SEEA-EEA Carbon Account for the Netherlands

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Overview

- Geocarbon
- Biocarbon
- Carbon in the economy
- Carbon in the atmosphere
- Overall carbon account

- *2013 only*

Geocarbon

All **known deposits** of subsoil carbon-based energy resources, which **could potentially be extracted.**

Mton C	oil	gas	shale gas	coal	limestone	TOTAL
Opening stock	54.2	533.0	94.3	12716.5		13398.1
Additions to stock						
Natural expansion						
Managed expansion						
Discoveries		0.1				0.1
Upwards reappraisals	0.3					0.3
Reclassifications						
Imports						
Reductions in stock						
Natural contraction						
Managed contraction	1.5	39.7			0.1	41.3
Downwards reappraisals		1.1				1.1
Reclassifications						0.0
Exports						
Net carbon balance	-1.1	-40.7	0.0	0.0		-41.9
Closing stock	53.1	492.4	94.3	12716.5		13356.4

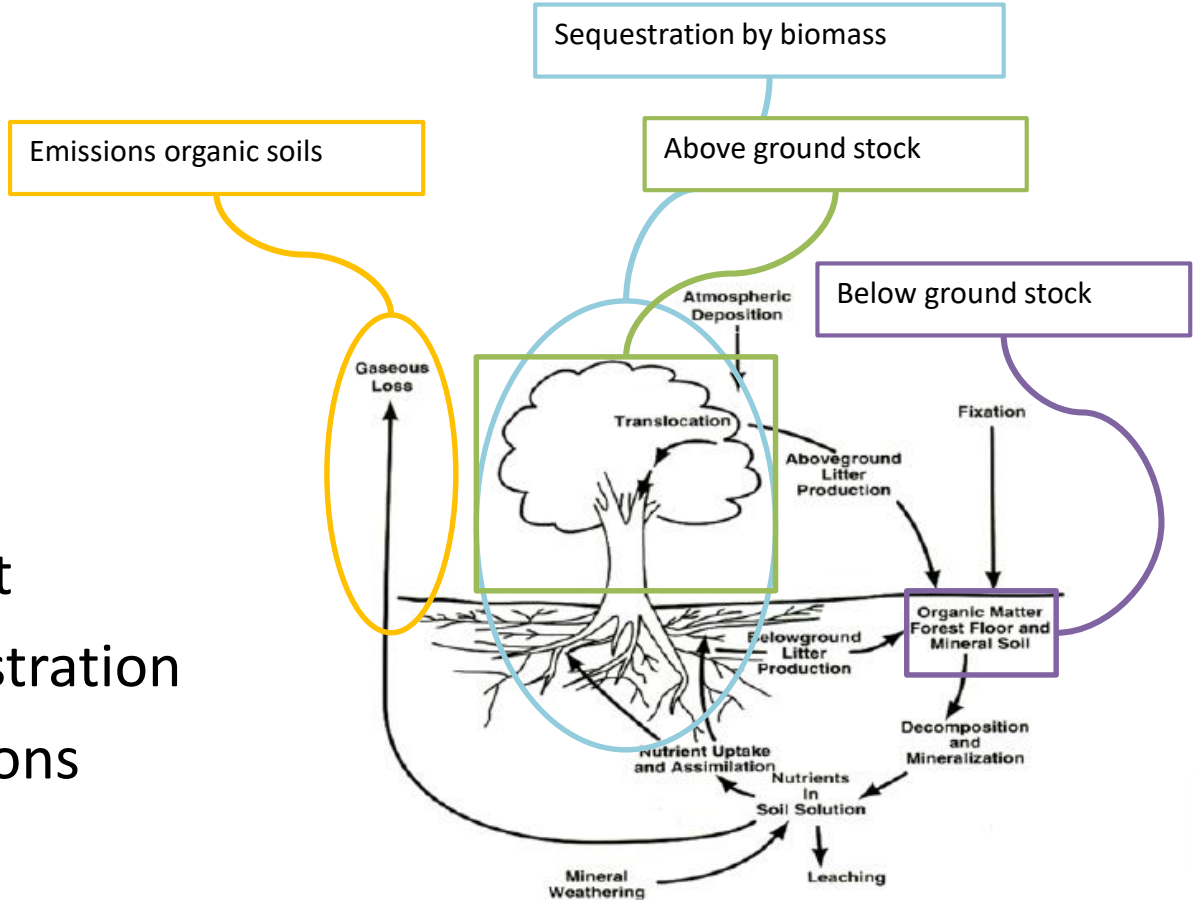
Biocarbon

Carbon stocks:

