Ekaterina POLESHCHUK Short bio

Water and Environment Support
in the ENI Southern Neighbourhood region

- Ekaterina Poleshchuk has 12 years of experience in statistics. Since 2016, she has **headed the Environment Statistics Division of the National Statistical Committee of Belarus**, where she leads the work on **SEEA implementation, green growth indicators, SEIS indicators, environmental SDG indicators** and others.
- In 2008 She graduated from the Belarusian State Economic University with a degree in statistics, has a Master's degree in economics and continues her postgraduate studies on SEEA.
- Since 2019, she **chairs** the **UNECE Join Task Force on Environment Statistics and Indicators**.

Water and Environment Support
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Session 5.3
Physical flow accounts for water in Belarus

RW-2-REG

19/10/2020, on-line

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LDK Consultants Engineers & Planners SA

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SEEA in Belarus (2016 - 2022)

- The process of SEEA implementation in Belarus:
  - started in 2016
  - has a modular character
  - reflected in the Strategy for the development of state statistics until 2022

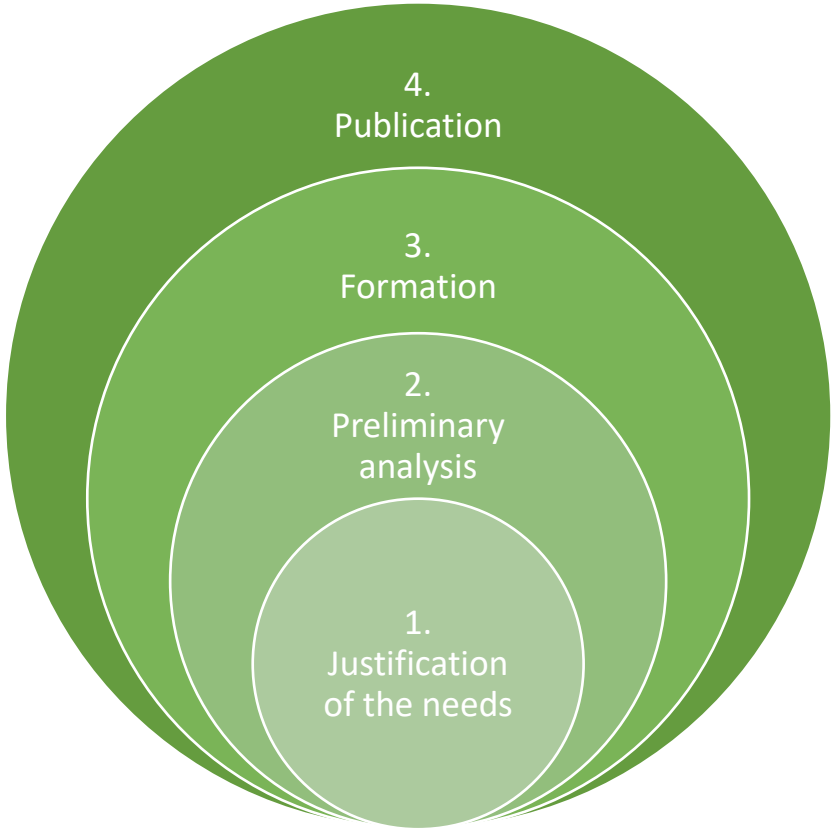
Accounts for water

Accounts for energy

Accounts for forest

Accounts for environmental protection expenditure

Implementation plan



1. Justification of the needs
2. Preliminary analysis:
   - of legislative, methodological, institutional, information bases and international experience
3. Formation
   - table layouts
   - experimental accounts
   - national methodology
4. Publication

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SEEA-water: Legislation

- Law of the Republic of Belarus “On State Statistics”
- Water Code of the Republic of Belarus
- Land Code of the Republic of Belarus
- Law of the Republic of Belarus “On Drinking Water Supply”
- Statistical work program

- In addition,
  - Strategy for the development of state statistics until 2022
  - Agreements on information interaction between Belstat and other state bodies

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SEEA-water: Methodology

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- International
  - System of Environmental-Economic Accounting 2012 - Central Framework https://unstats.un.org/unsd/envaccounting/seearev/seea_cf_final_en.pdf
  - System of National Accounts 2008 https://unstats.un.org/unsd/nationalaccount/docs/sna2008.pdf
  - System of Environmental-Economic Accounting for Water (SEEA-Water) https://unstats.un.org/unsd/publication/seriesf/Seriesf_100e.pdf
  - International Recommendations for Water Statistics https://unstats.un.org/unsd/publication/seriesM/seriesm_91e.pdf
- National
  - Methodological provisions for the formation of a physical flow account for water were prepared http://www.belstat.gov.by/upload-belstat/upload-belstat-word/Methodology/Metod_pol_okr_sr_28_12_2017.docx
  - Methodology for the formation of a physical flow account for water was prepared http://www.belstat.gov.by/upload-belstat/upload-belstat-word/Methodology/m2_invir_01_06_2019.docx
- Classifications
  - National Classifier of the Republic of Belarus ОКРБ 005-2011 "Types of economic activity" (in accordance with NACE Rev. 2.0)

