



# Aspects concerning the monitoring and compliance capacity of small public drinking water systems, in order to achieve the aim of DWD

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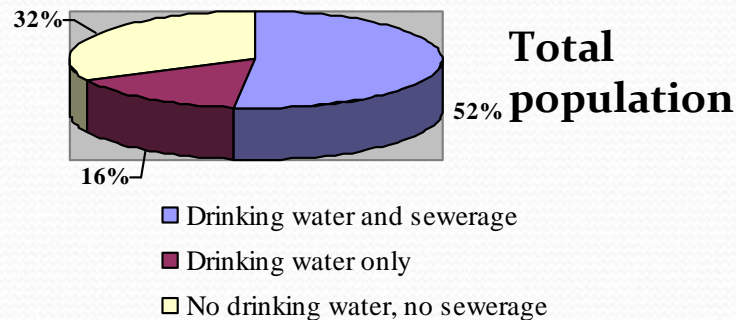
**Romanian Water Association**

# Background information

- **Drinking Water Directive 98/83/EC**
  - Small systems supplies **50 - 5.000 people** or provides **10 - 1.000 m<sup>3</sup>** DW/day
  - Very small systems supplies < **50 people**.
- **DWD aim** - to **protect human health** from the adverse effects of any contamination.



# Coverage with DW



## Rural coverage with public systems

- 33% of rural population (3,7 mill.)
- 17% of rural localities
  - **67% of rural population use individual DW supplies** (>1 mill. private wells).

	Public DW supply systems	Individual DW supply systems
% of localities with access	17	-
% of households with access	-	70
% of population with access	33	-
No. of waterworks	797	-
Length of the supply network, km	20339,5	-
Average consumption, l/person/day	70	-

# Water Operators in Romania

- **983** Water & Sewage Companies including ROC

License to operate DW & Sewage, until 2010		
Euro regions	No. of Counties	No. of Operators
NE	6	12
SE	6	27
S	7	30
SV	5	16
V	4	15
NE	6	11
Center	6	27
București - Ilfov	2	8
<b>Total</b>	<b>42</b>	<b>146</b>





# Methodology

- Romanian Water Association (ARA) disseminated a short questionnaire to the Water Operators that are its members.
  - *Data were provided for the year 2010.*
- *The assessment was meant to highlight the challenges and to offer some suggestions to support the decision makers in improving the present management practices and policy.*

# Questionnaire

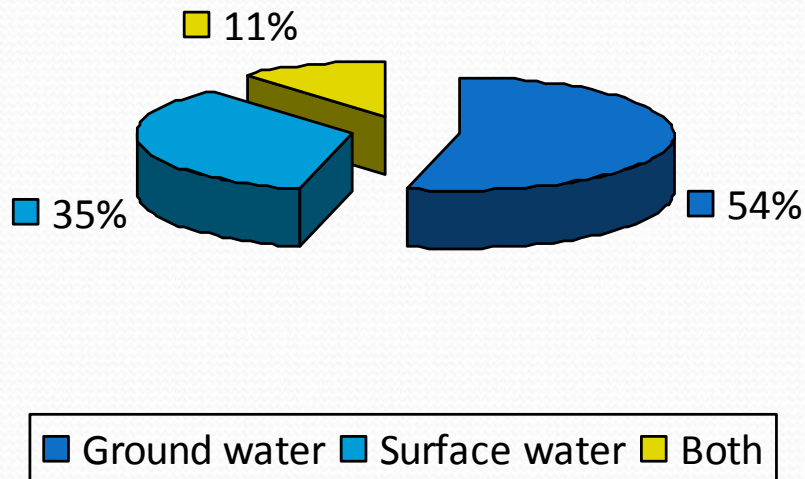


- General information about Water Operating Company
- General information about DW supply system
  - DW source
  - Type of supply system
  - Volume of Water & Number of population supplied
  - Type of treatment
- Drinking Water Monitoring Program
- Other operating information and Needs

