

Physical energy flow account (PEFA)

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3.2 Classification system

1. Contact	
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2. Metadata update	
2.3 Metadata last update	11th December 2020
3. Statistical presentation	
3.1 Data description	The physical energy flow account (PEFA) compiles information regarding energy flow in and out of the economy. The inflow (supply) and use are in separate parts of the account. Supply and use are then balanced in such a way that the supply of each energy type is the same as the use of the same. Similarly the energy use of each economic sector must be the same as the energy on the supply side. This supply and use table form (SUT) ensures bookkeeping balance, but is not identical to the physics definitions that underline energy balances. Supply and use tables are divided into sub-tables, such as energy flow from nature, from other economies, flow of produced energy and flow of excess energy, and indicators.

Economic sectors are classified by the NACE* 64 rev 2 system. This system separates economic activities into 64 classes, plus three for households. The economic sectors uses the registration of economic activities maintained by





Statistics Iceland (ISAT 2008). This classification system is identical between the system used by national accounts and business statistics.

The economic sectors are:

NACE*64	TITLE IN ENGLISH	TITLE IN ICELANDIC
A_U_TOTAL	Total Industries	Samtals fyrir iðnað
Α	Agriculture, forestry and fishing	Landbúnaður, skógrægt og fiskveiðar
A01	Crop and animal production, hunting and related service activities	Ræktun nytjajurta og búfjárrækt, veiðar og tengd þjónustustarfsemi
A02	Forestry and logging	Skógrækt og skógarhögg
A03	Fishing and aquaculture	Fiskveiðar og fiskeldi
В	Mining and quarrying	Námugröftur og vinnsla hráefna úr jörðu
С	Manufacturing	Framleiðsla
C10-C12	Manufacture of food products, beverages and tobacco products	Framleiðsla á matvælum, drykkjarvörum og tóbaksvörum
C13-C15	Manufacture of textiles, wearing apparel and leather products	Framleiðsla á textílvörum, fatagerð og framleiðsla á lleðri og leðurvörum
C16	Manufacture of wood and of products of wood and cork, except furniture; manufacture of articles of straw and plaiting materials	Framleiðsla á viði, viðarvörum og korki, önnur en húsgagnagerð; framleiðsla á vörum úr hálmi og fléttuefnum
C17	Manufacture of paper and paper products	Framleiðsla á pappír og pappírsvöru
C18	Printing and reproduction of recorded media	Prentun og fjölföldun upptekins efnis
C19	Manufacture of coke and refined petroleum products	Framleiðsla á koksi og hreinsuðum olíuvörum
C20	Manufacture of chemicals and chemical products	Framleiðsla á efnum og efnavörum
C21	Manufacture of basic pharmaceutical products and pharmaceutical preparations	Framleiðsla á lyfjum og efnum til lyfjagerðar
C22	Manufacture of rubber and plastic products	Framleiðsla á gúmmí- og plastvörum
C23	Manufacture of other non-metallic mineral products	Framleiðsla á vörum úr málmlausum steinefnum
C24	Manufacture of basic metals	Framleiðsla málma
C25	Manufacture of fabricated metal products, except machinery and equipment	Framleiðsla á málmvörum, að undanskildum vélum og búnaði
C26	Manufacture of computer, electronic and optical products	Framleiðsla á tölvu-, rafeinda- og optískum vörum
C27	Manufacture of electrical equipment	Framleiðsla á rafbúnaði og heimilistækjum
C28	Manufacture of machinery and equipment n.e.c.	Framleiðsla á öðrum ótöldum vélum og tækjum
C29	Manufacture of motor vehicles, trailers and semi-	Framleiðsla á vélknúnum ökutækjum og tengivögnum



