

SDG 6.3.1

Safely treated domestic wastewater

21 September, 2021



Methodology

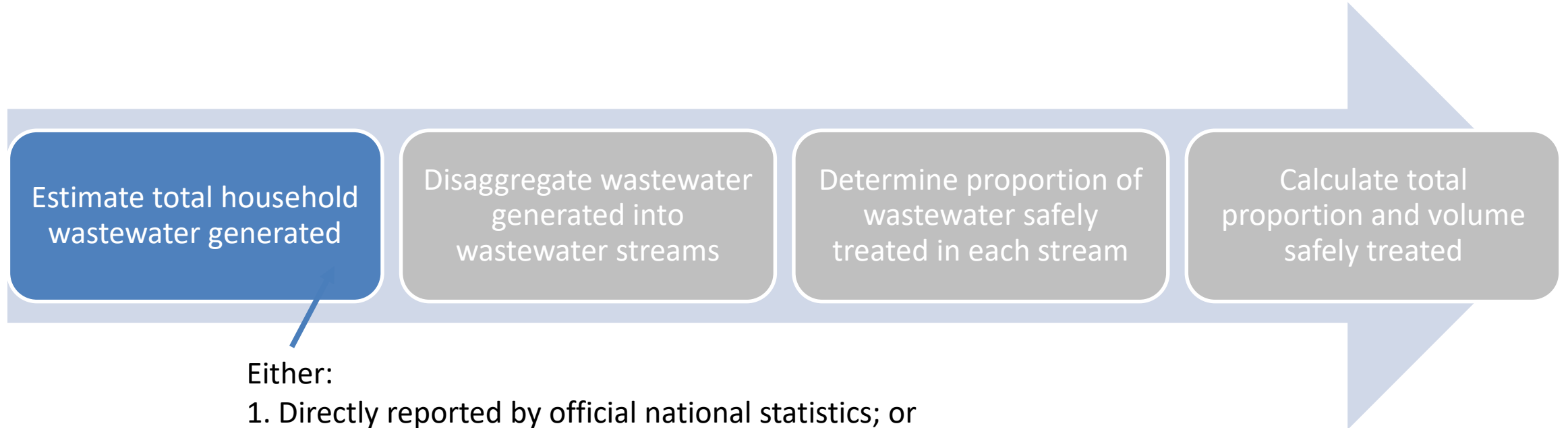
Estimate total household wastewater generated

Disaggregate wastewater generated into wastewater streams

Determine proportion of wastewater safely treated in each stream

Calculate total proportion and volume safely treated

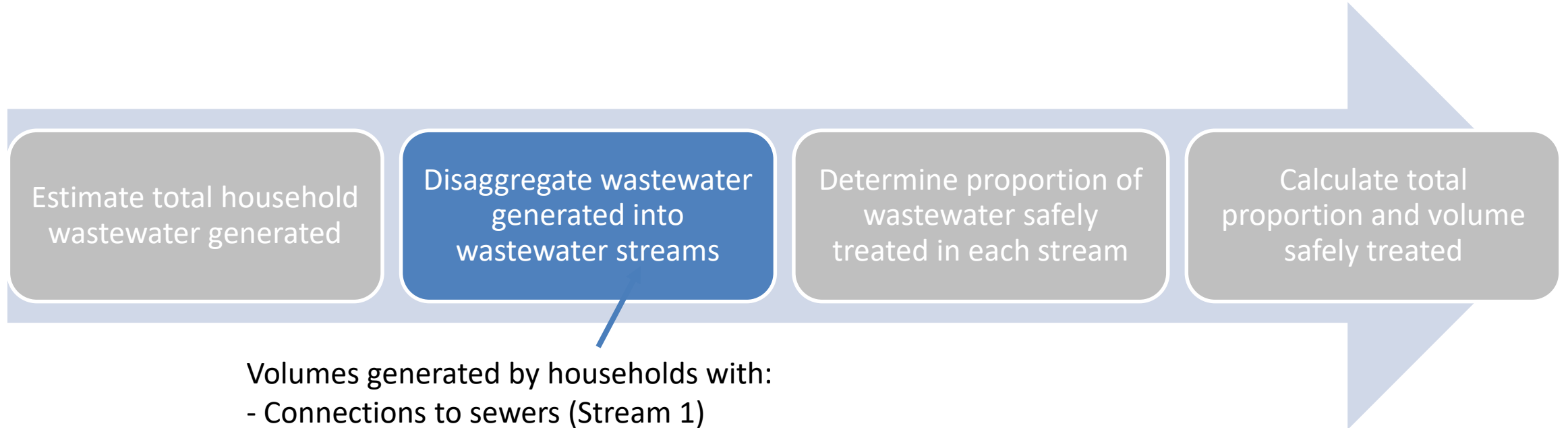
Methodology



Either:

1. Directly reported by official national statistics; or
2. Estimated internally based on:
 - total population
 - domestic water use (litres / capita / day)
 - ratio of water use to wastewater produced

Methodology

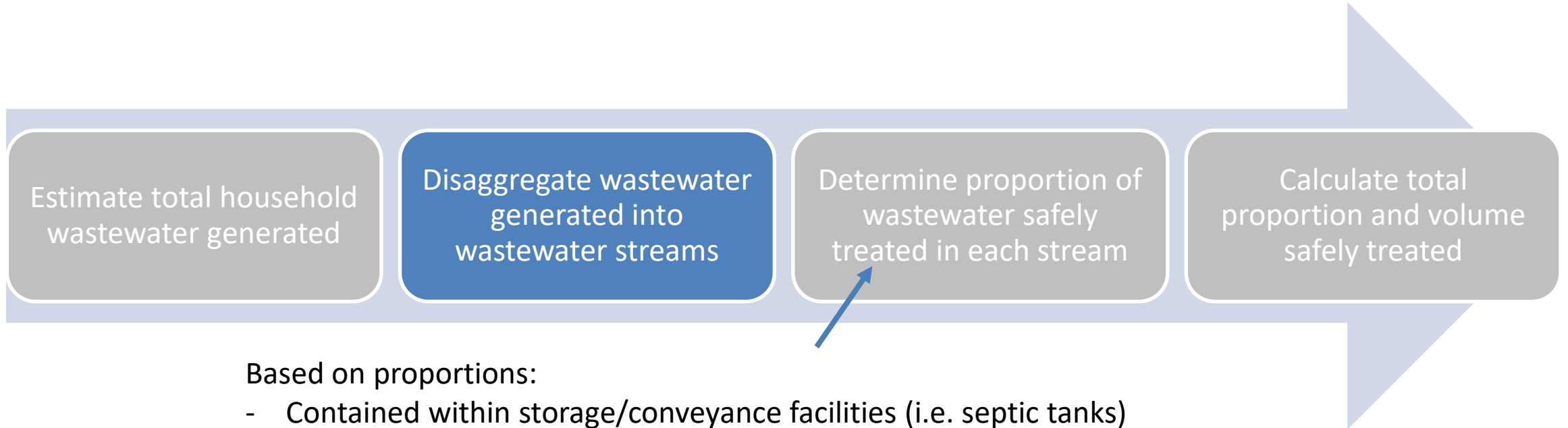


Volumes generated by households with:

- Connections to sewers (Stream 1)
- Connections to septic tanks (Stream 2)
- Connections to all other types of sanitation (Stream 3)

Based on data on the breakdown of household sanitation services by the Joint Monitoring Programme for Water, Sanitation, and Hygiene (JMP)

Methodology

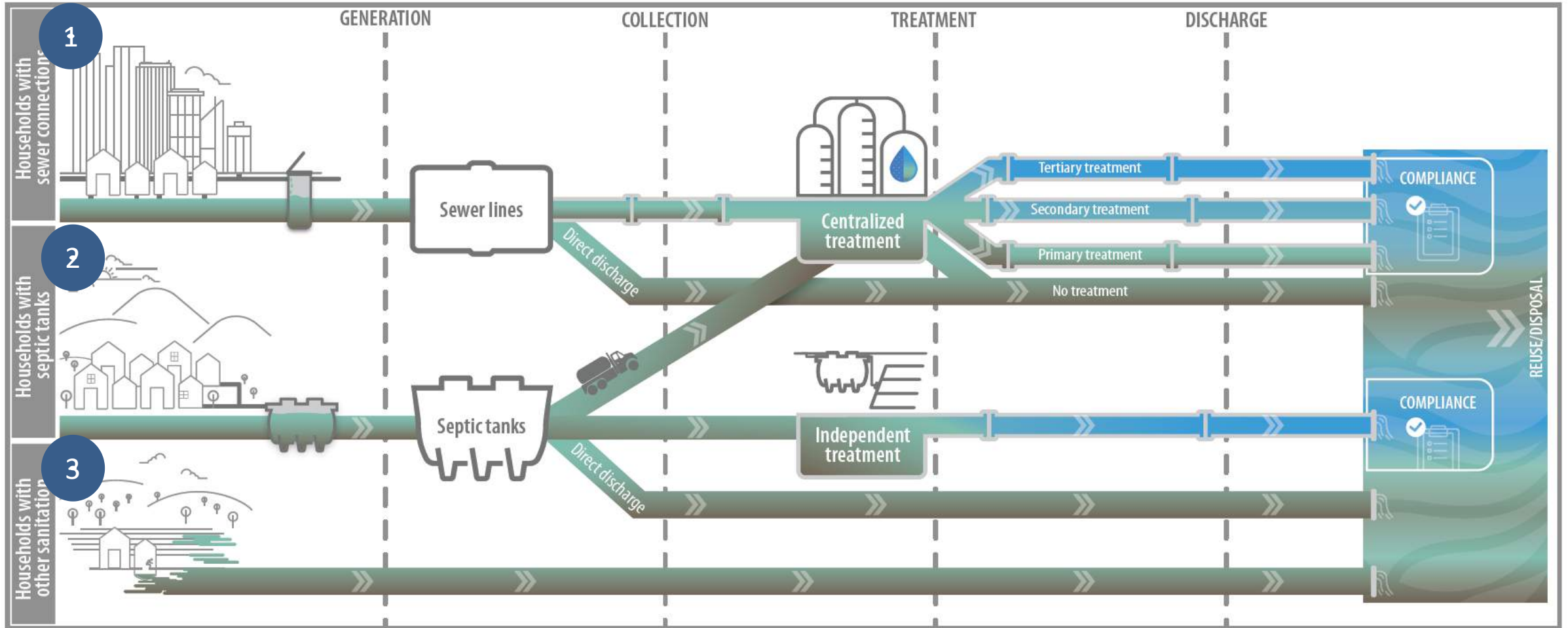


Based on proportions:

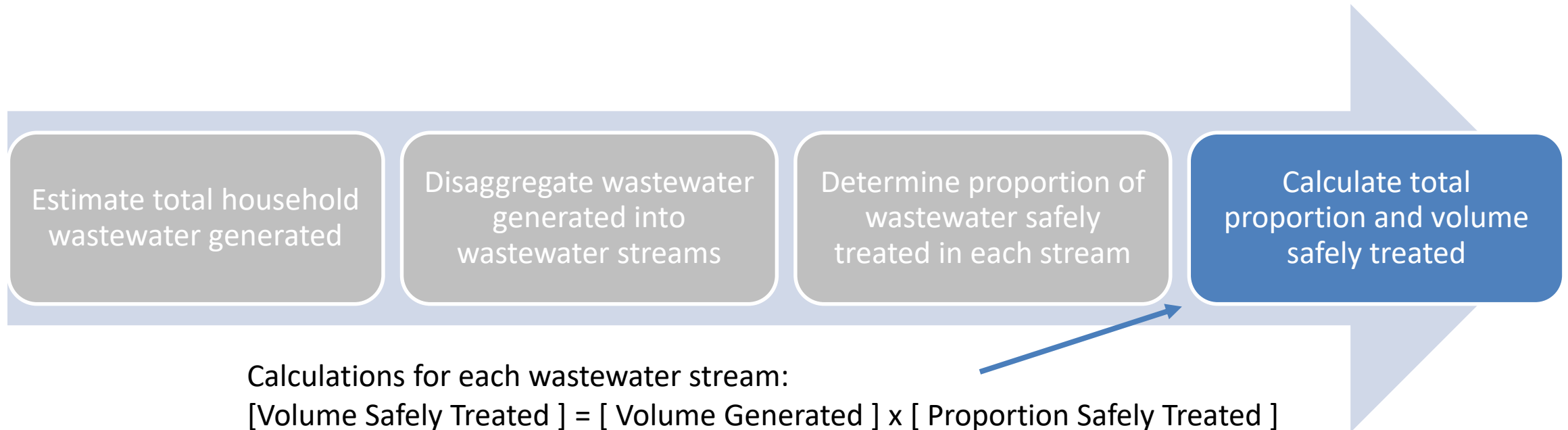
- Contained within storage/conveyance facilities (i.e. septic tanks)
- Collected at wastewater treatment systems (WWTPs or septic tanks)
- Safely treated at wastewater treatment systems

Wastewater volumes produced by households without sewer or septic tank connections were classified as ***not safely treated***

