PAUL – Introduction, function & feedback

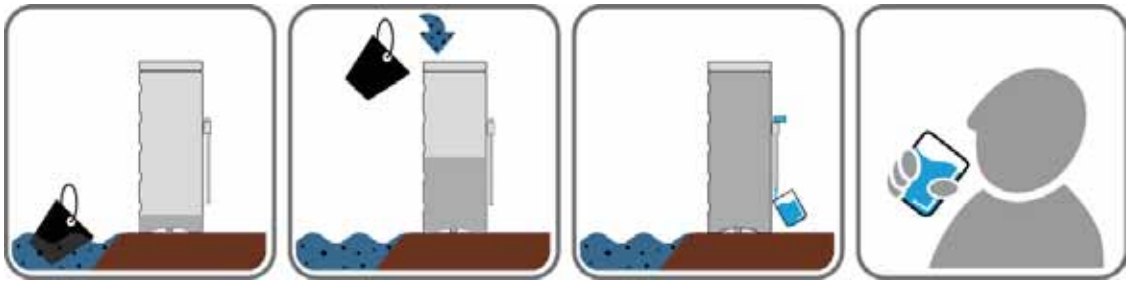
as of 26.06.2016

PAUL – a short introduction

The WaterBackpack „**PAUL**“, developed by the Department of Sanitary and Environmental Engineering of the University of Kassel, provides safe water from unsafe raw water sources by removing bacteria, pathogens, viruses etc. **PAUL** is used for **decentralised water supply** in rural areas, small **villages, schools, hospitals** etc. as well as in emergencies and disasters. **PAUL** is a unique new tool in decentralised water supply with the following main features:

- ✓ **PAUL** delivers **1,200 Liter water per day** (up to 6,000 L/d depending on circumstances)
- ✓ excellent water quality: bacteria and viruses are removed by 99.99% (avg.) up to 99.99999%; certified by UBA, Federal Environmental Agency, Germany
- ✓ no **energy**
- ✓ no **chemicals**
- ✓ no skilled personnel needed
- ✓ operation manual comprises of four pictograms, thus **PAUL** can be used even by illiterates,
- ✓ absolutely robust, no moving parts, lifetime 10+ years
- ✓ no maintenance in emergencies & disasters, minimum maintenance in permanent use over many year
- ✓ portable by one person on the back

The complete “operation manual” is seen here:



PAUL serves 2 tasks:

- ➲ **PAUL** is a **new & perfect tool** in **emergencies and disasters** (that’s what he originally was developed for), see the WHO guidelines on drinking water quality (2011), chapter 6.7 and the Sphere-Standards (2011), chapter 3, standard 1
- ➲ **PAUL**, due to its **long 10-year-lifetime**, is a quick, cheap and easy solution for **decentralised water supply** in rural areas, small **villages, schools, hospitals** etc. on a **permanent use basis**.

PAUL consist of a pre-sieve and an **U**ltra **L**ow **P**ressure **U**ltra**F**iltration (**ULPUF**) with an organic PES membrane, weighs 21 kg and measures 40 by 40 by 106 cm, thus six or twelve units fit on

one Euro-Palette. Although lightweight, **PAUL** delivers more than 1,200 Litre of potable water (1.2 tons) per day, which is sufficient for 400 people to survive in an emergency, and fulfils the WHO drinking water demand of 60+ people in decentralised permanent supply situations.

PAUL as well as the overfilling prevention valve (**OPV**), allowing fully automated operation, which is described below, are wholly manufactured in the Kassel **handicapped workshop** employing 300+ handicapped people.

So far, more than **2,100 PAUL** are in use in 60+ countries from Afghanistan to Zimbabwe – this means water for **800,000 people in disaster conditions**, and **more than 2 million liter of water per day**.

250 PAUL are in **NEPAL** – disaster relief and water for **90,000+ people**!

The logos of some organisations that brought **PAUL** into use are shown below.

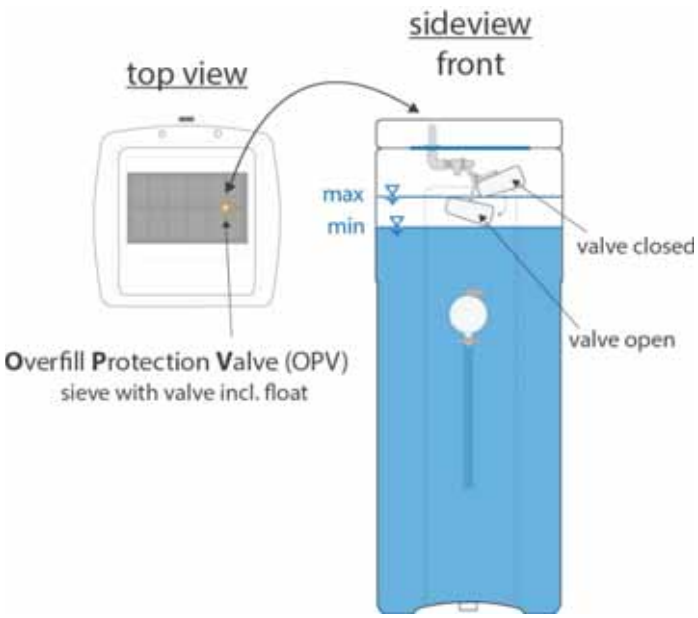
To our best knowledge, all units that were distributed so far by aid organizations remained in place. This means that **PAUL**s that were brought into an emergency situation, still serve as a **permanent water supply system**.

Today, even more units are brought into service intentionally for **permanent use** rather than in actual disaster situations – thus, see the next pages!

Make sure to see the last page for
distribution of **PAUL** and links to videos etc.

