

Package: reporttransport (via r-universe)

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Type Package

Title Reporting package for edgeTransport

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Description This package contains edgeTransport-specific routines to report model results. The main functionality is to generate transport reporting variables in MIF format from a given edgeTransport model run folder or REMIND input data.

Depends R (>= 3.5.0)

License LGPL-3

URL <https://github.com/pik-piam/reporttransport>

Imports data.table, gdx, gdxrwr, piamPlotComparison, quitte, remind2, rmndt, utils

Suggests knitr, sf, testthat

Encoding UTF-8

RoxygenNote 7.3.2

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

RemoteUrl <https://github.com/pik-piam/reporttransport>

RemoteRef HEAD

RemoteSha dc772f223232256ebfa6775e16a07a3f55ca31d2

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aggregateVariables	<i>Aggregate variables</i>
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Description

This function aggregates a large set of variables according to the edge transport decision tree and additional aggregation levels that are set manually. The aggregation is applied to all variables simultaneously. Additional transport specific columns are transferred into the variable column entry

Usage

```
aggregateVariables(vars, mapAggregation, weight = NULL)
```

Arguments

vars	Data.table with variables to aggregate in modified quitte style format
mapAggregation	Map containing levels for aggregation in addition to the levels of the decision tree
weight	Weight to aggregate variables

Value

Data.table with aggregated variables

Author(s)

Johanna Hoppe

checkForNAsAndDups	<i>Check a data.table for NAs and duplicates and throw an error if needed</i>
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Description

Check a data.table for NAs and duplicates and throw an error if needed

Usage

```
checkForNAsAndDups(dt, varname, codePosition)
```

Arguments

dt	data.table to be checked
varname	name of the variable
codePosition	position in the code to find the bug

Author(s)

Johanna Hoppe

convertToMIF	<i>Convert variables into model intercomparison format MIF</i>
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Description

Convert variables into model intercomparison format MIF

Usage

```
convertToMIF(  
  vars,  
  GDPMER,  
  helpers,  
  scenario,  
  model,  
 .gdx,  
  isTransportExtendedReported = FALSE  
)
```

Arguments

<code>vars</code>	Variables to be aggregated and converted into MIF format
<code>GDPMER</code>	GDP on market exchange rate basis to be used as weight for regional aggregation
<code>helpers</code>	List of helpers
<code>scenario</code>	Scenario name in MIF entry
<code>model</code>	Model name in MIF entry
<code>gdx</code>	GDX file containing further regional aggregation levels
<code>isTransportExtendedReported</code>	Switch to enable the extended transport variable set

Value

Variables provided in different aggregation levels in MIF format

Author(s)

Johanna Hoppe

`prepareForREMIND` *Prepare data to report to REMIND*

Description

Prepare data to report to REMIND

Usage

```
prepareForREMIND(dt, demScen, SSPscen, transportPolScen)
```

Arguments

<code>dt</code>	data.table with data to report to REMIND
<code>demScen</code>	demand scenario
<code>SSPscen</code>	SSP scenario
<code>transportPolScen</code>	transport policy scenario

Value

data table ready to report to REMIND

Author(s)

Johanna Hoppe

renameDuplicateVariables

Renames vertain variables to prevent duplicates for variables that are reported also in remind2

Description

Renames vertain variables to prevent duplicates for variables that are reported also in remind2

Usage

renameDuplicateVariables(vars)

Arguments

vars MIF variables

Value

MIF variables that are renamed to "Transport edge" where necessary

Author(s)

Johanna Hoppe

reportAggregatedCosts *Report cost variables in aggregated levels: Capital costs sales, operating costs (total non-fuel), fuel costs*

Description

Report cost variables in aggregated levels: Capital costs sales, operating costs (total non-fuel), fuel costs

Usage

reportAggregatedCosts(combinedCAPEXandOPEX)

Arguments

combinedCAPEXandOPEX
 detailed data on cost variables

Value

aggregated cost variables

Author(s)

Johanna Hoppe

reportAnalyticsVarSet *Report analytics variable set*

Description

Report analytics variable set

Usage

reportAnalyticsVarSet(data, timeResReporting)

Arguments

data List that contains the model results to report the analytics variable set
timeResReporting Timesteps to be reported

Value

Analytics variable set

Author(s)

Johanna Hoppe

reportBaseVarSet *Report basic variable set needed to report REMIND input data and detailed transport data*

Description

Report basic variable set needed to report REMIND input data and detailed transport data

Usage

reportBaseVarSet(data, timeResReporting)

Arguments

data List that contains at least the model results to report the basic variable set
timeResReporting Timesteps to be reported