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SEEA-water: Institutional base

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Coordinator of SEEA implementation in Belarus: Belstat

Interdepartmental Working Group on the implementation of SEEA-water

European Environment Agency

Ministry of Natural Resources and Environmental Protection

Ministry of Housing and Utilities

TAIEX mission by EU

SEEA-water: Information base

Ministry of Natural Resources and Environmental Protection

- Official statistics on water abstraction, water use and water discharge
- State Water Cadastre data

Ministry of Housing and Utilities

- Administrative data on water use by housing and public utilities organizations
- Administrative data on water discharge by housing and public utilities organizations

Belstat

- Demographic statistics on urban and rural population, household size and average household size
- Data of sample household living standards survey on the share of households living in apartments / houses equipped with piped water

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SEEA-water: Development process

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2016 - 2018

- Expert mission under the European Commission's TAIEX tool was organized
- Interdepartmental working group on SEEA-water in the Republic of Belarus was created
- Experimental physical water flow accounts for 2016 and 2017 were built
- Methodological provisions on physical supply and use tables on water resources were prepared and published* (in RU)

2019 - 2020

- Methodology on physical flow accounts for water was prepared and published *(in RU)
- Expertise of the results for 2016 and 2017 was done within the ENI SEIS II East project
- Final physical water flow accounts for 2016-2019 were built and published* (in RU and EN)

* On the Belstat website www.belstat.gov.by

Physical flow accounts for water: Methodology

- **Physical flow accounts for water** describe water flows that represent the abstraction of water from the environment, the use of water in economic activities, and the return of water into the environment
- Physical flow accounts for water include **two tables**: a **physical supply table for water** and a **physical use table for water**, in the formation of which the balance principle in relation to each other is worked

Supply and use tables include five sections, reflecting water flows between the environment and the economy:

(1) Water abstraction from the environment
(2) Distribution and use of abstracted water
(3) Wastewater in treatment facilities
(4) Return flows of water to the environment
(5) Evaporation of abstracted water, transpiration and water incorporated into products

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Physical flow accounts for water: the next identities should work

- ✓supply and use identity: the quantity of output and imports (total supply of products) must equal the quantity of intermediate consumption, household final consumption, gross capital formation and exports (total use of products)
- ✓input-output identity: requires that the total flows into the economy, or an enterprise or household, over an accounting period, either are returned to the environment or accumulate in the economy

Physical flow account for water for Belarus for 2019: supply table

(mln cubic metres)