PAUL – automated operation with the **O**verfilling **P**revention **V**alve **OPV** and the freshwater tank **S**imple **V**alve **SV**

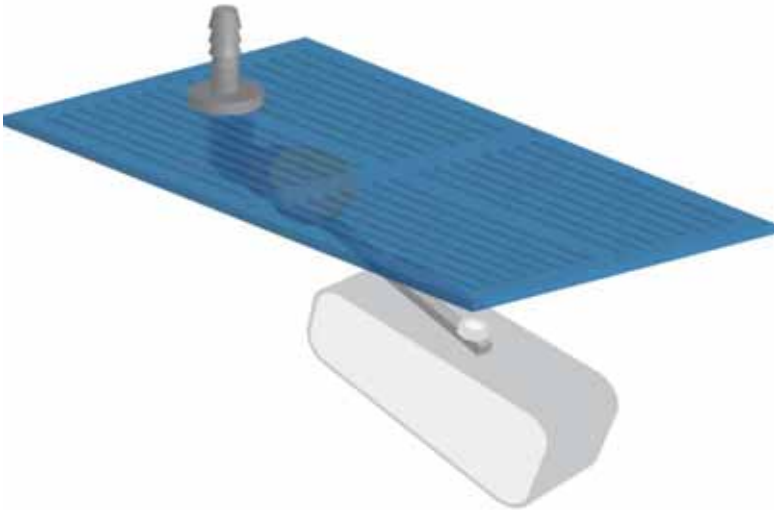
Usually, **PAUL** is filled with a bucket. In many locations, however, raw water comes from a reservoir or raw water tank and can be fed into **PAUL** by gravity. In order to prevent **PAUL** from overfilling, a simple valve unit is available that avoids overfilling, as can be seen from the left figure.



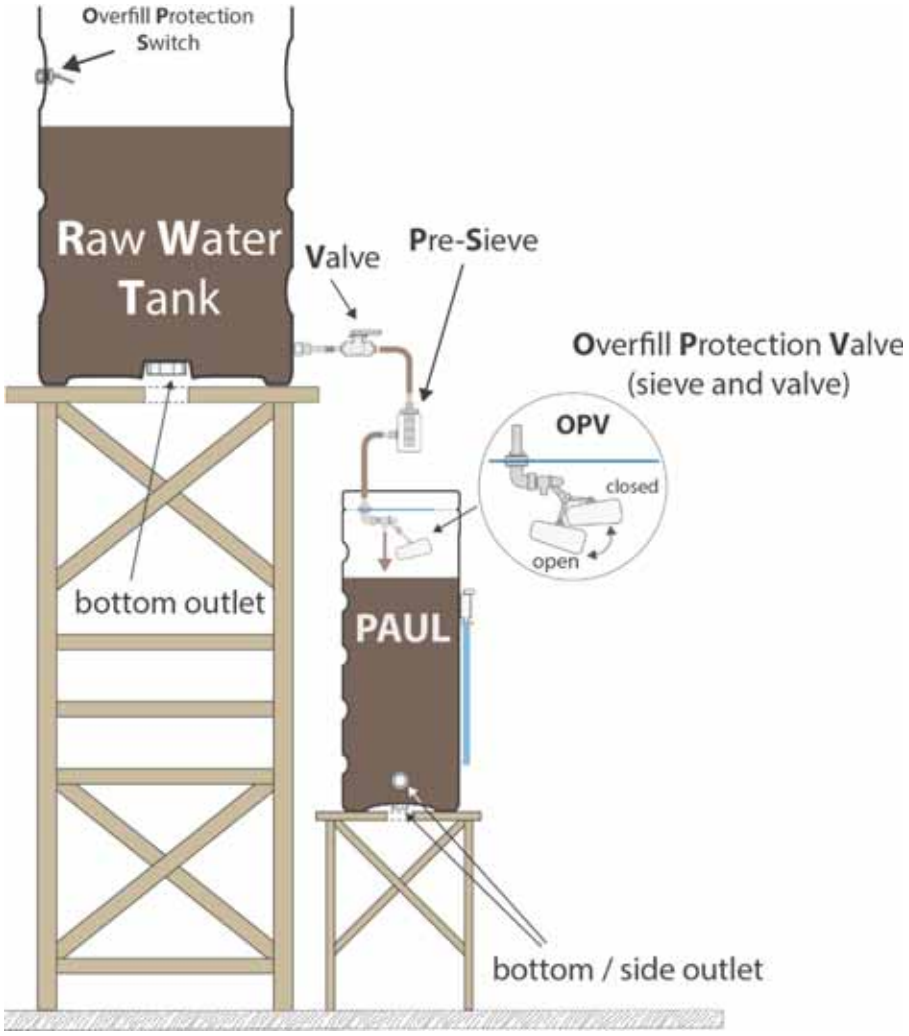
The sieve that is usually found on top of **PAUL** now holds a valve with a float. On top, there is a connector where a hose of ½" diameter can be connected. Once **PAUL** is filled up, the valve closes automatically, preventing **PAUL** from being overfilled. During filtration, the valve opens again, so continuous unattended filtration is possible.

The **overfilling prevention valve** (**OPV**) itself is shown in the figure below.

The sieve holds the valve with the float, and over the sieve there is a tile that covers the sieve. The tile closes the sieve but can also easily be removed, so you can use **PAUL** in both ways – connected to a raw water tank via the hose, or just fill it with a bucket through the sieve. This make filtration more flexible, easier and allows unattended automatic operation.



The figure on the next page shows a possible arrangement with a raw water tank and a **PAUL** unit with **OPV**. This arrangement allows a fully automated **PAUL** refilling process: every time water is withdrawn from **PAUL**, **PAUL** is refilled automatically (as long as water is in the raw water storage tank) without being overfilled.