- above ground
- below ground

Carbon flows:

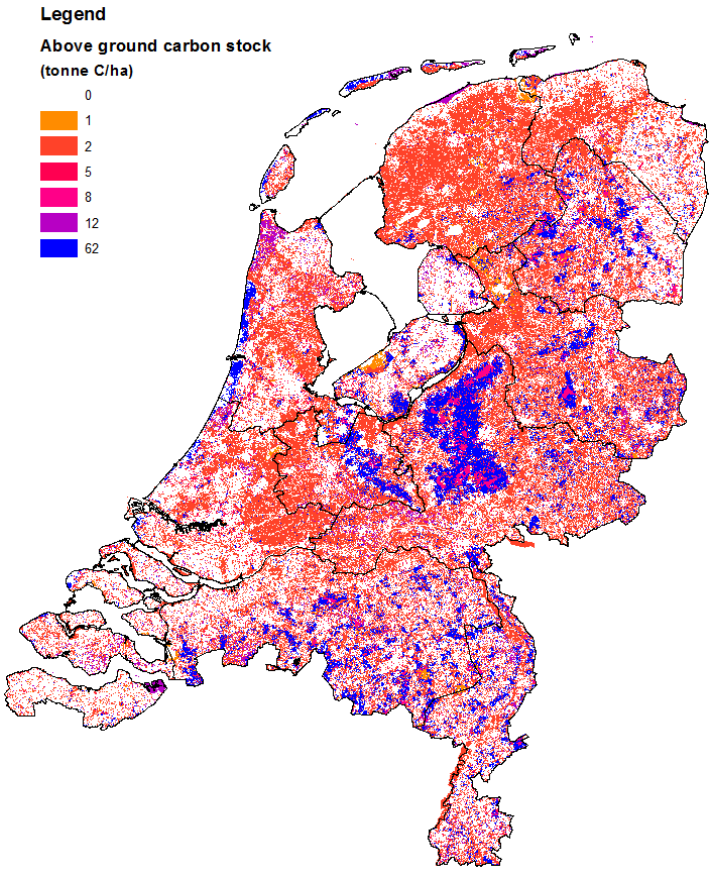
- timber harvest
- carbon sequestration
- carbon emissions