	Lacare.	
	trailers	
C30	Manufacture of other transport equipment	Framleiðsla annarra farartækja
C31_C32	Manufacture of furniture; other manufacturing	Framleiðsla á húsgögnum og innréttingum og önnur framleiðsla
C33	Repair and installation of machinery and equipment	Viðgerðir og uppsetning vélbúnaðar og tækja
D	Electricity, gas, steam and air conditioning supply	Rafmagns-, gas- og hitaveitur
E	Water supply; sewerage, waste management and remediation activities	Vatnsveita, fráveita, meðhöndlun úrgangs og afmengun
E36	Water collection, treatment and supply	Vatnsveita, öflun og meðferð vatns
E37-E39	Sewerage, waste management, remediation activities	Fráveita, sorphirða, meðhöndlun og förgun sorps og önnur þjónusta á sviði meðhöndlunar úrgangs
F	Construction	Byggingastarfsemi og mannvirkjagerð
G	Wholesale and retail trade; repair of motor vehicles and motorcycles	Heild- og smásöluverslun, viðgerðir á vélknúnum ökutækjum
G45	Wholesale and retail trade and repair of motor vehicles and motorcycles	Sala, viðgerðir og viðhald á vélknúnum ökutækjum og tengivögnum
G46	Wholesale trade, except of motor vehicles and motorcycles	Heildverslun, að undanskildum vélknúnum ökutækjum
G47	Retail trade, except of motor vehicles and motorcycles	Smásöluverslun, að undanskildum vélknúnum ökutækjum
Н	Transportation and storage	Flutningar og geymsla
H49	Land transport and transport via pipelines	Flutningar á landi og eftir leiðslum
H50	Water transport	Flutningar á sjó og vatnaleiðum
H51	Air transport	Flutningar með flugi
H52	Warehousing and support activities for transportation	Vörugeymsla og stoðstarfsemi fyrir flutninga
H53	Postal and courier activities	Póst- og boðberaþjónusta
I	Accommodation and food service activities	Rekstur gististaða og veitingarekstur
J	Information and communication	Upplýsingar og fjarskipti
J58	Publishing activities	Útgáfustarfsemi
J59_J60	Motion picture, video, television programme production; programming and broadcasting activities	Framleiðsla á kvikmyndum, myndböndum og sjónvarpsefni og útvarpsútsending og dagskrárgerð
J61	Telecommunications	Fjarskipti
J62_J63	Computer programming, consultancy, and information service activities	Þjónustustarfsemi á sviði upplýsingatækni og starfsemi á sviði upplýsingaþjónustu
К	Financial and insurance activities	Fjármála og vátryggingastarfsemi
K64	Financial service activities, except insurance and pension funding	Fjármálaþjónusta, þó ekki starfsemi vátryggingafélaga og lífeyrissjóða





K65	Insurance, reinsurance and pension funding, except compulsory social security	Vátryggingafélög, endurtryggingafélög og lífeyrissjóðir, þó ekki lögboðnar almannatryggingar
K66	Activities auxiliary to financial services and insurance activities	Starfsemi tengd fjármálaþjónustu og vátryggingum
L	Real estate activities	Fasteignaviðskipti
L68A	Imputed rents of owner-occupied dwellings	Leigustarfsemi eigin heimila
М	Professional, scientific and technical activities	Sérfræðileg, vísindaleg og tæknileg starfsemi
M69_M70	Legal and accounting activities; activities of head offices; management consultancy activities	Lögfræðiþjónusta og reikningshald, starfsemi höfuðstöðva og starfsemi við rekstrarráðgjöf
M71	Architectural and engineering activities; technical testing and analysis	Starfsemi arkitekta og verkfræðinga; tæknilegar prófanir og greining
M72	Scientific research and development	Vísindarannsóknir og þróunarstarf
M73	Advertising and market research	Auglýsingastarfsemi og markaðsrannsóknir
M74_M75	Other professional, scientific and technical activities; veterinary activities	Önnur sérfræðileg, vísindaleg og tæknileg starfsemi og Dýralækningar
N	Administrative and support service activities	Leigustarfsemi og ýmis sérhæfð þjónusta
N77	Rental and leasing activities	Leigustarfsemi, þó ekki fasteignaleiga
N78	Employment activities	Atvinnumiðlun
N79	Travel agency, tour operator reservation service and related activities	Ferðaskrifstofur, ferðaskipuleggjendur og önnur bókunarþjónusta
N80-N82	Security and investigation, service and landscape, office administrative and support activities	Öryggis- og rannsóknarstarfsemi, fasteignarumsýsla, hreingerningarþjónusta, skrúðgarðyrkja, skrifstofuþjónusta og önnur þjónusta við atvinnurekstur
0	Public administration and defence; compulsory social security	Opinber stjórnsýsla og varnarmál; almannatryggingar
P	Education	Fræðslustarfsemi
Q	Human health and social work activities	Heilbrigðis- og félagsþjónusta
Q86	Human health activities	Heilbrigðisþjónusta
Q87_Q88	Residential care activities and social work activities without accommodation	Umönnun á dvalarheimilum og félagsþjónusta án dvalar á stofnun
R	Arts, entertainment and recreation	Menningar-, íþrótta- og tómstundastarfsemi
R90-R92	Creative, arts and entertainment activities; libraries, archives, museums and other cultural activities; gambling and betting activities	Skapandi listir og afþreying, söfn og önnur menningarstarfsemi og fjárhættu- og veðmálastarfsemi
R93	Sports activities and amusement and recreation activities	Íþrótta- og tómstundastarfsemi
S	Other service activities	Félagasamtök og önnur þjónustustarfsemi
S94	Activities of membership organisations	Starfsemi félagasamtaka
S95	Repair of computers and personal and household goods	Viðgerðir á tölvum og hlutum til einka- og heimilisnota





