

National Monitoring

Tuesday 28 October 2014
RWSN Mapping and Monitoring

The Rural Water Supply Network has conducted a webinar series aimed at sharing knowledge and evidence from government-led mapping and monitoring of rural water supply services. In a series of four webinars the discussants, facilitators and participants explored the history of Water Point Mapping (WPM), present examples of district and national monitoring systems through a series of case studies, looked back at cases of failure and forward to the latest developments and innovations designed to enable improved mapping and monitoring of water supply services. Technical aspects as well as elements of related policy and practice were shared.

WPM is acknowledged as a useful tool for investment planning and decision making by national governments, development agencies, NGOs and other actors, particularly in under-served rural areas. Though in theory WPM should contribute to greater accountability, transparency and equity in service delivery, and in some cases it does, there are still many challenges in keeping data updated and ensuring it is used properly.

This third webinar in the series explores the latest state-of-play in national level monitoring of rural water supply, with presentations also of country-led monitoring systems. In these systems, information is collected, analysed and used to inform decentralized resource allocation. Case studies of national monitoring models were reviewed to understand the approaches used in embedding the systems and processes required for maintaining accurate and timely rural water supply information. These case studies also demonstrate the impact monitoring has had on extending equitable and sustainable service delivery and provide key learning points.

For each model the following aspects were explored: reasons for monitoring, indicators, updating mechanisms, use of information, costs, fiscal decentralization and presence of joint review processes.

Case studies include the DACAAR in Afghanistan, SIBS in Timor-Leste and SIASAR in Nicaragua and Honduras.



Chair of RWSN
Ton Schouten, IRC

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What is WPM?

Water point mapping is a tool for monitoring water point distribution and functionality used by governments and NGOs to improve service delivery. The process includes data collection and entry, which is often then translated into a visual tool for analysis, generally in the form of a map displaying geographic distribution of water points, their functionality and usage statistics.



How can WPM be sustained?

Case Study:

Afghanistan:

Functionality survey and water sampling

O&M strategy is important for improving functionality and sustainability.



Speaker: **Leendert Vijselaar**,
DACAAR

Why are you monitoring?

The purpose of the study was to determine the functionality situation of water points, and to share the outcome with the MRRD (Ministry of Rural Rehabilitation and Development) and the Afghanistan WASH Cluster and integrate the information with national database. With this the aim was to advocate the development of an O&M strategy to improve water point sustainability.

What data is monitored?

The main objective of the monitoring study was to evaluate the functionality of water points and to perform water quality surveys. The study included the monitoring of 160 groundwater stations and measured the fluctuations in functionality. The study identified that 35% of water points were non-functional due to bad workmanship, community problems in maintaining the well and to raise money for mechanics' payment, use of poor quality materials and poor community mobilization.

Data and indicators used in the study were harmonized through discussions with the Afghanistan WASH cluster and the Water Sector Group. The data was recorded on paper forms then entered into Excel spread sheets. However it is expected that in the future data collection through mobile phone survey will facilitate and accelerate the information flow.

The data collected by DACAAR has then been presented in maps with breakdown by province; however the district level breakdown was not performed due to the high number of districts and limited resources. If needed, maps can be created at district level.

How does the information flow?

The data gathered from the study was presented in a report and shared with rural WASH sector actors. The MRRD appointed two engineers to each province to support the process, and the dataset is then managed by district level officials. The district level data is sent to the MRRD through regional centres and is consolidated in the national database of the MRRD to inform operations and maintenance (O&M) strategy. The data is also made available to the province for community water management support. One of the main issues identified during the study is the limited funding availability for the mechanics (mostly private sector) to perform maintenance work.

Currently, data is not updated regularly, but the MRRD program is in planning stages for this with support from/partnership with the World Bank and other NGOs.

What are the costs?

The costs encountered during the functionality Survey (194 out of 400 districts) were:

- \$6.6 per water point surveyed
- \$58 per water sample for water quality (1 in 7 samples where tested for water quality)

Additional costs include car rental, accommodation, salaries, travel, overhead, data collection system costs, software, training, supervision and data analysis. In the case of the Functionality Survey in Afghanistan, the total cost of the project was €200,000.

As the water sampling and the data collection survey were done simultaneously, some costs were shared, thus the figure of \$58 per water quality sample was achieved. DACAAR also used a mobile lab for sampling in some regional locations, which also contributed to lowering the costs. Out of 30,000 water points visited, 3,400 were sampled for water quality testing, so scale reduction on these analyses further contributed to cost reduction. Without these considerations, the actual cost was estimated at \$80 per sample, not including travel and other facilities rental costs.

