FOREIGNERS: Tuning Careers - P38





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# Mixing Wate with Footbal

How a US-based NGO is rolling out the ultimate community project in Africa – and attracting global attention - P22



**PERSONALITY: Through** Glass Brightly P45

**EVENT: The Turkana** Festival 2012 P52



August 2012 THE REGION'S AVIATION LIFESTYLE MAGAZINE

A Supplement of Aviation East Africa



EDITORIAL By East African Flyer Chairman Eric Mwandia

# The Ultimate Community Project

inding a fit between football and rainwater harvesting is thinking way outside the box. And yet this is exactly what an organization with the distinctive name PITCH\_Africa (yes, written exactly that way, complete with the underscore) has done, as you can see from our Cover Story.

PITCH\_Africa is a US-based social enterprise organization that, in its own words, "focuses on promoting high-yield community-integrated rainwater harvesting initiatives using sport as a catalyst".

The organization is best known for the Rainwater Harvesting Street Football Stadium that sits above a school and community education centre.

It has now turned its focus on Africa, where water access is a big issue that often degenerates into violent conflict. Their projects have attracted global attention.

PITCH\_AFRICA'S Co-Director Jane Harrison spoke to EA Flyer Contributing Editor (Science & Technology) Wycliffe Muga in a

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riveting and informative interview. In 'The Big Debate: The State of Kenya's Wildlife' our other big story in this issue, Kenya Wildlife Service Director Julius Kipng'etich, the palaeontologist and author Richard Leakey and **EA Flyer's** Wycliffe Muga bring three knowledgeable analytical perspectives to bear on the issue of Kenya's iconic wildlife resource and heritage of splendor and the way forward.

In this month's Personality feature, 'Through Glass Brightly', Writer Brian Obara introduces us to glass sculptor Jeremy Gituru and his wondrous works.

**EA Flyer** photojournalist Anthony Njoroge presents two superb photo essays back-to-back on two events that are as different from each other as it is possible to be divergent – the Turkana Festival 2012, held by the shores of the Jade Sea itself and the Nairobi's Hottest Wheels car show held in Nairobi's Westgate shopping mall and sponsored by Gillette. the brand of Procter & Gamble worldfamous for safety razors, among other personal-care products. Natalie Lukkenaer wrote a thesis on Kenyan hip-hop music during the Kanu era and produced a major project on how to start a music school in Kenya. "From that point, everything I did was about Sauti Academy and building that idea", she tells EA Flyer Correspondent Roopa Gogineni in our Foreigners feature for August – 'Tuning Careers'.

In 'New Hope', the fourth installment in the ongoing book serialization of Amboseli, **A Miracle Too Far**, by David Lovatt-Smith, onetime Warden of the Amboseli National Park, we are informed that 'There are a thousand places in the world where livestock of a higher quality can be produced more efficiently than in Maasailand, but there is scarcely another area on the globe that is so potentially rich in wildlife'.

Angela Kintu, *EA Flyer's* ever upbeat Uganda Correspondent, reminds us that laughter is not only the best medicine but good business too, in this month's intriguing 'Letter from Kampala'.

As always, enjoy a rich and varied menu from Team *EA Flyer!* 

ONE SOCCER PITCH = ONE MILLION LITERS OF WATER = ONE SCHOOL = ONE CLINIC = O

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# Fit between Football and Rainwater Harvesting

How water filtration, conservationist agricultural techniques and other community-integrated dimensions of one project are becoming part of a larger programme that can be communicated throughout the region, through football, a league and a cup. PITCH\_AFRICA'S Co-Director **JANE HARRISON** spoke to *EA Flyer* Contributing Editor (Science & Technology) **WYCLIFFE MUGA**. Her Co-Director is **DAVID TURNBULL**. See boxed item alongside the following interview headlined "About PITCH\_Africa". Excerpts:

### EA FLYER: What gave you the idea for your concept?

**PITCH AFRICA:** There are two ways to answer that question. We were in Copenhagen, at the Homeless World Cup in 2007, having already been working quite seriously on the relationship of soccer and water. The Homeless World Cup is a social enterprise co-founded by a Scottish entrepreneur called Mel Young to address homelessness internationally using football as a catalyst. Their annual event, where all the partners come together, is a kind of parallel football cup for homeless kids. This was the first time that we had seen street football played in any formal way and it was a big surprise because it was a very energetic and dynamic game and a great deal of fun to watch. That combined with the really impressive quality of the teams and the very clear benefits they had got from this experience was significant.

### Q: What would you say those benefits were?

**A:** A lot of them were certainly from slums, homeless people in very bad situations. I spoke with Mel Young at the time and he had





said that, of all his various philanthropic projects, this was the most profound in terms of getting players off drugs, getting them into the workforce, beginning to build lives for themselves and so on. He's the guy who set up a paper in Britain called The Big Issue, a newspaper that was being produced, distributed and sold by homeless people to generate an income for themselves. This has now become a Europe-wide franchise, but what was striking was that he said compared to The Big Issue, the impact of a Homeless World Cup was far more dramatic. So, there was something very special about the football energy and, of course, there are many other organizations working in this territory.



The experience confirmed for us that a fit between football and the work we had already been doing on rainwater harvesting systems could be even more interesting. There has been a lot of focus on solving water problems by drilling boreholes, but, in many areas of the world, drilling into aquifers is not a particularly sustainable operation, in part because many of these aquifers are non-renewable, these are not water resources that will replenish in our lifetime. Further complicating matters, as water levels drop, drilling gets more and more expensive and more prone to damage, fluoride content in the water can escalate and so on. Borehole breakage rates can also be shockingly high. It is by no means an uncomplicated solution to the problem of water access.