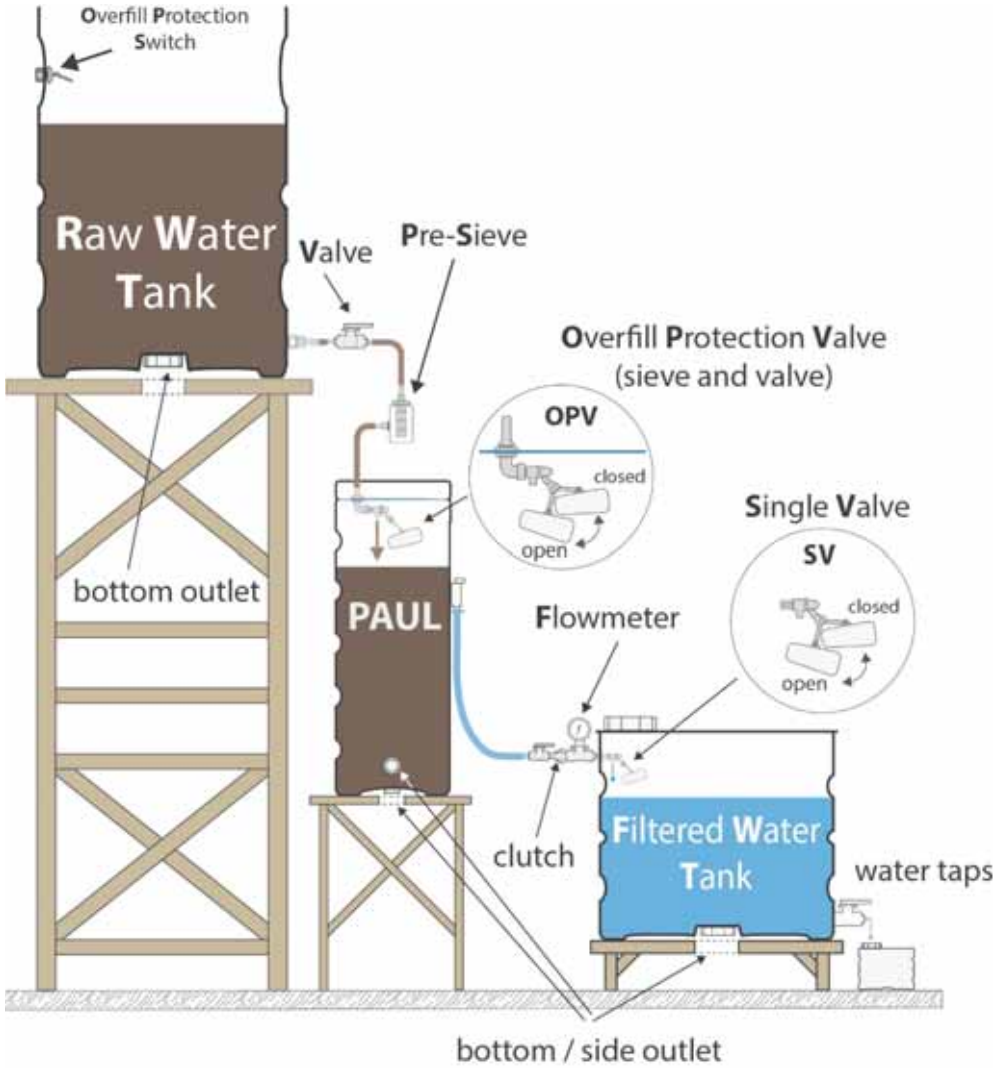


The figure on the next page shows a possible arrangement with a raw water tank and a **PAUL** unit with **OPV**, and in addition to the **OPV** installed in **PAUL**, another "**Simple Valve SV**" is installed in the filtered water storage tank. This arrangement allows a fully automated filtration process: every time water is withdrawn from the filtered water tank, the **SV** installed here opens the connection to the outlet of **PAUL** – and **PAUL** starts filtering automatically (as long as water is in the raw water storage tank) without being overfilled.

By installing a filtered water storage tank and connecting the outlet of **PAUL** to this tank via a simple valve **SV**, you make the most usage of **PAUL**'s capabilities. The reason is that the filtered water storage tank enables the whole arrangement to

- **filter continuously over 24 hours, night and day,** and at the same time to
- **tap the whole daily amount** (1,200 Liter) in a **very short time**,

which is essential in many situations like **schools, hospitals** etc. Using this combination of an **OPV** and a **SV** results in a perfect, comfortable and fully automated "no electricity" system with maximum benefit for all users.
This configuration is already in operation in several locations, see the photographs below.


Overfill Protection Switch
Raw Water Tank
Valve
Pre-Sieve
Overfill Protection Valve (sieve and valve)
OPV
closed
open
Single Valve
SV
closed
open
bottom outlet
PAUL
Flowmeter
clutch
Filtered Water Tank
water taps
bottom / side outlet


