)
```

---

calcValidWageDevelopment

calcValidWageDevelopment

Description

wage index: hourly labor costs in crop+livestock production relative to a baseyear

Usage

```
calcValidWageDevelopment(
  datasource = "ILO_completed",
  baseYear = 2000,
  dataVersionILO = "Aug24"
)
```

Arguments

datasource   Available datasources are:

- ILO_raw : based on ILO hourly labor costs data
- ILO_completed : based on ILO hourly labor costs data completed with a regression with GDP pc MER
- USDA_FA0_raw : based on USDA/FAO hourly labor costs data
- USDA_FA0_completed : based on USDA/FAO hourly labor costs data completed with a regression with GDP pc MER

baseYear   year relative to which the wage development should be calculated

dataVersionILO "" for the oldest version, or "monthYear" (e.g. "Aug23") for a newer version

Value

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

Author(s)

Debbora Leip

Examples

```
## Not run:
calcOutput("ValidWageDevelopment", datasource = "ILO_completed")

## End(Not run)
```

---

calcValidWaterUsage   *calcValidWaterUsage*

Description

Returns historical and projected water withdrawal from different data sources

Usage

```
calcValidWaterUsage(datasource = "shiklomanov_2000")
```

Arguments

datasource   Currently available:

- historical:
    - "foley_2011"
    - "shiklomanov_2000"
    - "wada_2011"
    - "wisser_2008"
    - "CWatM:ipsl-cm5a-lr"
    - "CWatM:gfdl-esm2m"
    - "CWatM:miroc5"
    - "CWatM:hadgem2-es"
    - "LPJmL:ipsl-cm5a-lr"
    - "LPJmL:gfdl-esm2m"
    - "LPJmL:miroc5"
    - "LPJmL:hadgem2-es"
    - "H08:ipsl-cm5a-lr"
    - "H08:gfdl-esm2m"
    - "H08:miroc5"
    - "H08:hadgem2-es"
    - "MATSIRO:ipsl-cm5a-lr"
    - "MATSIRO:gfdl-esm2m"
    - "MATSIRO:miroc5"
    - "MATSIRO:hadgem2-es"
    - "MPI-HM:ipsl-cm5a-lr"
    - "MPI-HM:gfdl-esm2m"
    - "MPI-HM:miroc5"
    - "PCR-GLOBWB:ipsl-cm5a-lr"
    - "PCR-GLOBWB:gfdl-esm2m"
    - "PCR-GLOBWB:miroc5"
    - "PCR-GLOBWB:hadgem2-es"

- projections:
  - "fischer_IIASA"
  - "hejazi_2013"
  - molden_IWMI
  - seckler_IWMI
  - shiklomanov

Value

list of magpie object, weight, unit, and description

Author(s)

Stephen Wirth, Anne Biewald, Felicitas Beier

---

calcValidYield   *calcValidYield*

Description

Calculates a dataset of agricultural production out of the combined data of calcFAOharmonized().
Covers dry matter (DM) production. Also returns areas of individual crops from FAOSTAT. Total
area can be lower or higher than arable land because of multicropping or fallow land. Returns yield
as calculated from area area and production.

Usage

```
calcValidYield(datasource = "FAO", future = NULL)
```

Arguments

datasource   Specify which datasource needs to be used. Currently only "FAO" and "calibrat-
                edLPJmL" is available.

future   if NULL no future values are returned (default). specify climate scenario (gcm:rcp),
                if future is needed

Value

List of magpie objects with results on country level, weight on country level, unit, Max.&Min.
values alongwith description.

Author(s)

Abhijeet Mishra, Isabelle Weindl

See Also

[calcFAOmassbalance](), [calcCroparea]()

Examples

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

## End(Not run)
```

---

convertGasser   *convertGasser*

Description

Convert subtypes on ISO country level.

Usage

```
convertGasser(x)
```

Arguments

x	MAgPIE object containing Gasser emissions data

Details

Convert Gasser Data

Value

Historical LUC emission data

Author(s)

Abhijeet Mishra

See Also

[readSource](#)

---

convertGMIA   *convertGMIA*

Description

Convert Global Map on Irrigated Area Data

Convert subtypes on ISO country level.

