Priedas Nr. 6

Naudojamų modelių aprašymai

Article 38 Reporting on national projections

Annex XXV - Table 4: Model Factsheets

Field	Description
Model 1	
Model name (abbreviation)	Energy system model
Full model name	Model of fuel and energy consumption in the sectors of the Lithuanian economy
Model version and status	Not applicable
Latest date of revision	2024-06-03
URL to model description	Not applicable
Model type	Spreadsheet-based calculator
Summary	Energy model is based on statistical data and assumptions regarding certain macroeconomic factors with variuos existing and planned policy measures taken into account. Primarily used to evaluate and predict achievement of national targets in energy efficiency and renewable energy source use. Results of Energy model are used to assess GHG emissions.
Intended field of application	Primary and final energy consumption projections for National energy and climate plan, Renewable Energy share calculations and tracking of targets and indicative trajectories.
Description of main input data categories and data sources	Statistical data reflecting the current energy consumption situation and specific assumptions influencing the energy consumption projections. Information on existing and planned energy efficiency, renewable energy source promotion and green-house-gas emission reduction measures.
Validation and evaluation	General quality control procedures where applied estimating Energy projections: analysis of projected activity data trends, consistency check of activity data sources, completeness check and etc.
Output quantities	Primary and final energy consumption by fuel and energy type

GHG covered	Not applicable
Sectoral coverage	Energy sector
Geographical coverage	Lithuania
Temporal coverage (e.g. time steps, time span)	2050 year per year
Other models which interact with this model, and type of interaction (e.g. data input to this model, use of data output from this model)	Data input from Transport model and output to Energy emissions tool (fuel and energy consumption)
Input from other models	Fuel and energy consumption in transport
References to the assessment and the technical reports that underpin the projections and the models used	Policies & Measures and Projections of Greenhouse Gas Emissions in Lithuania
Model structure (if diagram please attach to your submission in Reportnet)	Not applicable
Comments or other relevant information	Not applicable
Model 2	
Model name (abbreviation)	Energy GHG calculator
Full model name	Energy emissions calculator
Model version and status	Not applicable
Latest date of revision	2024-06-13
URL to model description	Not applicable
Model type	Spreadsheet-based calculator
Summary	The obtained fuel consumption data in energy sector is multiplied by emission factors of every fuel in order to estimate projected GHG emissions. Thus, GHG projections fully correspond to the methodology used for preparation of National GHG inventory.
Intended field of application	Projections of emissions from energy sector
Description of main input data categories and data sources	Consumption of different fuel types in each subsector of energy. Projected activity data are provided by several companies (petroleum refining, other energy industries and fugitive emissions) and Energy system model.
Validation and evaluation	General quality control procedures where applied estimating Energy projections: analysis of projected activity data trends, consistency check of projected emissions in the Energy emissions calculator and projected emissions in the GovReg_Proj_T1a_T1b_T5a_T5b template, consistency check of activity data sources, completeness check and etc.
Output quantities	GHG emissions
GHG covered	Energy sector GHG emissions (CO2, CH4 and N2O)
Sectoral coverage	Energy sector excluding transport

Geographical coverage	Lithuania
Temporal coverage (e.g. time steps, time span)	2050 year per year
Other models which interact with this model, and type of interaction (e.g. data input to this model, use of data output from this model)	Data input form Energy system model (fuel consumption)
Input from other models	Consumption of different fuel types in each subsector of energy
References to the assessment and the technical reports that underpin the projections and the models used	Policies & Measures and Projections of Greenhouse Gas Emissions in Lithuania
Model structure (if diagram please attach to your submission in Reportnet)	Not applicable
Comments or other relevant information	Not applicable
Model 3	
Model name (abbreviation)	Transport model
Full model name	Transport emissions calculator
Model version and status	Not applicable
Latest date of revision	2024-06-13
URL to model description	Not applicable
Model type	Spreadsheet-based calculator
Summary	The determined fuel consumption of each fuel type or other activity data for every transport sub-sector is multiplied by emission factors of every fuel in order to estimate projected GHG emissions. Thus, GHG projections fully correspond to the methodology used for preparation of National GHG inventory.
Intended field of application	Projections of emissions from transport sector
Description of main input data categories and data sources	Consumption of different fuel types and other activity data in each subsector of transport, vehicle fleet and mileage data from state enterprise "Regitra" and association of vehicle inspection firms "Transeksta".
Validation and evaluation	General quality control procedures where applied estimating transport projections: analysis of projected activity data trends, consistency check of the projected emissions in the GovReg_Proj_T1a_T1b_T5a_T5b template, consistency check of activity data sources, completeness check and etc.
Output quantities	GHG emissions
GHG covered	Transport sector GHG emissions (CO2, CH4 and N2O)
Sectoral coverage	Transport sector
Geographical coverage	Lithuania
Temporal coverage (e.g. time steps, time span)	2050 year per year