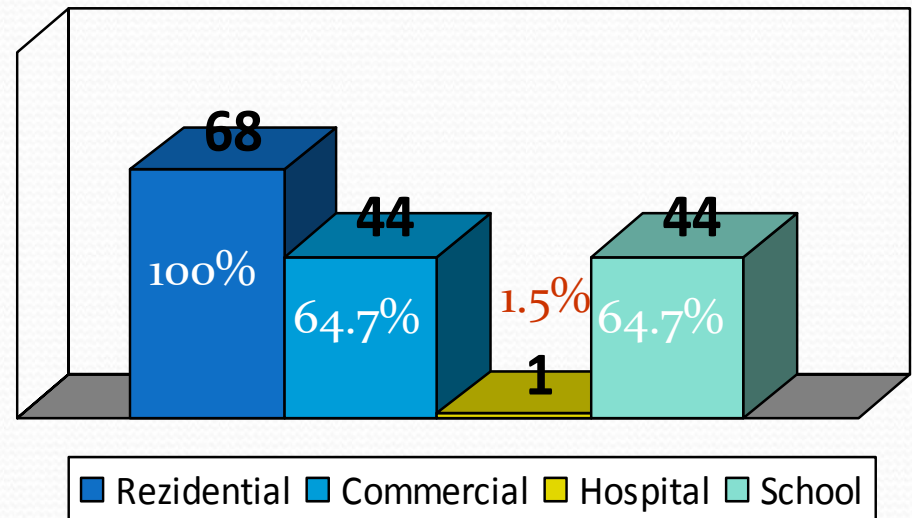


# Results

## Type of DW source



## Type of supply system



- Counties - 6
- Water Operating Companies - 6
- DW public small supply systems - 68

# Results

- **No. of population supplies**

- Min – 193 persons
- Max – 7743 persons
- Average – 1831

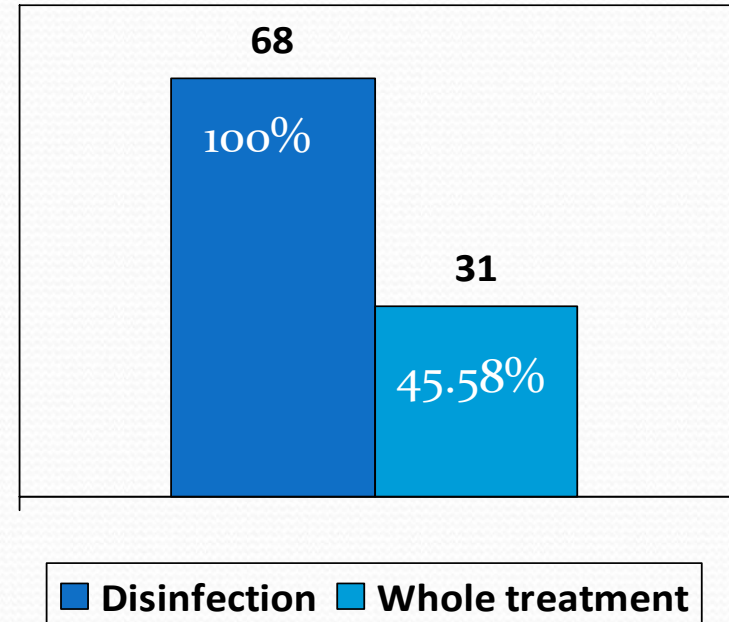
- **Volume of water supplied (m<sup>3</sup>/day)**

- Min – 8.95
- Max – 1815
- Average  $\cong$  200

- **DW consumption (l/person/day)**

- Min – 26.32
- Max – 671.23
- Average – 98.30

## Type of DW treatment



**100%** - continuous supply

**98.5%** - continuous disinfection

### Disinfectants

-Chlorine	86.76%
-Hypochlorite	5.88%
-Bleach	5.88%
-UV	0.0100%



# Results

## DW Monitoring program

- **100%** of the suppliers declare that the monitoring program complies with GD 974/2004 for the year 2010.
- MICROBIOLOGICAL PARAMETERS
  - Average  $V_{DW} \cong 200$  m<sup>3</sup>/day
  - Average population  $\cong 1831$

\*)Check in monitoring at the exit of the water work

\*\*) Check in monitoring at the consumers' tap

Microbiologic Parameters	GD 974/2004 Standard/ Reduced No. of samples/year	Assessment (No. of analyses in range of)/year
E. Coli	4/2* 4/-**	2-92
Enterococci	4/2* 4/-**	2-92