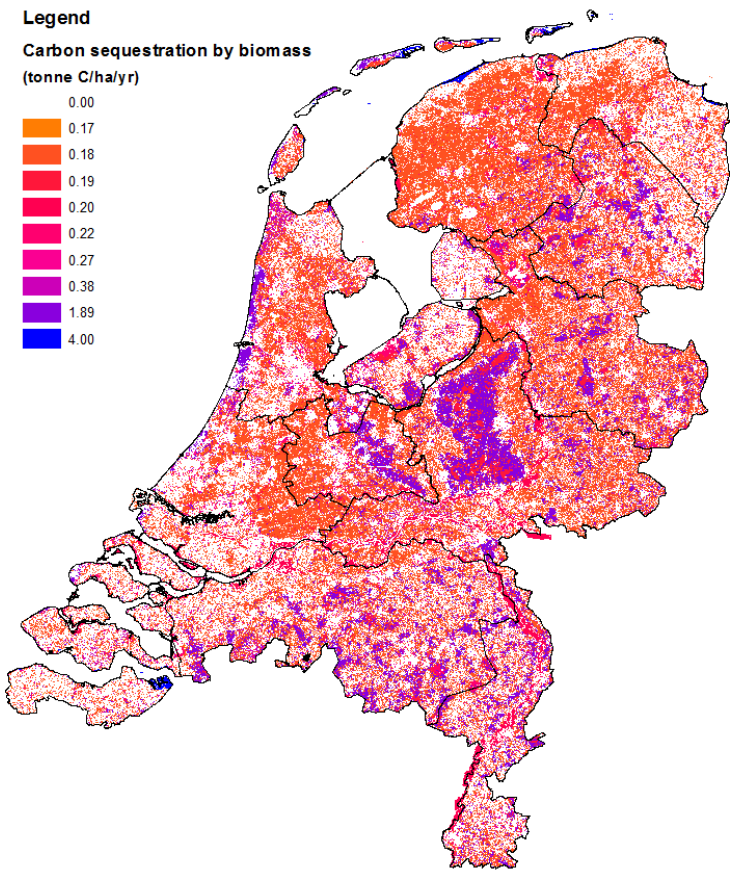


Carbon sequestration

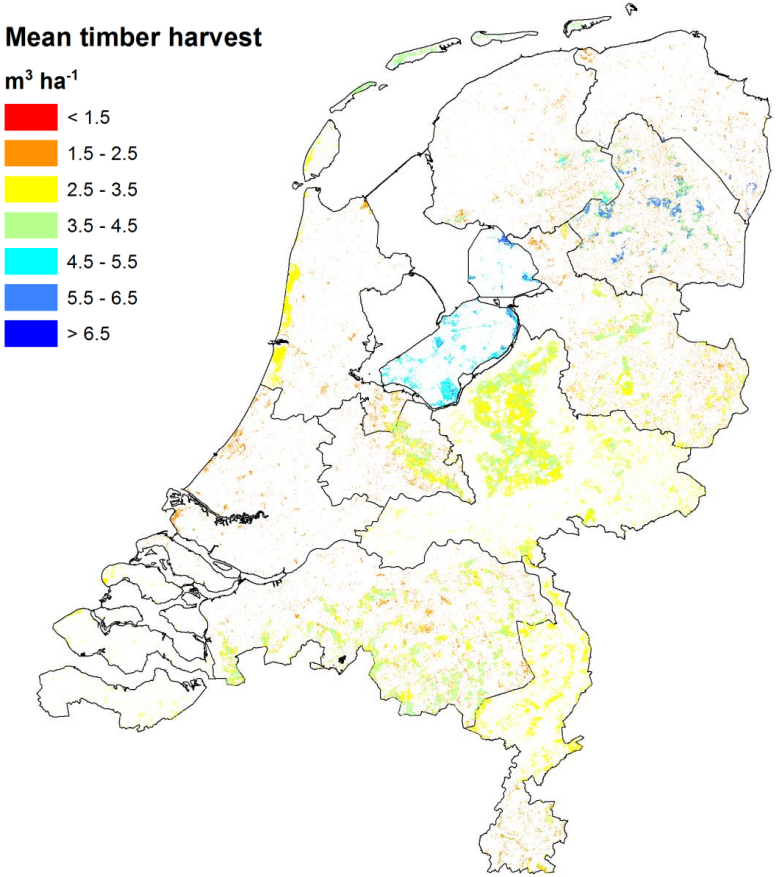
Ecosystem unit	Carbon sequestration ton C /ha /yr	Carbon stock ton C/ha
Non-perennial plants	0	0
Perennial plants	0.38	17
Greenhouses	0	0
Meadow	0.18	2
Buffer strips	0.17	2
Coastal dunes (vegetated)	1.89	84
Coastal dunes (active)	0	0
Beaches	0	0
Deciduous forest	1.89	81
Coniferous forest	1.89	86
Mixed forest	1.89	84
Heath land	0.19	8
Inland dunes	0	
Fresh water wetlands	0.22	1
Natural grassland	0.19	2
Public green space	0.27	6
Other unpaved terrain	0.18	2
River flood basin	0.2	
Tidal salt marshes	4	12