Other models which interact with this model, and type of interaction (e.g. data input to this model, use of data output from this model)	Data output to Energy system model (fuel and energy consumption)
Input from other models	Not applicable
References to the assessment and the technical reports that underpin the projections and the models used	Policies & Measures and Projections of Greenhouse Gas Emissions in Lithuania
Model structure (if diagram please attach to your submission in Reportnet)	Not applicable
Comments or other relevant information	Not applicable
Model 4	
Model name (abbreviation)	Industrial emission calculator
Full model name	MS Excel based industrial emission calculator
Model version and status	Not applicable
Latest date of revision	2024
URL to model description	Not applicable
Model type	MS Excel based calculator
Summary	Projections of GHG emissions from IPPU sector is based on projected data provided by the main emitters in IPPU sector: clinker, lime, glass, ammonia and nitric acid, mineral wool producing companies. The projection of fluorinated greenhouse gases is based on the prohibitions outlined in the Regulation (EU) 2024/573.
Intended field of application	IPPU GHG emissions projections
Description of main input data categories and data sources	Projected production data provided by the main emitters in IPPU sector: clinker, lime, glass, ammonia and nitric acid, mineral wool producing companies wich provide information about projected amount of ammonia production, natural gas consumption, nitric acid production, clinker production, lime production, glass production, mineral wool production. In other subcategories historical data and population are used.
Validation and evaluation	General quality control procedures where applied estimating IPPU projections: analysis of projected activity data trends, consistency check of projected emissions in the IPPU emissions accounting tool and projected emissions in the GovReg_Proj_T1a_T1b_T5a_T5b template, consistency check of activity data sources, completeness check and etc.

Output quantities	CO2 emissions from cement, lime, glass production, ceramics, other uses of soda ash, mineral wool production, ammonia production, cast iron production, lubricant, paraffin wax, solvents use, urea-based catalyst, from asphalt roofing, road paving with asphalt. N2O emissions from nitric acid production, from propellant for pressure and aerosol products and medical applications. HFCs emissions from product uses as substitutes for ozone depleting substances (ODS), SF6 emissions from semiconductor manufacturing, electrical equipment and NF3 emisissions from photovoltaics
GHG covered	IPPU sector GHG emissions (CO2, N2O, HFCs, SF6, NF3)
Sectoral coverage	Mineral, Chemical, Metal industry, Non-energy products from fuels and solvent use, Electronics industry, Product uses as substitutes for ODS, Other product manufacture and use.
Geographical coverage	Lithuania
Temporal coverage (e.g. time steps, time span)	2050 year per year
Other models which interact with this model, and type of interaction (e.g. data input to this model, use of data output from this model)	Not applicable
Input from other models	Not applicable
References to the assessment and the technical reports that underpin the projections and the models used	Policies & Measures and Projections of Greenhouse Gas Emissions in Lithuania
Model structure (if diagram please attach to your submission in Reportnet)	Not applicable
Comments or other relevant information	Not applicable
Model 5	
Model name (abbreviation)	Agriculture emissions calculator
Full model name	MS Excel based agriculture calculator
Model version and status	Not applicable
Latest date of revision	2024
URL to model description	Not applicable
Model type	MS Excel based calculator
Summary	Projections of GHG emissions from agriculture sector is based on projected livestock population, milk production, milk fat, and the share of manure management systems for the main livestock categories (dairy cattle, non-dairy cattle and swine). GHG projections of agricultural soils category are based on projected consumption of inorganic and organic N fertilizers, main harvested crops and area harvested, application of urea and consumption of liming materials (limestone and dolomite) used for soils.