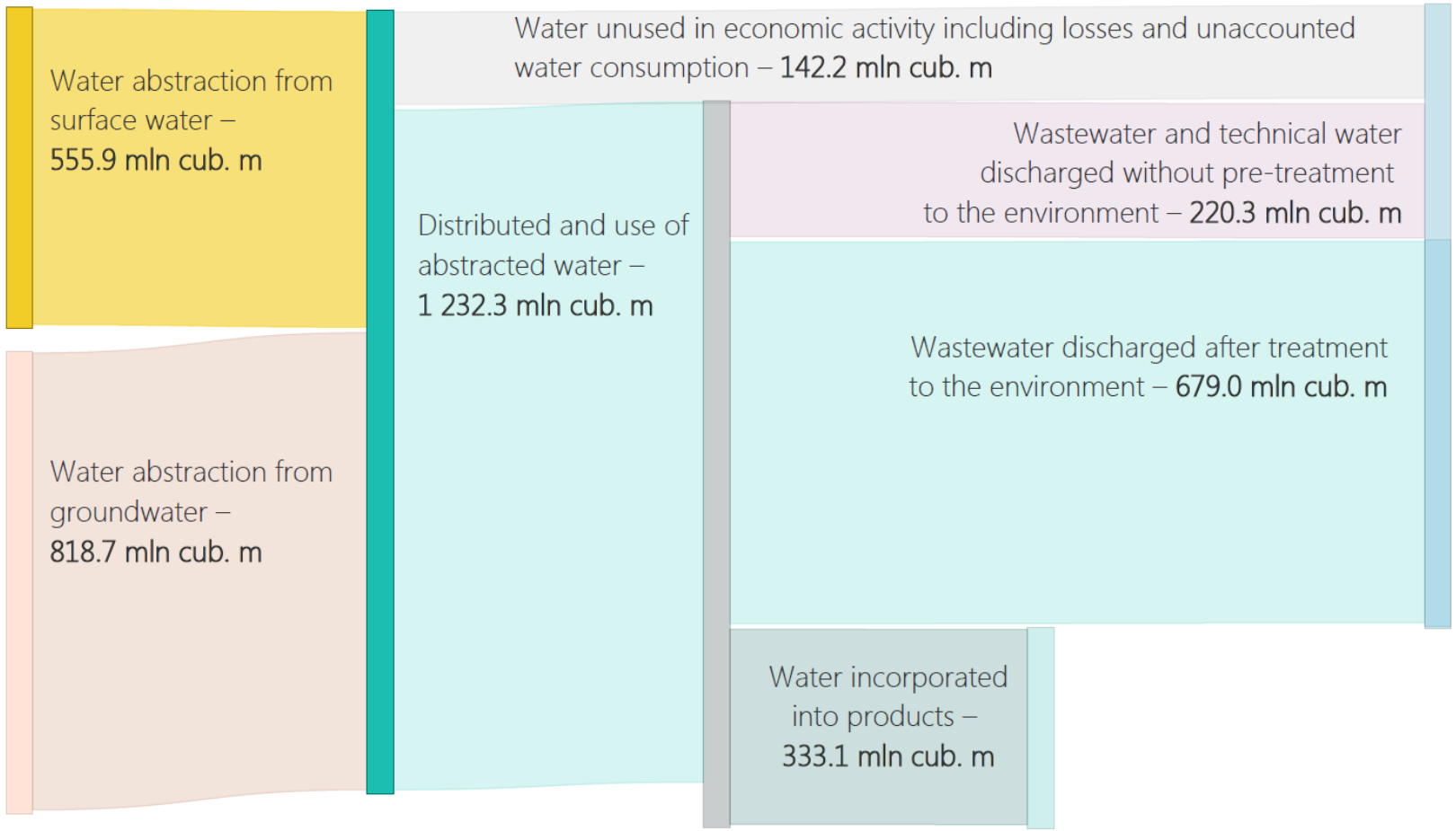
	Abstraction of water; production of water; generation of return flows								Flows from the rest of the world (import)	Flows from the environment	Total supply
	Section by NACE Rev. 2.0							House-holds			
	Agriculture, forestry and fishing	Mining	Manufac-turing	Electricity, gas, steam and air condition-ing supply	Water supply; sewerage, waste man-agement and remediation activities	Construc tion	Other industries				
	A	B	C	D	E	F	G-S				
Water abstraction from the environment										1 374,53	**1 374,53**
Surface water										555,86	555,86
Groundwater										818,67	818,67
Distribution and use of abstracted water	367,31	1,28	175,07	178,92	470,58	11,65	27,53		–		**1 232,34**
For distribution	43,80	0,41	28,31	119,89	418,56	9,31	1,42		–		621,70
For own-use	323,51	0,87	146,75	59,03	52,03	2,34	26,11				610,64
Wastewater in treatment facilities	8,29	0,41	147,52	26,35	77,21	0,74	69,35	349,09	–		**678,95**
Wastewater to treatment	4,32	0,41	79,78	18,85	28,55	0,72	67,07	349,09	–		548,79
Own treatment	3,96	0,00	67,74	7,50	48,66	0,02	2,29		–		130,16
Return flows of water to the environment	215,65	30,57	122,96	133,83	510,76	2,82	24,86	–			**1 041,44**
To inland water resources	198,95	30,54	121,33	133,18	510,59	2,72	23,41	–			1 020,72
Surface water	188,13	30,49	110,94	99,45	429,80	2,60	19,85	–			881,26
Groundwater	10,82	0,06	10,39	33,72	80,79	0,11	3,56	–			139,46
of which:											
Losses in distribution	0,00	–	0,53	7,90	32,99	–	0,29	–			41,71
Other losses	0,02	–	0,53	7,44	37,23	–	0,00	–			45,21
To other sources	16,70	0,03	1,63	0,65	0,17	0,10	1,45	–			20,73
Evaporation of abstracted water, transpiration and water incorporated into products	156,46	3,44	52,28	41,14	2,15	0,03	12,10	65,49			**333,09**
Total supply	747,70	35,70	497,82	380,24	1 060,70	15,24	133,84	414,58	–	1 374,53	**4 660,35**

Physical flow account for water for Belarus for 2019: use table

(mln cubic metres)