Usage

```
convertGMIA(x, subtype)
```

Arguments

x	MAgPIE object containing IrrigatedArea data on Country level
subtype	: No subtype needed

Value

Global Map on Irrigation data as MAgPIE object on country level Missing values are added as NA

Author(s)

Stephen Wirth

See Also

[readSource](#)

Examples

```
## Not run:
a <- readSource("GlobalIrrigationMap", "all_data_national")
a <- readSource ("GMIA", "aei_pct", convert = FALSE)
a <- readSource ("GMIA", "aei_pct", convert = "correctonly")

## End(Not run)
```

convertHID   *convertHID*

Description

Convert subtypes on ISO country level.

Usage

```
convertHID(x, subtype)
```

Arguments

x	MAgPIE object containing IrrigatedArea data on Country level
subtype	: No subtype needed

Details

Convert Historic Irrigation Data

Value

Irrigated Area data as MAgPIE object on country level Missing values are added as NA

Author(s)

Stephen Wirth

See Also

readSource

Examples

```
## Not run:
a <- readSource("HID", "national_1900_2005")

## End(Not run)
```

convertIMPACTIrrigInvCosts

convertIMPACTIrrigInvCosts

Description

converts units and dimensions of average annual baseline water-related investment cost data from readIMPACTIrrigInvCosts

Usage

```
convertIMPACTIrrigInvCosts(x)
```

Arguments

x   MAgPIE object containing irrigation investment cost data on region level

Value

magpie object containing average annual baseline water-related investment cost on country-level (in million 2017 USD per year)

Author(s)

Felicitas Beier

See Also

readSource

Examples

```
## Not run:
a <- readSource("IMPACTIrrigInvCosts", convert = TRUE)

## End(Not run)
```

convertPardeyAgRD   *convertPardeyAgRD*

Description

Agricultural R&D investment data read from https://www.nature.com/news/agricultural-rd-is-on-the-move-1.20571 3 tables are read in: AgRD_Pardey is public Ag expenditure in 1960 and 2011, extracted from the interactive figure in the article that has more complete countries agGERD and agPERD are total and public expenditures respectively, for less countries but more years

Usage

```
convertPardeyAgRD(x)
```

Arguments

x   MAgPIE object containing PardeyRD data

Value

magpie object containing expenditure in Ag R&D, 2009 USD PPP

Author(s)

David Chen

See Also

readSource

Examples

```
## Not run:
a <- convertSource("PardeyAgRD")

## End(Not run)
```

---

convertWaterUsage   *convertWaterUsage*

Description

Convert data on agricultural water use Convert subtypes on ISO country level.

Usage

```
convertWaterUsage(x, subtype)
```

Arguments

x	MAgPIE object containing IrrigatedArea data on Country level
subtype	: No subtype needed

Value

Data on water use as MAgPIE object on country level Missing values are added as NA

Author(s)

Stephen Wirth

See Also

[readSource](#)

Examples

```
## Not run:
a <- readSource("WaterUsage", "aquastat_2008_12")

## End(Not run)
```

---

correctGMIA   *correctGMIA*

Description

Correct Irrigated Area

Correct Irrigated Area to 0.5 Degree x 0.5 Degree Grid. Change resolution from 5 arcmin to 0.5 Degree by aggregating. Values in ha are summed up, Values in percent are calculated using mean.

Usage

```
correctGMIA(x, subtype)
```

Arguments

x	MAgPIE object containing Global Map on Irrigaiton data data at 0.5 Degree resolution
subtype	: subtypes are the same as in readGMIA

Value

Global Map on Irrigation data as MAgPIE object at a 0.5 Degree resolution.

Author(s)

Stephen Wirth

See Also

readSource

Examples

```
## Not run:
a <- readSource("IrrigatedArea")

## End(Not run)
```

---

correctHID   *correctHID*

Description

Correct Irrigated Area

Correct Irrigated Area to 0.5 Degree x 0.5 Degree Grid. Change resolution from 5 arcmin to 0.5 Degree by aggregating. Values in ha are summed up, Values in percent are calculated using mean.

Usage

```
correctHID(x, subtype)
```

Arguments

x	MAgPIE object containing Global Map on Irrigaiton data data at 0.5 Degree resolution
subtype	: subtypes are the same as in readGMIA

Value

Global Map on Irrigation data as MAgPIE object at a 0.5 Degree resolution.