Example – Household Wastewater Management Chain: Global estimates



Methodology



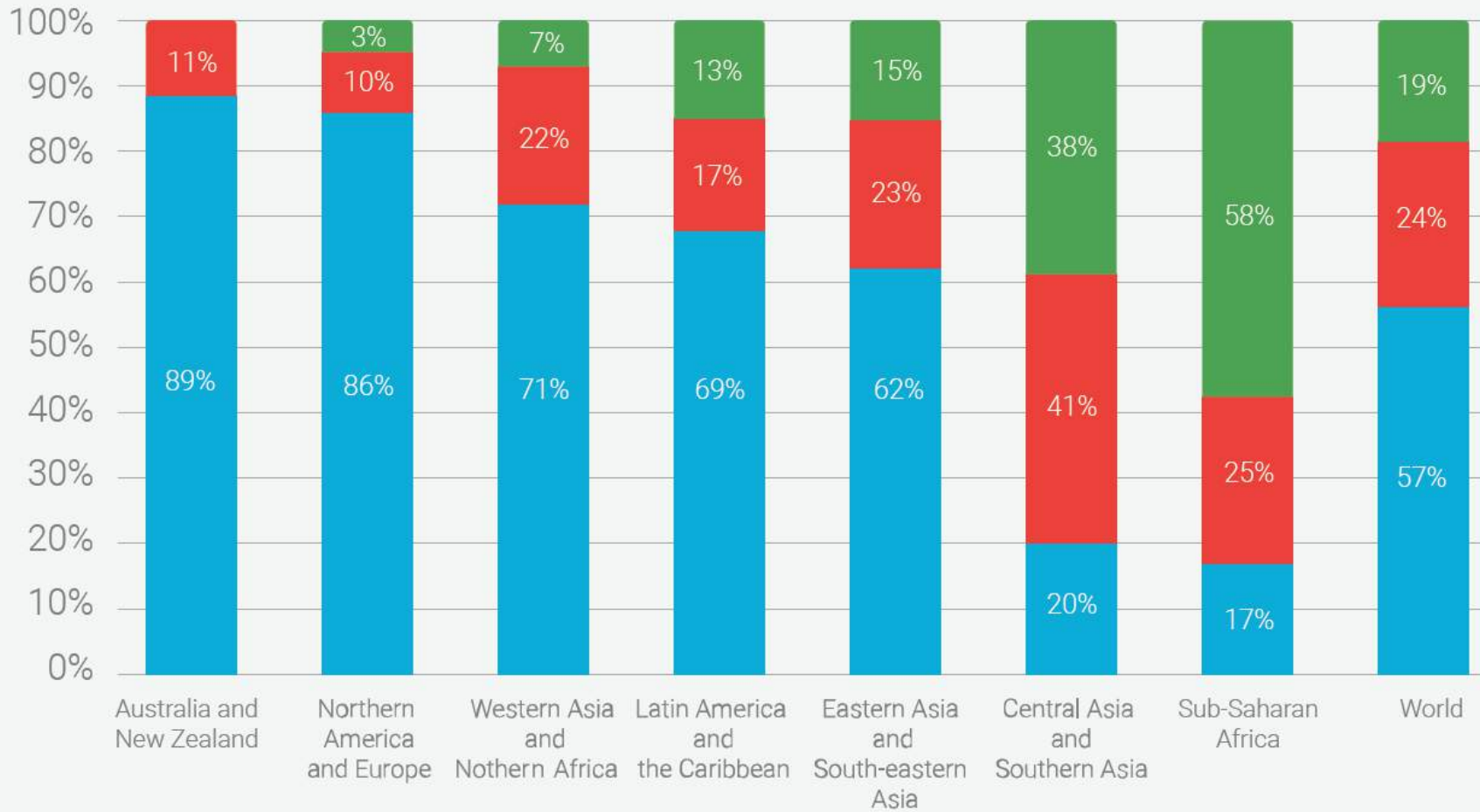
Calculations for each wastewater stream:

$$[\text{Volume Safely Treated}] = [\text{Volume Generated}] \times [\text{Proportion Safely Treated}]$$

Σ Volume Safely Treated (Sewers + Septic Tanks)

$$[\text{Total proportion safely treated}] = \frac{[\text{Total volume safely treated}]}{[\text{Total volume generated}]}$$

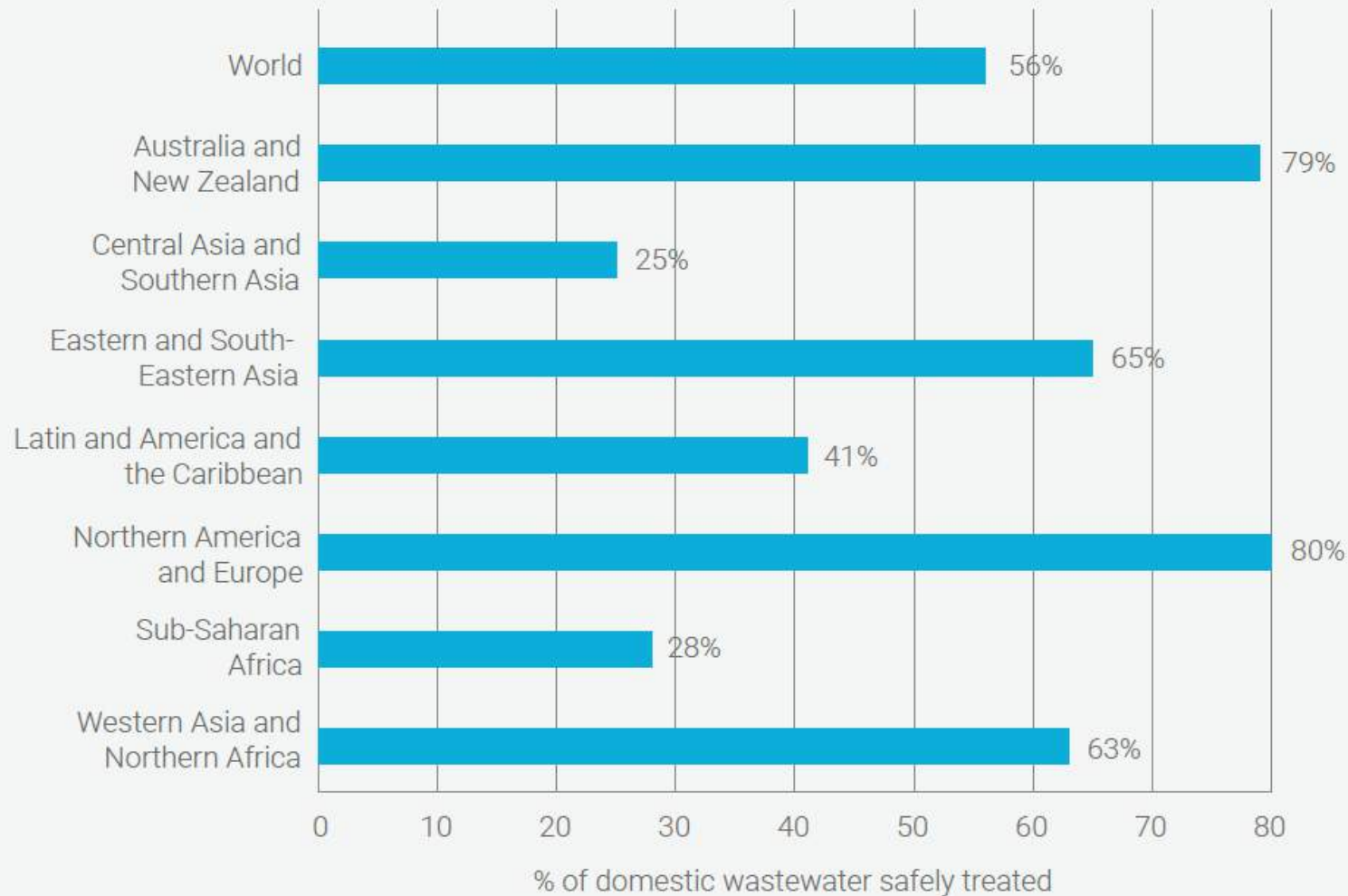
Results – Household wastewater generation



- Other sanitation facilities
- Septic tanks
- Sewers

Estimates derived for **all 234** SDG countries and territories

Results – Household wastewater treatment



Estimates derived for:

- **128** of 234 SDG countries and territories (55%)
- **80%** of households wastewater flows
- **84%** of the global population

Results – Household wastewater treatment



See SDG6 website for additional resources

- 6.3.1 indicator report
- Methodological Note
 - Further explanation of calculations, terminology, definitions, rules and exceptions
- 234 country files
 - Country-specific data
 - Assumptions used in place of missing data
 - Raw calculations
 - Data summaries and breakdowns



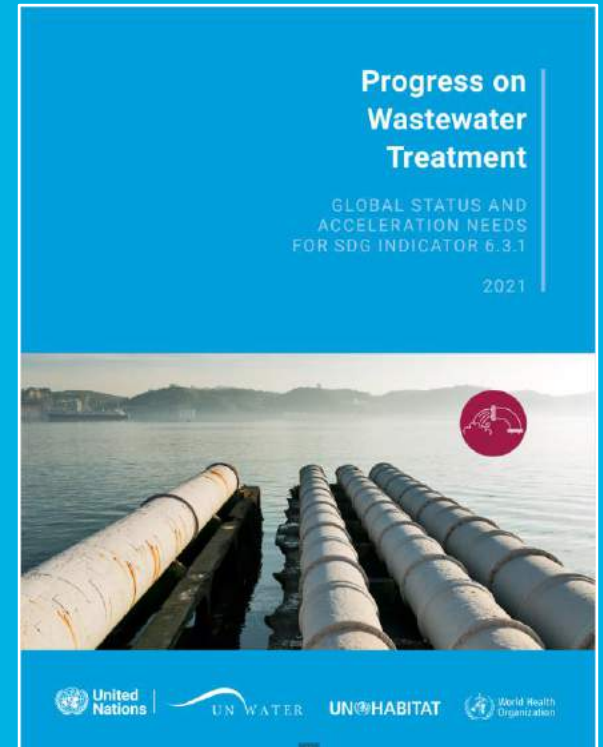
Thank you!

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FOR A BETTER URBAN FUTURE

*A better quality of life for all
in an urbanizing world*

Progress on Wastewater Treatment 2021 Update

SDG 6 Indicator Report 6.3.1
TOTAL and INDUSTRIAL wastewater flows



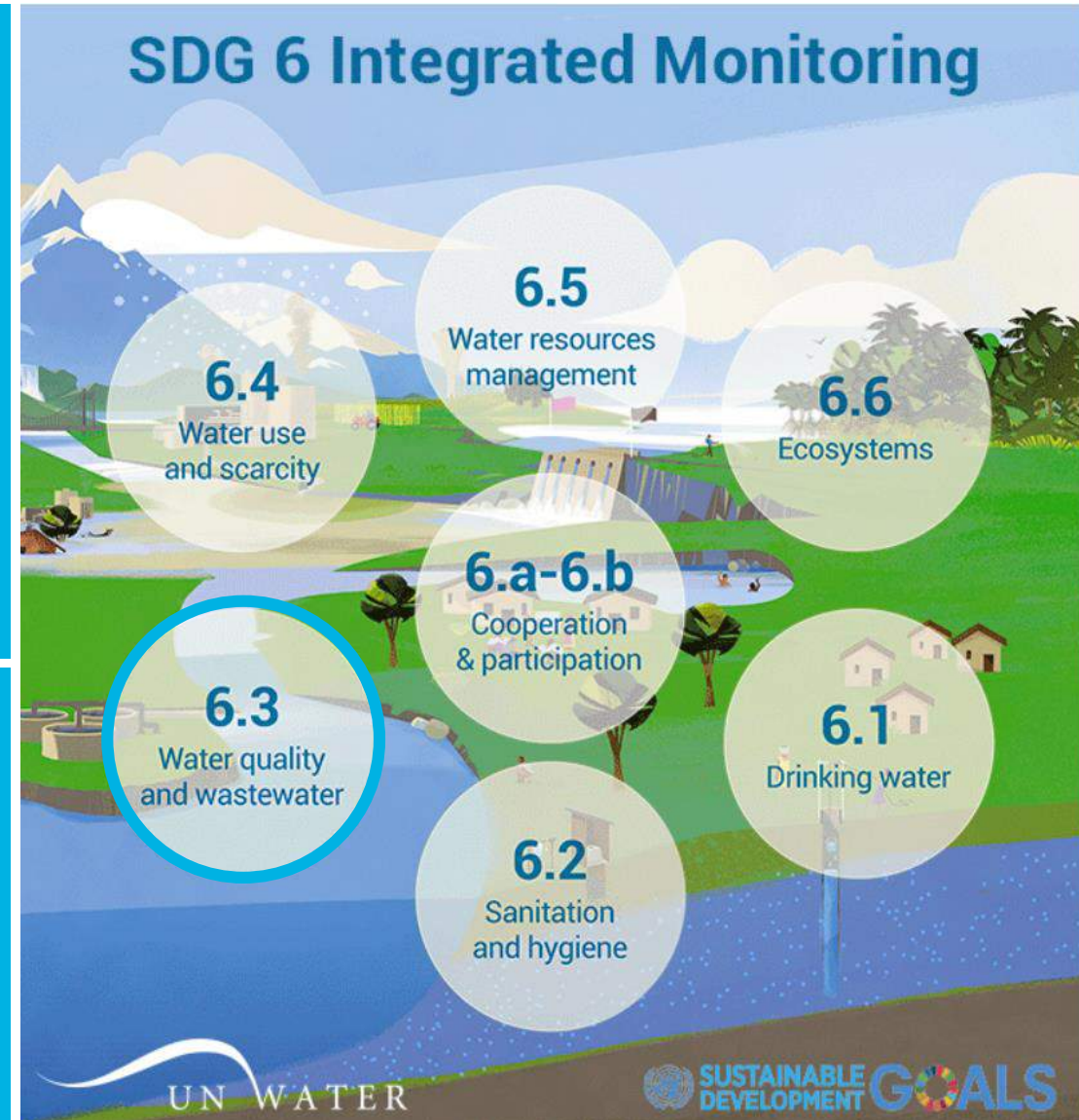
Presentation by: Florian Thevenon
Date: 21 September 2021

