

Water accounts, Denmark

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Outline of presentation

- Introduction, SEEA (System of Environmental-Economic Accounting)
- Physical water accounts
- Monetary water accounts



Personal background

- Chemical Engineer
- > 25 years consultancy, environment
 - e.g:
 - GHG inventory
 - Capacity building
- 2 years at Statistics Denmark
 - Water accounts
 - Aquatic resources/Fish asset accounts



History of the Danish Environmental-Economic Accounts I

- 1974** **Energy accounts linked to the national accounts**
 - Monetary and physical supply-use tables for energy
 - Input-output energy analyses
- 1993** **Work on environmental accounts/air emissions**
- 1999** **Regular publication of environmental accounts**
 - Energy og emissions to air
- 2001** **Additional accounts**
 - Water, supply and use
 - Energy asset accounts
 - Environmental taxes and subsidies



History of the Danish Environmental-Economic Accounts II

2008 **Material Flow Accounts**

2010 **Discontinuation due to budget cuts**

2011 **Work starts again due to EU-legislation (air emissions, environmental taxes, material flows)**

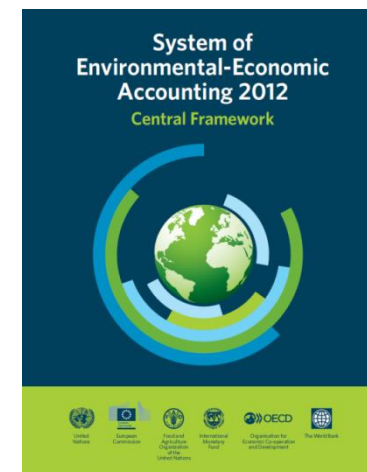
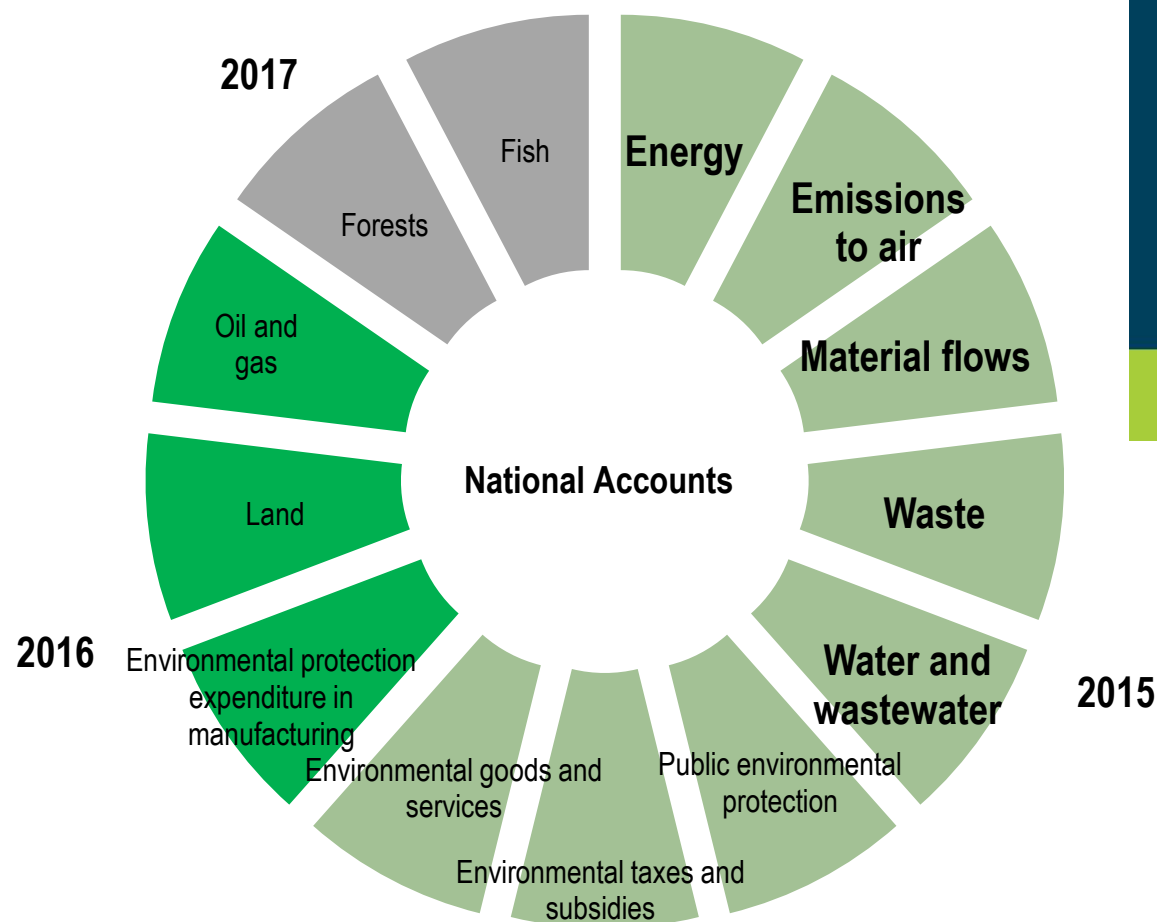
2014 **Environmental Goods and Services**

