



In this 2018 annual overview, we present the positive impact we make on the lives of people who lack reliable access to safe drinking water or decent sanitation facilities. These water and sanitation services come at a cost. We develop models that foresee in recovering the costs and so making these services truly sustainable. The continued availability of affordable services is also our starting point when promoting solar-based irrigation solutions; smallholder farmers are facilitated to invest in 'green' technologies to move from subsistence farming to small scale commercial production.

Since PRACTICA was established in 2001, innovation has been the foundation through which we want to achieve of our mission. Continued R&D enables us to offer new concepts, technologies and approaches. We rely on a large network of partner organisations to jointly execute the projects that bring the innovation to the field and gather user feedback to further improve the product and services. A unique approach that we proudly promote.

Robert Vuik, Director Operations
Jan Nederstigt, General Director

AT A GLANCE



Farmer with
SF2 solar pump
in Madagascar

Our vision is that the private sector in fragile and upcoming economies, will play an increasingly important role in providing and accelerating access to clean drinking water, safe sanitation facilities and sustainable solar powered irrigation technologies. We work on knowledge transfer and dissemination of existing low cost technologies to enable this private sector to provide relevant sustainable services and products.

When we see a mismatch between available technologies and market needs, we work on new product development. With this approach, we contribute to reaching the UN Sustainable Development Goals, as set out in the 2030 Agenda for Sustainable Development.

On an operational level, PRACTICA acts as a non-profit consultancy organization: We work with international and local public and private organizations to implement technical innovations in their programs. We charge a consultancy fee for those services, based on a cost-recovery basis. We invest in applied research and product development to ensure continued innovation in the sector.

"For me, 2018 is a year marked by participation in various development projects implemented in West African countries, such as Senegal, Burkina Faso and Togo. The missions I carried out for PRACTICA were mainly in training, technical support and implementation of solar irrigation solutions adapted to small farms.

In Senegal, in partnership with the farmers association AUMN, as part of the pilot program 'Solar pumping solutions for irrigation at intermediate depths in the Niayes'. I was responsible for the identification and selection of sites and stakeholders for our pilot; the implementation of capturing, dewatering, storage and the application of water technologies to the plot; and data collection and monitoring of technology adoption by smallholders.

In Burkina Faso, for the D4C project, I was acting as technical assistant in the selection of demo fields; setting up a data collection system and monitoring of the demo fields; and in technical capacity building of project stakeholders on data collection and data capturing tools.

In Togo, with the SISAM project my role was training partners on the implementation of low-cost cement storage mini-basins; on optimal installation and operation of SF2 solar pumps; and on providing field demonstration sessions of recommended application techniques for the SF2."



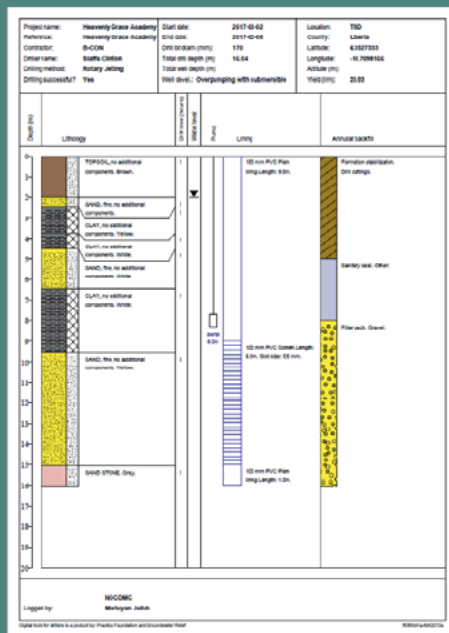
Youssouf Diallo
Water and irrigation expert
PRACTICA foundation

GROUNDWATER DEVELOPMENT

Digital tools for drilling

In many countries, groundwater data is often not available or scattered in various locations, often only in paper format. For new water points there are no simple solutions to capture, store and share geo-hydrological data and therefore this information is not collected or gets lost over time. As a result, decision makers do not have sufficient information to plan and manage groundwater resources effectively.