Aboveground stock & sequestration



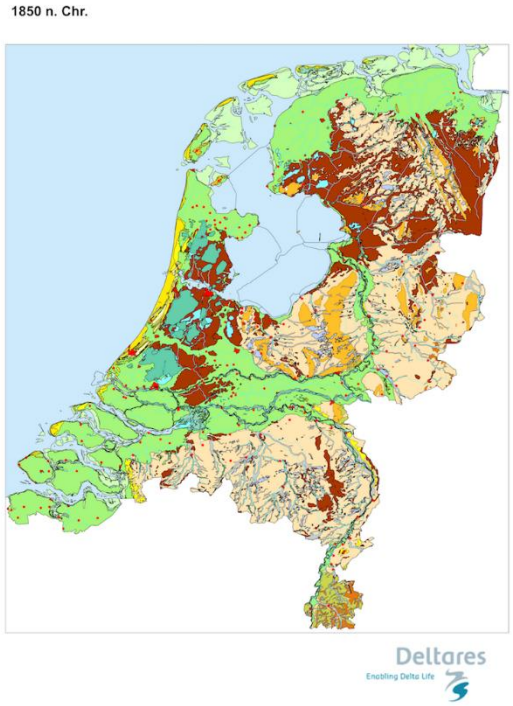


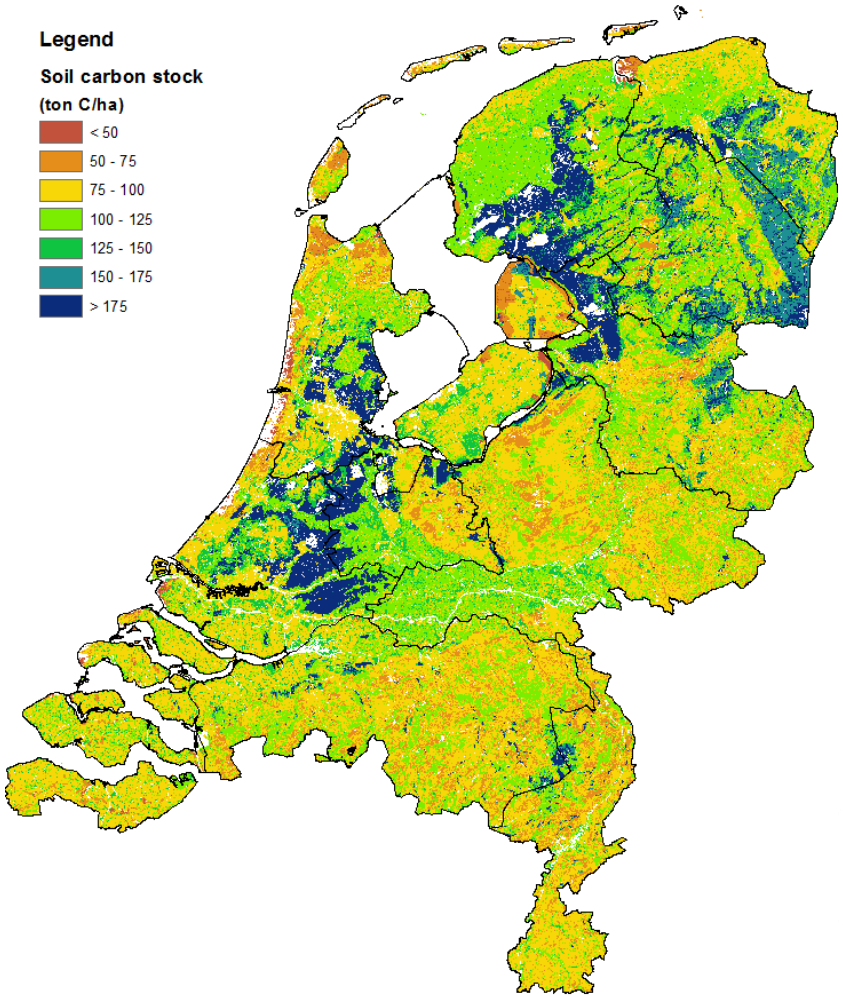
Timber harvest



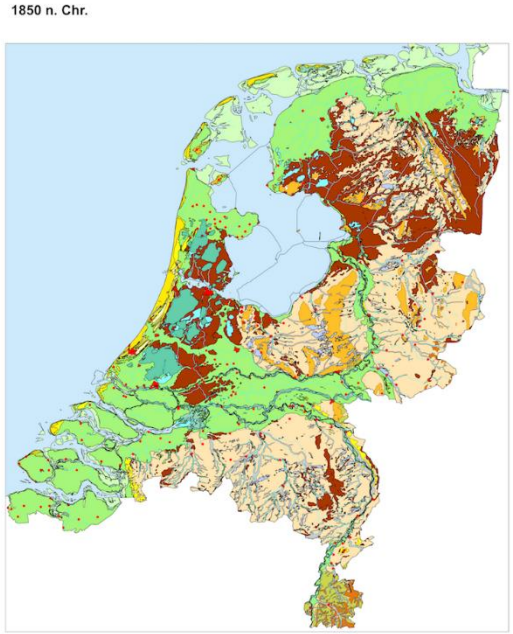