2015-17 **”Full” implementation of SEEA Central Framework - increased budget for ”Green National Accounts**

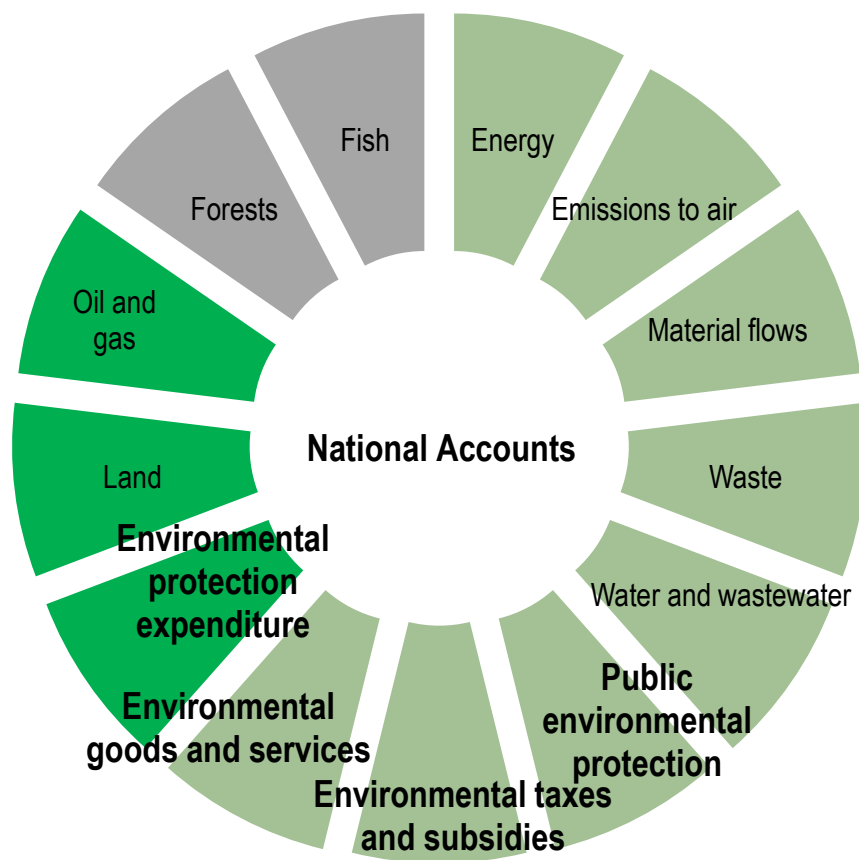
2018 **Extended EU-legislation (Physical energy accounts, Environmental goods and services, environmental protection expenditures)**