UN HABITAT
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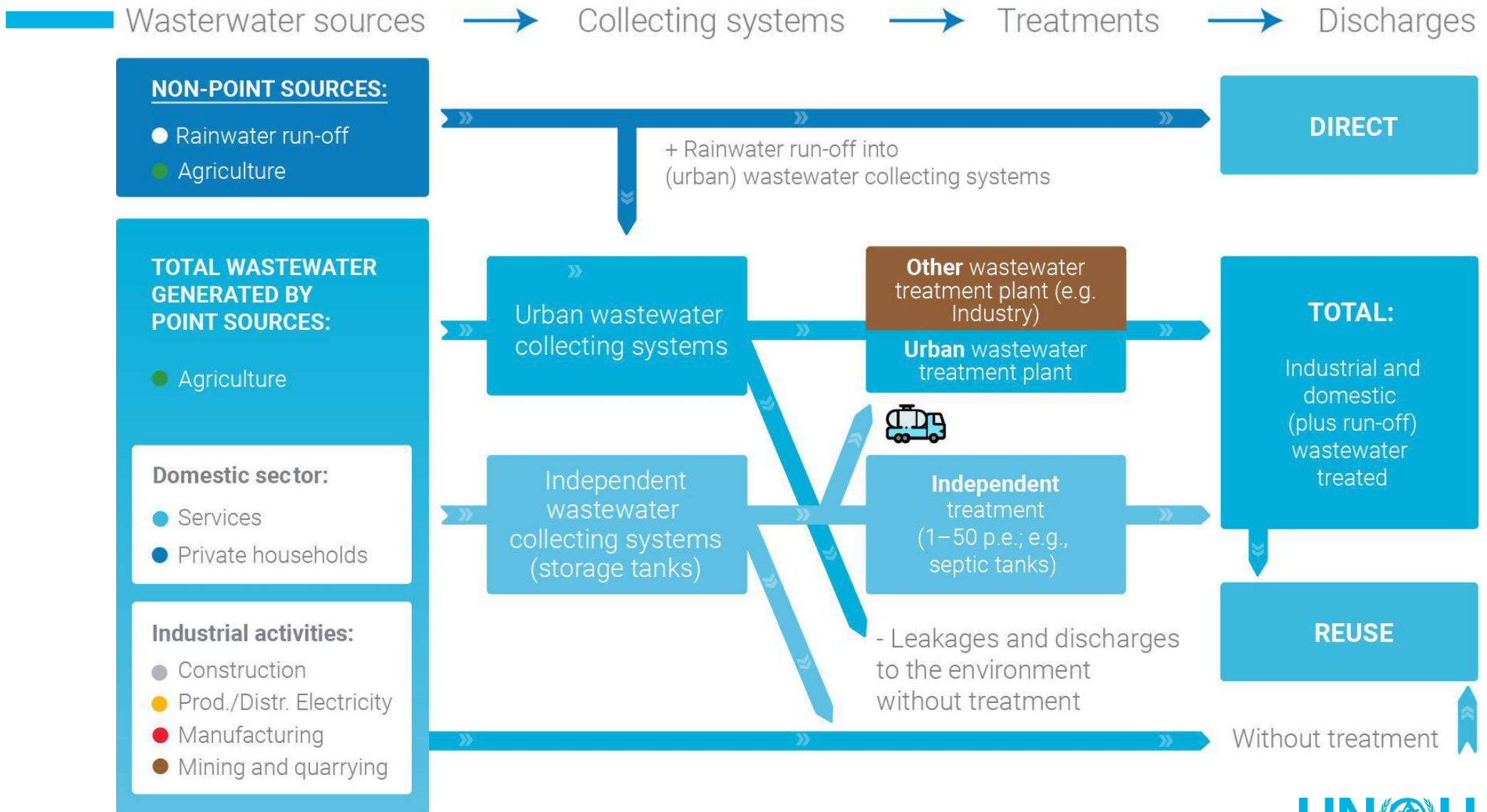
SDG Target 6.3: Indicators 6.3.1 and 6.3.2

“By 2030, improve water quality by reducing pollution, eliminating dumping and minimizing the release of hazardous chemicals and materials, halving the proportion of untreated wastewater and substantially increasing recycling and safe reuse globally”.

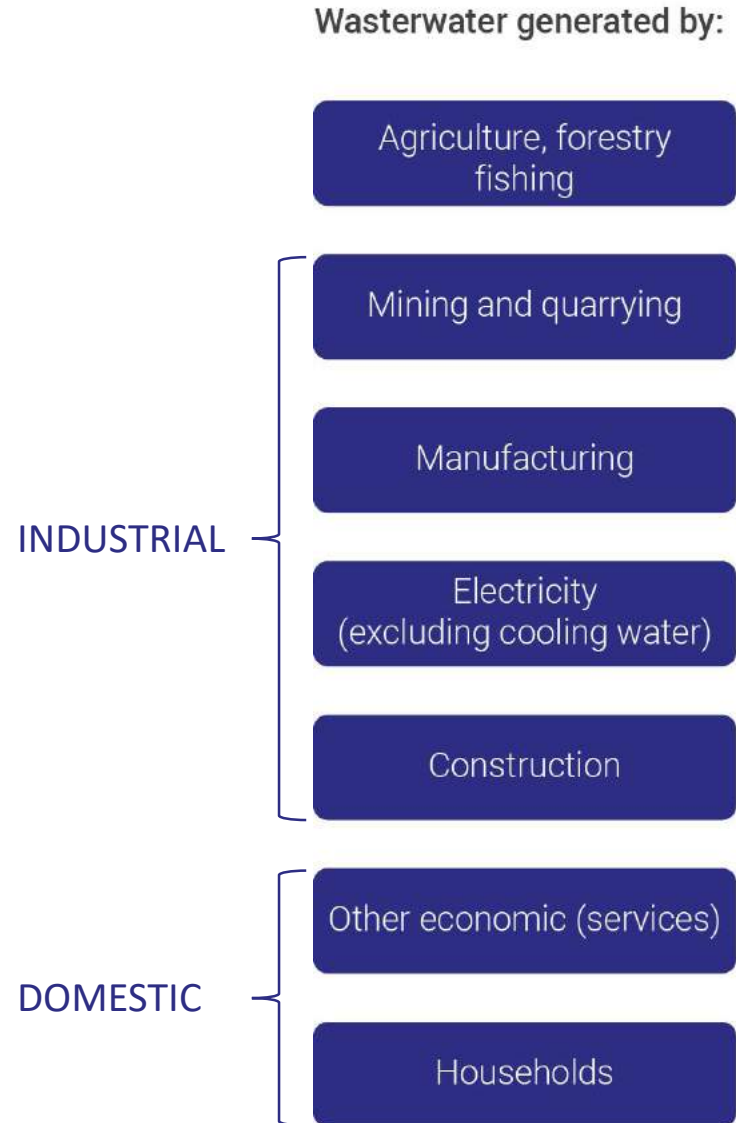
- Indicator 6.3.1 “Proportion of wastewater safely treated”
- Indicator 6.3.2 “Proportion of bodies of water with good ambient water quality”



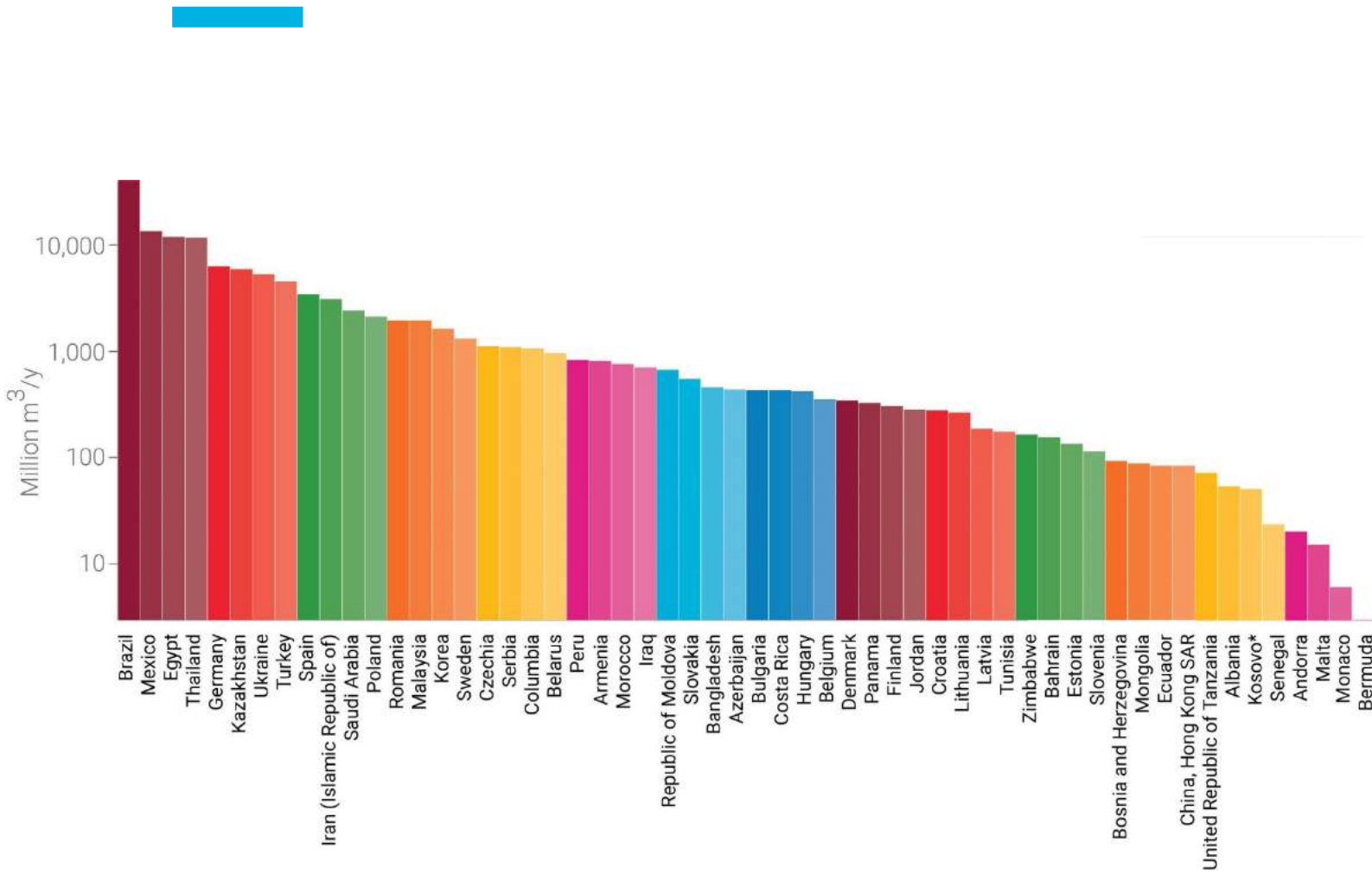
Methodology to monitor indicator 6.3.1



Disaggregation of generated (ISIC) and treated flows



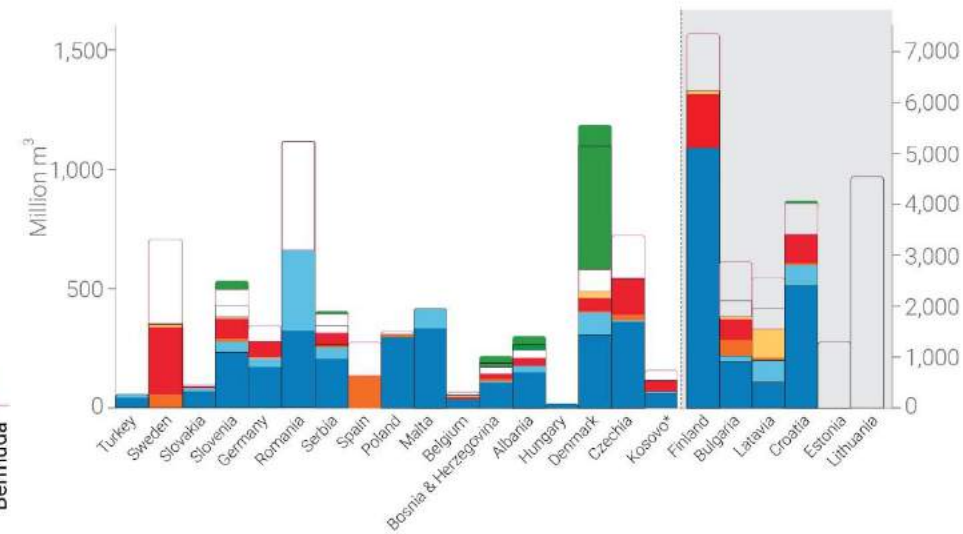
Total wastewater flow generated in 2015 (132 Bcm)