Ghana (Tamale/Kulaa) © 2015 Eugen Muller/Zürich

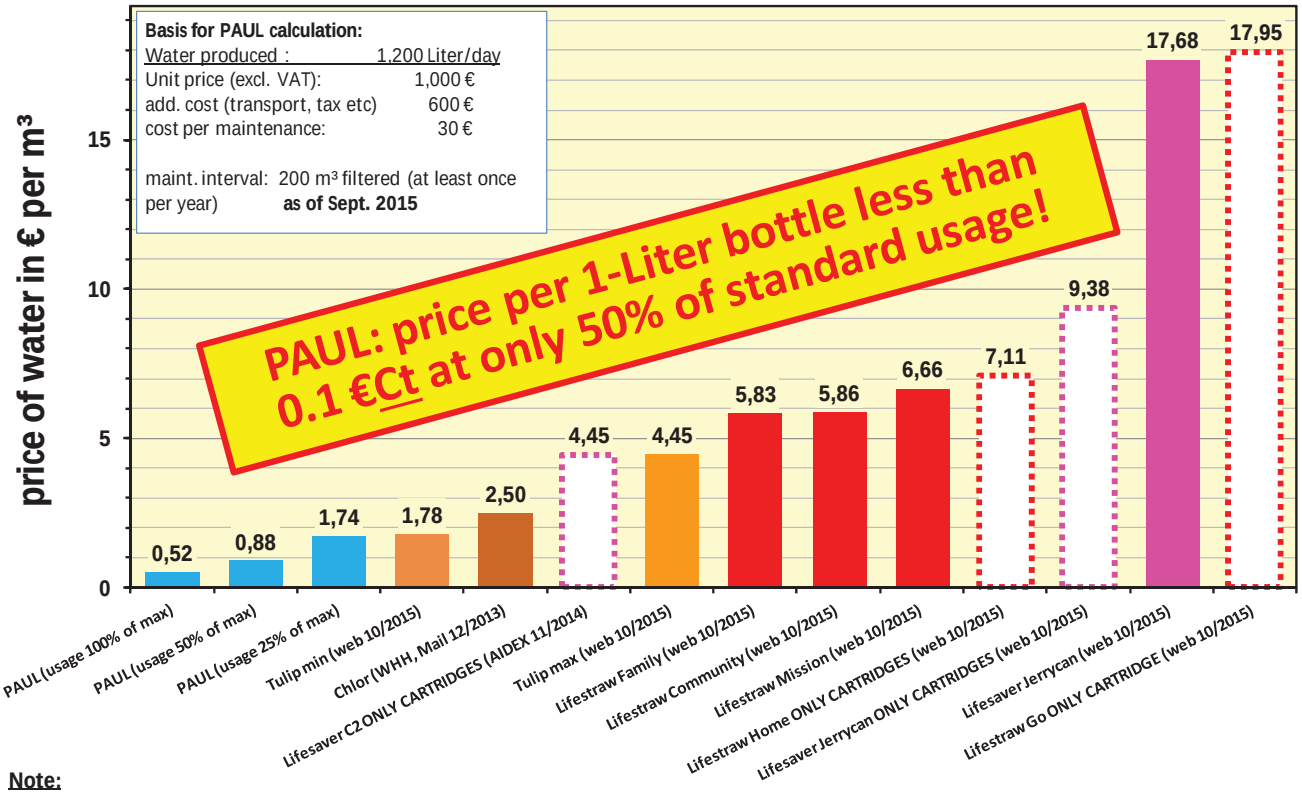

Nepal © 2015 Shanti Leprahilfe/HdL

PAUL – economical/logistic considerations

PAUL has a long lifetime of many years – experiences show 10 or even more years. This is assured by a special filtration technology called "Ultra Low Pressure UltraFiltration (ULPUF)", see
www.uni-kassel.de/fb14bau/fileadmin/datas/fb14/Institute/IWAU/Siedlungswasserwirtschaft/Vortraege/Vortraege_2015/T_PAUL_allg_2015-03-21.pdf
which was developed at the University of Kassel, at DESEE, and which first was presented in a TV broadcast in 2002.Consequently, **PAUL** is the perfect solution for **permanent water supply**, especially when equipped with **OPV**, a freshwater storage tank and a **SV**, see page 3, 4 and especially page 6.

Concerning cost, the only important figure is the cost per unit of product, in case of water treatment the cost of 1 m^3 water purified. It is a mistake to only compare **investment** and not consider **running cost**.

The figure below shows the **cost per cubic meter of water produces in Euro** and compares **PAUL** to alternatives. All other membrane based technologies operate with high pressures, resulting in low initial cost but **very high running cost** due to membrane replacement that is necessary frequently.



Note:
Only with PAUL, maintenance, tax, shipping is included! All other prices do **NOT** include spare parts, maintenance, taxes, shipping costs!
Dotted columns indicate ONLY price of replacement cartridges (device as such is not included!)
Lifesaver: In addition, the price of activated carbon cartridges is **NOT** included (this would triple the price per m^3)

Even if **PAUL** is used only for 2.5 years, or only used during 6 hrs/day, it is far cheaper than other solutions. Using **PAUL** only for 50% of its nominal capacity, the price of a 1-Liter Bottle is below 0.1 €ct – **10 bottles of 1 Liter will cost less than 1 €ct.**

In order to have a quick overview over **PAUL** and some competing products, calculations were made and for **PAUL** the conditions as mentioned in the above figure were considered.

Concerning Tulip, the data were retrieved from the internet on 9th May 2015. On the same day, the price for the Lifesaver Jerrycan 20000UF (listed under "max") was retrieved from the internet. Note that the price according to the manufacturers web is even higher, see the graph on the previous page. The cost for the Lifesaver C2 (listed under "min") was given by the founder of Lifesaver during the AIDEX2014 fair in November 2014.

The results are shown in the table.

type of device	cost in € per							
	1 m³		head and year permanent, 20		head and month permanent, 20		1 Liter	
	min	max	min	max	min	max	min	max
PAUL made in Germany	0,52 €	1,74 €	3,77 €	12,70 €	0,31 €	1,06 €	0,0005 €	0,0017 €
Drip ceramic filter made in The Netherlands	1,78 €	4,45 €	13,03 €	32,57 €	1,09 €	2,71 €	0,0018 €	0,0045 €
Jerrycan w membrane filter made in the UK	4,45 €	9,38 €	32,57 €	68,69 €	2,71 €	5,72 €	0,0045 €	0,0094 €

PAUL — **all** cost (maintenance, shipping!, ...) included
NO further import of spare parts necessary

Drip filter, ceramic — according to provider. No Tax, shipping etc. included

Jerrycan w membrane — only due to **cartridge replacement**. No cost for device, maintenance, shipping ... Included

all retrieved May 9th 2015, Jerrycan min cost: oral info by company founder, AIDEX 11/2014
Replacement cartridges to be imported from UK permanently.

In addition to the results shown in the table, it's not only a question of **cost**, but also of **logistic**: **PAUL**, in contrary to all other technologies and appliances, **does not need spare parts or cartridges to be supplied & changed on a regular basis** – just transport it to the place where it is used, no further supplies or parts are needed ! This means true **independency** and real "**Help for Self-Help**"!

... and by the way: users of **PAUL** for permanent supply reported to us that,

- there is **less garbage**, especially plastic bottles used for selling water,
- **cost reduction** due to reduced illness cost, loss due to inability to work etc. and
- more **school attendance** is possible,
- **resources consumption** is massively **reduced** as no boiling is necessary, and also
- there is **local added value** by creation of **employment** for water supply erection an operation – **perfect for micro-financing** ...

PAUL – feedback (**short version for mailing**)

Some organisations that brought **PAUL** into use sent us feedback. **In order to fit into eMails, we had to shorten rigorously, so in this file you will only find a selection.**
Please see the PAUL Cloud for a more exhaustive (but still not complete) collection of feedback.
Some of the messages are in German as the original language. All statements, opinions etc. are those of the respective author or entity.

Humanity Care Foundation

www.humanity-care-stiftung.de

Location: **Pakistan** (seit der Flut 2010)

"*Die Augen der Dorfältesten glänzen voll Stolz aber auch in Dankbarkeit als wir am vergangenen Sonntag, den 17. Oktober 2010, den Hahn der kleinen Wasseraufbereitungsanlage aufdrehen und mit dem gereinigten Wasser unsere Becher füllen. Wir stehen im Halbkreis und trinken gemeinsam das Wasser, das noch vor wenigen Wochen ungefiltert den Menschen in diesem durch die Flut zerstörten Dorf furchbare Bauchschmerzen und Durchfall beschert hatte.*
(...)
Diese Wasserrucksäcke waren unter anderem durch die „Humanity Care Stiftung" gesponsert worden und per Lufttransport im Rahmen der NATO-Luftbrücke in Islamabad angekommen.
(...)
Die Wasseraufbereitungsanlagen sind ein großer Segen aber nur ein Anfang und ein Symbol für die Menschen, dass man sich um sie kümmert. Jetzt müssen die Häuser wieder aufgebaut werden und die Menschen mit einfachsten Hilfsmitteln dabei unterstützt werden."