**38.4%** is the highest % of noncompliant analyses, out of the total no. of analyzed samples, for **Enterococci**.

# Results

## DW Monitoring program

### • INDICATOR PARAMETERS

- Average  $V_{DW} \cong 200$  m<sup>3</sup>/day
- Average population  $\cong 1831$

90.9% is the highest % of noncompliant analyses, out of the total no. of analyzed samples, for Mn

Other noncompliance have been registered for:

Fe, Turbidity, NH<sub>4</sub><sup>+</sup>  
Colony count 22°C, TC

Indicator Parameters	GD 974/2004 Standard/ Reduced No. of samples/ year	Assessment (No. of analyses in range of)/ year
24	4/2*	38 - 2027
	6/3**	

\*)Check in monitoring at the exit of the water work

\*\*) Check in monitoring at the consumers' tap



# Results

- DW Monitoring program

- CHEMICAL PARAMETERS

- Average  $V_{DW} \cong 200 \text{ m}^3/\text{day}$
- Average population  $\cong 1831$

100% is the highest % of noncompliant analyses out of the total no. of analyzed samples, for  $\text{No}_3^-$

Results provided for 12 chemical parameters.

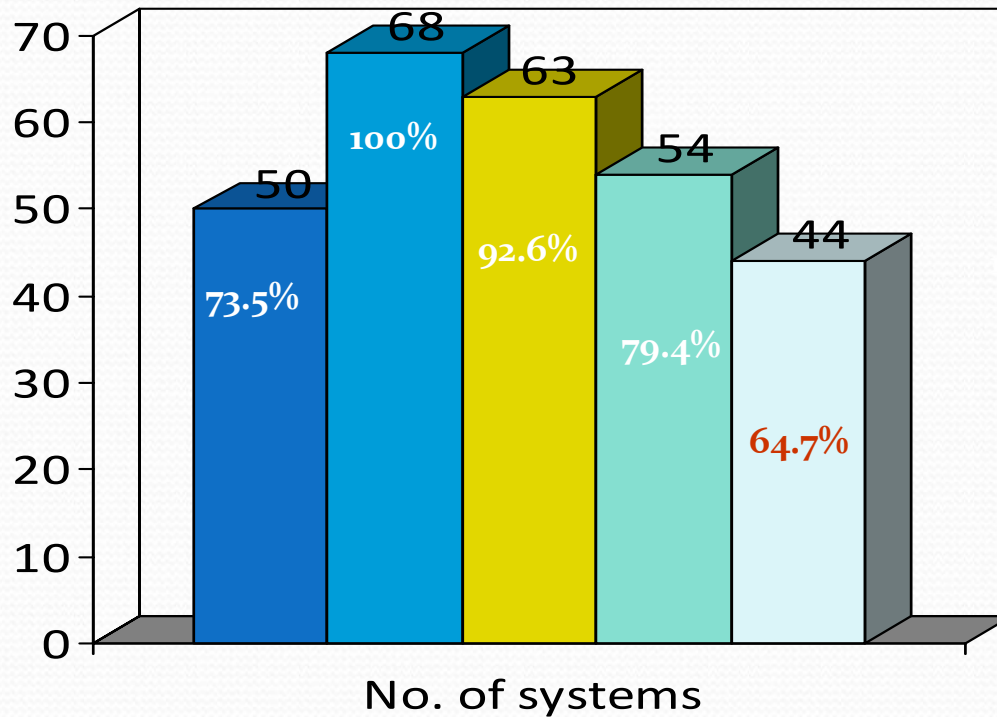
Chemical Parameters	GD 974/2004 No. of samples/ year	Assessment (No. of analyses in range of)
22 <sup>*</sup>	1 <sup>*</sup> 52 Cl <sub>2</sub>	2 - 239
27 <sup>**</sup>	1 <sup>**</sup> 4 Cl <sub>2</sub>	

<sup>\*</sup>) Audit monitoring at the exit of the water work

<sup>\*\*</sup>) Audit monitoring at the consumers' tap

Audit monitoring is the task of PHAs.