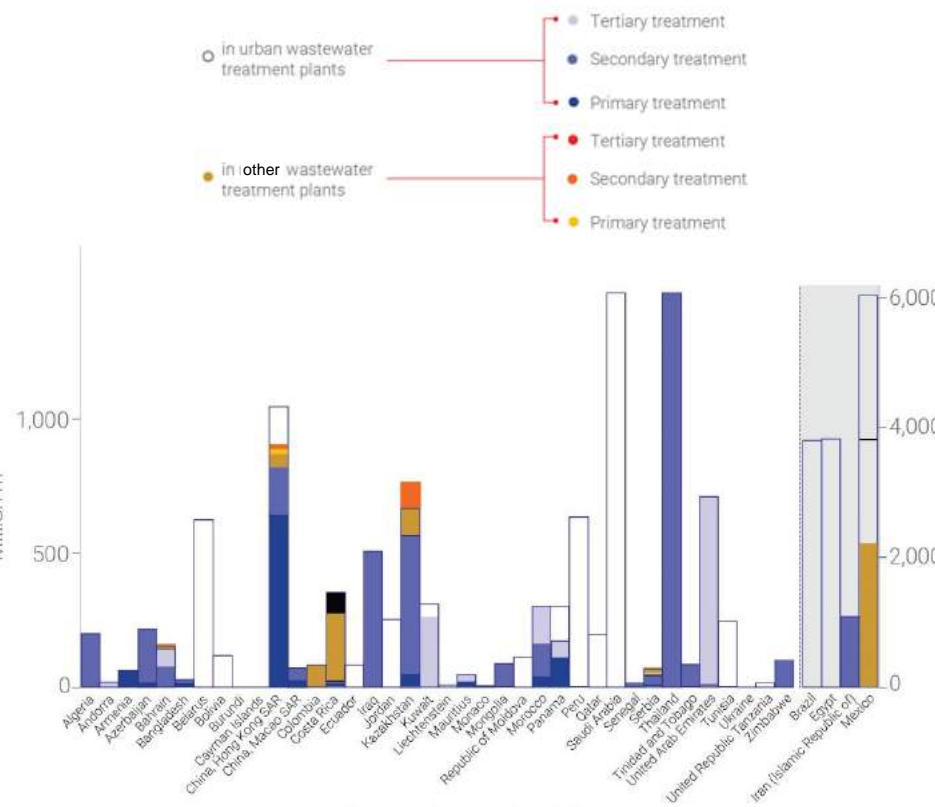
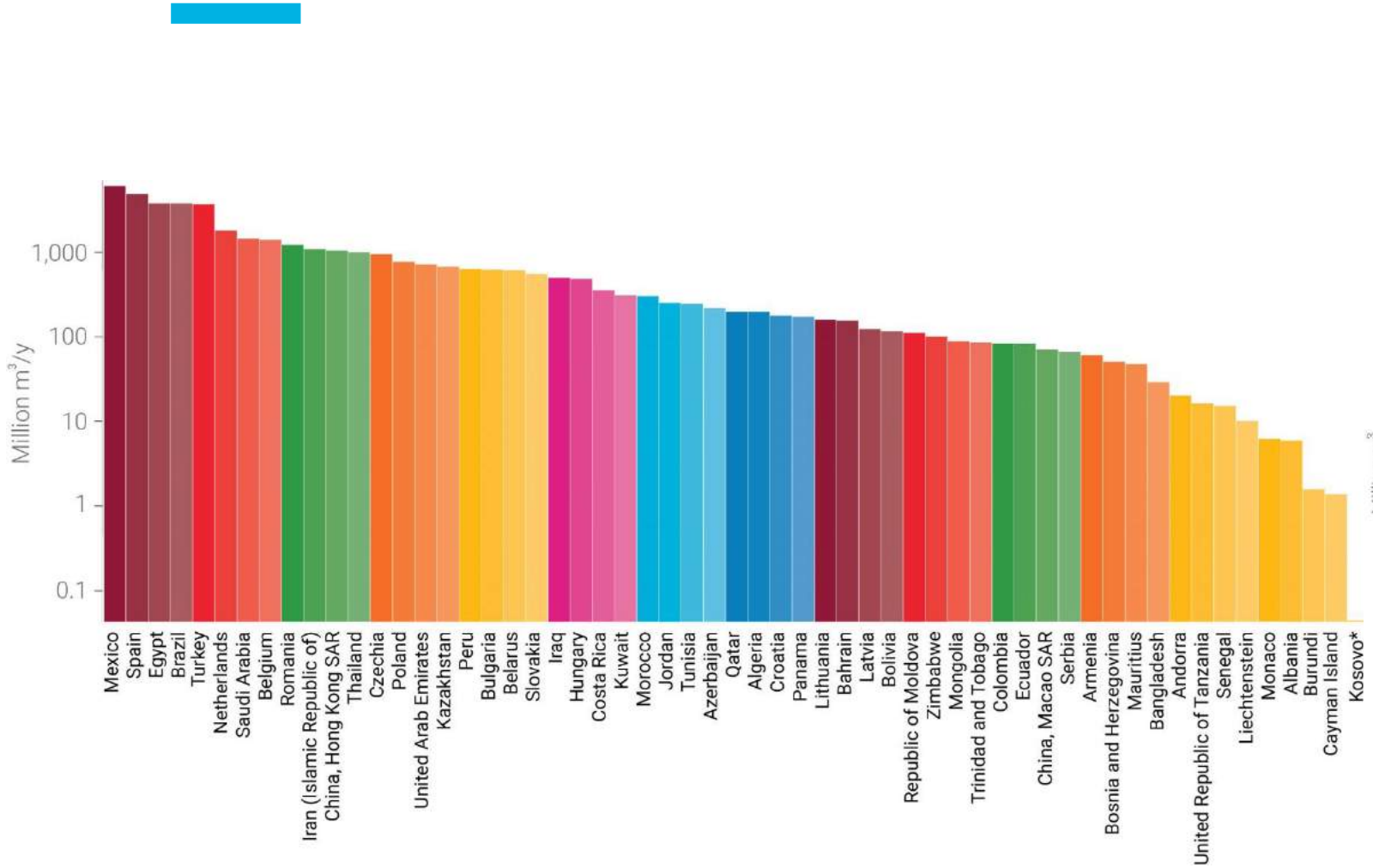
Total industrial wastewater generated



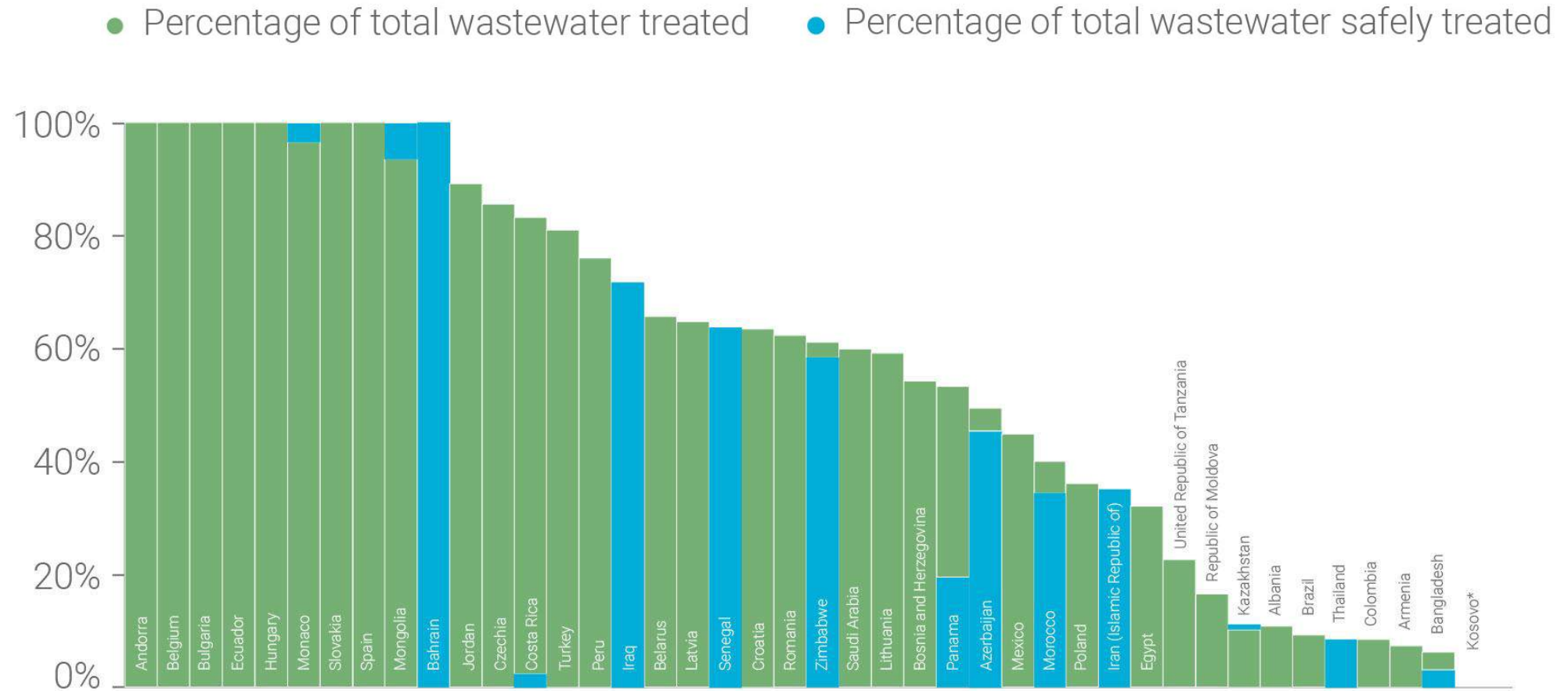
Total Domestic Wastewater Generated



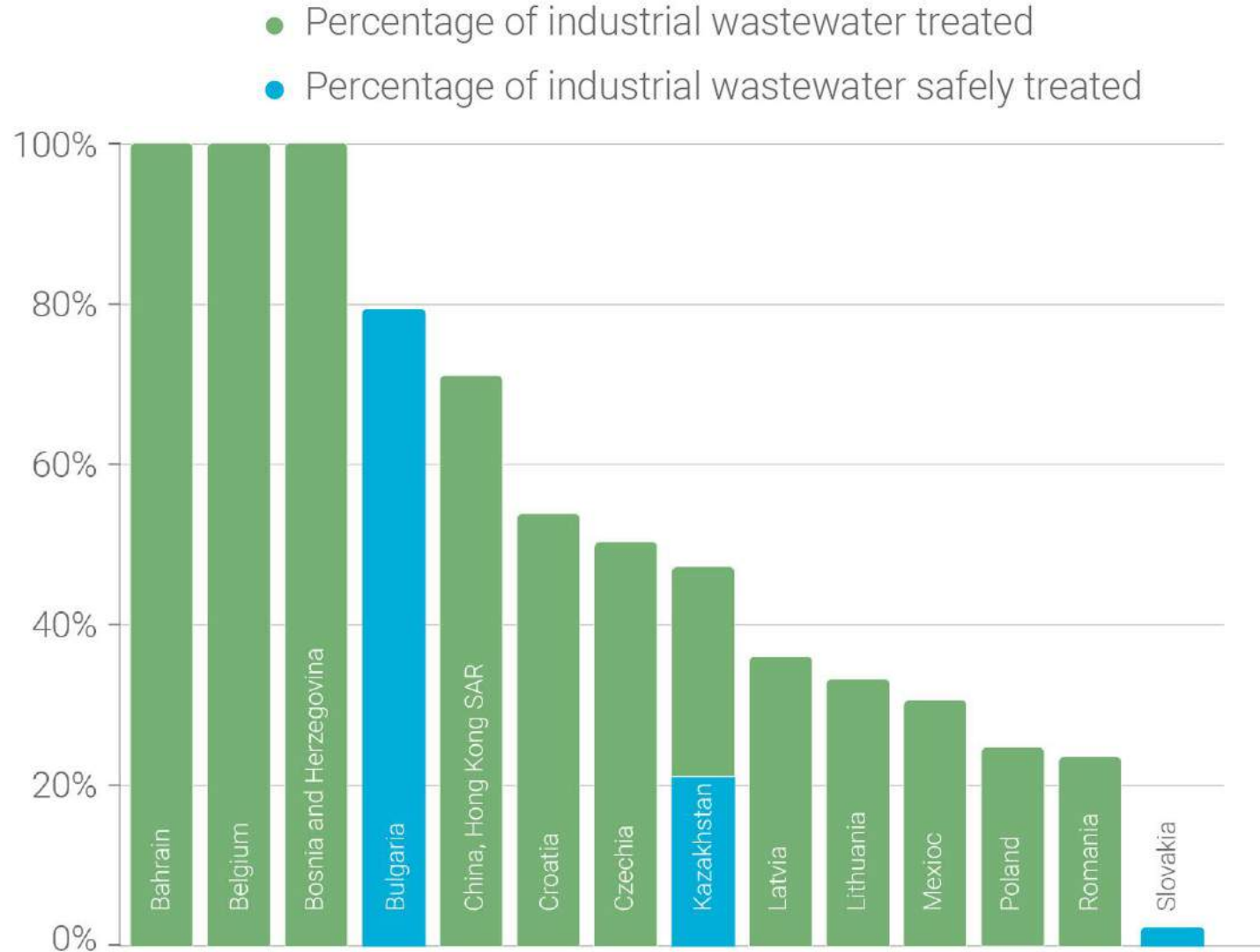
Total wastewater flow treated in 2015 (42 Bcm)



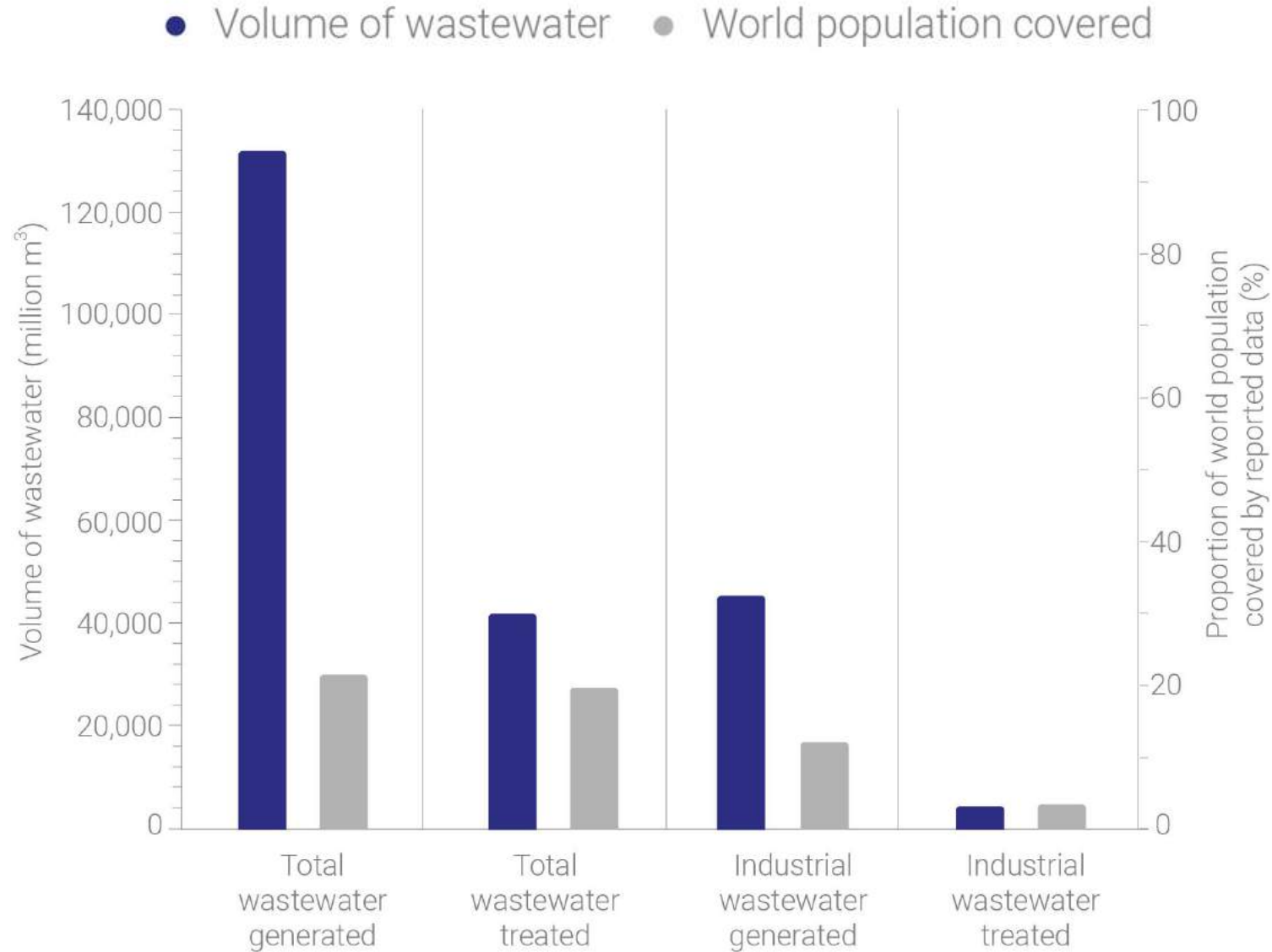
Proportion of total wastewater flow treated: 32%