Bericht Militärattaché Klaus Wolf, Islamabad, Oktober 2010

***

The eyes of the village elders shined with pride and gratitude as we turned on the tap of a small water treatment unit last Sunday, 17th October 2010, and filled our cups with purified water. We stood all together in a semicircle and drank the water, which, unfiltered, had given people of this destroyed by a flood village terrible stomachache and diarrhea.
(...)
These water backpacks were sponsored among others by the „Humanity Care Foundation" and were brought to the spot by air within the framework of a NATO airlift in Islamabad.
(...)
The water treatment units are a true blessing and a symbol for the people, showing that they are being taken care of. The next step is to rebuilt the houses in the village and provide people with the basic resources."

Report by military attaché Klaus Wolf, Islamabad, October 2010

www.stiftunglife.de

Location: **Myanmar**

Yesterday we visited Kyat Pha Mway Zaung, in Pyapon District, located in the Irrawaddy Delta Region. Pyapon is 125 km, about 2 h 15 min by car, SSW of Yangon and from Pyapon you need another 1 h and 45 min by boat. We carried PAUL* with us and had the previous days already delivered a 1000 liter storage tank. PAUL will be used to purify the water from the small open storage lakes which is the only water source for most of the communities in the coastal Delta Region. There are almost no wells. Salt free water can only be found in 200 and more meter depths, which makes the drilling of a well very expensive. The storage lakes are filled during the raining season from end May to mid September, and the water needs to last for the remaining year. Each household collects rain water and keeps it in sealed earth jars for drinking purposes. PAUL will help now to purify the water from the Monastery storage lake and the portable water will be supplied to about 500 children attending the Primary School at the Monastery, as well the household living around the Monastery compound. There is still a need for the Government Middle and High School with 750 students. Maybe another PAUL will find his way to this place. With 5500 people it is a strong community. It is also one of the villages, benefitting from the Solar Lamp project. Two of their six storage lakes have been recently built from their own Solar Lamp Village budget. The young Chap next to our Monk is Ruben, who just arrived from Munich a week ago to assist us in our boy orphanage project Myitar Chaung Chi. By the way, Capt. Than Oo thought that PAUL can create miracles by trying to get water out from an empty PAUL. Guess that was too much to ask for.

Berichte aus Myanmar Mitte 2013, all photos © Stiftunglife

Kinderhilfswerk ChildFund Deutschland

Location: **Gambia**

Test results by Department of Water Resources:

THE REPUBLIC OF THE GAMBIA

DEPARTMENT OF WATER RESOURCES
7 Marina Parade, Banjul, The Gambia Tel: 7794502

12th July 2013

ADP 318/01 (101)

BMZ/Child fund Water and Sanitation Project
C/o Ellen Schiller
Project Manager
Project Office, Child fund The Gambia

Water Quality Analyses of Two Water Points in Sintet Nursery School

According to microbiological analysis results, the Filtered sample has registered no coliform bacterial count. This has therefore clearly indicated that filtration system units are quite suitable for water treatment. The filter is also capable of reducing turbidness of the polluted water as indicated in the results sheet. The microbiological values obtained after filtrations are therefore quite impressive and encouraging and all the tested parameters are indeed within the recommendation of the World Health Organization's standards for drinking water quality.
(...).
Generally the water Filtered from the filtration tank/system is of good quality and consequently suitable for consumption, as well as other domestic uses based on WHO's recommended guideline values. It is therefore highly recommended to replicate the same filtration systems to other Nursery and Lower Basic schools in other part of your intervention areas for the student to have access to good quality water for their daily consumption.

Private initiative Mr. Jürgen Schaupp

Location: **Tansania**

- installed March 2012
- since then, **no more cases of diarrhea, cholera or other waterborne diseases according to locals**

Ärzte für Madagaskar e.V.

www.aerzte-fuer-madagaskar.de

Location: **Madagaskar**

„PAUL ist nach wie vor im Einsatz und bedeutet eine große Verbesserung der Wasserhygiene für Personal und Patienten. ***Laut Aussagen einiger Angestellte hätten sie seit der Einführung von PAUL keinen Durchfall mehr****, PAUL wird akzeptiert und fleißig genutzt. Das freut uns sehr. PAUL hat mittlerweile auch sein eigenes Häuschen bekommen, damit sich das Wasser nicht zu sehr erwärmt. Die Menschen stehen mit ihren Plastikflaschen Schlange, um sich sauberes Trinkwasser abzufüllen. Unter folgendem Link können Sie den PAUL (ab min 0:55) in Aktion sehen: http://vimeo.com/71638889 ”*

"PAUL is still in use and contributes to a major improvement in water hygiene for the staff and patients. ***According to one of the employees, there were no cases of diarrhea since PAUL came in use****, PAUL is very well accepted and used diligently. We are very pleased with that. PAUL also has its own small house now to prevent the water in it from overheating. People bring empty plastic bottles and wait in line to get clean drinking water from PAUL. You can see PAUL in action (from 00:55 min) under the following link: http://vimeo.com/71638889 "*

www.stiftunglife.de

Location: **Myanmar**

Stiftunglife hat im Laufe der letzten 2 Jahre bereits 70 Wasserrucksäcke nach Myanmar gebracht, vorzugsweise an Schulen.

Vor kurzem bekamen wir einen kleinen Bericht von einer Schulinspektion übermittelt: *„…heute haben MinMin und ich die Marja Schule besucht.*

Die Marja Schule ist eine Schule, die nah am Irrawaddy liegt. Sie sieht gut aus, alles ist sauber und ordentlich, es gibt keine großen Mängel zu beanstanden. … Da sie zum Wasserpumpen Diesel brauchen und das Geld manchmal knapp ist, würden sie gerne einen Wassertank mit 5000 Gallonen haben, der das Regenwasser auffängt. ***Sie haben festgestellt, daß die Schüler dieses Jahr keinen Durchfall mehr haben*** *und wollen deswegen die Nutzung von PAUL auch gern im Dorf verbreiten. Eine Schule mit einer aktiven Schulleiterin und auch einer aktiven Dorfgemeinschaft…“*

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“Stiftunglife” (“Life Foundation”) has brought over 70 PAULs to Myanmar, mostly to schools, over the past two years.