- Average harvest: 3.4 m^3 /yr
- Total harvest: 1.1 × 10^6 m^3 /yr

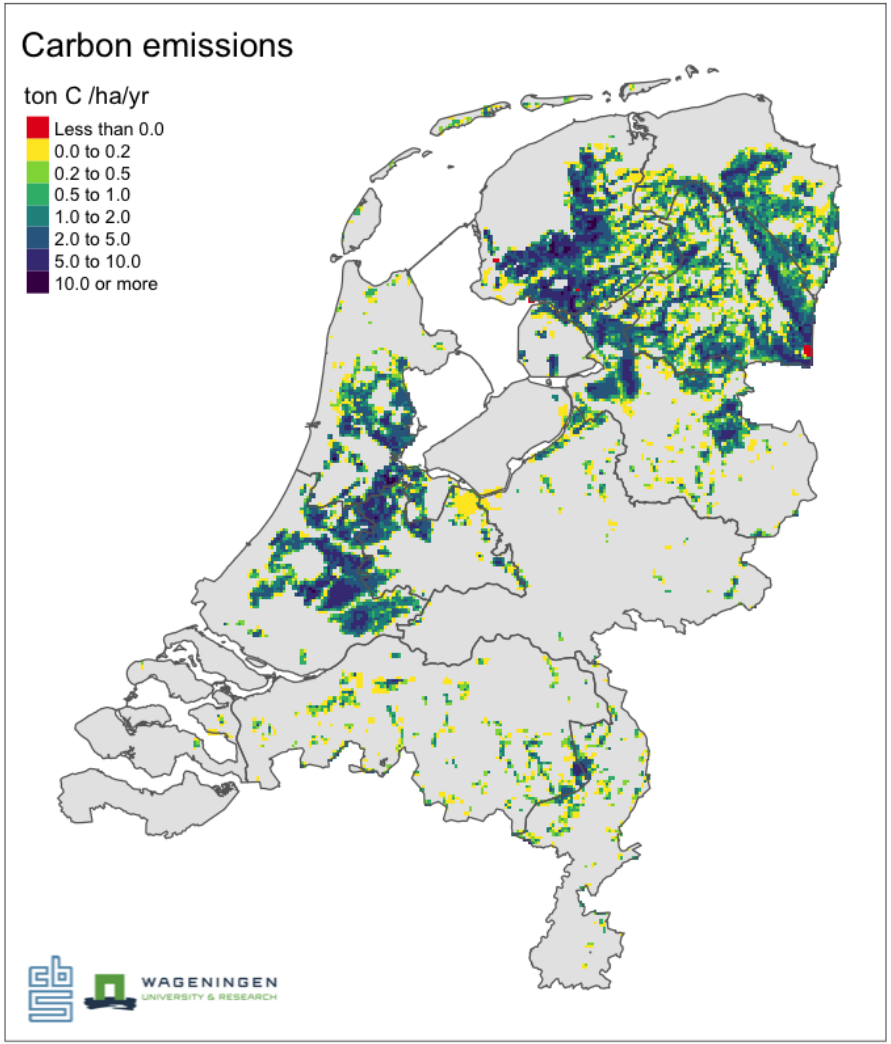
Carbon stock in soil (upper 30cm)