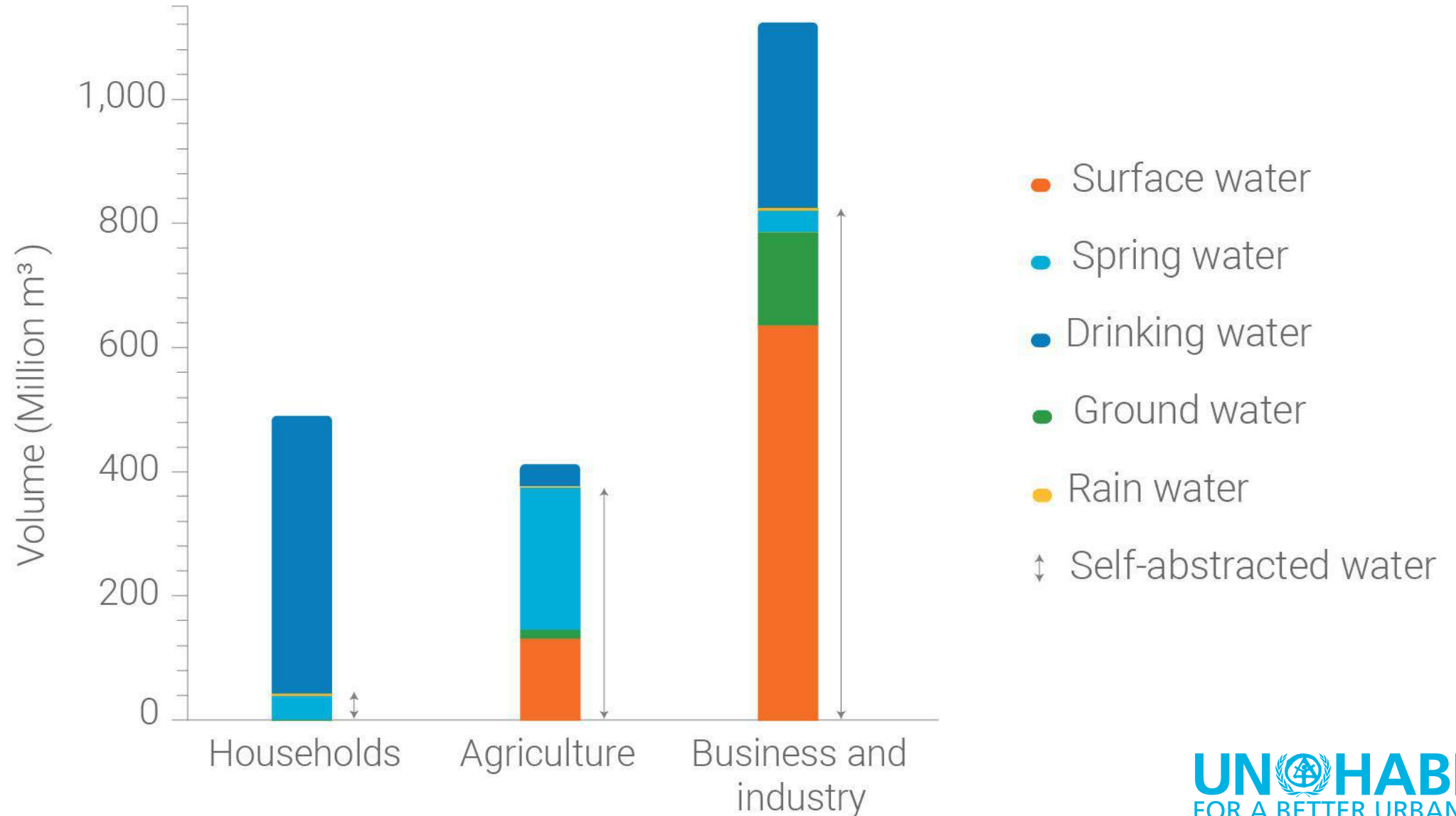
Proportion of industrial flow treated: 30%



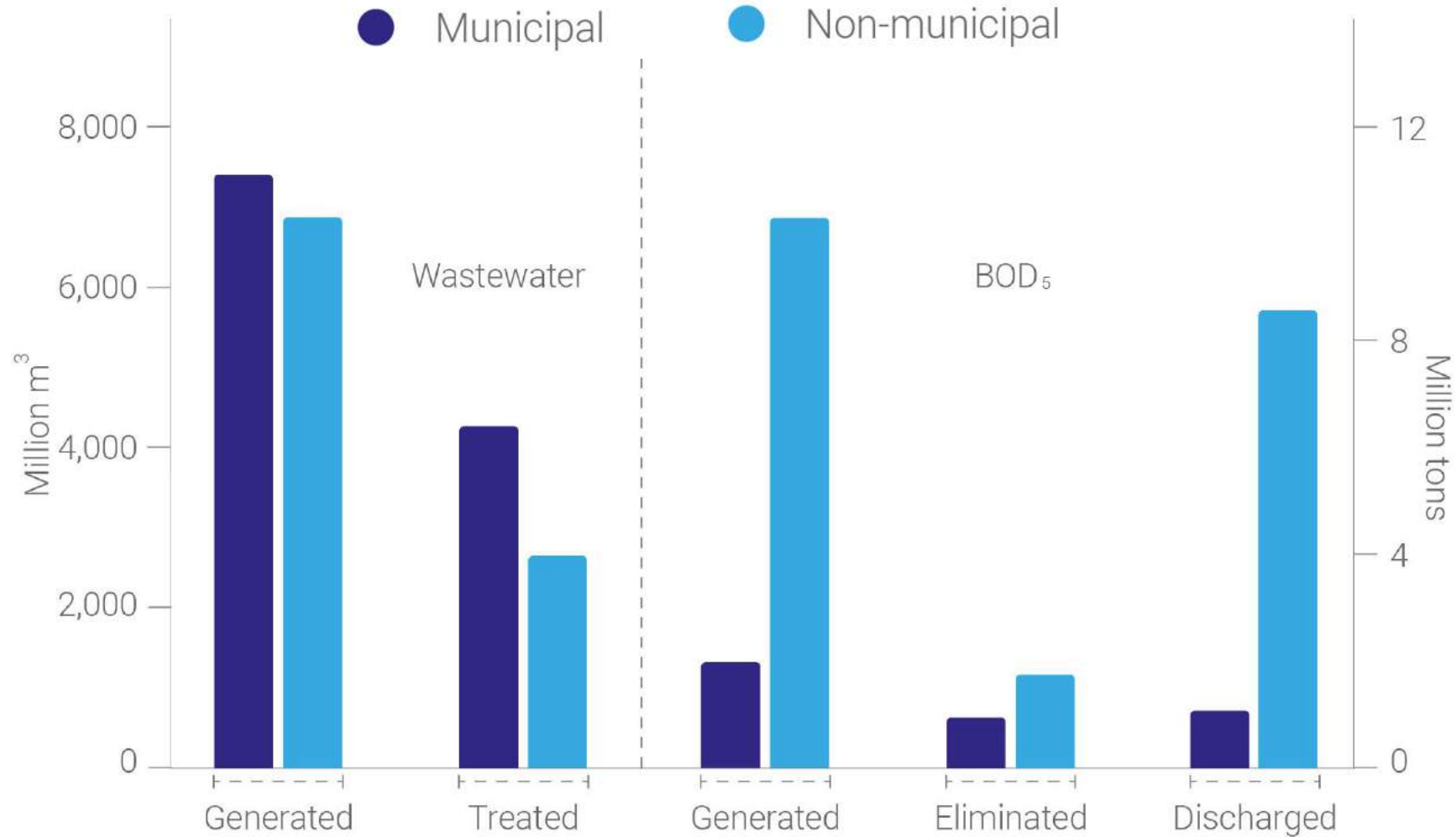
Insufficient data for regional and global estimates



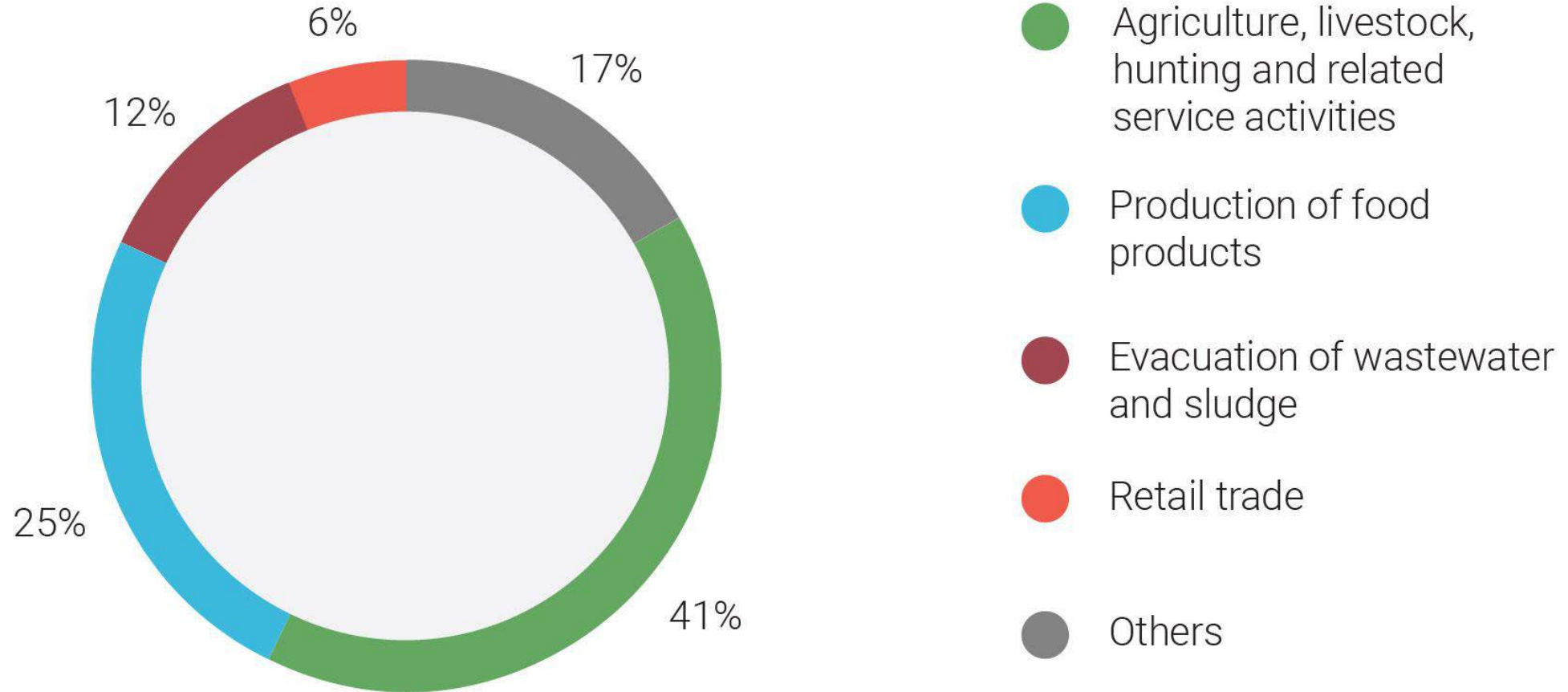
Non-reported water consumption (Switzerland)



Importance of non-municipal sources (Mexico)

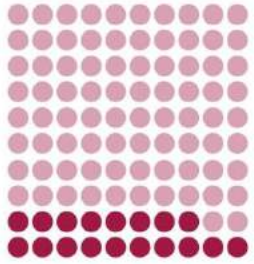


Loads of BOD by economic activities (Costa Rica)






SDG 6.3.1 WASTEWATER



Only
42
countries

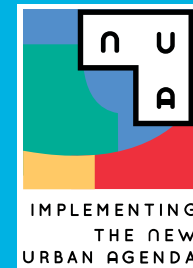
reported statistics on wastewater generation and treatment in **2015**

These **limited data** suggest that about a $\frac{1}{3}$  of total or industrial wastewater **received treatment** before discharge



Thank you

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www.unhabitat.org

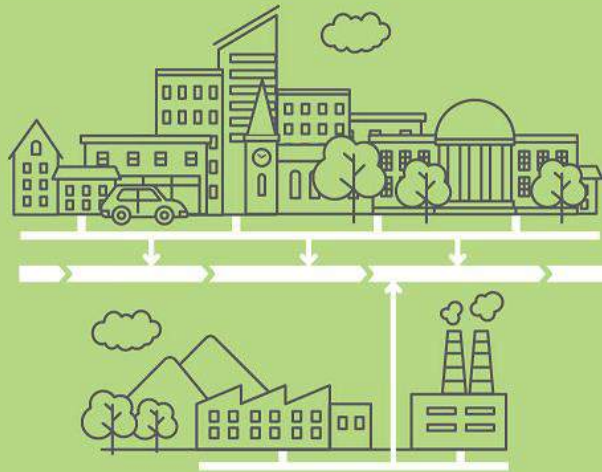
Waste Water Treatment in Ireland



Eimear O'Keeffe
Environmental Protection Agency
September 2021

Waste water treatment in Ireland

Urban area



Waste water is collected from a community or urban area

The waste water is conveyed through a network of sewer pipes to a treatment plant