Author(s)

Stephen Wirth

See Also

[readSource](#)

Examples

```
## Not run:
a <- readSource("IrrigatedArea")

## End(Not run)
```

---

correctSoilCarbonDebt   *correctSoilCarbonDebt*

Description

Correct data from Soil Carbon Debt Paper (https://github.com/whrc/Soil-Carbon-Debt/)

Usage

```
correctSoilCarbonDebt(x)
```

Arguments

x   magpie object provided by the read function

Value

List of magpie objects

Author(s)

Kristine Karstens

Examples

```
## Not run:
  readSource("SoilCarbonDebt", convert="onlycorrect")

## End(Not run)
```

---

downloadAR6SPMFig1 *downloadAR6SPMFig1*

Description

download IPCC AR6 Summary for Policymakers Figure 1, global surface temperature change relative to 1850-1900 from observations and CMIP6 models (human and natural forcings simulations)

Usage

```
downloadAR6SPMFig1()
```

Value

Metadata on downloaded dataset

Author(s)

Michael Crawford

See Also

https://www.ipcc.ch/report/ar6/wg1/downloads/report/IPCC_AR6_WGI_SPM.pdf

Examples

```
## Not run:
  downloadSource("AR6SPMFig1")

## End(Not run)
```

---

downloadBII *downloadBII*

Description

Download historical and projected BII dataset from Phillips et al. 2021 (https://doi.org/10.5519/he1eqmg1).

Usage

```
downloadBII()
```

Value

Metadata on downloaded BII data

Author(s)

Michael Crawford

See Also

https://data.nhm.ac.uk/dataset/bii-bte

Examples

```
## Not run:
  downloadSource("BII")

## End(Not run)
```

---

downloadCMIP6 *downloadCMIP6*

Description

Download near-surface air temperature projection from CMIP6 for the following scenarios: SSP1-1.9, SSP1-2.6, SSP2-4.5, SSP3-7.0, SSP4-3.4, SSP4-6.0, SSP5-8.5, SSP5-3.4-over

Usage

```
downloadCMIP6()
```

Value

Metadata on downloaded CMIP near-surface air temperature data

Author(s)

Michael Crawford

See Also

https://cmip6.science.unimelb.edu.au/

Examples

```
## Not run:
  downloadSource("CMIP6")

## End(Not run)
```

---

downloadGlobalCarbonBudget

downloadGlobalCarbonBudget

Description

download the most current Global Carbon Budget dataset

Usage

```
downloadGlobalCarbonBudget()
```

Value

Metadata from the Global Carbon Budget 2023 dataset

Author(s)

Michael Crawford

Examples

```
## Not run:
downloadSource("GlobalCarbonBudget")

## End(Not run)
```

---

downloadSoilCarbonDebt

downloadSanderman

Description

Download data from Soil Carbon Debt Paper (https://github.com/whrc/Soil-Carbon-Debt/)

Usage

```
downloadSoilCarbonDebt()
```

Value

Meta information on downloaded data

Author(s)

Kristine Karstens

Examples

```
## Not run:
  readSource("SoilCarbonDebt", subtype = "SOCS_2010")

## End(Not run)
```

---

fullENGAGE   *fullENGAGE*

Description

retrieves validation data from mrcommons for the ENGAGE project

Usage

```
fullENGAGE()
```

Value

validation data in IAMC reporting format

Author(s)

Florian Humpenoeder

---

fullMADRATTOLPJML   *fullMADRATTOLPJML*

Description

creates historical outputs to be used by LPJml or other models that require gridded inputs

Usage

```
fullMADRATTOLPJML()
```

Value

No return; the function writes a number of netcdf files into the output folder of MADRAT

Author(s)

Benjamin Leon Bodirsky

See Also

[fullVALIDATION](#)

Examples

```
## Not run:
fullMADRATTOLPJML()

## End(Not run)
```

---

fullVALIDATION *fullValidation*

Description

Function that produces the complete validation data set used for evaluation of MAgPIE outputs

Usage

```
fullVALIDATION(rev = 0.1)
```

Arguments

rev   data revision which should be used as input. Will be converted to [numeric_version](#)
                when called via [retrieveData](#).