Value

list of intensive and extensive output variables

Author(s)

Johanna Hoppe

reportEdgeTransport *Report EDGE-Transport Model results*

Description

This function reports the transport model results of an iterative or standalone run. If not handed over in the function call, it first loads the transport model results from the stored RDS files. Then it calculates the output variables and brings the data into the right format. A basic output variables set is always calculated that is needed for all reporting packages. With the help of switches, different reporting packages can be generated: - isTransportReported activates the reduced reporting of transport variables in MIF format to be attached to a REMIND.mif. It includes the variables needed to create REMIND compareScenarios2 and report results for projects - isTransportReported + isTransportExtendedReported activates further the extended reporting of transport variables and if isStored is activated as well, triggers the generation of a separate transport.MIF. It includes the reduced reporting and additional transport variables for a detailed analysis of the transport sector using transportCompareScenarios - isTransportReported + isTransportExtendedReported + isAnalyticsReported activates further the generation of additional variables for the analysis of the model behavior such as the inconvenience costs over iterations. They can be analyzed in the analytics sheet in compareScenariosTransport. It can be used in combination or without isTransportExtendedReported. - isREMINDinputReported activates the reporting of REMIND input data from a standalone run. This mode is used in the REMIND input data generation with all other switches turned off. It can be also used in combination with the other switches.

Usage

```
reportEdgeTransport(  
  folderPath = file.path(".", "EDGE-T"),  
  data = NULL,  
  isTransportReported = TRUE,  
  isTransportExtendedReported = FALSE,  
  isAnalyticsReported = FALSE,  
  isREMINDinputReported = FALSE,  
  isStored = TRUE,  
  ...  
)
```

Arguments

folderPath	Path to the EDGE-Transport output folder of an iterative or standalone run
data	List of model results. If not handed over, the data is loaded from the RDS files in the output folder
isTransportReported	Switch for activating the reporting of transport data in MIF format
isTransportExtendedReported	Switch for activating the reporting of detailed transport data im MIF format needed to create transportCompareScenarios
isAnalyticsReported	Switch for activating reporting of model analytics data
isREMINDinputReported	Switch for activating reporting of REMIND input data
isStored	Switch for activating data storage and creating the transport.MIF file
...	Additional model results/parameter that are handed over individually

Value

The function either returns the REMINDinputData if isREMINDinputReported is enabled or the transport data in MIF format

Author(s)

Johanna Hoppe

reportEmissions	<i>Report emissions allocated to the transport sector. Only direkt emissions from liquid or gaseous energy carriers used in ICEs are considered. Indirect emissions from electricity and hydrogen are not allocated to the transport sector.</i>
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Description

Report emissions allocated to the transport sector. Only direkt emissions from liquid or gaseous energy carriers used in ICEs are considered. Indirect emissions from electricity and hydrogen are not allocated to the transport sector.

Usage

```
reportEmissions(dtFE,.gdxPath, prefix, helpers)
```


Arguments

dtFE	Final energy data for liquids and gases
gdxPath	Path to REMIND fulldata.gdx containing emission factors
prefix	Prefix that specifies the emissions we are referring to in the variable name (either tailpipe or demand)
helpers	List of helpers

Value

Emissions data for provided values in dtFE

Author(s)

Johanna Hoppe

reportExtendedTransportVarSet

Report extended detailed transport variable set

Description

Report extended detailed transport variable set

Usage

```
reportExtendedTransportVarSet(data, baseVarSet, timeResReporting)
```

Arguments

data	List that contains the model results to report the extended detailed transport variable set
baseVarSet	List that contains the basic variables
timeResReporting	Time resolution for variable reporting

Value

Extended detailed transport output variable set

Author(s)

Johanna Hoppe

reportFinalEnergy *Report variables in relation to the vehicle fleet.*

Description

Variables like energy intensity and capital costs are linked to the construction year of a vehicle. As energy intensity and capital costs change over time for new sales, the composition of the fleet from vehicles of different construction years needs to be taken into account to report these variables.

Usage

```
reportFinalEnergy(  
  fleetEnergyIntensity,  
  fleetESdemand,  
  loadFactor,  
  hybridElecShare,  
  helpers  
)
```

Arguments

fleetEnergyIntensity	Energy intensity linked to the vehicle fleet
fleetESdemand	Energy service on technology level linked to the vehicle fleet
loadFactor	Persons or tons per vehicle
hybridElecShare	Share of electric driving in hybrid electric vehicles
helpers	list of helpers

Value

Final energy consumed by all modes and technologies

Author(s)

Johanna Hoppe

reportFleetVariables *Report variables in relation to the vehicle fleet.*

Description

Variables like energy intensity and capital costs are linked to the construction year of a vehicle. As energy intensity and capital costs change over time for new sales, the composition of the fleet from vehicles of different construction years needs to be taken into account to report these variables.