In 2018, PRACTICA has set a significant next step to support the sector in addressing these issues by developing a toolkit called the **digital tools for drilling**. A set of mobile apps is developed in-house to support drillers, governments, WASH experts and (humanitarian) organizations to start collecting, storing and utilizing data digitally in a simple way. Siting data and well construction data can now be captured, interpreted and visualized in professional PDF reports for the users, while the data is stored digitally for the whole sector to use.



The Volterra 3



Finding the best location for a borehole – well siting – is critical for the users, but also for the drillers; drilling at the wrong location results in dry or failed boreholes. Especially for small local drilling companies, the financial risks are big and a serious threat for the business.

Siting is key in this regards, but the traditional equipment is expensive and complicated to use. For these reasons, we developed a low cost, light weight 1-D siting tool called the **Volterra**. The device uses a Bluetooth connection with a smartphone for the user interface. Other hardware like the battery and the wiring can easily be sourced locally, making the device easy to carry overseas. Trained field staff can carry out the measurement and the software assists in the interpretation of the results.

In the same fashion, we plan to develop tools for well yield testing and water quality data capture, so we can jointly continue professionalizing groundwater programs with implementers and policy makers.

FARMER-LED IRRIGATION

Putting farmers at the core of solar irrigation development

Technology development implies moving from the field to test labs, to manufacturers and back to the field. In 2018 the field has been our main arena and farmers have been our most important interlocutors. Our action research focused on the development, piloting and evaluation of a range of irrigation solutions with farmers and local partners.

In the Niayes area in Senegal, groundwater for irrigation is increasingly inaccessible as conventional motor pumps cannot pump water beyond 8m depth. Affordable intermediate depth pumps could allow over eleven thousand small-scale farmers to tap from this renewable resource and become less prone to the effects of climate change. In a pilot project funded by the World Bank in Senegal, four different solar irrigation pumps have been tested by farmers to identify optimal solar solutions (water access, pumping and water application), including the durable commercial chains for the most appreciated packages.

In 2018 we have supported local entrepreneurs and partners in the installation of 112 solar pumps for farmers led irrigation in Burkina Faso, Niger, Togo, Benin, Senegal, Madagascar and Mozambique. This support included a range of application systems including basins, hose-pipes, different spray tube set-ups, mini pivots and drip. In Mozambique applied research with the local university and farmers has led to the development of four irrigation packages for sand rivers requiring an investment of less than €1.000 for a borehole, pump, application system and agricultural inputs. Our approach puts the farmer at the centre of the construction of the solution, emphasizing the needs and the behaviours.



SF2 pump in Madagascar

RURAL WATER SUPPLY



Drinkwater supply in Liberia

The concept of 'Modular micro grids' is based on the view that smart engineering can make the –much overlooked - difference in the financial sustainability of a water point. Design decision have a significant impact on the capital and operational expenditure. Also – with prepayment technology on the market – generating a revenue to maintain the system is now a design decision too.