2018 **??**

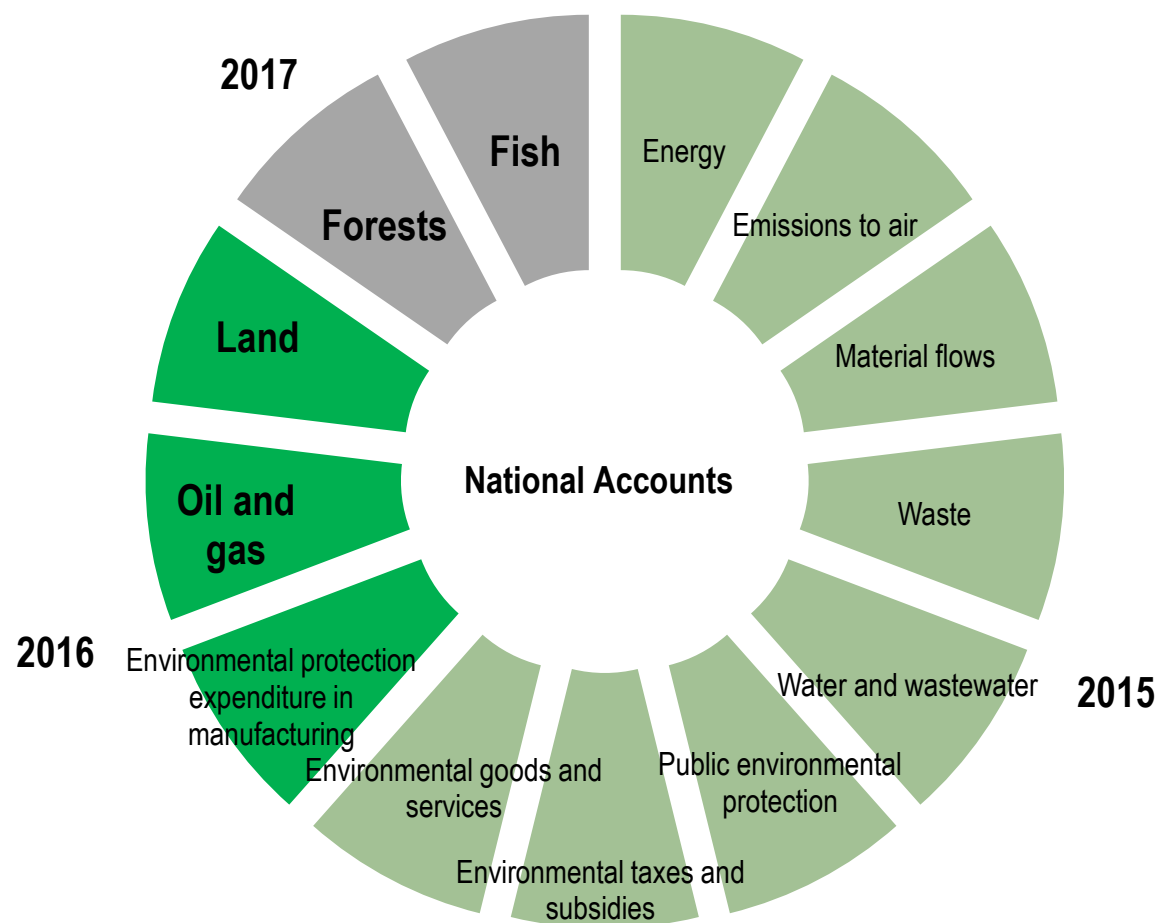
Flow accounts: Use of natural resources and environmental pressures