# Operating information



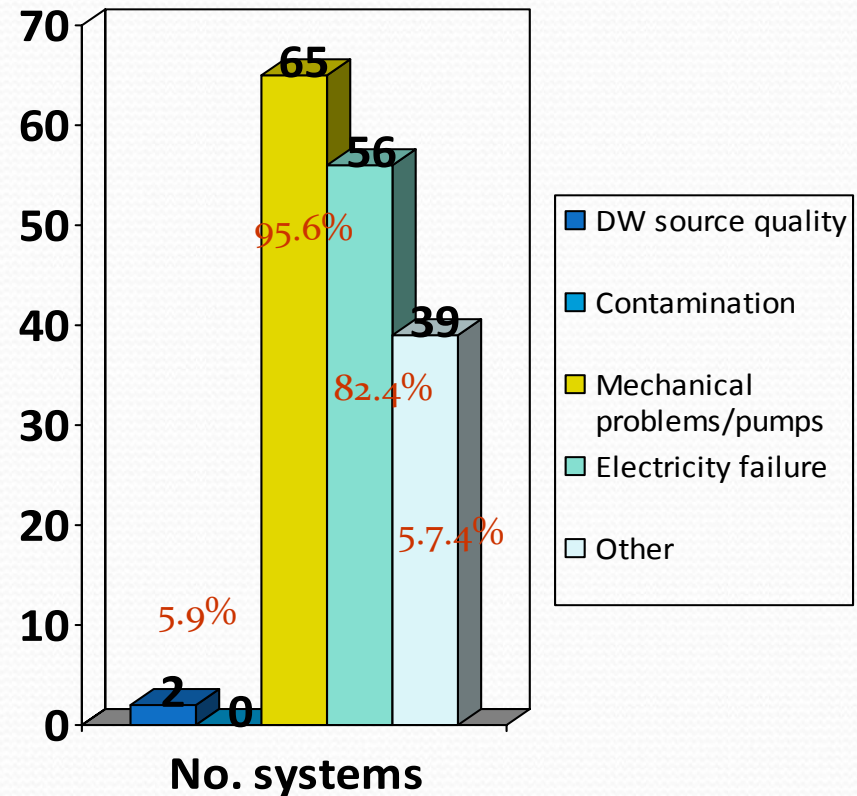
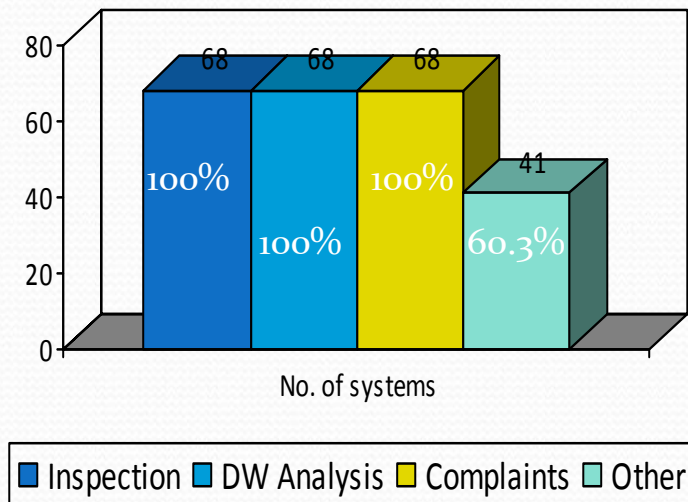
**Maintenance activities**