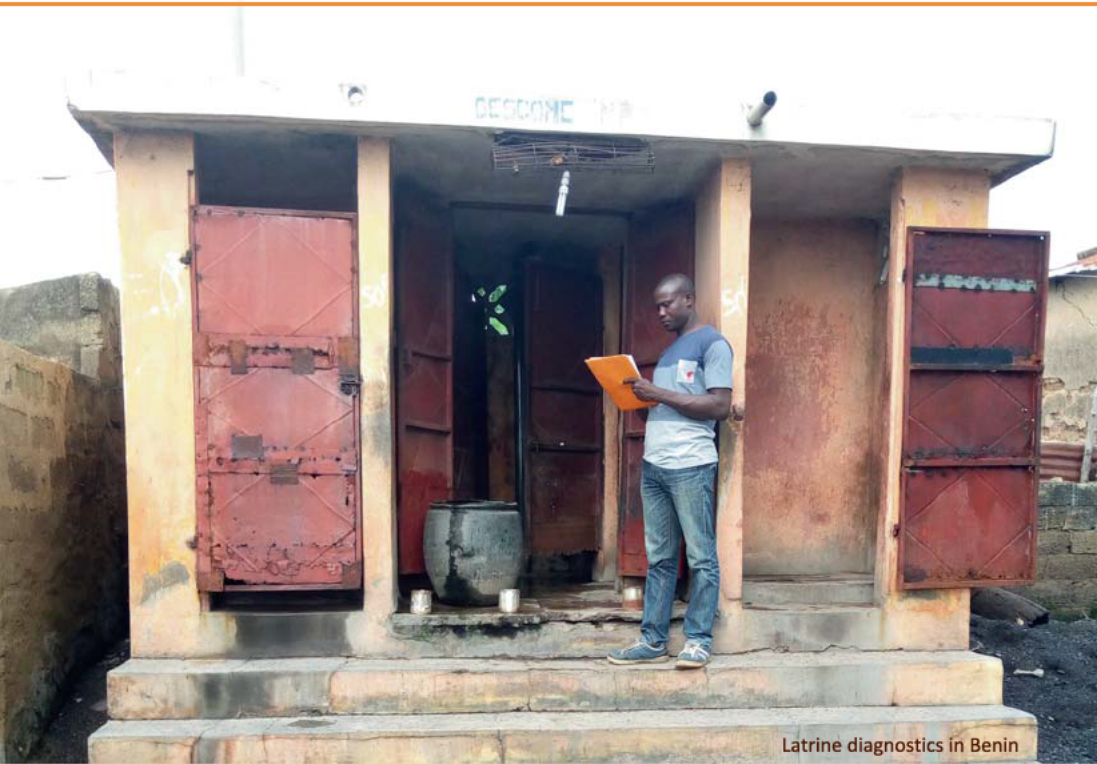
We keep the operational and capital cost low by building the piped water systems up to 6-8 times smaller than the conventional piped systems used in sub-Sahara Africa. The modular micro grids are designed based on the direct water need of the population rather than building the system based on future population growth projections. Yet, they are futureproof by creating the ability to expand these water points into a full grown water distribution network when water demand increases. Moreover – we size the system for realistic water consumption per capita based on field experience rather than a theoretical approach. Standardisation of systems avoids high engineering costs and makes replacement of parts

easier. Solar power avoids the repeating burden of fuel cost. Using prepayment technology ensures that customers pay for the water provision and that the functioning of the system can be monitored remotely. All means to an end – the end result strives for a viable business case in the sector of safe water provision in the rural context. 2018 was the year that the theory was put into reality – and we love it when a plan comes together!



People buying drinking water
in Monrovia, Liberia

SANITATION; FAECAL SLUDGE MANAGEMENT



In 2018, Practica shared its experience in the field of Sanitation & Faecal Sludge Management (FSM) within various large-scale projects carried in African cities:

In **Lusaka (Zambia)**, we provided technical assistance to the WSUP advisory / ECA / Agua Consult group in order to design new FSM businesses to be deployed by Lusaka Water and Sewerage Company over the entire city. Mechanical desludging units, based on slurry tankers and HP-cleaners, have been especially designed to cover needs of low-income neighborhoods.

In **Parakou (Benin)**, we assist the Municipality in the implementation of its sanitation masterplan 2015-2035. First actions consisted of the design & building of innovative public toilets, and the development of an entrenchment site to pilot low cost FSM while reusing nutrients from sludge for agro-forestry.

In **Fianarantsoa (Madagascar)**, the PRACTICA / SIA conseil group implements the 3F Project, a 3-year project supporting the Municipality of Fianarantsoa in setting a full FSM-chain. 3F includes the construction of a new generation of public toilets, as well as establishing sustainable FSM services for 40,000 inhabitants within a mountain town. Both slow pyrolysis and co-composting reuse options will be piloted within this project.

A growing number of municipalities contact PRACTICA to benefit from the package of solutions we offer at each step of FSM chains development. Having supported the development of several emptying businesses in Africa (Madagascar, Mali, Benin), our knowledge of these businesses enables us to design and set-up sustainable FSM services and PPPs (Public-Private Partnerships).