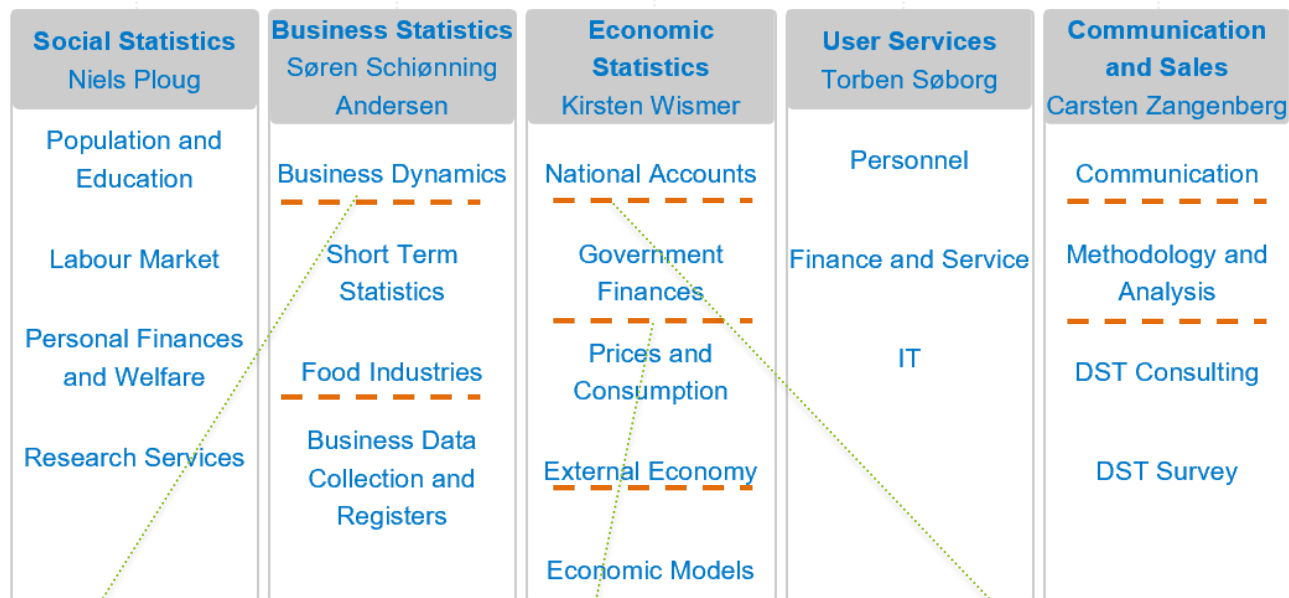
Green economy: Environmental activity accounts