Carbon emissions from drained peatland





Biocarbon account

	Meadow	Other agricultural land	Forrest	Dunes / beaches	Fresh water wetlands	Natural grassland	Public green space	Other unpaved terrain	Paved surfaces	Other	TOTAL	
Opening stock	112	94.1	48.2	5.3	0	5	6.1	30.6	52	23.6	376.9	⟵ C stock above ground and in soil
Additions to stock												
Natural expansion	0.2	0	0.6	0	0	0	0	0.1	0	-0.9	0	⟵ C sequestration
Managed expansion												
Upwards reappraisals												
Reductions in stock												
Natural contraction	0.9	0.4	0.1	0	0	0	0.1	0.1	0.2	-1.8	0	⟵ Emissions from peat
Managed contraction			0.5								0.5	⟵ Timber harvest
Downwards reappraisals												
Net carbon balance	-0.7	-0.3	0	0	0	0	0	-0.1	-0.2	0.9	-0.5	
Closing stock	111.3	93.7	48.2	5.3	0	5	6.1	30.5	51.8	24.5	376.4	

Carbon in the economy

- Carbon in the economy reflects **a wide range of materials** that are either in stock or that flow through the economy.
- Some **flows of carbon related to products** (including imports and exports) are relatively well known and were derived from the SEEA CF accounts
- The **stocks of carbon in the economy** are often not well known, as well the flow of carbon associated with fixed capital formation
- The account for carbon in the economy also includes data on recycled products, which is valuable information with regard to the **circular economy**

Carbon in the Economy

Data sources:

- Accounts
  - Physical Energy Flow Accounts (PEFA)
  - Ecomomy-wide material flows account
  - Air emissions account
  - Water emissions account
  - Waste Accounts
- Other
  - Population size; Lifestocks stats; Respiration parameters
  - Manure statistics

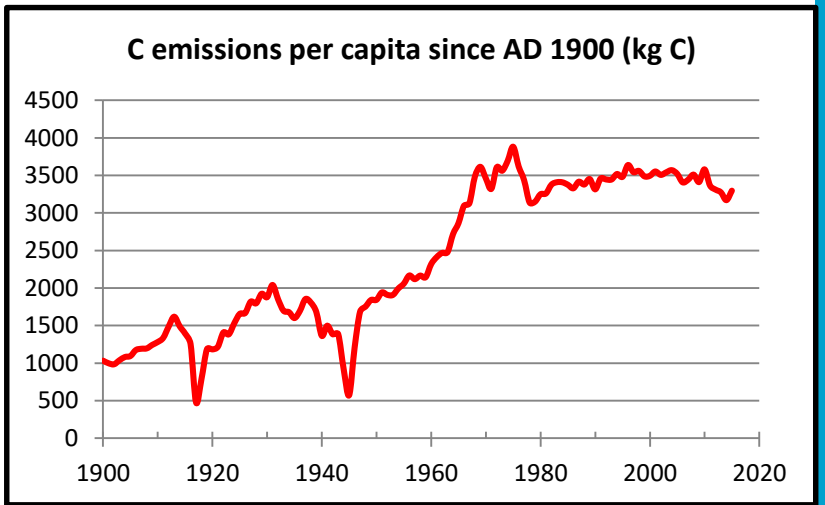
Mton C	Carbon in the economy							
	Inventories			Fixed assets and consumer		Waste		**TOTAL**
	fossil fuels	biobased	other	biobased	other	biobased	other	
Opening stock	24.4							
Additions to stock								
Managed expansion								
Extraction from geocarbon	50.1		0.0					50.1
Extraction from biocarbon		0.0						0.0
Capture from the atmosphere		0.1						0.1
Upwards reappraisals								
Reclassifications								
incorporation in products			15.0					15.0
Gross fixed capital formation				0.4	0.0			0.4
recycled products		0.0	0.0					0.0
Waste production						0.0	0.0	0.0
Imports	146.5	0.4	21.5			0.5	0.0	168.9
Reductions in stock								
Managed contraction								
Emissions to the atmosphere	44.0	0.3	0.3			0.9	0.0	45.4
Respiration of humans		0.0						0.0
Respiration of livestock		0.0						0.0
Emissions to water		0.0	0.0			0.0	0.0	0.0
Emissions to soil		0.0	0.0			0.0	0.0	0.0
Downwards reappraisals								
Reclassifications								
incorporation in products	15.0							15.0
Gross fixed capital formation	0.0	0.4	0.0					0.4
Recycled products						0.6	0.0	0.6
Waste production		0.0	0.0					0.0
Exports	131.0	0.2	27.3			0.3	0.0	158.9
Net carbon balance	0.6	0.0	0.0	0.0	0.0 ##	0.0	0.0	0.6
Closing stock	25.0							