Usage

```
reportFleetVariables(salesData, vehiclesConstrYears, helpers)
```

Arguments

salesData	variables linked to new sales in the respective years
vehiclesConstrYears	vehicle numbers and their construction years for the respective years
helpers	list of helpers

Value

Variable in relation to the vehicle fleet

Author(s)

Johanna Hoppe

reportLiquidsAndGasesComposition
Report the split of liquids and gases into fossillbiohydrogen

Description

Report the split of liquids and gases into fossillbiohydrogen

Usage

```
reportLiquidsAndGasesComposition(dtFE,.gdxPath, timeResReporting, helpers)
```

Arguments

dtFE	Final energy data for liquids and gases
gdxPath	Path to REMIND.gdx, which contains the share of the various production routes for liquid and gaseous energy carriers
timeResReporting	Time resolution for variable reporting
helpers	List of helpers

Value

Final energy for liquids and gases split into fossilbiohydrogen

Author(s)

Johanna Hoppe

reportREMINDinputVarSet

Report REMIND/iterative EDGE-T input data

Description

Report REMIND/iterative EDGE-T input data

Usage

```
reportREMINDinputVarSet(
  fleetESdemand,
  fleetFEdemand,
  fleetEnergyIntensity,
  scenSpecLoadFactor,
  fleetCapCosts,
  combinedCAPEXandOPEX,
  scenSpecPrefTrends,
  scenSpecEnIntensity,
  initialIncoCosts,
  annualMileage,
  timeValueCosts,
  hybridElecShare,
  demScen,
  SSPscen,
  transportPolScen,
  timeResReporting,
  helpers
)
```

Arguments

fleetESdemand	energy service demand on fleet level
fleetFEdemand	final energy demand on fleet level
fleetEnergyIntensity	energy intensity on fleet level
scenSpecLoadFactor	scenario specific load factor data
fleetCapCosts	annualized capital costs on fleet level
combinedCAPEXandOPEX	CAPEX and OPEX on sales level in high temporal resolution
scenSpecPrefTrends	scenario specific preference trends in high temporal resolution
scenSpecEnIntensity	scenario specific energy intensity in high temporal resolution
initialIncoCosts	initial inconvenience cost
annualMileage	annual mileage in high temporal resolution
timeValueCosts	time value cost equivalent in high temporal resolution
hybridElecShare	share of electric driving for hybrid electric vehicles
demScen	demand scenario
SSPscen	SSP scenario
transportPolScen	transport policy scenario
timeResReporting	time resolution reporting
helpers	list with helpers

Value

REMIND/iterative EDGE-T input data

Author(s)

Johanna Hoppe

reportToREMINDcapitalCosts

Report to REMIND p35_esCapCost

Description

Report to REMIND p35_esCapCost

Usage

```
reportToREMINDcapitalCosts(  
  fleetCapCosts,  
  fleetESdemand,  
  timeResReporting,  
  demScen,  
  SSPscen,  
  transportPolScen,  
  helpers  
)
```

Arguments

fleetCapCosts	capital costs on fleet level
fleetESdemand	energy service demand on fleet level
timeResReporting	time resolution reporting
demScen	demand scenario
SSPscen	SSP scenario
transportPolScen	transport policy scenario
helpers	list of helpers

Value

Capital Costs per CES node in [2005US\$/pkm or 2005US\$/tkm]

Author(s)

Johanna Hoppe

reportToREMINDenergyEfficiency
Report to REMIND f35_fe2es

Description

Report to REMIND f35_fe2es

Usage

```
reportToREMINDenergyEfficiency(  
  fleetEnergyIntensity,  
  scenSpecLoadFactor,  
  fleetESdemand,  
  hybridElecShare,  
  timeResReporting,  
  demScen,  
  SSPscen,  
  transportPolScen,  
  helpers  
)
```

Arguments

fleetEnergyIntensity	energy intensity on fleet level
scenSpecLoadFactor	scenario specific load factor data
fleetESdemand	energy service demand on fleet level
hybridElecShare	share of electric driving for hybrid electric vehicles
timeResReporting	time resolution reporting
demScen	demand scenario
SSPscen	SSP scenario
transportPolScen	transport policy scenario
helpers	list of helpers

Value

Energy efficiency of transport fuel technologies in [trn pkm/Twa or trn tkm/Twa]

Author(s)