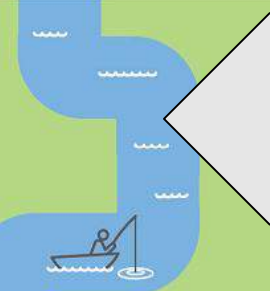
The waste plant to that cou

Waste water treatment system

Sludge and solid waste sent offsite



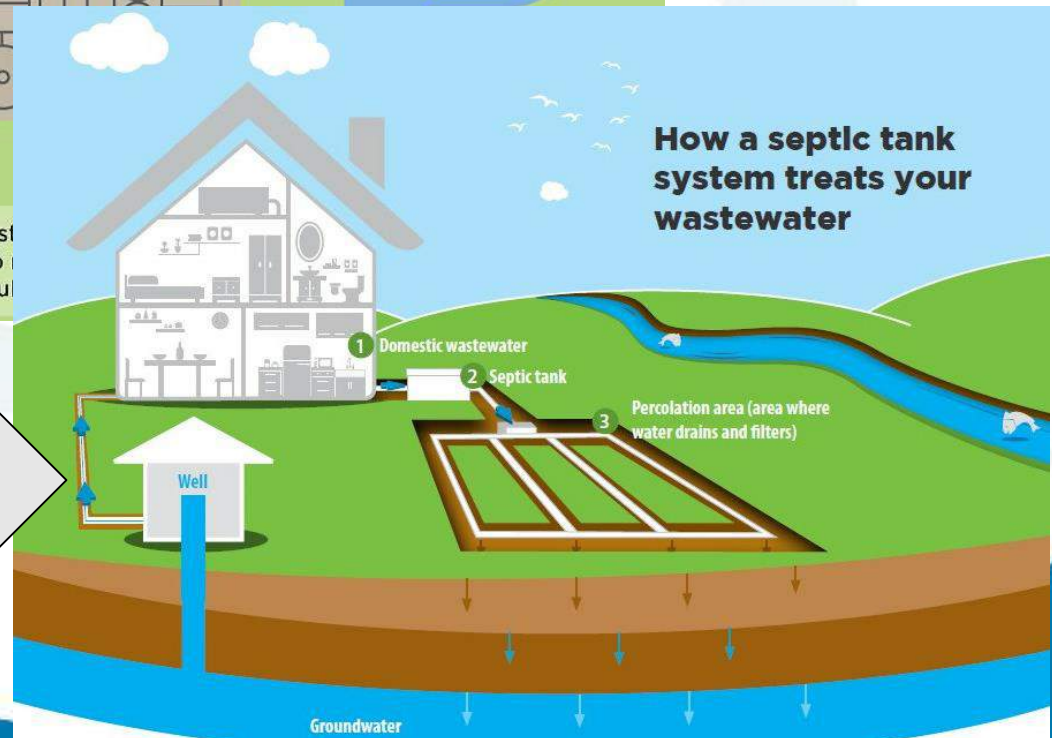
Receiving water body



Two thirds of the population is served by piped sewers (urban waste water treatment plants)

One third of the population is served by on-site sanitation systems (domestic waste water treatment systems)

How a septic tank system treats your wastewater

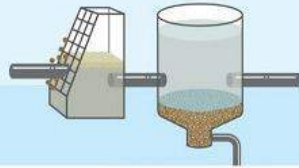


Groundwater

Urban Waste Water Treatment

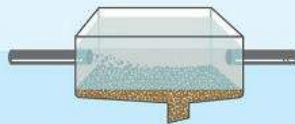
How is waste water treated?

Preliminary treatment. Waste water flows through screens and tanks that remove rags, large pieces of plastic, grit, fat and grease. This prepares the waste water for the next stages of treatment outlined below.

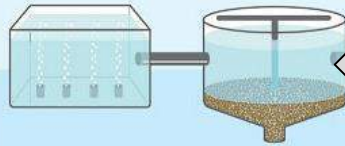


1% of urban waste water is conveyed to plants that provide basic treatment

Primary treatment. The waste water enters large sedimentation tanks. Particles in suspension within the waste water sink down by gravity to the bottom of the tanks and are removed.

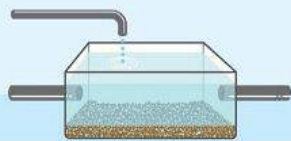


Secondary treatment. This is a biological process whereby microorganisms such as bacteria break down and remove the organic (polluting) matter. The clean water is then separated from the solid particles (referred to as 'sludge') in a final settlement tank. Secondary treatment is a higher level of treatment than primary treatment, and it significantly reduces the amount of polluting matter.



Almost 64% of urban waste water is treated at plants designed to provide secondary treatment

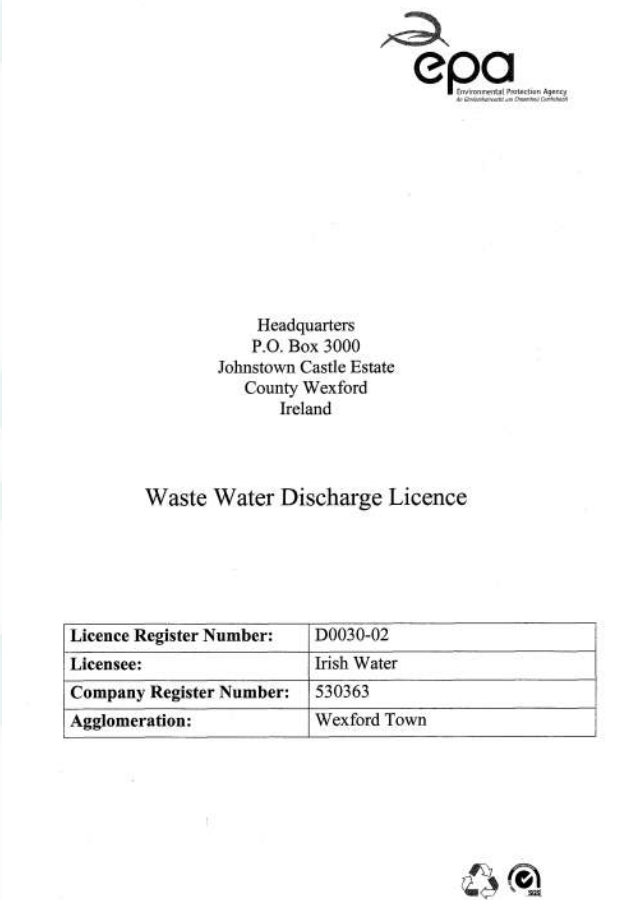
Nutrient removal. Additional treatment is sometimes carried out to further reduce nutrients such as nitrogen and phosphorus. This may be through biological processes whereby bacteria remove the nutrients, or by adding chemicals that cause the nutrients to precipitate out of the



Nearly 34% of urban waste water is treated at plants designed to provide secondary treatment with nutrient removal

Regulation of urban waste water

- Urban Waste Water Treatment Directive
- S.I. No. 254/2001 – Urban Waste Water Treatment Regulations, 2001
- S.I. No. 684/2007 – Waste Water Discharge (Authorisation) Regulations, 2007

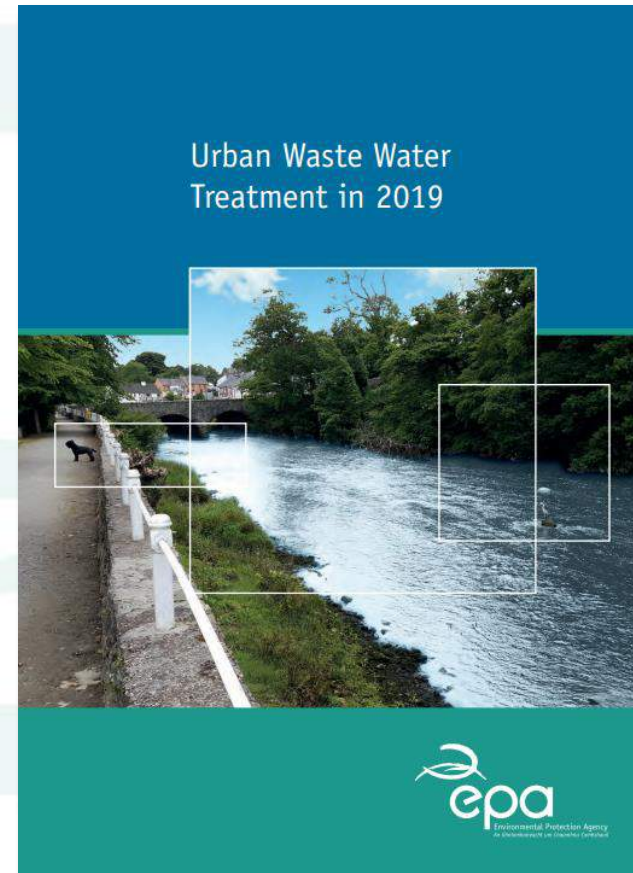


The image shows the cover of a 'Waste Water Discharge Licence' document. At the top right is the EPA logo. In the center, the headquarters address is listed: 'Headquarters, P.O. Box 3000, Johnstown Castle Estate, County Wexford, Ireland'. Below this, the title 'Waste Water Discharge Licence' is centered. At the bottom right, there are two small circular logos: the recycling symbol and the ISO 14001 certification logo.

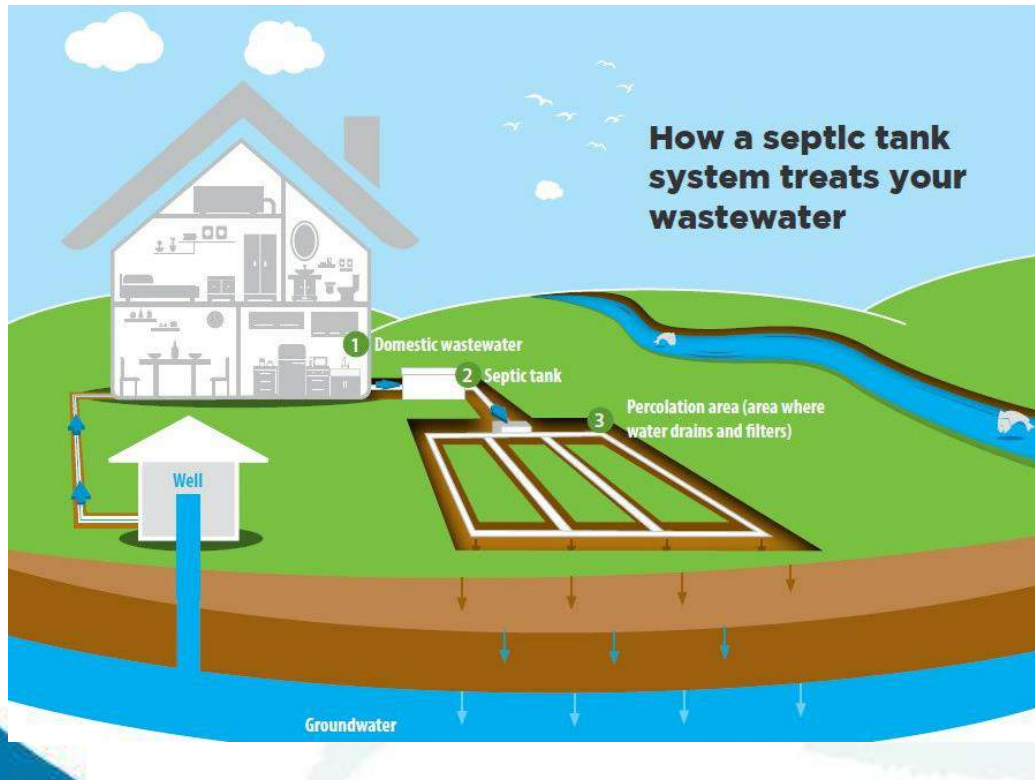
Licence Register Number:	D0030-02
Licensee:	Irish Water
Company Register Number:	530363
Agglomeration:	Wexford Town

Urban waste water enforcement

- Priority areas e.g. areas discharging raw sewage
- National Site Inspection Plan
- National Projects
- Annual Urban Waste Water Treatment Report
- Compliance Investigations



Domestic Waste Water Treatment



Half of septic tank systems fail inspection

epa
Environmental Protection Agency
An tAonreasáireacht um Chaomhú Comhshaoil

What should householders do?

- ✓ Visible check for obvious problems from the septic tank
- ✓ Clean out your septic tank regularly
- ✓ Fix septic tanks that fail inspection
- ✓ Test your drinking water well at least annually

1 Domestic wastewater

2 Septic tank

3 Percolation area (area where water drains and filters)

Well

Drinking water contamination

Ponded effluent

Effluent leaking into stream

Groundwater

What assistance is available to householders?