S96	Other personal service activities	Önnur þjónustustarfsemi
Т	Activities of households as employers; undifferentiated goods- and services-producing activities of households for own use	Atvinnurekstur innan heimilis, þjónustustarfsemi og framleiðsla á ýmis konar vöru á heimilum til eigin nota
U	Activities of extraterritorial organisations and bodies	Starfsemi stofnana og samtaka með úrlendisrétt
HEIM	Household air emissions	Heimilin samtals
HEIM_HITUN	Household - Heating/cooling	Notkun heimila - Hitun/Kæling
HEIM_FLUTNINGUR	Household - Transport	Notkun heimila - Flutningur
HEIM_ANNAD	Household - Other	Notkun heimila - Annað
BRIDGING_ITEMS	Bridging items (total)	Mismunatölur (samtals)
BRIDGING_RESIDENTS	Less national residents abrot	Notkun innlendra aðila erlendis
BRIDGE_LAND_TRANSPORT	Bridging items - Residents abroad: Land transport	Mismunatölur - Rekstur erlendis: Flutningur á láði
BRIDGE_AIR_TRANSPORT	Bridging items - Residents abroad: Air transport	Mismunatölur - Rekstur erlendis: Flutningur í lofti
BRIDGE_WATER_TRANSPORT	Bridging items - Residents abroad: Water transport	Mismunatölur - Rekstur erlendis: Flutningur á legi
BRIDGE_FISHING	Bridging items - Residents abroad: National fishing vesels operating abroad	Mismunatölur - Rekstur erlendis: Fiskiskip erlendis
BRIDGING_NON_RESIDENTS	plus Non-residents on the territory	Notkun erlendar aðila hérlendis
BRIDGE_NR_LAND_TRANSPORT	Bridging items + Non-residents: Land transport	Mismunatölur + Erlendur rekstur hérlendis: Flutningur á láði
BRIDGE_NR_AIR_TRANSPORT	Bridging items + Non-residents: Air transport	Mismunatölur + Erlendur rekstur hérlendis: Flutningur í lofti
BRIDGE_NR_WATER_TRANSPORT	Bridging items + Non-residents: Water transport	Mismunatölur + Erlendur rekstur hérlendis: Flutningur á legi

Energy in the PEFA is classified into 31 different energy products. Of those, seven are designated for natural energy input, 19 products are for manufactured energy and four are designated for residual energy. The energy products are:

	IDENTIFIER	TITLE IN ENGLISH	TITLE IN ICELANDIC
Ğ	N00	NATURAL ENERGY INPUTS	ORKA TEKIN ÚR NÁTTÚRU
	N01	Fossil non-renewable natural energy inputs	Kolefniseldsneyti (ekki endurnýjanlegt)
NERGY	N02	Nuclear non-renewable natural energy inputs	Kjarnorka (ekki endurnýjanlegt)
<u>.</u>	N03	Hydro based renewable natural energy inputs	Vatnskorka (endurnýjanleg framleiðsla)
₹	N04	Wind based renewable natural energy inputs	Vindorka (endurnýjanleg framleiðsla)
₽	N05	Solar based renewable natural energy inputs	Sólarorka (endurnýjanleg framleiðsla)
₹	N06	Biomass based renewable natural energy inputs	Orka úr lífmassa (endurnýjanleg framleiðsla)
_	N07	Other renewable natural energy inputs	Önnur orka (endurnýjanleg framleiðsla)
	P00	ENERGY PRODUCTS	ORKUVÖRUR
⊕∽	P08	Hard coal	Steinkol
5 C	P09	Brown coal and peat	Brúnkol og mór
PRODUCED	P10	Derived gases (= manufactured gases excl. biogas)	Afleitt gas (fyrir utan lífgas)
	P11	Secondary coal products (coke, coal tar, patent fuel, BKB and peat products)	Efni framleidd úr kolum (kox, koltjara, nýgas, BKB og móefni)