Intended field of application	Agriculture GHG emission projections
Description of main input data categories and data sources	Main livestock population data, Main harvest of crops and area harvested, Inorganic N fertilifer, Amount of limestone materials consumed, Application of urea All projected activity data are provided by Ministry of Agriculture
Validation and evaluation	General quality control procedures where applied estimating Agriculture projections: analysis of projected activity data trends, consistency check of projected emissions in the Agriculture emissions calculator and projected emissions in the GovReg_Proj_T1a_T1b_T5a_T5b template, consistency check of activity data sources, completeness check and etc.
Output quantities	Methane (CH4) emissions from enteric fermentation of livestock; CH4 and nitrous oxide (N2O) (direct and indirect) emissions from manure management; direct and indirect N2O emissions from managed soils; carbon dioxide (CO2) emissions from soil liming and application of urea
GHG covered	Agriculture sector GHG emissions (N2O, CH4, CO2)
Sectoral coverage	Agriculture sector (Enteric fermentation, Manure management, Agriculture Soils, Liming, Urea application)
Geographical coverage	Lithuania
Temporal coverage (e.g. time steps, time span)	2050 year per year
Other models which interact with this model, and type of interaction (e.g. data input to this model, use of data output from this model)	1. Data input from LULUCF model (data of organic CL and GL area and average annual soil carbon stock change in mineral soil) 2. Data output to IPPU model (CO2 emissions from urea)
Input from other models	data of organic CL and GL area and average annual soil carbon stock change in mineral soil from LULUCF
References to the assessment and the technical reports that underpin the projections and the models used	Policies & Measures and Projections of Greenhouse Gas Emissions in Lithuania
Model structure (if diagram please attach to your submission in Reportnet)	Not applicable
Comments or other relevant information	Not applicable
Model 6	
Model name (abbreviation)	IPCC Waste Model
Full model name	IPCC Waste Model
Model version and status	Not applicable
Latest date of revision	2024
URL to model description	https://www.ipcc-nggip.iges.or.jp/public/2006gl/vol5.html
Model type	MS Excel based

Summary	Projections of GHG emissions from Solid waste disposal on land is based on generated amount of municipal solid waste, amount of waste disposed of in the landfils, the amount of CH4 recovered. Projections of waste generation are based on historical as well as projected data on the population, GDP and amount of generated waste per capita.
Intended field of application	Projections of GHG emissions from solid waste dispodal on land
Description of main input data categories and data sources	Data on municipal waste disposed of in the landfills, CH4 recovery. Other parameters (DOC, DOCf, OX and etc.) are default, provided in the model.
Validation and evaluation	General quality control procedures where applied estimating Waste sector projections: analysis of projected activity data trends, consistency check of projected emissions in the Waste sector emissions calculator and projected emissions in the GovReg_Proj_T1a_T1b_T5a_T5b template, consistency check of activity data sources, completeness check and etc.
Output quantities	Methane (CH4) emissions from solid waste disposal on land
GHG covered	Methane (CH4)
Sectoral coverage	Solid waste disposal on land
Geographical coverage	Lithuania
Temporal coverage (e.g. time steps, time span)	2050 year per year
Other models which interact with this model, and type of interaction (e.g. data input to this model, use of data output from this model)	Not applicable
Input from other models	Not applicable
References to the assessment and the technical reports that underpin the projections and the models used	Policies & Measures and Projections of Greenhouse Gas Emissions in Lithuania
Model structure (if diagram please attach to your submission in Reportnet)	Not applicable
Comments or other relevant information	Not applicable
Model 7	
Model name (abbreviation)	Waste tool
Full model name	MS Excel based waste calculator
Model version and status	Not applicable
Latest date of revision	2024
URL to model description	Not applicable
Model type	MS Excel based calculator