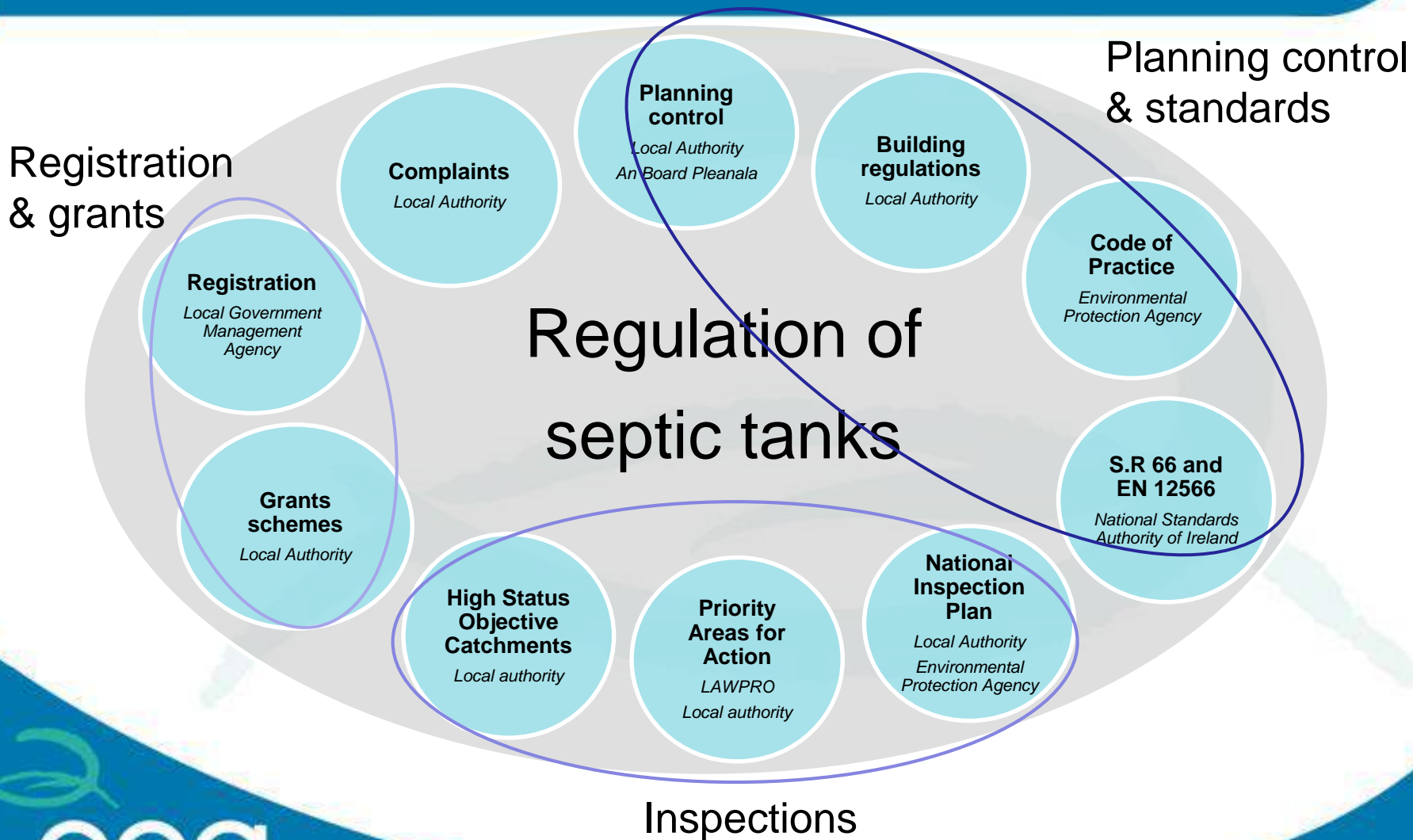
Grants of up to €5,000 are available to fix septic tanks & for improvements to household wells.

Contact your local authority for details.

Find information on-line at the following links:

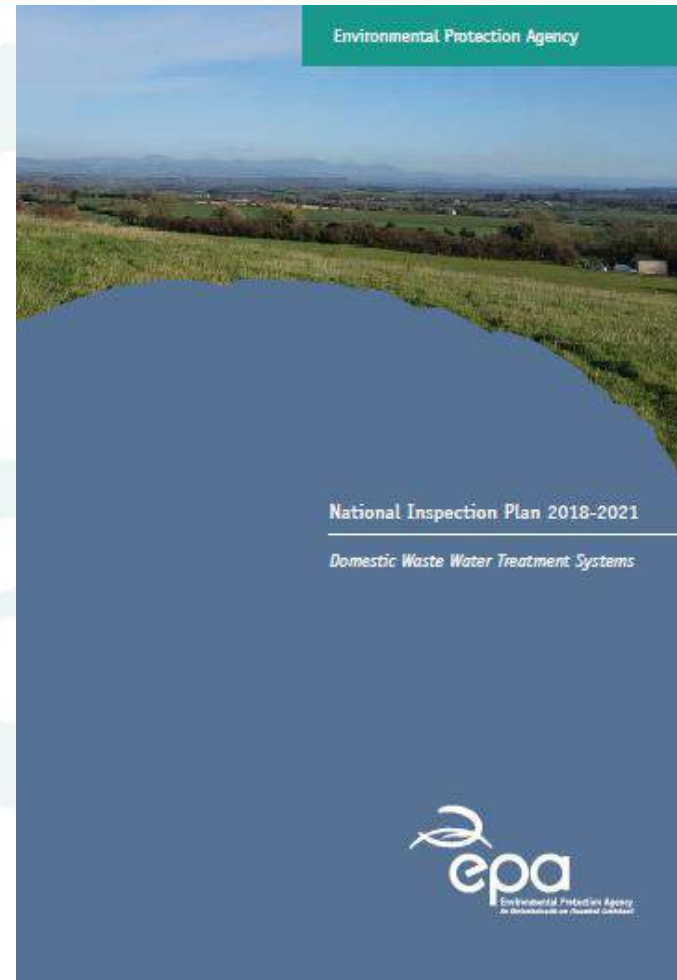
- Septic tank grants
- Household well grants
- Septic tank maintenance

DWWTS - regulatory system



DWWTS Inspections - national inspection plan

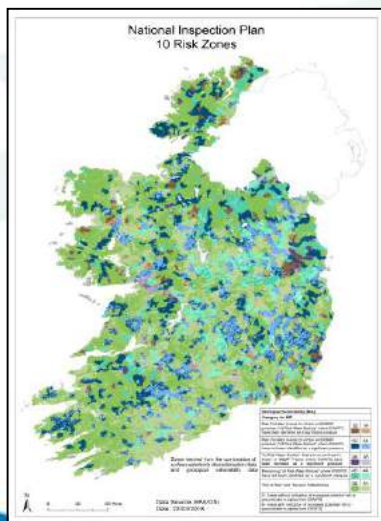
- 2013
- 2015-2017
- 2018-2021
- 1,000 inspections/annum min.
- Additional inspections - where evidence exists that DWWTS are causing an issue in a particular catchment.



DWWTS Inspections - national inspection plan

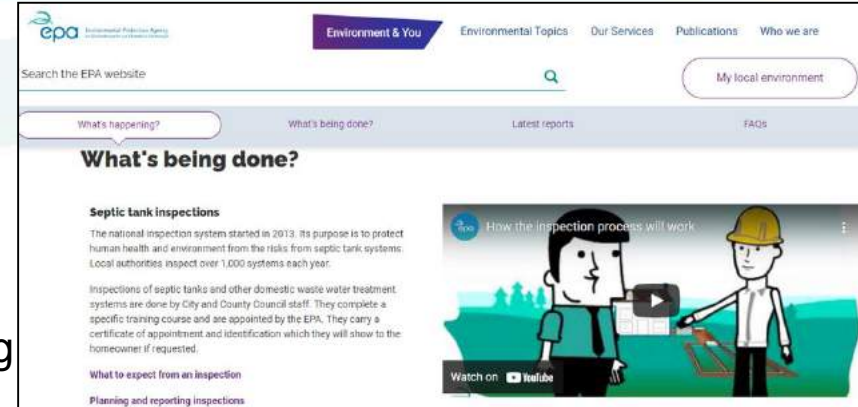
Risk zone	At risk water body ¹	Area for action ²	DWWTS significant pressure	Increased groundwater risk potential	Weighting applied to risk zone	National number of inspection per risk zone
1A	✓	✓	✓		100	59
1B	✓	✓	✓	✓	200	243
2A	✓	✓			25	142
2B	✓	✓		✓	50	360
3A	✓		✓		20	8
3B	✓		✓	✓	40	22
4A	✓				10	30
4B	✓			✓	20	77
5A					1	16
5b				✓	2	43
Total no. of inspections						1,000

Local Authority Area	Minimum Number of Inspections 2018- 2021	2018	2019	2020	2021
Carlow County Council	60	15	15	15	15
Cavan County Council	128	32	32	32	32
Clare County Council	156	39	39	39	39
Cork County Council	240	60	60	60	60
Donegal County Council	472	118	118	118	118
Dun Laoghaire / Rathdown County Council	4	1	1	1	1
Fingal County Council	24	6	6	6	6
Galway County Council	404	101	101	101	101
Kerry County Council	208	52	52	52	52
Kildare County Council	136	34	34	34	34
Kilkenny County Council	108	27	27	27	27
Laois County Council	96	24	24	24	24
Leitrim County Council	92	23	23	23	23
Limerick City and County Council	132	33	33	33	33
Longford County Council	36	9	9	9	9
Louth County Council	32	8	8	8	8
Mayo County Council	280	70	70	70	70
Meath County Council	252	63	63	63	63
Monaghan County Council	104	26	26	26	26
Offaly County Council	68	17	17	17	17
Roscommon County Council	140	35	35	35	35
Sligo County Council	112	28	28	28	28
South Dublin County Council	8	2	2	2	2
Tipperary County Council	164	41	41	41	41
Waterford City and County Council	80	20	20	20	20
Westmeath County Council	80	20	20	20	20
Wexford County Council	260	65	65	65	65
Wicklow County Council	124	31	31	31	31
TOTAL	4,000	1,000	1,000	1,000	1,000



DWWTS Inspections – inspection process

- Inspectors
 - Training course for WSA staff.
 - 100 approx. Inspectors nationally
- What to expect
 - No rainwater or clean surface water entering
 - No leaks
 - No ponding
 - No unauthorised discharges
 - Components in working order
 - Proper maintenance and operation
 - De-sludging
 - Not a risk to human health or the environment



DWWTS Inspection - remediation

- Advisory notice
 - Measures
 - Timeframes

- Remediation
 - Planning exemption - Planning and Development (Amendment) Regulations 2013 (S.I. No. 219/2013)
 - Variances to the CoP requirements may be considered by the local authority
 - Grants
 - High Status Objective Areas
 - National Inspection Plan
 - Priority Areas for Action

Inspections - 2020 findings

- Domestic Waste Water Treatment Systems Inspections 2020 [report](#)
- 2020: 809 inspections; 54% failed
- 2013-2020: 76% of systems that failed have been fixed (2,972)
- 34 legal actions

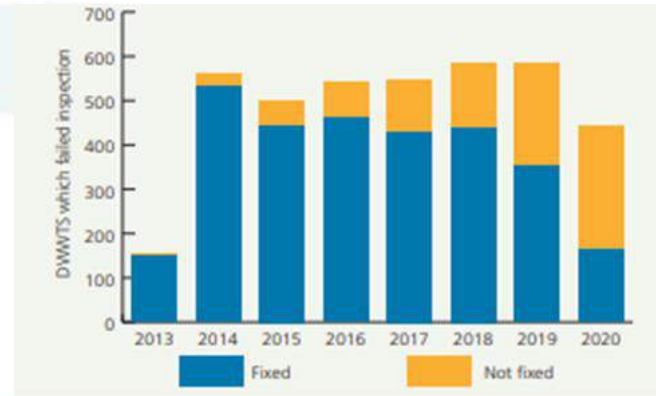


FIGURE 2: Status of DWWTs which failed 2013-2020 (on 17/05/2021)

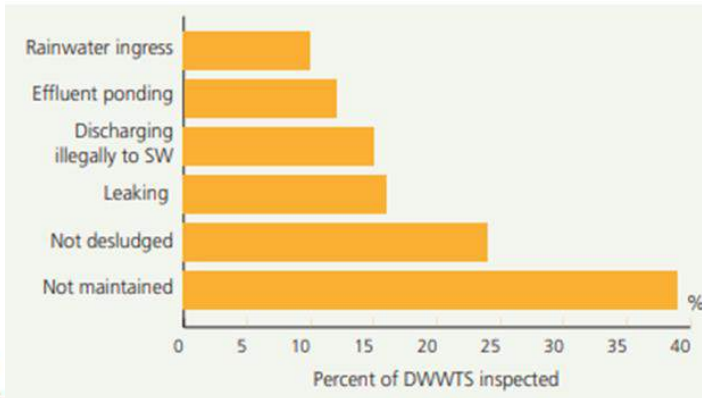


FIGURE 1: Reasons for DWWTs failures 2020 (individual DWWTs can fail for multiple reasons)



MONITOREO E INFORMES EN AGUAS RESIDUALES, COSTA RICA

INDICADOR ODS 6.3.1:

“Proporción de aguas residuales tratadas de manera segura”.

INDICADOR ODS 6.3.1. CR:

“Proporción de aguas residuales por origen y tipo de tratamiento”.

Lic. Ana Victoria Giusti Méndez, USA-DPRSA

21 setiembre 2021

RESPALDO LEGAL-AGUAS RESIDUALES

LEY GENERAL DE SALUD (N°5395, 1973)

- CAPITULO III “De las obligaciones y restricciones para la evacuación sanitaria de excretas y aguas servidas y negras”.