	P12	Crude oil, NGL, and other hydrocarbons (excl. bio)	Hráolía, NLG, og önnur kolvetnisefni (ekki lífræn)
	P13	Natural gas (without bio)	Jarðgas (án lífefna)
	P14	Motor spirit (without bio)	Bensín efni (án lífefna)
	P15	Kerosenes and jet fuels (without bio)	Steinolía og þotueldsneyti (án lífefna)
	P16	Naphtha	Naptha
	P17	Transport diesel (without bio)	Dísil olía (án lífefna)
	P18	Heating and other gasoil (without bio)	Hitunarolía og önnur gasolía (án lífefna)
	P19	Residual fuel oil	Svartolía
	P20	Refinery gas, ethane and LPG	Gas úr vinnslustöðvum, etan og LPG
	P21	Other petroleum products incl.	Önnur olíuefni, þ.á.m. oxunarefni og olíuframleiðslu
		additives/oxygenates and refinery feedstocks	millivara
	P22	Nuclear fuel	Geislavirk efni til kjarnakljúfa
	P23	Wood, wood waste and other solid biomass,	Viður, viðarkurl og annar fastur lífmassi auk
		charcoal	viðarkola
	P24	Liquid biofuels	Fljótandi lífolía
	P25	Biogas	Lífgas
	P26	Electrical energy	Raforka
	P27	Heat	Hiti
_	R00	ENERGY RESIDUALS	AFGANGSORKA
چَ	R28	Renewable waste	Endurnýtanlegur úrgangur
ÿ	R29	Non-renewable waste	Óendurnýtanlegur úrgangur
RESIDUAL ENERGY	R30	Energy losses all kinds of (during extraction, distribution, storage and transformation, and dissipative heat from end use)	Hverskonar orkutöp (vegna framleiðslu, dreifingar, geymslu og umbreytingar)
<u> </u>	R31	Energy incorporated in products for non-energy use	Orkuinnihald sem fer í framleiðsluvörur

PEFA separates reporting into six different tables, which are:

TABLE IDENTITY	TITLE IN ENGLISH	TITLE IN ICELANDIC
TABLE A	Physical supply table for energy flows	Innflæði orku
TABLE B	Physical use table for energy flows	Útflæði orku
TABLE B.1	Transformation use of energy flows	Notkun orku í umbreytingarferlum
TABLE B.2	End use of energy flows (including non-energy use)	Lokanotkun orku
TABLE C	Physical use table of emission-relevant use of energy flows	Notkun orku tengd losun gróðurhúsalofts og
	(related to fuel combustion)	mengandi efna
TABLE D	Vectors of key energy indicators	Mælikvarðar

Tables A, B.1 and B.2 are true account data. Table B is the sum of B.1 and B.2. Table C is a sub-sum of table B.2, where energy consumption that is associated with emission of greenhouse gasses is extracted.





Tables A – C are divided into rows (by energy products) and columns by NACE*64 sectors. Additional columns are then used to account for total energy flow from nature, other economies, change in inventories and statistical differences. The additional columns are:

IDENTITY	TITLE IN ENGLISH	TITLE IN ICELANDIC
ENV	Environment	Umhverfi
ROW_ACT	Rest of the World - economic activities	Önnur hagkerfi
TSUE	TOTAL SUPPLY/USE OF NATURAL INPUTS, PRODUCTS, AND RESIDUALS	SAMTALS INNFLÆÐI/NOTKUN ORKU ÚR NÁTTÚRU EÐA ÖÐRUM VÖRUM
STADIF	Statistical Differences	Tölfræðilegur mismunur/skekkja
CHINV_PA	Changes in inventories and produced assets	Breyting á byrgðum og framleiddum vörum