Author(s)

Jan Philipp Dietrich, Benjamin Leon Bodirsky

See Also

[readSource,getCalculations,calcOutput](#)

Examples

```
## Not run:
retrieveData("Validation")

## End(Not run)
```

---

readAR6SPMFig1 *readAR6SPMFig1*

Description

download IPCC AR6 Summary for Policymakers Fig 1, global surface temperature change relative to 1850-1900 from observations. This dataset also includes the CMIP6 models (human and natural forcings simulations), but are so far excluded here.

Usage

```
readAR6SPMFig1()
```

Value

magclass object

Author(s)

Michael Crawford

See Also

https://www.ipcc.ch/report/ar6/wg1/downloads/report/IPCC_AR6_WGI_SPM.pdf

Examples

```
## Not run:
  readSource("AR6SPMFig1")

## End(Not run)
```

---

readBII *readBII*

Description

Read and select scenarios and variables from the "The Biodiversity Intactness Index - country, region and global-level summaries for the year 1970 to 2050 under various scenarios" dataset. Default behavior is to return BII for the historical period.

Usage

```
readBII(subtype = "historical", subset = "bii")
```

Arguments

subtype	scenario selection, with potential values: "historical", "ssp1rcp2p6image", "ssp2rcp4p5messageglobiom", "ssp3rcp7p0aim", "ssp4rcp6p0gcam", "ssp5rcp8p5remindmagpie". Lists are accepted.
subset	variable selection, with potential values: "bii", "crops", "highintensityag", "hpd", "pastureland", "qualitynatural", "urbanextent". Lists are accepted.

Value

magclass object containing the desired subtypes and subsets

Author(s)

Michael Crawford

See Also

https://data.nhm.ac.uk/dataset/bii-bte

Examples

```
## Not run:
  readSource("BII")

## End(Not run)
```

---

readCMIP6   *readCMIP6*

Description

Read near-surface air temperature projection from CMIP6 for the following scenarios: SSP1-1.9, SSP1-2.6, SSP2-4.5, SSP3-7.0, SSP4-3.4, SSP4-6.0, SSP5-8.5, SSP5-3.4-over

Usage

```
readCMIP6()
```

Value

a magclass object

Author(s)

Michael Crawford

See Also

https://cmip6.science.unimelb.edu.au/

Examples

```
## Not run:
  readSource("CMIP6")

## End(Not run)
```

---

readEmisLucGlo   *EmisLucGlo*

Description

Read historic land-use change CO2 emissions

Usage

```
readEmisLucGlo(subtype = NULL)
```

Arguments

subtype   Available subtypes are:

- historical:
    - Canadell_2007
    - Friedlingstein_2010
    - Harris_2013
    - Houghton_2012
    - RCP

Value

magpie object containing data land-use change CO2 emissions

Author(s)

Florian Humpenoeder

See Also

[readSource](#)

Examples

```
## Not run:
a <- readSource("EmisLucGlo",subtype="Canadell_2007")
a <- readSource("EmisLucGlo",subtype="Friedlingstein_2010")

## End(Not run)
#'@importFrom reshape2 dcast
```

---

readFAOrotation   *FAOrotation*

Description

Read Rotation lengths reported by Global planted forests thematic study: Results and analysis
(2006)

Usage

```
readFAOrotation(subtype = "FAO")
```

Arguments

subtype   subtype - only FAO supported

Value

magpie object containing rotation length data

Author(s)

Abhijeet Mishra

See Also

[readSource](#)

Examples

```
## Not run:
a <- readSource("FAOrotation")

## End(Not run)
```

---

readGasser *Gasser*

Description

Read historic land-use change CARBON emissions

Usage

```
readGasser(subtype = "bookkeeping")
```

Arguments

subtype   subtype

Value

magpie object containing data land-use change CARBON emissions

Author(s)

Abhijeet Mishra

See Also

readSource

Examples

```
## Not run:
a <- readSource("Gasser")

## End(Not run)
```

---

readGlobalCarbonBudget

readGlobalCarbonBudget

Description

read the Global Carbon Budget, selecting the models GCB, BLUE, H&C2023, OSCAR and their sub-components Net, Deforestation, Forest regrowth, Other transitions, Wood harvest and other forest management

Usage

```
readGlobalCarbonBudget()
```

Value

a magpie object in Mt CO2 per year

Author(s)