We have recently received a report from a school inspection, which said the following: *“…we have MinMin today and I have visited the Marja School.*

The Marja School is a school, situated near Irrawaddy. The school looks good, everything is clean and tidy there. As the schools uses diesel to pump water, which is sometimes too costly, it would be preferable to have a water tank of 5000 gallons, where the rainwater could be collected. As it has been found out that ***the schoolchildren haven’t had diarrhea this year****, they would like to spread the usage of PAUL among the villagers. Marja is the school with an active principal and an engaged village community …"*

Private initiative of the City of Baruth/Mark

www.stadt-baruth-mark.de

Location: **Mongolia**

Die Stadt Baruth/Mark, ca. 80 km südlich von Berlin gelegen, hat seit 2011 eine Partnerstadt in der Mongolei, die Stadt Murun in der Provinz Huvsghul.

Hier besteht das Problem, dass keine ausreichende Versorgung mit Trinkwasser in den öffentlichen Einrichtungen wie Schule und Kindergärten abgesichert werden kann. Viele Kinder trinken Wasser aus der örtlichen Wasserversorgung und leiden dadurch an Durchfallerkrankungen.

Nachdem Mitarbeiter der Stadt Baruth/Mark Mitte 2013 drei Wasserrucksäcke in die betroffene Region gebracht und in Betrieb genommen hatten, erreichte uns nun im Juni 2014 folgende Nachricht:

„…in der vorigen Woche habe wir wieder unsere Partnerstadt Murun besucht. Inzwischen ist der Wasserrucksack Paul seit ca. einem Jahr in Einsatz. Wie uns der Schuldirektor berichtete wird das Wasser sehr gern von den Kindern getrunken und ***es gibt keine Durchfallerkrankungen mehr an der Schule****. Somit haben ca. 2.000 Kinder jeden Tag Zugang zu sauberem Trinkwasser. Ich denke das ist doch ein voller Erfolg…“*

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The town of Baruth / Mark, located somewhat 80 km to the south of Berlin, has a partnership with the city of Murun in Huvsghul province in Mongolia since 2011.

Murun has a big problem with the supply of drinking water in public facilities such as schools and kindergartens. Many children have to drink water from the local water supplies and thereby suffer from diarrheal diseases.

The officials from Baruth/Mark brought three water backpacks PAUL to the region, mentioned above, in 2013. One year later, we received the following feedback:

"... We paid another visit out partnership town Moron last week. The water backpack has already been in use for one year there. As the principal of the local school told us, the schoolchildren were very fond of drinking the water from PAUL, and ***there have been no more cases of diarrhea among them****. Thus, around 2000 children have access to clean drinking water every day. In my opinion, it is a huge success… "*

Freundeskreis Christliche Sozialarbeit In Uganda
HILFE ZUR SELBSTHILFE

http://butiru-freundeskreis.de

Location: **Uganda**

Originaltext von Herrn Manfred Wardin im Anschluss an einen mehrwöchigen Aufenthalt in Butiru/Uganda:

"...Viele von Ihnen/Euch wissen bereits, dass wir in diesem Jahr Spenden für die Anschaffung von PAUL Wasserfiltern gesammelt haben, da wir in Butiru immer wieder mit Typhus und anderen Durchfallerkrankungen zu kämpfen haben. Besonders die Kinder leiden unter dem mit Bakterien und Viren verunreinigten Wasser. Um uns den Transport der Filter zu erleichtern, hatten wir zuvor unter jeden PAUL kleine Rollen montiert. Darüber hinaus verpackten wir die Filter zusätzlich in Seesäcke...Auch am Flughafen in Entebbe/Uganda verlief alles reibungslos. Einem skeptisch drein blickenden Zollbeamten erklärten wir, dass die Wasserfilter für den humanitären Einsatz ins Land eingeführt werden, was er mit einem Durchwinken quittierte.

Elisabeth Mwaka erwartete uns bereits am Flughafen. Die Freude war bei allen groß. Vor Ort wurden die Filter in der Nähe eines Wachpostens der Schule platziert, damit dieser ein Auge auf die Filter hat. Dort befindet sich auch die Wasserpumpe, die die ganze Schule mit Wasser versorgt und bisher als Trinkwasserquelle genutzt wurde. Nachdem die Filter in Betrieb genommen wurden, verglichen wir das Brunnenwasser mit dem frisch gefilterten Wasser. Bereits mit bloßem Auge war der Unterschied, nämlich ein Gelbstich des Brunnenwassers, gut zu erkennen. Einhellige Meinung zum Geschmack: Das Filterwasser schmeckt um Längen besser."

*Die drei PAUL-Wasserfilter versorgen täglich 2.300 Kinder mit frisch gefiltertem Wasser. Die Zahl der Erkrankungen, hervorgerufen durch das mit Bakterien und Viren verseuchte Wasser, ist auf Null gesunken. Elisabeth: "**Dank unserer neuen Wasserfilter haben wir bisher keine Fälle von Typhus oder Dysenterie unter Schülern und Personal gehabt.**"*

Original text by Mr. Manfred Wardin after staying for several weeks in Butiru / Uganda:

"... As many of you might know, we have collected donations for the purchase of PAUL water filters this year so that we don't have to repeatedly deal with typhoid and other diarrheal diseases in Butiru. In particular, children suffer a lot from the bacteria and virus-contaminated water. In order to enable us transport the filter easily, we mounted small rollers under each PAUL. In addition, we packed the filters in duffel bags ... At the airport of Entebbe / Uganda everything went smoothly. In response to a skeptical look from a custom officer we explained, that the filter was supposed to be a part of humanitarian work in the country; an explanation which he accepted with a waving through gesture.

Elisabeth Mwaka picked us up at the airport. Everyone was very excited. The filters were placed near the school's security post so that the guard could keep an eye on them. The water pump, standing nearby, provides water for the whole school and was previously used as a source of drinking water as well. After the filters had been put into operation, we compared the well water with the freshly filtered water. A yellowish tinge of the well water was easy to nice. After testing the filtered water, everyone came to the conclusion that it tasted way better that the well water."