What were the challenges with the monitoring program?

The main challenges encountered during the project included:

- Insecurity
- Inaccessibility of some remote water points
- Winter weather conditions limiting access
- Attaining permission from authorities

Lessons learnt?

Specific recommendations resulting from the DACAAR functionality sampling survey include:

- Community mobilization is required
- Replacement systems for non-functional water point could be achieved with input from communities
- Standards as in MRRD Implementation Manuals & SKAT Hand pump specifications need to be followed and integrated in mechanics training
- A requirement to follow-up with community on their O&M over years in the provinces and districts was identified
- Procurement of water point materials should be done according to the set standards
- A certification process of the water points is suggested
- An O&M strategy should be implemented within the Rural Water Supply Policy

Questions for Leendert

Q: What can communities do when there is a breakdown? Can they send an SMS, call someone and arrange for a mechanic?

Yes, community members can phone mechanics directly. Most of the time, mechanics are selected by the community and trained on the job. They are usually known by the community members. They are assigned a few water points to look after and are paid a salary.

Q: Monitoring systems are impressive in terms of scale, but seem to have issues with community level maintenance.

The aim is not just monitoring, but also providing improved services.

Q: How can the sustainability of the systems that are being used be improved? Such as for mobile, ICT4D, network coverage, power issues? These are all aspect that go beyond the WASH sector.

There is good connectivity in large cities and provinces headquarters. There is a current project for improving the connection with telephones in some areas, but this is not being completely successful.

Q: Is information on the organisation who built/funded the water points, collected and included in the dataset?

Yes information on donor, implementer, community, whose village, mechanic and his telephone number are all collected and included in the dataset.

Q: Have you considered the use of mobile phones for data collection?

We did consider telephones for data collection, but the contract was signed late and DACAAR was then in a hurry to get the collection of the data going and therefore limiting the time for the preparations to get the data on the telephone. Paper and entering data in Excel sheets was considered the safe option as requires low capability and so that data could be checked against paper information required. However DACAAR is looking at AKVO FLOW to support data collection process.

Q: Were any dynamic maps developed showing the functionality of the water points?

All the data are in excel sheets with GPS and kml files were produced. The kml files were needed to check if any entering mistakes were made with the GPS data. Such mistakes could be avoided through the use of telephones with GPS readings.

Q: What challenges have you faced in using data from other ministries, institutions and sectors that you need for calculating indicators or generating maps (e.g. geographical shapes for administrative units like districts)?

We did not have to rely on other datasets, DACAAR collected all the data independently. The geographic shapes for the districts are up to date as being prepared by UN organisation. DACAAR did not make district maps but only provinces ones. Due to the large number of districts covered maps were not generated for all districts; however these could be built as per request, i.e. when preparing for new proposals.

Case Study:

Water and sanitation information system for Timor-Leste



Speaker: **Keryn Clark**,
AusAID

‘Whether using SMS or GPS or paper forms, data monitoring is the **key purpose.**’

Keryn Clark, 2014

Why are you monitoring?

SIBS (**Sistema Informasaun Bee no Saneamentu**) is a water and sanitation information system in Timor-Leste and is owned by the national government’s Directorate for Water and Sanitation. It was developed to monitor water services, sanitation and hygiene coverage in rural areas and to provide the government with knowledge to use for planning and service delivery investment. It was designed for a centralized monitoring system but can be adapted for decentralized monitoring (i.e. district level). SIBS monitoring system developed is also supporting the government in moving from the previous infrastructure monitoring approach to a service delivery monitoring (i.e. including monitoring of water committee functionality).

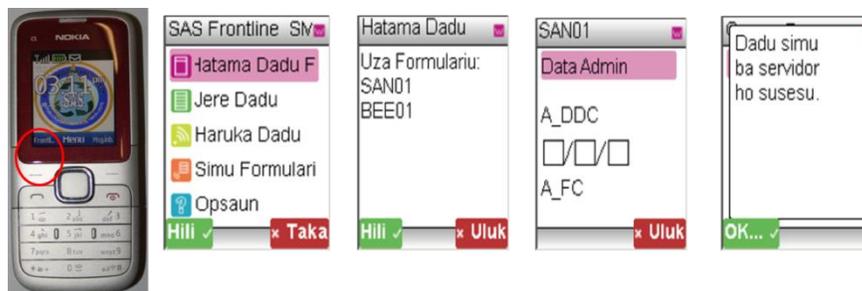
SIBS allows the analysis of key aspects of sustainable service delivery, including quality, quantity and reliability, and it measures water point functionality down to the village level. Sanitation data is collected down to the household level, which is performed by a Community Health Volunteer (PSF), member of the community. The PSF collects the data for the Ministry of Health, and the quality of the data collected is related to the quality of the PSF programme itself, which is some regions works better while in others the system has declined, impacting the data quality too. It was acknowledged that though the system is functional, it needs further improvement.