Johanna Hoppe

reportToREMINDfinalEnergyDemand
Report to REMIND f35_demByTech

Description

Report to REMIND f35_demByTech

Usage

```
reportToREMINDfinalEnergyDemand(  
  fleetFEdemand,  
  timeResReporting,  
  demScen,  
  SSPscen,  
  transportPolScen,  
  helpers  
)
```

Arguments

fleetFEdemand	final energy demand on fleet level
timeResReporting	time resolution reporting
demScen	demand scenario
SSPscen	SSP scenario
transportPolScen	transport policy scenario
helpers	list of helpers

Value

Final energy demand on CES level per transport fuel technology [TWa]

Author(s)

Johanna Hoppe

 reportToREMINDfinalEnergyShares

Report to REMIND final energy shares f35_shFeCes

Description

Report to REMIND final energy shares f35_shFeCes

Usage

```
reportToREMINDfinalEnergyShares(
  fleetFEdemand,
  timeResReporting,
  demScen,
  SSPscen,
  transportPolScen,
  helpers
)
```

Arguments

fleetFEdemand	Final energy demand on fleet level
timeResReporting	time resolution reporting
demScen	demand scenario
SSPscen	SSP scenario
transportPolScen	transport policy scenario
helpers	list of helpers

Value

Final energy shares of transport fuel technologies in [-]

 reportToREMINDtrpdemand

Report to REMIND p29_trpdemand

Description

Report to REMIND p29_trpdemand

Usage

```

reportToREMINDtrpdemand(
  fleetESdemand,
  hybridElecShare,
  timeResReporting,
  demScen,
  SSPscen,
  transportPolScen,
  helpers
)

```

Arguments

fleetESdemand	energy service demand on fleet level
hybridElecShare	share of electric driving for hybrid electric vehicles
timeResReporting	time resolution reporting
demScen	demand scenario
SSPscen	SSP scenario
transportPolScen	transport policy scenario
helpers	list of helpers

Value

Energy service demand per CES node in [trillion pkm/trillion tkm]

Author(s)

Johanna Hoppe

reportTransportVarSet *Report detailed transport variable set*

Description

Report detailed transport variable set

Usage

```

reportTransportVarSet(data, baseVarSet, timeResReporting)

```

Arguments

data	List that contains the model results to report the detailed transport variable set
baseVarSet	Basic output variable set
timeResReporting	Timesteps to be reported

Value

Detailed transport output variable set

Author(s)

Johanna Hoppe

reportUE	<i>Report variables in relation to the vehicle fleet.</i>
----------	---

Description

Report variables in relation to the vehicle fleet.

Usage

```
reportUE(FEdemand, helpers)
```

Arguments

FEdemand	Finale energy demand
helpers	List with helpers

Value

Useful energy demand

Author(s)

Johanna Hoppe

storeData	<i>Store EDGE-Transport model results</i>
-----------	---

Description

This function creates the EDGE-Transport outputfolder and stores all outputfiles in the respective subfolders

Usage

```
storeData(outputFolder, varsList = NULL, ...)
```

Arguments

outputFolder	Path to folder for storing output data
varsList	Raw model results
...	Optional passing of additional variables

Author(s)

Johanna Hoppe

toolReportsharesLDVtransport	<i>Report FE shares of LDV in transport liquids</i>
------------------------------	---

Description

Report FE shares of LDV in transport liquids

Usage

```
toolReportsharesLDVtransport(  
  fleetFEdemand,  
  timeResReporting,  
  demScen,  
  SSPscen,  
  transportPolScen,  
  helpers  
)
```

Arguments

fleetFEdemand	final energy demand on fleet level
timeResReporting	time resolution reporting
demScen	demand scenario
SSPscen	SSP scenario
transportPolScen	transport policy scenario
helpers	list of helpers

Value

Final energy shares of LDV in transport liquids [-]

Author(s)

Johanna Hoppe

transportCompareScenarios

Render CompareScenarios for EDGE Transport

Description

A wrapper for `piamPlotComparison::compareScenarios`

Usage

```
transportCompareScenarios(
  mifScen,
  mifHist,
  outputDir = getwd(),
  outputFile = "CompareScenarios",
  outputFormat = "PDF"
)
```

Arguments

mifScen	character(n), optionally named. Paths to scenario mifs. If the vector has names, those are used to refer to the scenarios in the output file.
mifHist	character(1). Path to historical mif.
outputDir	character(1). The directory where the output document and intermediary files are created.
outputFile	character(1). File name (without extension) of the output document to be created.
outputFormat	character(1), not case-sensitive. "html", "pdf", or "rmd".

Value

The value returned by `render()`.

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