*The three PAUL water filters provide 2300 children with freshly filtered drinking water every day. Since the use of PAULs the number of cases of sicknesses, caused by consuming the water, contaminated with bacteria and viruses, has dropped to zero. Elisabeth: **"Thanks to our new water filter we have not had any cases of typhoid or dysentery among our pupils and staff."***

www.ugandakreis.de

Location: **Uganda**

Originaltext von Herrn Elmar Weckenbrock im Anschluss an einen Aufenthalt in Uganda Anfang 2015:

"*Seit einigen Tagen ist unsere Gruppe zurück aus Uganda. Es war eine erfolgreiche Reise mit vielen guten Begegnungen und Erfahrungen. In unserem Reisegepäck wir auch „Mr. Paul“. In unserer kleinen Krankenstation wurde er herzlich willkommen geheißen. Zur Zeit muss er noch täglich von Hand befüllt werden, doch schon in den nächsten Wochen wird das gesamte Wassersystem neu installiert und mit Hilfe der Optionsbaugruppen ein kontinuierlicher Durchfluss gewährleistet. Paul fühlt sich sichtlich wohl in Uganda. Die Wasserqualität ist super. Paul wird aus der Untergrundzisterne, welche in der Regenzeit durch Oberflächenwasser der Dächer gespeist wird, mit Wasser versorgt.*

Ich glaube, „Mr. Paul“ hat seinen Platz an der richtigen Stelle gefunden."

Original text by Mr. Elmar Weckenbrock after his stay in Uganda in the beginning of 2015:

"Our group has returned from Uganda several days ago. Our trip was very successful and full of new encounters and experiences. We also brought “Mr. Paul” with us". He received a very warm welcome at out medical station. At the moment, PAUL is still filled in manually every day, but the entire water system is to be reinstalled during the next weeks to ensure an automatic continuous flow of water into the unit. The rainwater from the roofs is to be collected in the underground cistern and then delivered to the filter unit. Mr. Paul feels comfortable in Uganda, and the quality of water, filter with it, is great.

I think that “Mr. Paul” has found its rightful place there".

www.christengemeinde-langenfeld.de

Location: **Philippines**

Herr Rainer Hückelhoven schreibt:

"Der PAUL wurde von Singapore Airlines als Koffer akzeptiert und ohne Aufpreis mitgenommen. Am Zoll in Davao gab es keine extra Kontrolle ☺.

Im Bergdorf Piyag (ca. 180km nördlich von Davao /Mindanao) haben wir unseren PAUL im Ostergottesdienst der örtlichen Gemeinde übergeben.

2 weitere PAUL aus unserer Hilfsaktion haben wir in der Nähe in Nachbardörfern gefunden. Siehe Bilder der nach dem Sturm neu gebauten Häuser mit PAUL.

*Die sind seit über **2 Jahren im Einsatz und versehen unproblematisch ihren Dienst. Seitdem keine Durchfallerkrankungen durch schlechtes Wasser!***

2 Weiter PAUL stehen noch in Tacloban, was Ende 2013 durch den Taifun Haiyan zerstört wurde.
Der zweite vor Ostern georderte PAUL wird mit dem zur Verfügung gestellten Ventilsystem nach Madagaskar reisen.
Unsere Missionare Fam. Schwenk waren dort jetzt für 3 Monate zum Sprachtraining und sind vielfach Durchfall erprobt worden…. Sie mussten sich ständig gefiltertes Wasser bei Nachbarn besorgen.
Im Juni reisen sie mit 2 Container voll Gepäck wieder zurück nach Madagaskar.

Der PAUL geht mit auf die Reise und wird unseren Missionaren und Jungvieh (es wird ein Rinderzuchtprojekt geben) sauberes Wasser liefern."

Mr. Rainer Hückelhoven writes:

"The water backpack PAUL was transported by Singapore Airlines as a suitcase without extra charge. There was also no additional control at the custom in Davao.

We have handed the two PAULs over to the local community in the mountain village Piyag (approximately 180km to the north of Davao / Mindanao) during the Easter service.

Two more PAULs from our aid campaign were spotted in the nearby villages (see pictures of the houses with PAULs, which were newly built after the storm).

*The units **have been in use for over 2 years now, and do their job perfectly well. Since PAULs have been in use, no cases of diarrhea, caused by the consumption of contaminated water, have occurred!***

Two more PAULs are still being used in Tacloban, which was destroyed by the Typhoon Haiyan at the end of 2013.

The second PAUL with a special ventilation system will travel to Madagascar.
Our missionaries, the Schwenk Family, have been staying there for 3 months now, attending a language training, and often suffer from diarrhea... They had to get filtered water from their neighbors to avoid it.

They go back to Madagascar in June and take PAUL with them. It will provide our missionaries and young cattle (for a cattle farming project) with clean water."