The monitoring data is used by the government for yearly national budget planning and to allocate capital investment in areas with low infrastructure coverage and also, as the government is moving towards a more service delivery approach, for O&M planning and other aspects of service delivery.

How is data collected?

Data is collected through an ICT based system. A community profile is compiled for all communities, including information on water system assets and the social environment. Key indicators are updated quarterly via SMS and additionally when a new water point is introduced.. The information is collected by government staff (WASH facilitators in community) as part of their regular responsibilities on a sub-district level.

As outside of the capital of Timor-Leste internet access is extremely limited, while mobile service is available across approximately 85% of the country, the system uses a SMS based tool for data collection. Data entry is performed using simple, non-smartphone mobile phones with the open-source program FrontlineSMS. Information on water and sanitation is filled in the embedded forms in the program and then sent whenever coverage is available.



Indicators monitored

SIBS's water related indicators in the below table are indicated in blue and sanitation indicators in green (aligned with national policy indicators); they include common indicators such as time, reliability, functioning, reliability, and quantity, but also look at the number of women in a group and what role they have.

SIBS indicators include:
Number of HH (served & unserved)
Time taken to collect water
Adequate water supply (periods of year low flow rate/low level)
Water system functioning status (fully/partially/not functioning)
Water quality & level of water source protection
System management including WUG - funds collected, repairs undertaken etc
of women in roles of responsibility (leader, technician, treasurer)
Access to improved latrine
Access to unimproved latrine
Access to shared latrine
Access to hand washing (with soap) facility
Open Defecation Free (ODF) status

How is the data analysed and does the information flow?

SIBS data is presented in an Excel spreadsheet using a 'traffic light' colour coding system to identify what key management decisions need to be made and in which location in a way that promotes accountability. The data can also be presented in a visualisation map. This can present aggregated data at district (ermera), ward (suko) and village (aldea) level.

What are the costs?

The system is efficient because the SMS-based data transfer system is cheap and easy to use. The cost breakdown includes:

- Frontline SMS – www.frontlinesms.com which is open source software, so SIBS actually avoids cost here.
- Cost of phones for data collection (for 88 WASH Facilitators) with the server based in Dili (capital)
- SMS – one form each for Water and Sanitation (thus 2 SMS at 0.8c per village for 2,225 villages)
- Cost of visiting each community (in Timor Leste this is process is part of the ongoing role of the WASH Facilitator)
- Cost to maintain the Information Management System support: establish database, SMS system and for ongoing systems support
- Costs for equipment to access maps and data
- Costs for bringing key people together to analyse and respond to data
- Costs associated with data validation (5%) to ensure accuracy
- Costs of government facilitators employed with a role to support community based water committees, community engagement for new systems and collect SIBS data

What are the challenges encountered?

A number of challenges with running and maintaining the monitoring systems were identified:

- Management and resourcing of sub-national staff for the collection of data
- Organizational Processes: monitoring linked to WASH management processes and demand for information.
- Ownership of information: recognition of data by other Government agencies
- The quality of sanitation data which can be poor, and is dependent on presence and data collection from health volunteers and community leaders.
- Internet and IT challenges in the districts, determining difficulties for sub-national offices to access information on-line
- As SIBS provides information only at village level, a requirement to link SIBS to an asset management system for each water system was recognized as essential for the management of O&M procedures. This is currently being developed and includes an integration of water point monitoring within the village monitoring database.

Questions for Keryn

Q: What method is used to discern water quality? Aesthetic qualities or quantitative measurement of inorganic and microbial parameters?

The method uses perception, aesthetic qualities and turbidity. But the government has just passed a national government policy that requires water testing. This will require some extensive training to the data collectors for water quality testing.

Q: How are SMSs sent by data collectors paid for?