Stocks of natural resources: Asset accounts



Organisation of Statistics Denmark

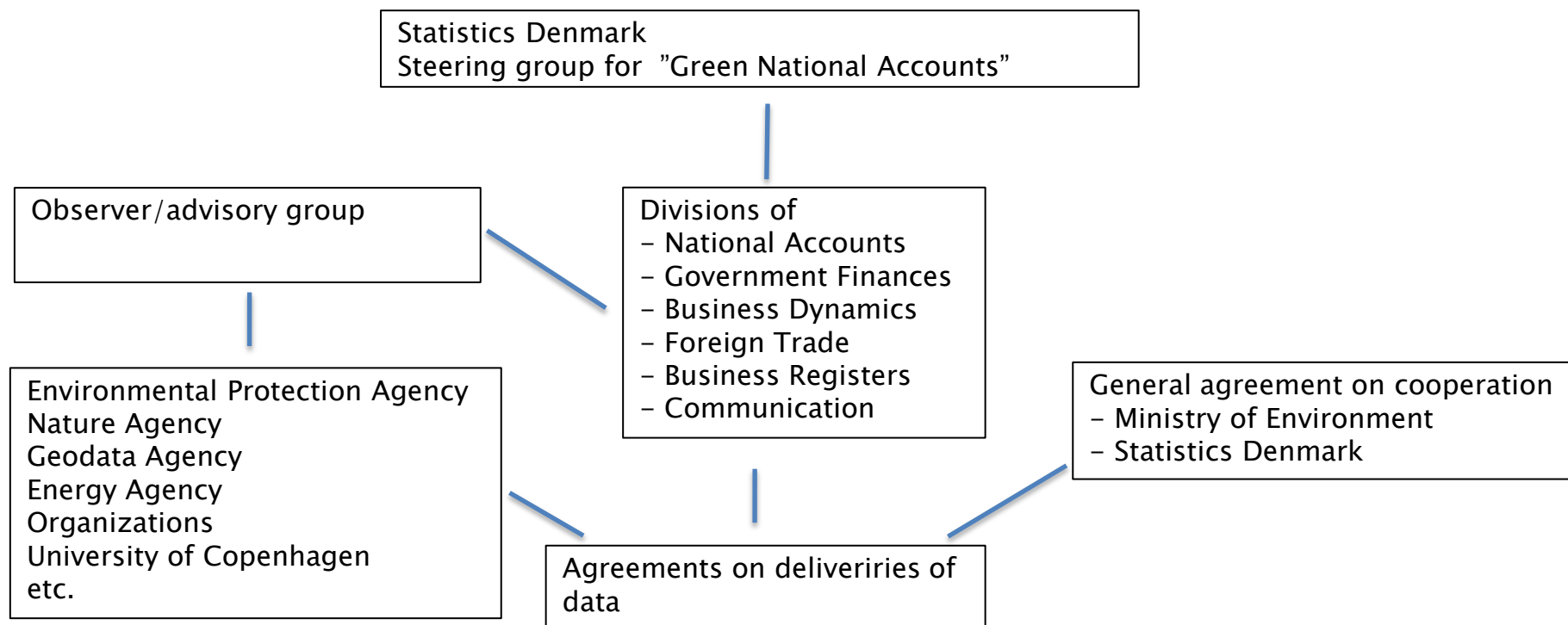


Environmental Goods and Services Sector, EGSS
Industries' env. protection expenditures

Government environmental Activities
Environmental taxes and subsidies

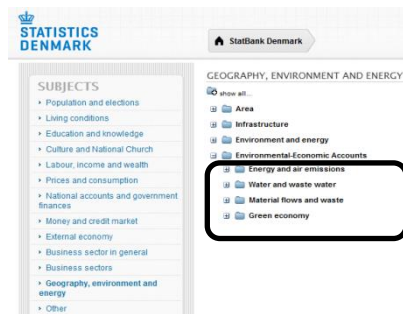
Energy, Air emissions, Waste, Water, Env. taxes by industries, Material flow accounts, Land cover and land use
Natural resource asset accounts (oil, gas, forests, fish)

Coordinating the work on environmental-economic accounts

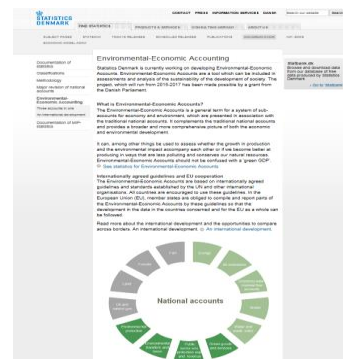


Communication

www.statbank.dk



"Green National Accounts" website



News from Statistics Denmark



Affaldsregnskab
2014
Geografi, miljø og energi

Vi genanvender mere affald fra husholdninger

Mængden af husholdningsaffald er stort set uændret fra 2013 til 2014, men der er mere af husholdningsaffaldet, som indløses til genanvendelse – 1,5 mio. ton i 2014 mod 1,3 mio. ton i 2013. Det svarer til, at 44 pct. af husholdningsaffaldet genanvendes. Erhvervsaffaldet har endnu højere genanvendelsesgrad. For affald fra bygge og anlæg er den 68 pct., mens 66 pct. af affaldet fra resten af erhvervene indløses til genanvendelse.

Affald fra husholdninger og erhverv efter behandlingsform, 2014

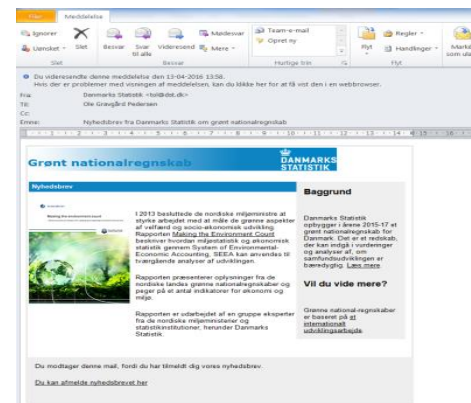


Års. Andre behandlingsformer omfatter forbrænding, deponering, særlig behandling og midlertidig oplagring