3.3 Sector coverage	The Icelandic economy regardless if the operation occurs in Iceland proper or abroad. Economic activities of non-residents is excluded from the accounts, but included in Bridging items.
3.4 Statistical concepts and definition	Supply: Energy flow from nature, other economies, or production of energy products from the economy that goes into the economy itself. Energy flow from the economy into the environment is also a part of the supply. Use (final): Energy used by sectors for heating/cooling, transport or as a part of the manufactured goods. Use (transformation): Energy used by the sectors where one form of energy is used to produce another type of energy product. Residual energy: Energy that leaves the economy as waste heat, energy losses and renewable or non-renewable waste. Natural energy: Type of energy that is extracted from the environment. This energy is consumed by economic sectors to produce other types of energies (Produced Energy) that is then consumed. The natural energy is never consumed without transformation. Produced energy: Energy products that are manufactured and can be used for heating, transportation of product manufacturing by the economy.
3.5 Statistical unit	
3.6 Statistical population	All operation by individuals or companies that have registered identification number (kennitala) in Iceland. All parties engaged in mining operations within the country's boundary regardless of nationality.
3.7 Reference area	Does not apply.
3.8 Time coverage	PEFA is summarized per annum.
3.9 Base period	Mandatory reporting goes back to 2014.
4. Unit of measure	
4. Unit of measure	Terajoules (TJ)



5. Reference period	
5. Reference period	Not applicable
6. Institutional mandate	
6.1 Legal acts and other agreements	Completion of the PEFA fulfills regulation EU 961/2011 regarding environmental statistics (http://data.europa.eu/eli/reg/2011/691/2014-06-16). Legal authority for statistics Iceland in collecting the PEFA data is covered by regulation IS 163/2007 covering the authority of Statistics Iceland in compiling national statistics.
7. Confidentiality	
7.1 Confidentiality - policy	See guideline by statistics Iceland regarding procurement and compiling of confidential information: https://hagstofa.is/media/43950/Reglur-um-me%C3%B0fer%C3%B0-tr%C3%BAna%C3%B0argagna.pdf
7.2 Confidentiality – data treatment	The published data is not considered to be confidential since operation of individuals is not exposed.
8. Release policy	
8.1 Release calendar	Publication of the data will be posted on publication schedule 10 days prior to the publication date, in accordance with the rules of Statistics Iceland.
8.2 Release calendar access	The publication calendar is available at: https://statice.is/publications/
8.3 User access	The published data will be made available on Statistics Iceland data repository.
9. Frequency of dissemination	





9. Frequency of dissemination	The data will be updated annually.
10. Accessibility and clarity	
10.1 News release	Not pre-scheduled, published as needed.
10.2 Publication	No further publication is scheduled.
10.3 On-line database	The data is separated into several data tables available through here: https://statice.is/statistics/environment/energy/energy-flow-accounts/
10.4 Micro-data access	Statistics Iceland can only grant access to microdata in the case of approved research projects or due to collaboration with statistical processors within the European statistical colloquium. High standard is set for access to microdata in both cases. All personal identifications are exchanged with a hash key data thus ensuring that the utmost care is taken. Application for micro-data access are processed through the research division of Statistics Iceland, see here: https://hagstofa.is/thjonusta/gogn-til-visindarannsokna/
10.5 Other	-
10.6 Documentation on methodology	Detailed documentation for compiling is available at the website of Eurostat: https://ec.europa.eu/eurostat/web/environment/methodology see: https://ec.europa.eu/eurostat/documents/1798247/6191537/PEFA-Manual-2014-v20140515.pdf
10.7 Quality documentation	Quality documentation is in development
11. Quality management	
11.1 Quality assurance	PEFA is based on the Icelandic energy account submitted by the Icelandic Energy Authority to Eurostat and the



International Energy Association (IEA). Quality tests are done by Eurostat and IEA and forwarded to the Energy Authority. Further comments from PEFA compilers are also considered by the Energy Authority. Quality assurance of other internal data from within Statistics Iceland are done separate from this compilation.