In advance - government has an agreement with the telephone company to pay in advance the credit required. SMS system for data transfer is quite cheap. One of the challenges is that people can use the same credit to make personal phone calls and so can go through the credit quickly.

Q: What is the limitation of not having a water point monitoring system in place?

The reason that the monitoring system was not including the water point level monitoring was to keep complexity down. A big driver was around monitoring coverage - looking at water point doesn't look at areas that don't have any. However to inform O&M planning, having a water point level monitoring is essential. For this reason, specific WP mapping is now going to be integrated within the SIBS monitoring system.

Q: Monitoring systems are impressive in terms of scale, but seem to have issues with community level maintenance.

SIBS system is a tool to provide information and to understand where systems aren't functioning. This helps communities manage their systems, it also support linking the information and the planning between community, government and private sector.

Q: How can we improve the sustainability of the systems that are being used? Such as mobile, ICT4D, network coverage, power issues? All aspect that go beyond the WASH sector

The use of FrontlineSMS system allows for data forms to be stored in the phones, these don't need to have coverage to store the data, and can then send it when coverage is available.

The main issue is mostly on returning the data to district and sub-district level and the low IT skills which limit the use of the excel file (therefore issues are more associated with the use of data and therefore ownership of the system)

Q: Is information on the organisation who built/funded the system listed in the monitoring system? Is that information available?

At the moment, SIBS monitoring system does not include the funding source but plan to do so in the future (with the integration of WPM).

Q: How do you design the sample of households in each community?

The unit of measure differs between water and sanitation. For water, the data is collected at "aldeia" level which is the smallest village unit. This corresponds with the national government census and registration numbers given to each community. The decision to measure by community rather than water system or water point is that a key objective was to measure coverage and access as well as functionality. Thus it covers communities that don't have access to an improved water source, and also measures communities that have a distance to collect improved water. With the transition from an infrastructure to a service delivery approach, the government, along with BESIK support, is now starting to trial and assess the management system (measuring at water point level) which is then also linked to the aldeia code.

For sanitation, data is also summarised to the aldeia level, however the community health promoter (which is an MoH supported volunteer) collects key data on sanitation and hygiene from each HH and summarises it on a form they have – this process is part of their existing job and is not specific to SIBS (i.e. their role was to do this prior to SIBS starting). There are some difficulties with the quality of this information, particularly if the health volunteer is not operational.

Q: Are there any trust issues between the ministries and if so how are these managed?

It's probably less an issue of trust but rather more of recognition that the data exists, and of assurance of the quality of the data. There are a number of different MIS processes among Ministries and there is work being undertaken to link MIS systems for Health to the SIBS, and also linking to the Ministry of Education MIS, in terms of understanding where schools are and if the water system in that community is functional.

There is also the decentralised community development program which is growing in size and linking SIBS with them is recognized. The way this linking process is managed includes aiming to have open communication about SIBS by demonstrating how it works, and then from the Directorate of Water & Sanitation doing checks to maximise the quality of the data.

Q: What challenges have you faced in using data from other ministries, institutions and sectors that you need for calculating indicators or generating maps (e.g. geographical shapes for administrative units like districts)?

The sanitation data is in effect from the Ministry of Health - however it is collected at the level of the data collection point - i.e. the volunteer collecting the information provides it to the WASH facilitator who completes the SIBS form on his/her phone. The geographic shapes are those set by the Department of Statistics in the Ministry of Finance, thus any study that uses these codes can also use the WASH data - e.g. for nutrition programs.

Case Study: SIASAR: Honduras and Nicaragua



Speakers: **Javier Rivera Garay** and **Eric Estrada Gómez**,
Rural Development Division SANAA – Honduras;
Nuevo FISE – Nicaragua

As **little**
information as
needed, but
not less.

Why are you monitoring?