null by definition

incomplete or missing data

Carbon in the atmosphere

- Context: anthropogenic climate change
- Additions to stock:
  - emissions from economic activities
  - emissions from respiration (humans and livestock)
  - emissions from soils
- Reduction in stock:
  - carbon sequestration
- National carbon stock?
  - Cumulative C emissions since 1900



Carbon in the Atmosphere

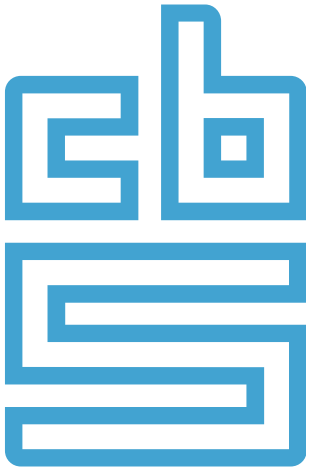
	Mton C
Opening stock	3193.2
Additions to stock	
Short cyclic emissions diue to economic activities	5.1
Other emissions due to economic activities	51
Respiration of humans and livestock	6.3
Emissions from biocarbon (natural ecosystems)	1.8
Reductions in stock	
carbon sequestration in cultivated plants	-8.5
carbon sequestration in biocarbon (natural ecosystems)	-1
Net carbon balance	54.8
Closing stock	3248

Carbon account for the Netherlands, 2013

	Geocarbon					Biocarbon				Carbon in the economy				Carbon in the atmosphere	Total
Mton C	oil	gas and shalegas	coal	limestone and marl	total geocarbon	Forests	Cropland / meadows	Other ecosystems	Total biocarbon	Inventories	fixed assets, cosumer durables	Waste	Total	Total	
Opening stock	533	189	0		722	35	132	-329	-162	24			24	0	584
Additions to stock	0	0	0	0	0	0.4	0.2	0.6	1.2	251	2	10	263	0.0	265
Natural expansion						0.4	0.2	0.6	1.2					0.0	1
Managed expansion										50			50	0.0	50
Discoveries	0	0	0		0										0
Upwards reappraisals	0	0	0		0										0
Reclassifications										15	2	6	23		23
Imports										186		4	190		190
Reductions in stock	41	0	0	41	82	0.4	1.0	0.0	1.5	246	0	10	256	0.0	-340
Natural contraction						0.0	1.0	0.1	1.1					0.0	-1
Managed contraction	40	0	0	41	81	0.4	0.0	0.0	0.4	60		3	62	0.0	-144
Downwards reappraisals	1	0	0		1										-1
Reclassifications										19	0	5	23		-23
Exports										168		3	170		-170
Net carbon balance	-41	0	0	-41	-82	0.0	-0.8	0.5	-0.3	5	2	0	7	0.0	-75
Closing stock	492	189	0		681	35	131	-328	-162	30			32	0	551

Policy relevance

1. Measuring progress towards **international climate mitigation obligations.**
2. **Supporting specific policy actions** in the field of climate change mitigation.
3. The ecosystem part of the carbon account (i.e. biocarbon) is **spatially explicit**. Maps depict where carbon emissions take place and which areas are most important for carbon sequestration. This facilitates **climate action by provincial and local stakeholders**.
4. Measuring progress towards a **circular economy** regarding carbon



Facts that matter

Issues

- Should all carbon flows be recorded in the carbon account (or only the ‘relevant ones’)?
- Is the structure of carbon in the economy adequate?
- Data gaps: how to find data for carbon in (economic) stocks? Is this policy relevant?
- Carbon in the seas/oceans?
- What could be additional policy applications for the carbon account?