# Management information

## Mechanisms for problems' identification

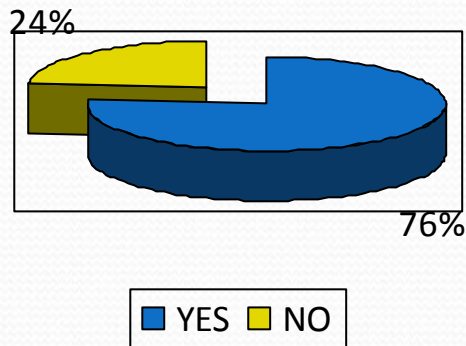


## Problems' nature

# Management information

## Ranking of decision making factors

### Management plans based on consumers' health risk

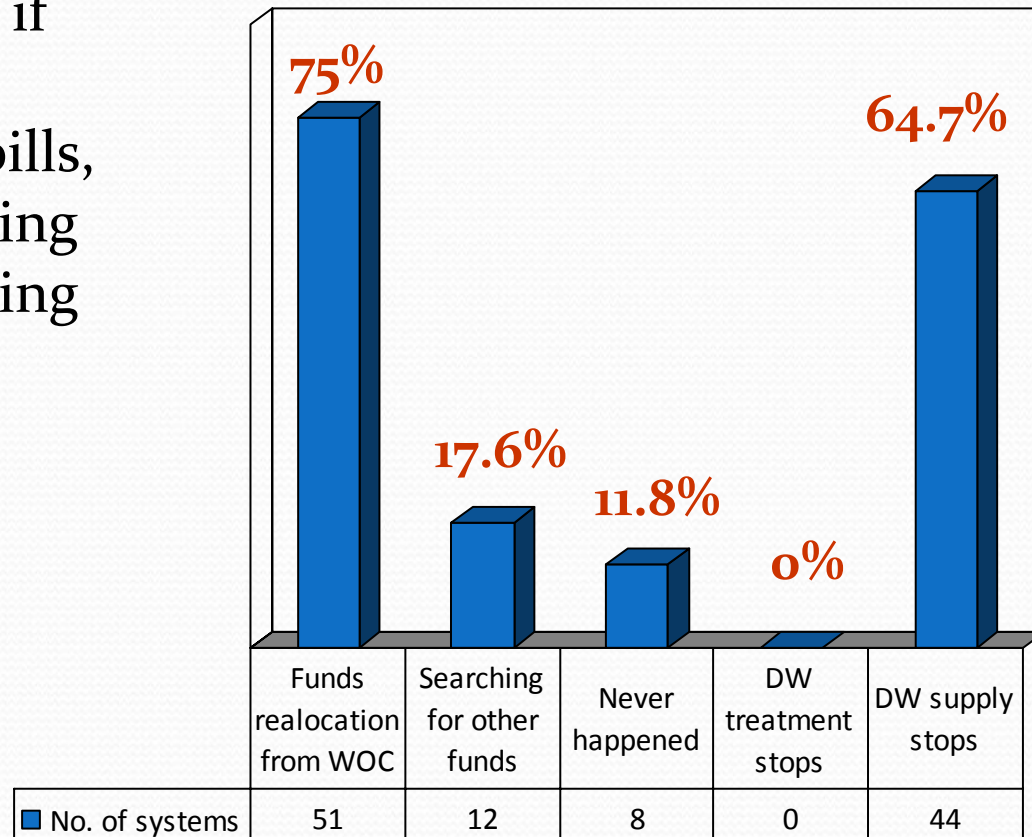


Rank /No. of systems	Technical	Financial	Further development	Public Interest	Public Health
1	4	0	0	0	64
2	2	44	0	18	4
3	13	12	0	43	0
4	49	12	7	0	0
5	0	0	61	7	0



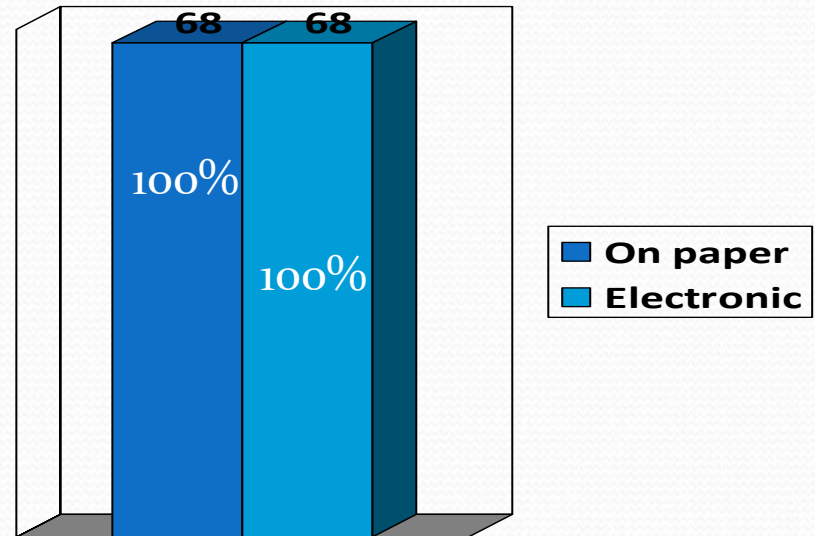
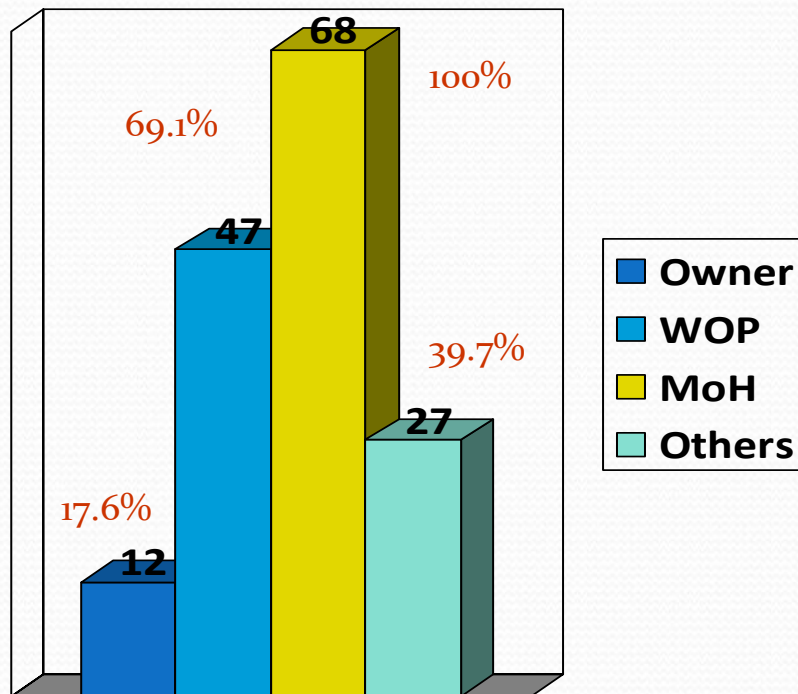
# Management information

