

# Circular Economy Ontology Network (CEON) - Energy Module

## Metadata

**IRI**

<http://w3id.org/CEON/ontology/energy/>

**Title**

Circular Economy Ontology Network (CEON) - Energy Module

**Creator**

Huanyu Li

**Contributor**

Eva Blomqvist  
Mikael Lindecrantz  
Robin Keskisärkkä

**Date Created**

2024-11-01

**License**

<https://creativecommons.org/licenses/by/4.0/>

**Version Iri**

<http://w3id.org/CEON/ontology/energy/0.1/>

**Version Info**

0.1

**Preferred Namespace Prefix**

energy

**Preferred Namespace Uri**

<http://w3id.org/CEON/ontology/energy/>

**Description**

A module of the CEON ontology network defining aspects of the energy concept.

**Covers Requirements**

Covers the following requirements from Onto-DESIDE D3.2: CE1-2, CE4-3, CE6-3, CE7-4, CE8-2, CE10-7, CE10-9, CE11-6, CE12-5.

## Classes

Biofuel <sup>C</sup>	
IRI	<a href="http://w3id.org/CEON/ontology/energy/Biofuel">http://w3id.org/CEON/ontology/energy/Biofuel</a>
Sub Class Of	<a href="#">Biomass<sup>C</sup></a>

Biogas <sup>C</sup>	
IRI	<a href="http://w3id.org/CEON/ontology/energy/Biogas">http://w3id.org/CEON/ontology/energy/Biogas</a>
Sub Class Of	<a href="#">Biomass<sup>C</sup></a>

## Biomass<sup>C</sup>

**IRI** <http://w3id.org/CEON/ontology/energy/Biomass>

**Sub Class Of** [EnergySource<sup>C</sup>](#)

**Super Class Of**  
[Biofuel<sup>C</sup>](#)  
[Biogas<sup>C</sup>](#)

## Coal<sup>C</sup>

**IRI** <http://w3id.org/CEON/ontology/energy/Coal>

**Sub Class Of** [FossilFuel<sup>C</sup>](#)

## Energy<sup>C</sup>

**IRI** <http://w3id.org/CEON/ontology/energy/Energy>

**Sub Class Of** <http://w3id.org/CEON/ontology/resourceODP/Resource>

**In Domain Of** [hasEnergySource<sup>op</sup>](#)

**Super Class Of**  
[NonRenewableEnergy<sup>C</sup>](#)  
[RenewableEnergy<sup>C</sup>](#)

## Energy Composition<sup>C</sup>

**IRI** <http://w3id.org/CEON/ontology/energy/EnergyComposition>

**Sub Class Of** <http://w3id.org/CEON/ontology/actorODP/ResourceParticipation>

**In Domain Of** [hasEnergyComponentPercentage<sup>dp</sup>](#)

## Energy Conversion<sup>C</sup>

**IRI** <http://w3id.org/CEON/ontology/energy/EnergyConversion>

**Sub Class Of** <http://w3id.org/CEON/ontology/actorODP/ResourceRelation>

## Energy Infrastructure<sup>C</sup>

**IRI** <http://w3id.org/CEON/ontology/energy/EnergyInfrastructure>

**Sub Class Of** <http://w3id.org/CEON/ontology/actorODP/Infrastructure>

## Energy Source<sup>C</sup>

**IRI** <http://w3id.org/CE0N/ontology/energy/EnergySource>

**In Domain Of** [hasCarbonIntensity<sup>dp</sup>](#)  
[hasSustainability<sup>dp</sup>](#)

**In Range Of** [hasEnergySource<sup>op</sup>](#)

**Super Class Of** [Biomass<sup>C</sup>](#)  
[FossilFuel<sup>C</sup>](#)  
[GeothermalEnergySource<sup>C</sup>](#)  
[Hydropower<sup>C</sup>](#)  
[SolarEnergySource<sup>C</sup>](#)  
[Wind<sup>C</sup>](#)