Summary	Projections of GHG emissions from Biological treatment of waste is based on amount of waste composted (data from Regional Waste Management Centers); projections of GHG emissions from waste incinration is based on historical data; projections of GHG emissions from Wastewater treatment and discharge is based on historical amount of organically degradable material in wastewater, population conected to wastewater collecting system (projection of the Ministry of Environment).
Intended field of application	Projections of GHG emissions from biological treatment of waste, waste incineration and wastewater treatment and discharge.
Description of main input data categories and data sources	Data on biodegradable waste composted, incinerated waste (without energy recovery), amount of organically degradable material in the wastewater (TOW), population connceted to wastewater collecting system, protein consumption per capita, emission factors (IPCC default), population.
Validation and evaluation	General quality control procedures where applied estimating Waste sector projections: analysis of projected activity data trends, consistency check of projected emissions in the Waste sector emissions calculator and projected emissions in the GovReg_Proj_T1a_T1b_T5a_T5b template, consistency check of activity data sources, completeness check and etc.
Output quantities	Methane (CH4) and nitrous oxide (N2O) emissions from Biological treatment of waste; CO2, CH4 and N2O emissions from waste incineration; CH4, N2O emissions from wastewater treatment and discharge
GHG covered	CO2, CH4, N2O
Sectoral coverage	Biological treatment of waste, Incineration of waste, Wastewater treatment and discharge
Geographical coverage	Lithuania
Temporal coverage (e.g. time steps, time span)	2050 year per year
Other models which interact with this model, and type of interaction (e.g. data input to this model, use of data output from this model)	Not applicable
Input from other models	Not applicable
References to the assessment and the technical reports that underpin the projections and the models used	Policies & Measures and Projections of Greenhouse Gas Emissions in Lithuania
Model structure (if diagram please attach to your submission in Reportnet)	Not applicable
Comments or other relevant information	Not applicable
Model 8	

Model name (abbreviation)	LULUCF calculator
Full model name	MS Excel based LULUCF calculator
Model version and status	Not applicable
Latest date of revision	2024
URL to model description	Not applicable
Model type	MS Excel based calculator
Summary	Projections of GHG emissions and removals in LULUCF sector is based on projected areas of land remaining in land category and land converted to other land category and areas of different cropland management practices; in addition to this, projected growing stock volume changes, harvested volume, natural mortality (dead wood volume) in forest land; volume of peat extracted for horticultural use in peat extraction remaining peat extraction subcategory are necessary for projection of GHG emissions and removals in LULUCF sector
Intended field of application	GHG emissions and removals in LULUCF sector
Description of main input data categories and data sources	Growing stock volume changes, harvested wood volume, dead wood volume, land use area and land use area changes for all categories (forest land, cropland, grassland, wetlands, settlements, other land) Projected activity data is a combination of data provided by the Ministry of Agriculture (MoA) and State Forest Service (SFS)
Validation and evaluation	General quality control procedures where applied estimating LULUCF sector GHG projections: analysis of projected activity data trends, consistency check of projected emissions in the LULUCF GHG emissions and removals calculator and projected emissions in the GovReg_Proj_T1a_T1b_T5a_T5b template, consistency check of activity data sources, completeness check and etc.
Output quantities	Carbon stock changes in biomass, dead organic matter and soils (both mineral and organic) in all land use categories (forest land, cropland, grassland, wetlands, settlements and other land); CH4 emissions due to wildfires in forest land, cropland and grassland categories; direct N2O emissions due to drainage and N mineralization/immobilization in forest land, cropland, grassland, wetlands, settlements and other land; indirect N2O emissions due to Nitrogen leaching and run-off (in all land use categories)
GHG covered	CO2, CH4, N2O
Sectoral coverage	LULUCF sector (forest land, cropland, grassland, wetlands, settlements, other land)
Geographical coverage	Lithuania