- What happens if the consumers don't pay the bills, and the operating budget is running short?



# Reporting information

To whom are reported the data regarding the DW system?



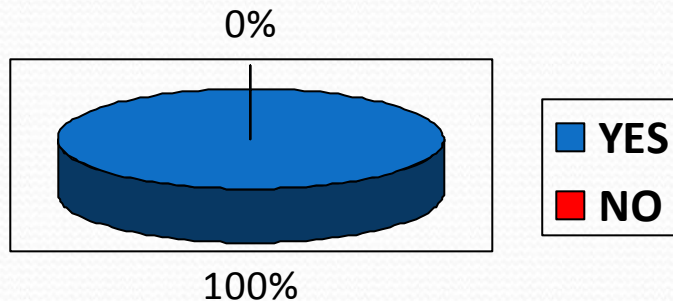
How are kept the records?

WOP = Water Operating Company  
MoH = Ministry of Health  
Others = ANAR, ANRSC, EPA

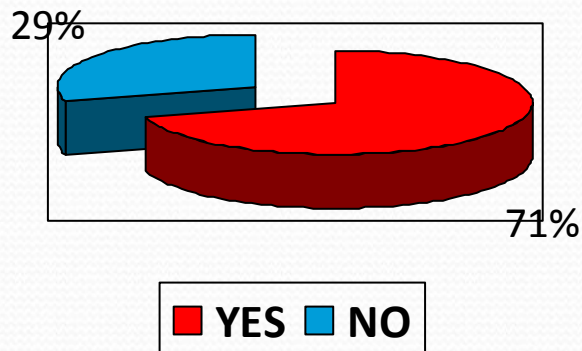


# Other information & Needs

**WOP that are aware about transition periods**



**In situation to apply for a derogation**



## ARA Required Support

- Information regarding small DW systems in EU, problems encountered and solutions.
- Training sessions in common for WOC and PHA.
- Support for WOCs' interests towards public authorities.
- Continuous professional training.

# Discussions

## ● Challenges

- Low coverage of rural population with public DW supply
- DW that exceeds the limit values for some microbiological and chemical parameters
- Limited capacity to monitor the DW quality for all parameters in the DWD
- Need for huge investments in infrastructure
  - **5.6 billion € for drinking water by 2015.**
- Need for training & experience exchange.



# Discussions - Rural infrastructure

- **Extension of the DW & Sewage public networks** for the villages located close to a city with a WOC + solidarity principle for tariffs.
- **Development of a local public supply systems for DW & Sanitation** for the villages located in remote areas from cities with simple, compact, modular, and automatic technology.
- **Individual household solutions for DW & Sanitation** for the remote localities with a small number of inhabitants, located far away from cities.