## Fossil Fuel<sup>C</sup>

**IRI** <http://w3id.org/CE0N/ontology/energy/FossilFuel>

**Sub Class Of** [EnergySource<sup>C</sup>](#)

**Super Class Of** [Coal<sup>C</sup>](#)  
[NaturalGas<sup>C</sup>](#)  
[Petroleum<sup>C</sup>](#)

## Geothermal Energy Source<sup>C</sup>

**IRI** <http://w3id.org/CE0N/ontology/energy/GeothermalEnergySource>

**Sub Class Of** [EnergySource<sup>C</sup>](#)

## Hydropower<sup>C</sup>

**IRI** <http://w3id.org/CE0N/ontology/energy/Hydropower>

**Sub Class Of** [EnergySource<sup>C</sup>](#)

## Natural Gas<sup>C</sup>

**IRI** <http://w3id.org/CE0N/ontology/energy/NaturalGas>

**Sub Class Of** [FossilFuel<sup>C</sup>](#)

## Non Renewable Energy<sup>C</sup>

**IRI** <http://w3id.org/CE0N/ontology/energy/NonRenewableEnergy>

**Sub Class Of** [Energy<sup>C</sup>](#)

## Petroleum<sup>C</sup>

**IRI** <http://w3id.org/CEON/ontology/energy/Petroleum>

**Sub Class Of** [FossilFuel<sup>C</sup>](#)

## Renewable Energy<sup>C</sup>

**IRI** <http://w3id.org/CEON/ontology/energy/RenewableEnergy>

**Sub Class Of** [Energy<sup>C</sup>](#)

## Solar Energy Source<sup>C</sup>

**IRI** <http://w3id.org/CEON/ontology/energy/SolarEnergySource>

**Sub Class Of** [EnergySource<sup>C</sup>](#)

## Wind<sup>C</sup>

**IRI** <http://w3id.org/CEON/ontology/energy/Wind>

**Sub Class Of** [EnergySource<sup>C</sup>](#)

## Object Properties

### has anergy<sup>op</sup>

**IRI** <http://w3id.org/CEON/ontology/energy/hasAnergy>

**Sub Property Of** <http://w3id.org/CEON/ontology/actorODP/participatingObject>

### has converted energy<sup>op</sup>

**IRI** <http://w3id.org/CEON/ontology/energy/hasConvertedEnergy>

**Sub Property Of** <http://w3id.org/CEON/ontology/actorODP/participatingResource>

**Range** [NonRenewableEnergy<sup>C</sup>](#) or [RenewableEnergy<sup>C</sup>](#)

### has energy source<sup>op</sup>

**IRI** <http://w3id.org/CEON/ontology/energy/hasEnergySource>

**Domain** [Energy<sup>C</sup>](#)

**Range** [EnergySource<sup>C</sup>](#)

has exergy<sup>op</sup>

**IRI** <http://w3id.org/CEON/ontology/energy/hasExergy>

**Sub Property Of** <http://w3id.org/CEON/ontology/actorODP/participatingObject>

has original energy<sup>op</sup>

**IRI** <http://w3id.org/CEON/ontology/energy/hasOriginalEnergy>

**Sub Property Of** <http://w3id.org/CEON/ontology/actorODP/participatingResource>

**Range** [NonRenewableEnergy<sup>c</sup>](#) or [RenewableEnergy<sup>c</sup>](#)

participating energy<sup>op</sup>

**IRI** <http://w3id.org/CEON/ontology/energy/participatingEnergy>

**Sub Property Of** <http://w3id.org/CEON/ontology/actorODP/participatingSubject>

## Datatype Properties

has carbon intensity<sup>dp</sup>

**IRI** <http://w3id.org/CEON/ontology/energy/hasCarbonIntensity>

**Domain** [EnergySource<sup>c</sup>](#)

has energy component percentage<sup>dp</sup>

**IRI** <http://w3id.org/CEON/ontology/energy/hasEnergyComponentPercentage>

**Domain** [EnergyComposition<sup>c</sup>](#)

has sustainability<sup>dp</sup>

**IRI** <http://w3id.org/CEON/ontology/energy/hasSustainability>

**Domain** [EnergySource<sup>c</sup>](#)

## Annotation Properties

description<sup>ap</sup>

IRI <http://purl.org/dc/elements/1.1/description>

contributor<sup>ap</sup>

IRI <http://purl.org/dc/terms/contributor>

created<sup>ap</sup>

IRI <http://purl.org/dc/terms/created>

creator<sup>ap</sup>

IRI <http://purl.org/dc/terms/creator>

description<sup>ap</sup>

IRI <http://purl.org/dc/terms/description>

license<sup>ap</sup>

IRI <http://purl.org/dc/terms/license>

title<sup>ap</sup>

IRI <http://purl.org/dc/terms/title>

preferred namespace prefix<sup>ap</sup>

IRI <http://purl.org/vocab/vann/preferredNamespacePrefix>

preferred namespace uri<sup>ap</sup>

IRI <http://purl.org/vocab/vann/preferredNamespaceUri>

covers requirements<sup>ap</sup>

IRI <http://www.ontologydesignpatterns.org/schemas/cpannotation/schema.owl#coversRequirements>

definition<sup>ap</sup>

IRI <http://www.w3.org/2004/02/skos/core#definition>

pref label<sup>ap</sup>

IRI <http://www.w3.org/2004/02/skos/core#prefLabel>

## Namespaces

:

<http://w3id.org/CEON/ontology/energy/>

dc

<http://purl.org/dc/elements/1.1/>

dcterms

<http://purl.org/dc/terms/>

geo

<http://www.opengis.net/ont/geosparql#>

odp

<http://www.ontologydesignpatterns.org/schemas/cpannotationschema.owl#>

owl

<http://www.w3.org/2002/07/owl#>

prov

<http://www.w3.org/ns/prov#>

rdf

<http://www.w3.org/1999/02/22-rdf-syntax-ns#>

rdfs

<http://www.w3.org/2000/01/rdf-schema#>

skos

<http://www.w3.org/2004/02/skos/core#>

vann

<http://purl.org/vocab/vann/>

## Legend

c	Classes
op	Object Properties
dp	Datatype Properties
ap	Annotation Properties