LEY DE CONSERVACION DE VIDA SILVESTRE (N°7317, 1992)

- **Artículo 128.**-Prohíbese arrojar aguas servidas, aguas negras, desechos o cualquier sustancia contaminante en manantiales, ríos, quebradas, arroyos permanentes o no permanentes, lagos, marismas y embalses naturales o artificiales, esteros, turberas, pantanos, humedales, aguas dulces, salobres o saladas, en sus cauces o en sus respectivas áreas de protección.
- Las instalaciones agroindustriales e industriales, así como las demás instalaciones, deberán estar provistas de sistemas de tratamiento para impedir que los desechos sólidos o las aguas contaminadas de cualquier tipo destruyan la vida silvestre. **La certificación de la calidad del agua será dada por el Ministerio de Salud.**

RESPALDO LEGAL-AGUAS RESIDUALES

DE.33601-S- MINAE Reglamento vertido y reuso de aguas residuales (2007)

- **OBJETIVO:** Establecer los límites máximos permisibles de parámetros físicos, químicos y microbiológicos para la disposición de las aguas residuales y establecer las pautas para su control y cumplimiento.
- **OBLIGATORIEDAD DE REPORTES OPERACIONALES:** Todo ente generador de aguas residuales están en la obligación de confeccionar REPORTES OPERACIONALES periódicamente (**TRIMESTRAL /SEMESTRAL**), cuando el efluente es vertido a un **CUERPO RECEPTOR, ALCANTARILLADO SANITARIO o REUSADO**. Se presentan al **MINISTERIO DE SALUD**.
- Los ROAR se generan en la PLATAFORMA del “Sistema Informático para el Registro de Reportes Operacionales de Aguas Residuales”.
- **PARAMETROS ESTABLECIDOS:** **UNIVERSALES** (Caudal, T°C, pH, DBO, DQO, SST, SSED, GyA, SAAM), **COMPLEMENTARIOS** (nitrógeno, fosfatos, fenoles, hidrocarburos, metales, plaguicidas,), **MICROBIOLOGICOS** (nematodos, c.fecales).
- **CERTIFICACION DE LA CALIDAD DEL AGUA RESIDUAL:** De oficio y anualmente
- **Art.10. ESTADISTICAS DE CUMPLIMIENTO DE PARAMETROS-LIMITES.**
- **Comité Técnico de Vertido y Reuso de Aguas Residuales**

**PARÁMETROS DE ANÁLISIS OBLIGATORIO CON SUS RANGOS O LÍMITES MÁXIMOS PERMISIBLES
DE.33601-S-MINAE**

PARAMETRO	CUERPO RECEPTOR	REÚSO	ALCANTARILLADO SANITARIO	UNIDAD
	Rango o Límite Máximo	Rango o Límite Máximo	Rango o Límite Máximo	
Caudal ⁽¹⁾	-----	-----	-----	m ³ /día
Potencial hidrógeno (pH)	5 a 9	5 a 9	6 a 9	----
Demanda Bioquímica de Oxígeno (DBO _{5,20})	50	50	300	mg/L
Sólidos Suspendidos Totales (SST)	50	50	300	mg/L
Grasas y Aceites (GyA)	30	30	50	mg/L
Nitrógeno Total	50	50	50	mg/L
Hidrocarburos	10	10	20	mg/L
Mercurio	0,01	0,01	0,01	mg/L
Organoclorados	0,05	0,05	0,05	mg/L
Coliformes Fecales	1000	1000	---	NMP/100ml

SIRROAR

***TECNICO RESPONSABLE RO.**

***Inscrito en el MS.**

***Genera el RO**



Browser



***R. OPERACIONAL**
***ANALISIS LAB.**

1



**ASIGNACION DEL
CODIGO ENTE
GENERADOR.
Usuario y Contraseña
(USA-DPRSA)**

ENTREGA
Físico o
C.electrónico

ATENCION CLIENTE-ARS

- 1.Verificacion-SIRROAR
2. Valida completitud
3. Y Otorga N°. Trámite.
4. VISTO



REGULACION-ARS

- 1.Revisión y Evaluación RO.
2. Devolución RO. SI Procede



CCAR.



RESPALDO LEGAL

Sistema Informático para el Registro de Reportes Operacionales en Aguas Residuales (SIRROAR), 2016

- ✓ Sistema mediante el cual se generan los ROAR y la CCAR (DE.33601).
- ✓ Almacena datos y producción en Excel.
- ✓ Estadísticas de conformidad con el artículo 10° del DE.33601 (Parámetros-Límites-CIIU).
- ✓ Reporte anual a los Entes Operadores de Alcantarillado Sanitario (AyA, ESPH, Municipalidades).
- ✓ Reportes a diferentes Instituciones gubernamentales (Municipalidades, Universidades,....).
- ✓ Estadísticas anuales del agua residual tratada en CR, para el CTIE-AGUA, OCDE, FAO, DNU-PNUMA, ODS.6.3,1, Cuentas Ambientales-BCCR, etc.

EXCEL-SIRROAR-ANUAL

CODIGO ENTE GENERADOR	NOMBRE ENTE GENERADOR	CIU	PROVINCIA	TIPO AGUA RESIDUAL	TIPO DISPOSICION	CAUDAL (m³/día)	DB0 (mg/L)	SST (mg/L)	GyA (mg/L)	DQO (mg/L)	Hidrocarburos (mg/L)	Arsenico (mg/L)	ORGANOFOSFORA DOS (mg/L)	Coliformes Fecales (NMP/100 ml)
RBR_DARSBAS_10	CONGELADOS DEL MONTE S.A.	1030	PUNTARENAS	ESPECIAL	CUERPO RECEPTOR	6,40	21,00	9,00	3,00	51,00	-	-	0,10	-
RCE_DARSCTG_33	CONSERVAS DEL VALLE S.A.	1030	CARTAGO	ORDINARIA	CUERPO RECEPTOR	38,70	39,00	91,00	13,00	174,00	-	-	0,00	-
RCH_DARSBGC_10	FINCA EL PELON DE LA BAJURA.	163	GUANACASTE	ORDINARIA	REUSO	-	11,00	69,00	11,40	13,00	-	-	1,20	6,02
RCN_DARSAJ1_138	CONDOMINIO HORIZONTAL VILLA FLORES	3700	ALAJUELA	ORDINARIA	CUERPO RECEPTOR	12,50	9,00	44,00	3,00	43,00	-	-	-	-
RCS_DARSCMU_540	CASA DOMINGA RESTAURANTE Y CAFETERIA	5610	SAN JOSE	ORDINARIA	ALCANTARILLADO SANITARIO	1,10	50,00	0,28	6,00	110,00	-	-	-	-
RHA_DARSPCC_25	UNO PETROL LA RITA	4730	LIMON	ESPECIAL	CUERPO RECEPTOR	0,60	16,00	66,00	117,80	28,00	5,80	-	-	-
RHN_DARSFRC_32	SERVICENTRO LA LUCHA.	4730	ALAJUELA	ORDINARIA	REUSO	1,00	21,00	30,00	4,00	46,00	4,00	-	-	-
RPC_DARSGAR_32	CONDOMINIO RESIDENCIAL VERTICAL CASA CASCADA	3700	PUNTARENAS	ORDINARIA	CUERPO RECEPTOR	6,00	8,00	16,00	3,00	27,00	-	-	-	0,00

ESTADISTICAS-DE.33601-S-MINAE (art.10°)

EJEMPLO RELLENOS SANITARIOS CIU 3820 AR-CUERPO RECEPTOR	T°C	pH	DBO (mg/L)	SST (mg/L)	S.SED (mg/L)	GyA (mg/L)	SAAM (mg/L)	DQO (mg/L)	HIDROCARB (mg/L)	ARSENICO (mg/L)	C.FECALES (NMP/100 ml)
LIMITE NORMATIVO	15-40	5 a 9	300,00	200,00	1,00	30,00	5,00	1000,00	10	0,1	1000
Promedio	26,59	7,37	49,50	57,34	0,33	8,40	0,53	469,86	0,02	0,00	0,42
Desviación	6,20	1,77	45,43	60,23	0,93	6,14	0,52	329,27	0,02	0,00	2,58
Datos superior al límite			0,00	2,00	1,00	0,00	0,00	4,00			
Cuenta	116,00	116,00	116,00	116,00	116,00	116,00	116,00	115,00	71,00	3,00	75,00
% Incumplimiento			0%	2%	1%	0%	0%	3%			
Valor.Min	20,0	5,0	2,0	0,0	0,0	0,0	0,0	32,0	0,0	0,0	0,0
Q1 (25%)	26,0	7,0	10,1	18,6	0,1	5,0	0,3	197,5	0,0	0,0	0,0
Q2 (50%)	27,0	7,5	38,5	47,0	0,1	5,0	0,5	397,0	0,0	0,0	0,0
Q3 (75%)	28,0	7,9	73,5	75,3	0,5	14,0	0,5	694,0	0,0	0,0	0,1
Valor. Max	32,0	9,0	225,0	460,0	10,0	24,7	5,0	1425,0	0,2	0,0	28,6

ESTADISTICAS-CTIE-AGUAS / RIEA

DIVISION CIU.4	ACTIVIDADES	2019								
		Volumen (m ³ /día)	Volumen (m ³ /año)	Volumen (1000 m ³ /día)	EMIS.TOTAL DBO (kg/año)	EMIS.TOTAL SST (Kg/año)	EMIS.TOTAL S.SED (L/año)	EMIS.TOTAL GyA (Kg/año)	EMIS.TOTAL SAAM (Kg/año)	EMIS.TOTAL DQO (Kg/año)
01	AGRICULTURA, GANADERÍA, CAZA Y ACTIVIDADES DE SERVICIOS CONEXAS	3066,53	932225,63	3,07	197535,08	119897,09	250191,56	16169,12	664,98	439017,16
10	ELABORACIÓN DE PRODUCTOS ALIMENTICIOS	53809,77	16358168,80	53,81	872578,45	574582,91	8759167,53	122540,07	5510,59	2205791,82
13	FABRICACIÓN DE PRODUCTOS TEXTILES	111,30	33835,20	0,11	1524,16	2133,26	21580,96	275,24	15,35	3951,03
20	FABRICACIÓN DE SUSTANCIAS Y PRODUCTOS QUÍMICOS	246,48	74928,81	0,25	1974,73	1778,24	29145,53	311,49	56,02	6136,20
21	FABRICACIÓN DE PRODUCTOS FARMACÉUTICOS, ...	70,70	21492,80	0,07	161,39	221,22	1603,30	30,51	1,16	454,53
37	EVACUACIÓN DE AGUAS RESIDUALES Y LODOS	86135,84	26185295,85	86,14	1704523,86	1379755,10	12771494,76	127023,51	114605,68	4268570,21
55	ACTIVIDADES DE ALOJAMIENTO	3068,79	1092490,78	3,07	44589,62	30303,04	515783,44	9540,41	1332,20	91970,70
56	ACTIVIDADES DE SERVICIO DE COMIDAS Y BEBIDAS	269,59	95974,04	0,27	3183,64	2113,21	6847,07	756,69	77,84	7747,81
86	ACTIVIDADES DE ATENCIÓN DE LA SALUD HUMANA	2495,53	758642,13	2,50	15554,69	15638,09	217319,53	4473,53	177,36	49227,79

FORMULARIO ODS.6.3.1

Objetivo	Objetivo 6. Garantizar la disponibilidad y la gestión sostenible del agua y el saneamiento para todos															
Meta	6.3 De aquí a 2030, mejorar la calidad del agua reduciendo la contaminación, eliminando el vertimiento y minimizando la emisión de productos químicos y materiales peligrosos, reduciendo a la mitad el porcentaje de aguas residuales sin tratar y aumentando considerablemente el reciclado y la reutilización sin riesgos a nivel mundial															
Nombre del indicador o de la variable	6.3.1 Proporción de los flujos de aguas residuales domésticas e industriales tratados de manera adecuada															
Indicador propuesto para Costa Rica	Proporción de aguas residuales por origen y tipo de tratamiento															
		Proporción de aguas residuales por origen y tipo de tratamiento														
		Años	Origen / Tratamiento								Subtotal tratado	Sin tratamiento		Total de Aguas residuales generadas		
			Aguas de origen domestico tratadas en plantas de tratamiento		Aguas de origen doméstico tratadas en solución individual (tanque séptico)		Aguas de origen agrícola tratadas en plantas de tratamiento		Aguas de origen industrial tratadas en plantas de tratamiento							
			hm ³ / año	Porcentaje	hm ³ / año	Porcentaje	hm ³ / año	Porcentaje	hm ³ / año	Porcentaje						hm ³ / año
		2015	24,30	4,80	227,00	44,80	88,80	17,50	111,00	21,90	451,10	89,00	55,90	11,00	507,00	100,00
		2016	22,26	4,52	181,83	36,88	1,60	0,32	25,90	5,25	231,59	46,98	261,41	53,02	493,00	100,00
		2017	28,26	5,72	176,20	35,67	1,09	0,22	25,72	5,21	231,27	46,82	262,73	53,18	494,00	100,00
		2018	35,25	6,86	176,30	34,30	1,32	0,26	74,85	14,56	287,72	55,98	226,28	44,02	514,00	100,00
		Fuente Ministerio de Salud, Sistema Informático y Registro de Reportes Operacionales de Aguas Residuales (SIRROAR), con datos del Instituto Nacional de Estadística y Censos; Encuesta Nacional de Hogares, Empresa de Servicios Públicos de Heredia y Instituto Costarricense de Acueductos y Alcantarillados, Registros Comerciales de los entes Públicos Administradores.														

**POLITICA NACIONAL
DE SANEAMIENTO EN
AGUAS RESIDUALES
(2016-2045)**

- **EJE 2. GESTION INTEGRADA PARA EL SANEAMIENTO DE LAS AGUAS RESIDUALES**
- **OBJETIVO:** Fortalecer la gestión de saneamiento de aguas residuales ordinarias y especiales a través del aprovechamiento de los instrumentos actuales y la creación de nuevos en caso de ser requeridos.
- **SUBTEMA:** Instrumentos tecnológicos para el manejo seguro de las aguas residuales.
- **ACCION ESTRATEGICA:** Elaboración e implementación de un sistema de información nacional única y sostenible, que contenga el registro de vertidos y reúsos de aguas residuales, con la información de la ubicación geográfica y la calidad de los efluentes.
- **INDICADOR:** Sistema de información único sectorial operando en línea con el 100% del total de la información de vertidos y reúsos de aguas residuales.

**INDICADOR
ODS 6.3.1**

- **INDICADOR ODS 6.3.1:** *“Proporción de aguas residuales tratadas de manera segura”.*
- **INDICADOR ODS 6.3.1. CR:** *“Proporción de aguas residuales por origen y tipo de tratamiento”.*

RETOS Y DESAFIOS - INDICADOR ODS 6.3.1

- Ampliar la captura de información de entes generadores de aguas residuales a nivel nacional.
- Mejora continua del SIRROAR (ajustes, programación, automatización de estadísticas).
- Incorporar el SIRROAR al Sistema para el Registro de Emisiones de Transferencia de Contaminantes (RETC), a mediano y largo plazo.
- Contar con un sistema de información único sectorial operando en línea con el 100% del total de la información de vertidos y reúsos de aguas residuales. (PNSAR 2016-2045).

Ministerio
de **Salud**
Costa Rica



!!! MUCHAS GRACIAS !!!