Temporal coverage (e.g. time steps, time span)	2040 year per year
Other models which interact with this model, and type of interaction (e.g. data input to this model, use of data output from this model)	1. Data input from other calculators of growing stock volume change, harvested volume, dead wood volume; 2. Data output to Agriculture sector model (areas of cropland and grassland organic soils and mineral soil carbon stock changes in cropland remaining cropland);
Input from other models	Data of growing stock volume change, harvested wood volume, dead wood volume
References to the assessment and the technical reports that underpin the projections and the models used	Policies & Measures and Projections of Greenhouse Gas Emissions in Lithuania
Model structure (if diagram please attach to your submission in Reportnet)	Not applicable
Comments or other relevant information	Not applicable
Model 9	
Model name (abbreviation)	Forest land calculator
Full model name	MS Excel based Forest land increment structure calculator
Model version and status	Not applicable
Latest date of revision	2024
URL to model description	Not applicable
Model type	MS Excel based calculator
Summary	Projections of forest land increment structure consist of growing stock volume increment, harvested wood volume and dead volume, which are projected taking into account historical data obtained from National Forest Inventory (NFI) measurements of 2002 - 2017 (data of growing stock volume increment and its use, age class structure).
Intended field of application	GHG emissions and removals in LULUCF sector
Description of main input data categories and data sources	Historical data of growing stock volume increment and its use (growing stock volume increment, harvested wood volume and dead volume) as well as age class structure, obtained from National Forest Inventory (NFI) measurements of 2002 - 2017 Projected activity data is provided by State Forest Service (SFS)
Validation and evaluation	General quality control procedures where applied estimating LULUCF sector GHG projections: analysis of projected activity data trends, consistency check of projected emissions in the LULUCF GHG emissions and removals calculator and projected emissions in the GovReg_Proj_T1a_T1b_T5a_T5b template, consistency check of activity data sources, completeness check and etc.
Output quantities	Growing stock volume changes, harvested wood volume, dead wood volume in cubic meters

GHG covered	CO2
Sectoral coverage	LULUCF sector forest land category
Geographical coverage	Lithuania
Temporal coverage (e.g. time steps, time span)	2040 year, 10 year time steps
Other models which interact with this model, and type of interaction (e.g. data input to this model, use of data output from this model)	1. Data output to LULUCF model (growing stock volume changes, harvested wood volume, dead wood volume); 2. Data output to IPCC HWP Worksheet (harvested wood volume)
Input from other models	Actual NFI data
References to the assessment and the technical reports that underpin the projections and the models used	Policies & Measures and Projections of Greenhouse Gas Emissions in Lithuania
Model structure (if diagram please attach to your submission in Reportnet)	Not applicable
Comments or other relevant information	Not applicable
Model 10	
Model name (abbreviation)	IPCC HWP Worksheet
Full model name	IPCC HWP Worksheet
Model version and status	Not applicable
Latest date of revision	2024
URL to model description	https://www.ipcc-nggip.iges.or.jp/public/2006gl/vol4.html
Model type	MS Excel based calculator
Summary	Projections of GHG removals in harvested wood products relate on projected total harvested wood volume and historical volume share between sawnwood, wood-based panels, paper and paper board and proportion of harvested wood products produced from total harvested wood volume.
Intended field of application	GHG emissions and removals in LULUCF sector
Description of main input data categories and data sources	Main input data is provided from Forest land calculator (harvested wood volume) and actual activity data for harvested wood products subcategories are subdivided according to historical share of volume between sawnwood, wood-based panels, paper and paper board and proportion of harvested wood products produced from total harvested wood volume.
Validation and evaluation	General quality control procedures where applied estimating LULUCF sector GHG projections: analysis of projected activity data trends, consistency check of projected emissions in the LULUCF GHG emissions and removals calculator and projected emissions in the GovReg_Proj_T1a_T1b_T5a_T5b template, consistency check of activity data sources, completeness check and etc.

Output quantities	GHG removals (CO2) in harvested wood products categories: sawnwood, wood-based panels and paper and paper board
GHG covered	CO2
Sectoral coverage	Forest land harvested wood products category
Geographical coverage	Lithuania
Temporal coverage (e.g. time steps, time span)	2040 year per year
Other models which interact with this model, and type of interaction (e.g. data input to this model, use of data output from this model)	1. Data input from Forest land calculator (harvested wood volume)
Input from other models	Forest land calculator
References to the assessment and the technical reports that underpin the projections and the models used	Policies & Measures and Projections of Greenhouse Gas Emissions in Lithuania
Model structure (if diagram please attach to your submission in Reportnet)	Not applicable
Comments or other relevant information	Not applicable