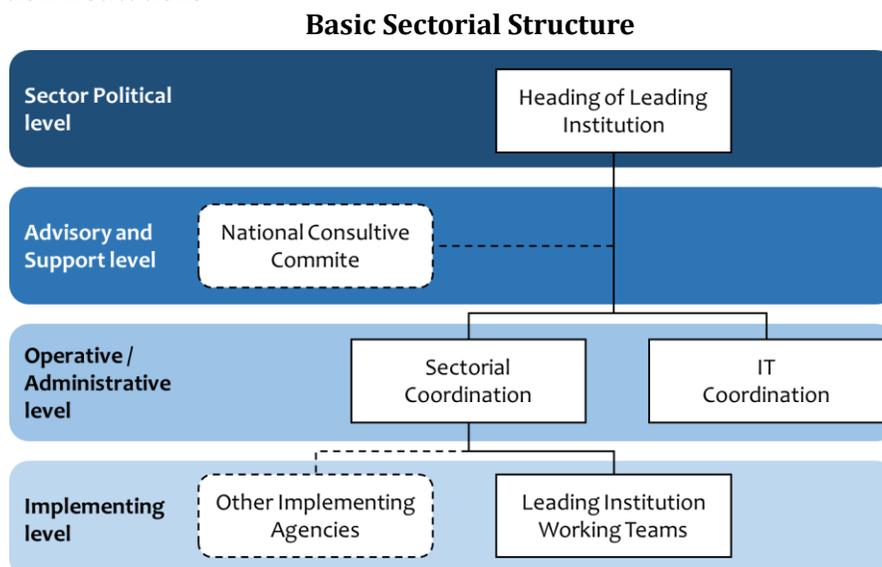
SIASAR, the Rural Water and Sanitation Information System, is a regional initiative led by its member countries in Central America and the Caribbean, each of which has adopted institutions that cover the main functions of the system. The members include countries Panama, Nicaragua, Honduras, and the Dominican Republic, as well as the state of Oaxaca in Mexico, in each country an institution is responsible for the functionality and management of the monitoring system. The purpose of SIASAR is to monitor and improve rural water services and ensure their sustainability, in particular in rural areas where low coverage, low self-sustainability of systems, and limited information on the status of services was observed.

SIASAR provides basic information and indicators about rural systems, which include small, scattered, isolated, poor and little known communities. The system is intended to inform the government and private, academic or other institutions at local, regional and national levels and enable them to plan and take appropriate measures for addressing inequities affecting rural areas and to improve the sustainability of existing services. Its intent is to provide information not only for coverage levels but also for sustainability, availability, priorities, intervention, multiple actors and functionality among other indicators.

The aim of SIASAR is to become a universal tool for rural water and sanitation monitoring, planning and decision making. One of its key principles however is simplicity, as it aims to produce only the minimum information required for adequate decision making and to keep processes simple to use and easy to understand.

How is the system structured?

SIASAR is owned and led by the Assembly of Members; each member nominates a leading institution to involve local actors in the implementation of the system. The system is framed under FOCARD, a regional dialog platform for water and sanitation institutions.



Each member organises its own internal structure for implementing the system around basic set principles. One of these principles is the establishment of a National Consultation Committee, which allows all actors in the water and sanitation sector to advise the leading institution and influence the nature and implementation of the monitoring system, thereby allowing these actors to take an active role in the process based on their respective abilities, e.g. data collection or data validation.

The leading institution within each member country then relays relevant recommendations to the multinational governing body, the Assembly of Members of SIASAR, in order to drive a continuous improvement process.

What data is monitored?

SIASAR monitors four different types of entities: communities, systems and service providers, which correspond to each rural water and sanitation system, and the technical assistance providers, which are the government or private agencies responsible for supporting the management of rural systems.



This differentiation allows SIASAR to monitor each system separately and allows to identify the source of problem and the optimal solution to address these (i.e. training, improve organization etc.). There is a standard form for each of the four entities to collect relevant data, present the data and grade the entity's performance.

In 2011, representatives from the three originating country members and the World Bank outlined the principles, goals and responsibilities for developing the SIASAR monitoring tool. This framework was extended to other actors and is still maintained, and multinational teams are in constant coordination for any improvements in the process.

The data provided by SIASAR is instrumental in decision making for improving and maintaining water and sanitation services in each of its member countries. It feeds into national and local municipal investment and intervention strategies.

How does the information flow? Is the data updated regularly?

The SIASAR cycle includes the collection, validation and publication of data, which are then used to plan and implement interventions.

Basic data is collected and uploaded directly from the field to a web server using Android system tablets or smart phones. The data collector involves the community and people in charge and makes several measurements and judgments to complete the forms. Villages without access to the internet can record information on the system forms and upload-it at headquarters or where there is connectivity.

The data is then validated, processed and made automatically and freely available via the web to any government or private agency interested for planning on www.siasar.org to ensure ease of access and transparency. Data is updated once a year at minimum.

Data is used by a number of different users and for different scopes, from national and municipal government investment planning, NGO for the evaluation of the projects' impact and for research by Universities.

What are the costs?

Based on the pilot experience in Honduras monitoring 116 systems the following cost table provides the breakdown of costs per different activities.