Michael Crawford

Examples

```
## Not run:
readSource("GlobalCarbonBudget")

## End(Not run)
```

---

readGMIA   *readGMIA*

Description

Read Global Irrigation Map

Read the Data from Siebert et.al on Irrigated Areas for each Country. Data contains total valuesas well as values from groundwater, surface water and non convential water sources for the following Categories:

- Area equipped for Irrigation (AEI)
- Area acutally irrigated (AAI)
- Consumption Irrigatoin Water use (ICU)

The following Data is also available spatialy explicit with a resolution of 5 arcmin:

- AEI in Percent
- AEI in Ha
- AAI as percent of AEI
- AEI from groundwater sources as percent of total AEI
- AEI from surface water sources as percent of total AEI
- AEI from non conventional sources as percent of total AEI

There also exists a correct function to aggregate the data to 0.5 degree resolution, set convert="correctonly" to run.

Usage

```
readGMIA(subtype = NULL)
```

Arguments

subtype   : Available subtypes are:

  - all_data_national : National Data on AEI (including differentiation by source
    (Groundwater, Surface water and nonconventional)), AAI
  - aei_pct : AEI in Percent
  - aei_ha : AEI in ha
  - aai_pct_aei : AAI as percentage of AEI
  - aeigw_pct_aei AEI from Groundwater sources as Percentage of total AEI
  - aeisw_pct_aei : AEI from Surface water sources as Percentage of total AEI
  - aeinc_pct_aei : AEI from nonconventional sources as Percentage total AEI

Value

magpie object of the Irrigated Area data

Author(s)

Stephen Wirth

See Also

readSource

Examples

```
## Not run:
a <- readSource("GlobalIrrigationMap", "all_data_national")
a <- readSource ("GMIA", "aei_pct", convert = FALSE)
a <- readSource ("GMIA", "aei_pct", convert = "correctonly")

## End(Not run)
```

---

readGSOC   *readGSOC*

Description

This function reads the raw GSOC data (available at http://54.229.242.119/GSOCmap/) or if available the preprocessed raster layers.

Usage

```
readGSOC()
```

Value

magpie object in cellular resolution

Author(s)

Kristine Karstens

Examples

```
## Not run:
readSource("GSOC")

## End(Not run)
```

---

readHID   *readHID*

Description

Read Historic Irrigation Data

Read the Data from Siebert et.al on Historic Irrigation for each Country. Data contains Area equiped for Irrigation (AEI) from 1900 to 2005 in ten or five year timesteps

The Data is also available spatialy explicit with a resolution of 5 arcmin:

Usage

```
readHID(subtype = NULL)
```

Arguments

subtype   : Available subtypes are:

- national_1900_2005 : National Data on AEI
- AEI_EARTHSTAT_CP : Data in 5armin gridded resolution based on Earthstat LU scenario and maximum consistency with pasture extent
- AEI_EARTHSTAT_IR : Data in 5armin gridded resolution based on Earthstat LU scenario and maximum consistency with AEI from subnationals regions
- AEI_HYDE_LOWER_CP : Data in 5armin gridded resolution based on Hyde LU scenario from the lower end of the uncertainty band and maximum consistency with pasture extent
- AEI_HYDE_LOWER_IR : Data in 5armin gridded resolution based on Hyde LU scenario from the lower end of the uncertainty band and maximum consistency with AEI from subnational regions
- AEI_HYDE_FINAL_CP : Data in 5armin gridded resolution based on Hyde LU scenario final version and maximum consistency with pasture extent
- AEI_HYDE_FINAL_IR : Data in 5armin gridded resolution based on Hyde LU scenario final version and maximum consistency with AEI from subnational regions

- AEI_HYDE_UPPER_CP : Data in 5armin gridded resolution based on Hyde
  LU scenario from the upper end of the uncertainty band and maximum con-
  sistency with pasture extent
- AEI_HYDE_UPPER_IR : Data in 5armin gridded resolution based on Hyde
  LU scenario from the upper end of the uncertainty band and maximum con-
  sistency with AEI from subnational regions

Details

Further information:

- S. Siebert, M. Kummu, M. Porkka, P. D??ll, N. Ramankutty, and B.R. Scanlon. 2015. A
  global data set of the extent of irrigated land from 1900 to 2005. Hydrology and Earth System
  Sciences. Vol. 19. p. 1521-1545.
- K. K. Goldwijk, A. Beusen, G. van Drecht, and M. de Vos. 2011. The HYDE 3.1 spatially
  explicit database of human-induced global land-use change over the past 12,000 years. Global
  Ecology and Biogeography. Vol. 20. p. 73-86

Value

magpie object of the Irrigated Area data

Author(s)

Stephen Wirth

See Also

readSource

Examples

```
## Not run:
a <- readSource("HID", "national_1900_2005")

## End(Not run)
```

---

readIMPACTIrrigInvCosts

readIMPACTIrrigInvCosts

Description

Average annual baseline water-related investment cost data (2016-2030) read from Rosegrant et al.
(2017) "Quantitative Foresight Modeling to Inform the CGIAR Research Portfolio"

Usage

```
readIMPACTIrrigInvCosts()
```

Value

magpie object containing average annual baseline water-related investment cost on IMPACT-region level (in billion 2000 USD per year)

Author(s)

Felicitas Beier

See Also

readSource

Examples

```
## Not run:
a <- readSource("IMPACTIrrigInvCosts", convert = TRUE)

## End(Not run)
```

---

readPardeyAgRD   *readPardeyAgRD*

Description

Agricultural R&D investment data read from https://www.nature.com/news/agricultural-rd-is-on-the-move-1.20571 3 tables are read in: AgRD_Pardey is public Ag expenditure in 1960 and 2011, extracted from the interactive figure in the article that has more complete countries agGERD and agPERD are total and public expenditures respectively, for less countries but more years

Usage

```
readPardeyAgRD()
```

Value

magpie object containing expenditure in Ag R&D, 2009 USD PPP

Author(s)

David Chen

See Also

readSource

Examples

```
## Not run:
a <- readSource("PardeyAgRD")

## End(Not run)
```

---

readProdPrIndex   *Read FAO producer price index*

Description

Read-in world producer price index as magclass object

Usage

```
readProdPrIndex()
```

Value

magpie object of the world producer index from FAO

Author(s)

Mishko Stevanovic

See Also

readSource

Examples

```
## Not run:  a <- readSource(type="ProdPrIndex")
```

---

readSoilCarbonDebt   *readSoilCarbonDebt*

Description

Read data from Soil Carbon Debt Paper (https://github.com/whrc/Soil-Carbon-Debt/)

Usage

```
readSoilCarbonDebt()
```

Value

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

Author(s)

Kristine Karstens

Examples

```
## Not run:
readSource("SoilCarbonDebt", subtype = "SOCS_2010")

## End(Not run)
```

---

readWaterUsage   *readWaterUsage*

Description

Read Historic and projcted Agricultural water consumption

Usage

```
readWaterUsage(subtype = NULL)
```

Arguments

subtype   Available subtypes are:

- historical:
  - foley_2011
  - shiklomanov_2000
  - wada_2011
  - wisser_2008
- projections
  - fischer_IIASA
  - hejazi_2013
  - molden_IWMI
  - seckler_IWMI
  - shiklomanov
  - aquastat_2008_12

Value

magpie object containing data on water usage

Author(s)

Stephen Wirth

See Also

readSource

Examples

```
## Not run:
a <- readSource("foley_2011")
a <- readSource("aquastat_2008_12")

## End(Not run)
#' @importFrom reshape2 dcast
```

---

readWBPoverty   *readWBPoverty*

Description

read World Bank poverty percentage of population under poverty line, and gini coef data No download function from WDI API yet, as the older versions (2011PPP as opposed to 2017PPP online) are currently most relevant for validating Soergel poverty model results and must be downloaded manually

Usage

```
readWBPoverty(subtype = "320PovertyLine")
```

Arguments

subtype   either "Gini", or the three poverty line thresholds: "190PovertyLine", "320Poverty-
                 Line", "550PovertyLine"

Value

magclass object

Author(s)

David M Chen

Examples

```
## Not run:
readSource("readWBPoverty", subtype = "320PovertyLine")

## End(Not run)
```

readWISE   *readWISE*

Description

This function reads the preprocessed data from WISE_30sec

Usage

```
readWISE()
```

Value

magpie object in cellular resolution

Author(s)

Kristine Karstens

Examples

```
## Not run:  readSource("WISE")
```

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