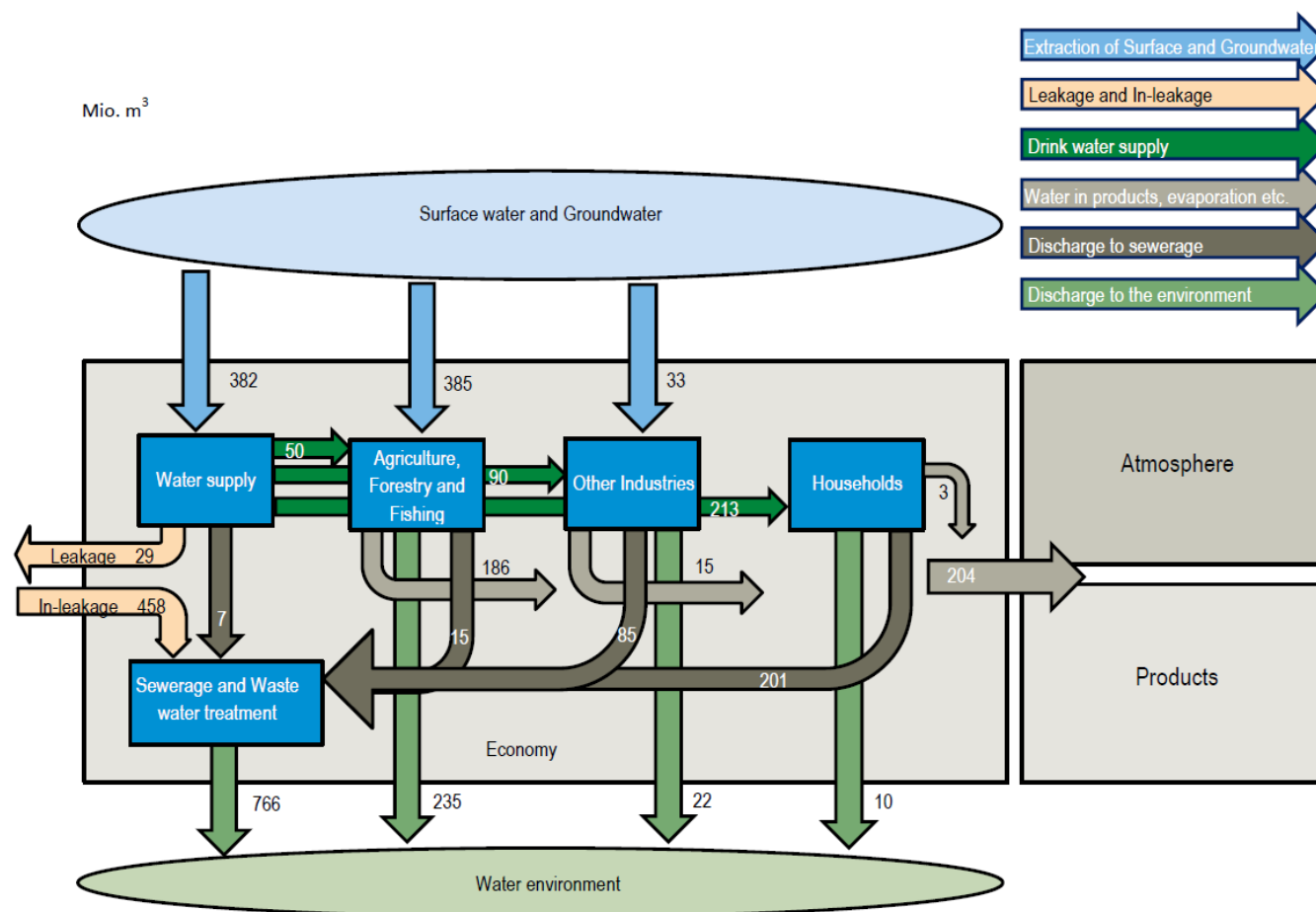
Mere affald fra bygge og anlæg

Den samlede affaldsmængde i Danmark var 12,0 mio. ton i 2014. Det er lidt mere end i 2013, hvor den var 11,1 mio. ton. Det skyldes især, at der var 0,5 mio. ton mere affald fra bygge og anlæg i 2014. Af det samlede affald stammer 3,4 mio. ton fra husholdningerne, 4,1 mio. ton er fra bygge og anlæg, mens de resterende 4,5 mio. ton kommer fra virksomheder i de øvrige erhverv.