11.2 Quality assessment		
12. Relevance		
12.1 User needs	Not known.	
12.2 User satisfaction	Not known.	
12.3 Completeness		
13. Accuracy and reliability		
13.1 Overall accuracy	The accuracy of the account is limited by the accuracy of the IEA records. In some cases the unit of measure is in thousand tonnes, which may in some cases be a non-relevant unit to Iceland.	
13.2 Sampling errors		
13.3 Non-sampling errors		
14. Timeliness and punctuality		
14.1 Timeliness	The IEA report cover the previous year and are usually compiled and submitted in March. This limits the timeliness of the PEFA.	
14.2 Punctuality	The PEFA accounts are due in June each year, but review and approval processing of the data can delay the final acceptance to mid-October.	
15. Coherence and comparability		
15.1 Comparability – geographical	Not applicable.	





15.2 Comparability – over time	The methodology of PEFA was published in 2014. Minor changes to the methodology were done in 2017 and 2018. This affected the classification of fuels and bio-fuels.
15.3 Coherence – cross domain	The economic sectors used here are identical to sectors used in national accounts and business statistics.
15.4 Coherence – internal	PEFA is one of the Environmental/economics statistical modules. The concept of emissions, bridging items and ownership of emission/energy is identical across all modules.
16. Cost and burden	
16. Cost and burden	The processing is based on data collection performed by the Energy Authority, registry data collected elsewhere within Statistics Iceland and data published by Statistics Iceland.
17. Data revision	
17.1 Data revision - policy	Data for all years will be reviewed and revised for the next five year. After that only the two most recent years will be reviewed or revised.
17.2 Data revision -practice	No procedure is available at this time.
18. Statistical processing	
18.1 Source data	PEFA is first and foremost a re-distribution of the national energy balance (IEA report) submitted by the Icelandic Energy Authority. Data is received directly from the Energy Authority upon submission to the IEA. Any changes or revisions of the data are performed until the IEA data has been accepted.
	Data for identification of energy use by economic sector. The IEA data has a rough classification of energy consumption by economic sectors and is first and foremost thought to be an account of energy imports and energy production capabilities of Iceland and what infrastructure for energy distribution exists within Iceland. The main compilation task within the PEFA is therefore distribute the energy consumption with each rough economy



class with the IEA data. This is done by identifying several factors in registry data that may indicate economic activity that is associated with energy consumption. As an example, activity is described by:

- Operator registration for vehicles, off-road machinery along with annual inspection records.
- Registration of ownership/operatorship of oceangoing vessels as well as registration of fishing catch, cargo records and arrival/departure records.
- Area/volume of rented or own office and manufacturing facilities.
- Export records of manufactured goods and import records of raw materials.

One distribution comb is constructed per energy product.

The main data sources are:

- Database of the Economy division in Statistics Iceland (includes national accounts and trade statistics).
- Database of the Population division in Statistics Iceland (includes employment and education statistics).
- Database of the Business division in Statistics Iceland (includes VAT reports, tourism statistics, industry statistics, business register, agriculture statistics and fishing statistics).
- Database in the Business division in Statistics Iceland regarding credit card transaction, road traffic statistics, vehicle registry and Environmental statistics.

Data used to transfer data from territorial principles to resident principle:

- Records regarding purchases of fuels by Icelandic companies abroad.
- Records of sales of fuels to foreign payment cards.
- Records of sales of fuels to companies with foreign residency.
- Records of purchase of fuels by Icelandic tourists abroad.





18.2 Frequency of data collection	Annually
18.3 Data collection	Data from the Energy Authority is received upon submission to the IEA. All other data is based on registry records.
18.4 Data validation	Considerable effort is done to validate the IEA data, especially in order to check import and export records with the IEA data and consumption of nationally produced energy products. Discrepancies are communicated with the Energy Authority with options for correction of the original data or motion to assume the difference as a part of the statistical discrepancy.
18.5 Data compilation	The data is pre-compiled and tested in R scripts. The compilation of the final PEFA report is done by the Eurostat PEFA-Builder tool.
18.6 Adjustment	-
19. Comment	
19. Comment	The PEFA is relatively complex and somewhat abstract description of energy flow. This increases the likelihood of misinterpretation of the account by users. A working paper was published in order to assist new users in reading and interpreting the results.