Private initiative of the City of Baruth/Mark

www.stadt-baruth-mark.de

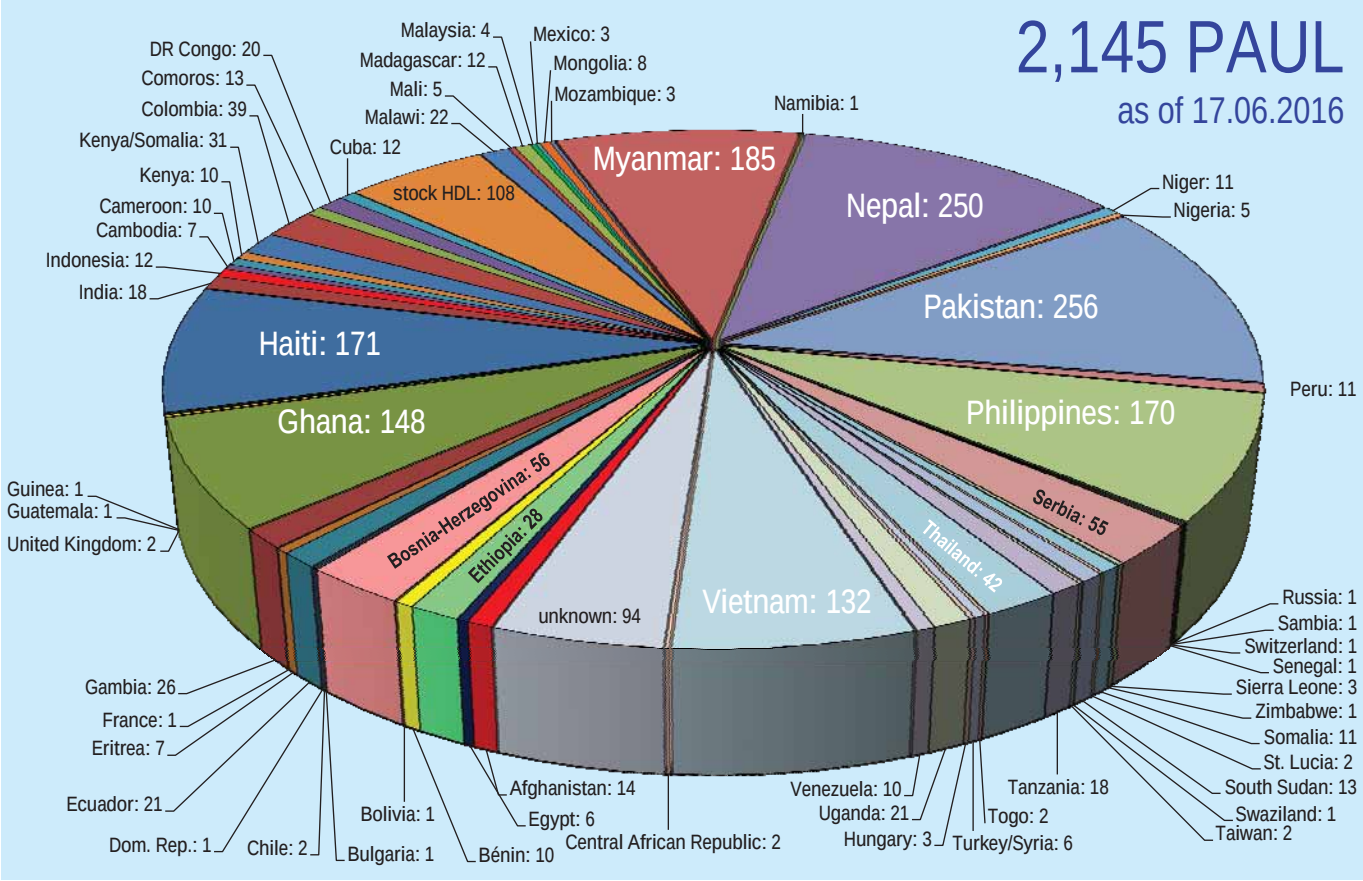
Location: **Mongolia**

Die Stadt Baruth/Mark, ca. 80 km südlich von Berlin gelegen, hat seit 2011 eine Partnerstadt in der Mongolei, die Stadt Murun in der Provinz Huvsghul.

Nachdem Mitarbeiter der Stadt Baruth/Mark Mitte 2013 drei Wasserrucksäcke in die betroffene Region gebracht und in Betrieb genommen hatten (siehe Seite 23), wurde diese Initiative im Frühjahr 2016 mit diesmal 5 Wasserrucksäcken wiederholt. Nach Rückkehr der Helfer erhielten wir folgende Nachricht:

„…inzwischen sind wir aus der Mongolei zurück und haben vier weitere Schulen mit Paul bestückt. Somit haben jetzt ca. 6000 Kinder in Murun Zugang zu frischem Trinkwasser. In den nächsten zwei Jahren wollen wir alle Schulen und Kindergärten in Murun mit Wasserfiltern ausstatten. Hierfür werden wir nochmals ca. 20 Filteranlagen benötigen. Die ersten fünf würden wir im Oktober mitnehmen wollen…Anbei sende ich Ihnen die Bedienungsanleitung in Mongolisch. Wir haben sie durch unsere Dolmetscherin übersetzen lassen. Außerdem sende ich Ihnen noch Bilder von unserem letzten Besuch. Einen Filter haben wir mal geöffnet. ***Er sieht nach zwei Jahren Gebrauch noch fast wie neu aus****.…“*

Distribution of **PAUL**



Videos on **PAUL**:
http://www.uni-kassel.de/fb14bau/institute/iwau/siedlungswasserwirtschaft/paul-wasserrucksack/videos.html

More videos & useful links (inside a webpage, press „F3"-button to search for „PAUL"):
http://en.wikipedia.org/wiki/Portable_Aqua_Unit_for_Lifesaving
http://www.johanniter.de/die-johanniter/johanniter-unfall-hilfe/auslandshilfe/aktuelles/news/hilfe-fuer-betroffene-des-taifuns-haiyan/
https://wasserrucksackpaul.wordpress.com/
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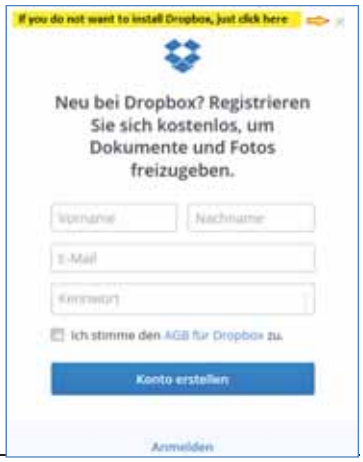
http://www.youtube.com/user/waterbackpack
http://www.stiftunglife.de/projekte/kinder-schulen-studenten/schulen-wasser-solar/
https://www.betterplace.org/de/projects/11305-retten-sie-leben-in-aller-welt-mit-paul

... and you can download much more material from the cloud via:
https://www.dropbox.com/sh/hcrg8fui0lttkqt/AAAcKt0m66p8JQdz19vtldbta?dl=0



If you use the link and you do not have Dropbox installed, a box like this will appear asking you whether you want to install Dropbox. The choice is up to you: if you decide not to install Dropbox, just click on the cross in the upper right corner, and you will nevertheless be able to download the files from the cloud.

In the cloud you will find **PAUL** Slideshows, information and videos in different languages (German, English, French, Español, …).

Each time new, additional or updated information is released, you will see this from the filename, which includes the phrase "UPDATE" in capital letters.

Also, please check the file "PAUL_New Links" in the cloud regularly.