	Abstraction of water; intermediate consumption; return flows							Final consumption (households)	Accumulation	Flows to the rest of the world (export)	Flows to the environment	Total use
	Section by NACE Rev. 2.0											
	Agriculture, forestry and fishing	Mining	Manufacturing	Electricity, gas, steam and air conditioning supply	Water supply; sewerage, waste management and remediation activities	Construction	Other industries					
	A	B	C	D	E	F	G-S					
Water abstraction from the environment	367,33	34,14	198,54	194,25	540,80	11,65	27,82					**1 374,53**
Surface water	233,30	–	106,55	73,54	112,51	10,77	19,19					555,86
Groundwater	134,03	34,14	91,99	120,71	428,29	0,88	8,63					818,67
Distribution and use of abstracted water	364,95	1,51	204,44	96,16	46,95	3,45	100,31	414,58		–		**1 232,34**
Distributed water	41,44	0,64	57,69	37,13	6,42	1,10	74,20	403,08		–		621,70
Own-use	323,51	0,87	146,75	59,03	40,53	2,34	26,11	11,50				610,64
Wastewater in treatment facilities	15,42	0,06	94,84	89,82	472,95	0,14	5,72			–		**678,95**
Wastewater received from other units	11,45	0,06	27,10	82,33	424,30	0,12	3,44			–		548,79
Own treatment	3,96	0,00	67,74	7,50	48,66	0,02	2,29			–		130,16
Return flows of water to the environment											1 041,44	**1 041,44**
To inland water resources											1 020,72	1 020,72
To other sources											20,73	20,73
Evaporation of abstracted water, transpiration and water incorporated into products									…		333,09	**333,09**
Total use	747,70	35,70	497,82	380,24	1 060,70	15,24	133,84	414,58	…	–	1 374,53	**4 660,35**

Physical flow accounts for water for Belarus: Sankey diagram for 2019



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Physical flow accounts for water for Belarus 2016 - 2019: main indicators

https://www.belstat.gov.by/en/ofitsialnaya-statistika/macroeconomy-and-environment/okruzhayuschaya-sreda/system-of-environmental-economic-accounting/

	2016	2017	2018	2019
Water abstraction from the environment	1 472.5	1 417.2	1 407.7	1 374.5
of which from:				
surface water	632.3	586.2	581.1	555.9
groundwater	840.2	831.1	826.7	818.7
Distribution and use of abstracted water	1 316.6	1 266.5	1 264.8	1 232.3
Wastewater in treatment facilities	687.5	685.0	684.1	679.0
Return flows of water to the environment	1 083.1	1 096.3	1 064.8	1 041.4
of which:				
to inland water resources	1 066.9	1 075.3	1 045.8	1 020.7
of which:				
surface water	890.2	912.3	897.3	881.3
groundwater	176.7	163.0	148.5	139.5
of which:				
losses in distribution	67.6	57.9	57.6	41.7
other losses	44.9	44.9	36.0	45.2
to other sources	16.2	20.9	19.1	20.7
Evaporation of abstracted water, transpiration and water incorporated into products	389.4	321.0	342.9	333.1

Physical flow accounts for water for Belarus: water abstraction efficiency

	2016	2017	2018	2019
Water abstraction efficiency calculated by gross domestic product by PPP (USD per cubic metre)				
Belarus	114.4	122.5	130.2	137.4
Water abstraction efficiency calculated by gross value added (at constant price 2016, BYN per cubic metre)				
Belarus	55.7	59.3	61.6	63.9
of which:				
Agriculture, forestry and fishing	15.3	15.8	15.9	18.5
Mining	23.1	19.9	16.3	18.7
Manufacturing	98.8	108.3	114.4	109.7
Electricity, gas, steam, hot water and air conditioning supply	16.1	17.6	19.5	20.1
Water supply; waste management and remediation activities	1.2	1.3	1.3	1.3
Construction	356.5	355.4	458.2	477.2
Other industries	1 317.5	1 502.6	1 691.1	1 743.6

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Physical flow accounts for water for Belarus: water abstraction intensity

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	2016	2017	2018	2019
Renewable freshwater resources, cub. km	42.4	60.4	55.0	37.3
Renewable freshwater resources per capita, 1000 litres per day	12.2	17.4	15.9	10.9
Water exploitation index (by annual flow), %	3.5	2.3	2.6	3.7
Water abstraction from the environment per capita, litre per day	424.6	408.8	406.7	399.9

Physical flow accounts for water for Belarus: open questions

- Estimation of precipitation involved in economic activity
- Estimation of reused water
- Analysis of the evaporation of water included in the products

- Valuation of water resources

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Thank you for your attention!

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