2018 BY THE NUMBERS

EUR 2018 2017

Revenues	1 166 989	1 059 997
Project costs	<u>-623 321</u>	<u>-550 391</u>
	543 668	509 606

Personnel costs	415 018	423 654
Depreciation	7 815	7 083

Other operational expenses	<u>136 440</u>	<u>102 632</u>
Total expenses	559 273	533 369

Operating result	-15 605	-23 763
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Finance result	<u>-450</u>	<u>-8 390</u>
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Deficit for the year	-16 055	-32 153
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The deficit for the year is added to the following reserves:

Continuity reserve	0	23 742
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Other reserves	<u>-16 055</u>	<u>-55 895</u>
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	-16 055	-32 153
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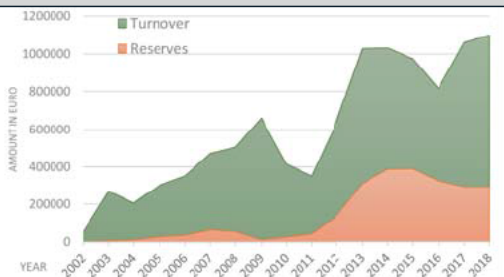
Annual financial report

We trigger socio-economic change and sustainable services by developing and disseminating technologies and concepts including successful business models. We do this within a wide range of projects. On an operational level, PRACTICA acts as a non-profit consultancy organization: We partner with international and local organizations and support those organizations to implement technical innovations within their programmes. We charge a consultancy fee for those services based on an organizational cost-recovery basis.

In case the activities result in revenues, these are being used for applied research and product development to ensure continued innovation in the sector. In 2018 we have been able to continue to invest in the development of concepts and products, using our reserves.

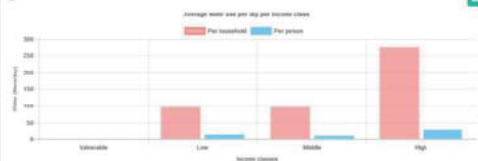
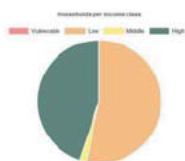
Our reserves:

Our continuity reserve is increased annually to cover a total of up to 50% of the annual operational costs. The restricted reserves are used for cross-subsidizing projects, concept development and investments in workshop and office facilities in Madagascar and the Netherlands.



The power of numbers and figures; our Social Dashboard

When equipping a water collection point with electronic pre-payment technology, you can easily monitor the water sales. We go a step further and combine data on water consumption patterns with social data of the population that is using the water. This can include information on family income, family composition and distance to the water point, all linked to the digital water wallet. The social impact can now be monitored – providing valuable insight in the social embedding of the system, reducing cost for evaluation and monitoring programs and guiding remedial actions when problems are observed. We started piloting the Social Dashboard on a new water point in Monrovia, Liberia.



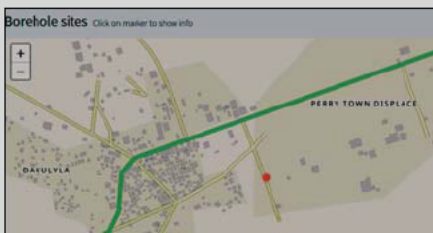
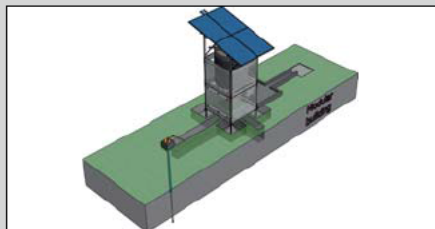
LOOKING AHEAD

2019 strategic focus

We continue balancing between working on market uptake of proven concepts and R&D to improve the status quo. Within the four themes of PRACTICA, our focus for 2019 is as follows:

Affordability and functionality in rural water supply

We will prioritize the introduction of modular piped systems in a pilot setting. In this way, we aim to collect evidence that proves rural water supply can work with a business model. From there, we will start working on scaling. We will develop monitoring tools that will provide essential management information to the rural entrepreneur.



Groundwater development

We will continue to improve the 'digital tools for drillers'; a set of tools that enables small enterprises to drill water wells more effectively and governments and NGO's to store, share and monitor critical geo-hydrological data.

Urban and peri-urban faecal sludge management chains

The knowledge and experience gained in establishing viable small FSM businesses will be used in our new project in Fianarantsoa, Madagascar. Documenting our learnings in this program will help others to copy our innovative approach and work towards the financial sustainability of faecal sludge management.



Innovative smallholder irrigation packages

With more high quality solar pumps entering the market, our focus will shift to tailoring water application methods to be used in combination with solar powered pumps. Objective testing of existing application methods and development of additional methods such as smartphone apps, will feed the market with the right information and technology. This will help to improve the efficient use of water and help farmers make cost-effective investments.