Systems monitored	116
Population of systems monitored	88,318
Cost Per System (US\$)	205.60
Cost Per Capita (US\$)	0.27

Item	Costs (US\$)						
	Per Diem	Transport	Salaries	Equipment	Administration	Communication	Total
Institutional set up				4,221.11			4,221.11
Preparation	296.14	61.82	770.66		198.99		1,327.62
Preparation supervision			301.51				301.51
Capture and uploading	5,468.76	1,153.35	4,930.09			302.11	11,854.31
Validation, processing and publication			1,744.66				1,744.66
Analysis and interpretation	926.16	159.89	1,528.20				2,614.26
Analysis supervision			802.01				802.01
Systematization	84.42	85.43	814.07				983.92
Total	6,775.49	1,460.49	10,891.19	4,221.11	198.99	302.11	23,849.38

The resulting average a per capita cost was **US\$ 0.275** related to the population served by the monitored systems.

What are the challenges?

Challenges encountered included mainstreaming the use of SIASAR and coordinating between national agendas and priorities, as well as maintaining consistency and managing institutional changes. Collecting and updating data also presents a continual challenge, as does continuing IT improvements to the system.

As SIASAR is a multi-national initiative, sometimes some initial trust issues for governments were raised. However, because SIASAR has been developed according to the regional context, country members support its regulations and framework. At the local level, trust is nurtured by granting local governments the authority over data collection and processing.

Lessons learnt?

It was expressed that SIASAR views its principle of simplicity (monitoring and collect data only for the minimum information necessary, no more, no less) as valuable and key to its current success. SIASAR also benefits from strong coordination and cooperation among its member countries. This coordination requires dedicated time, effort and ongoing communication, and is an adaptable and flexible institutionalised system and results in harmonized data and analysis processes across countries.

Questions for Javier and Eric

Q: Were there any objections to publishing data online immediately after collecting? Any issues of ownership, privacy, trust?

The system and database is completely open. There are no outstanding objections or particular issues, but as in any initiative involving governments, there's an initial trust issue. But SIASAR has been framed in a regional dialogue, so the organisation and data sharing is already supported by those countries. Local governments are in charge of collecting and processing data, and this local level involvement reduces the trust issues.

Q: How do people receive information at local level?

Anyone who has access to internet can view the information there. Currently there is a focus on the municipal level to try to reinforce the use of the system by training the local officials to access the information and make use of the indicators. The local level use of data would be the next step, following the completion of training on data use at municipal level.

Q: Monitoring systems are impressive in terms of scale, but seem to have issues with community level maintenance?

The system is only a tool – it provides information that can be used and interpreted according to needs. Actual activities have to be implemented by the community affected.

Q: How can the sustainability of the systems that are being used improved? Such as mobile, ICT4D, network coverage, power issues? All aspect that go beyond the WASH sector

The web component is simple. Collection of information is based on an Android system. Forms are recorded, and villages without internet access can upload the information from headquarters. The limitations due to low coverage are small.

Q: Is information on the organisations who build/fund the system collected and listed in the system? Is that information available?

Yes, in data collection the system builder is registered and included in the report.

Q: How would other Central American and Caribbean countries join SIASAR? Is there a minimum amount of data they must share in order to do so?

SIASAR is completely open to new associates (countries or autonomous regions). If interested, the representative institution must address solicitude to the President of FOCARD, (Foro Centroamericano y República Dominicana de Agua Potable y Saneamiento). At this moment the platform is available in Spanish only but in there is already a SIASAR II multilanguage version on the drawing board.

There is no minimum amount of data to share; the system is intended for national internal uses and eventually, to make comparative analysis.

Q: What challenges have you faced in using data from other ministries, institutions and sectors that you need for calculating indicators or generating maps (e.g. geographical shapes for administrative units like districts)?

All data needed are collected directly on the field. Other ministries or institutions can assume an active role in collecting or validating this information, following a pre-accorded protocol. The challenge is indeed, to involve as many institutions as possible, public or private.

As for special needs, the interested party has to accommodate the information to control spaces other than municipalities.

Community:

<https://dgroups.org/rwsn/mapping/join>

Presentations & Recordings:

<http://www.rural-water-supply.net/en/resources/details/615>

Full webinar series on rainwater harvesting, groundwater research and water point mapping (RAIN - UPGro - WaterAid - IRC - RWSN)

<http://www.rural-water-supply.net/en/projekts/details/79>