"Green National Accounts News" via e-mail to subscribers



Danish Water Account 2015



Water accounts

Principles

- Based on available administrative data at Statistics Denmark or other governmental agencies
- Based on published information
- Based on environmental reports from specific companies
- In line with the National Account Industrial classification (based on ISIC/NACE)

Water accounts

Tools

- Excel
- SAS Enterprise Guide
- SUM Tool
- Graphic tools

Data formats (input data)

- Excel
- Access DB
- SAS files
- Reports (paper)
- Internet

Physical water accounts

Water extraction

- Geological Survey of Denmark and Greenland (GEUS)
 - Extraction for water supply and industry
 - Extraction of groundwater in agriculture
 - Extraction of surface water for aqua culture
- Database contain information on single extraction sites
- Gap filling



Physical water accounts

Distribution

- Information on extration, distribution and sale of water for specific plants gives an indication of distribution loss (Surveyed by Danish Competition and Consumer Authority)
- A few surveys gives an indication of "in-leakage" in wastewater pipes



Physical water accounts

Water consumption I

- GEUS: total consumption of water from public water supply
- Households
 - DANVA Danish Water and Waste Water Association => information on consumption by households
- Industries
 - Administrative data on the reimbursement of taxes
 - Environmental reports
 - Employment statistics
 - "Production statistics"
 - GEUS: own extraction of water

Physical water accounts

Water consumption II

- Agriculture
 - GEUS: own extraction of groundwater
- Aquaculture
 - GEUS: own extraction of surface water
- Water in products / water evaporated during process
 - Environmental Protection Agency (EPA): survey



Physical water accounts

Discharge of water

- Total discharge calculated from Consumption – Water in products/Evaporated water
- Discharge from Households
 - Discharge = Consumption
 - EPA: Discharge directly
- Discharge from industry
 - Discharge = Consumption – Water in products
 - EPA: Discharge directly
- Discharge from WWTP
 - EPA: Amount of water and nutrients for individual plants

Monetary water accounts

- Average prices for water supply and wastewater treatment at municipality level
- Physical account at municipality level
- Total income in water supply industry and wastewater treatment industry
- Total water charge and wastewater charge
- Administrative data at municipality level



Monetary water accounts – average prices

- The Danish Water Supply industry and Wastewater Treatment Plants are regulated by Danish Competition and Consumer Authority (KFST).
- KFST stipulates a price ceiling for the individual plant based on information from previous years.
- The plant decide a price policy: annual charge (kr.) and a consumption dependent charge (kr./m³)
- For simplification an average consumption dependent charge has been applied



Water price

Market price	Basic price	Water charge	Vat
2011		5.00	25 %
2012		5.90	
2013		6.13	
2014		6.13	
2015	5 – 28	6.53	
2016		6.53	



Wastewater price

Market price			
Market price 1	Basic price		Vat
Market price 2		WW charge	Vat
Reduction in basic price ("step model")			
	0 – 500 m3	500 – 20000 m3	> 20000 m3
2014	1	0.96	0.88
2015	1	0.92	0.76
2016	1	0.88	0.64
2017	1	0.84	0.52
2018	1	0.80	0.40



Monetary water accounts - Households

Applied information

- Consumption patterns for different residence types (one-family houses, apartment buildings etc.)
- Number of residents
- Number of different residence types
- Geographical distribution (99 municipalities)
- Extrapolation of consumption pr. residence type based on yearly total consumption
- Average water and wastewater price pr. municipality



Monetary water accounts - Industry

Applied information

- Information on reimbursement of water charge pr. company pr. municipality
- Average water price pr. municipality

Applied information - Wastewater

- Information on water in products and evaporation of water
- Information on own wastewater treatment and direct discharge
- Average wastewater price pr. municipality
- Application of the "step" model
- Wastewater charge for direct discharge



Monetary water accounts - Other

Applied information

- Regional statistics on number of employees
- Average water and wastewater price pr. municipality



Monetary water accounts

Final balancing

- Adjustment to total water charge
- Adjustment to total wastewater charge
- Adjustment to total turnover in Water supply industry
- Adjustment to total turnover in WWTP