So rainwater harvesting, rather than being an incidental tool, starts to become very important and that has now even been recognized by organizations such as UNEP. It has been estimated that there is something like 13 times the amount of rain falling on the African continent than is needed by the population. In Kenya specifically, the conditions that have been analyzed really suggest that rainwater harvesting is a One Pitch, 1m Litres: Aerial view of PITCH Prototype at Los Angeles launch in 2010.

Home on the Pitch: The Homeless World Cup PITCH Game, Copenhagen 2007. really significant, an essential, tool here for addressing issues of water access.

We had been working with these ideas for some time, developing methods for harvesting and storing water in full-scale football pitches, but that is, of course, a fairly expensive operation. Copenhagen was significant because we were sitting in a street football venue with a playing court that is only 16 metres by 22 metres. It's quite a small, intimate stadium and we were sitting there with probably 1,000 people watching this football game and started to calculate how much water could be harvested from it and it was dramatic. Obviously the rain you are harvesting varies dramatically from region to region, but even looking at the lower ends of the rainfall spectrum, say 600 millimetres a year or even 300mm or less, you would be able to gather substantial amounts of water. When you consider that more than two-thirds of the African Continent has 600mm or more rainfall a year, this is significant.

Along with the realization that such a structure could produce a large water resource, it was clear to us that important social programmes, schools, clinics,

Turn to **P24** 



community workshops together with substantial amounts of water storage could be incorporated within the structure. Water and sport together become a powerful tool – a child's abilities in sports are not pre-determined by political, ethnic, economic and social boundaries/identities and therefore sport can be a powerful component in enabling communities to transcend these perceived boundaries building sense of community cohesion and common identity within a given geographic location.

We are interested in water as a socially integrated resource, as a peace-builder, rather approaching it as a material resource that simply requires technology for its delivery, a tap, a pump, borehole. We are interested in water solutions that encourage community engagement around a water source, a solution that a lot of different groups within the community could feel invested in. PITCH set out to be a crosscutting project, to be multi-dimensional, so that the community could take ownership of the basic proposition and use the spaces provided under the seating areas to provide school facilities, clinics, micro-enterprise initiatives and anything else they felt like. So it's a very malleable idea. The key idea is the link with the football, but we have also adapted this now so that the stadium can be used for volleyball and other sports, thereby gender issues, in different communities.

Q: Just to take you back a little bit. Out of all the people who were sitting there watching this street football, possibly it was only you who realized that there was potential in that. What's your academic background? There must have been something that you knew.

A: Well, my training is as an architect as is my co-founder David Turnbull, who also has a very strong engineering background. But there are a number of motivations that we have had in setting out. Architecture is a profession that tends to serve the

# **Consulting:** Jane, centre, at Usaonyiro

at Usaonyiro Primary, Segera, Kenya, 2012 most privileged people in any society and the profession is obviously structured in a way where it supports this. And it's not necessarily very easy to find alternative ways of practicing.

So, we weren't interested in finding ways of designing cheaper versions of what you would ideally be doing if you had a bigger budget. What we were really interested in doing is finding a way of practicing on the issues that are just not getting the same kind of attention. And, really, what was interesting to us is whether architectural solutions and architectural thinking might have something to offer in extreme situations. That was the question; it was by no means something we assumed. Obviously our instinct was that it should, and so that was the great motivating force in setting up the umbrella non-profit organization, ATOPIA Research, through which we've developed many different projects, new building and infrastructure typologies, addressing specific complex issues around the world. The PITCH\_Africa project is the one for which we received a

significant amount of R&D support from the Annenberg Foundation, early on, and that enabled us to take it a lot further.

# Q: So, the Annenberg Foundation, was this a competition, or you knew someone there? How did you get them to sign on to this?

A: We were very fortunate. One of the trustees had heard about the project and we were invited to present the project to the Board. It was an unusual situation and we were very fortunate to get the opportunity to do that. What was important was that that's the hardest stage to get supported in any project. Five minutes into the presentation Wallis Annenberg stood up and said "this is great, let's fund this". We'd done an awful lot of work on it ourselves, but, in order to be able to take it to the next level and build the first prototype, we needed to have that kind of Research and Development support so it was an important moment for the project.

# Q: So, have you been given enough money to be able to do the prototype?

A: We built and tested a series of prototypes in the US, including building a full-scale mock-up in Los Angeles in 2010. That all went very well and we are now working on PITCH Kenya, the first real project on African soil, with our local partners, the Zeitz Foundation. We are now in a position where we need to raise an additional US\$350,000. The project in Laikipia is going to be a secondary school and it will include eight full-sized classrooms together with the Samuel Eto'o Soccer Academy, which is very exciting, and an environmental and social-micro enterprise centre for the region. It will also be a hub, an incubator for ongoing environmental initiatives and a home base for the Laikipia Unity League and the Laikipia Unity Cup, two very interesting programmes established by the Zeitz Foundation to promote environmental sustainability and

# PITCH\_Kenya:

Computer Model showing central sport court, water tank and wings within a model farm. peace-building through football in the region. The League is being formed now and will be active year-round, but the Cup, a biennial event that has been running since 2010, is currently already reaching 20,000 people in Laikipia. This will grow to 40,000 once the League is up and running. We are in the process of working with the Zeitz Foundation to link the PITCH\_Africa initiative and the Samuel Eto'o Soccer Academy and School with the LUL and the LUC under a larger umbrella. Samuel Eto'o has generously committed 50% of the construction costs, so we now need to find matching funding, plus costs to support start-up operations.

Our relationship with the Zeitz Foundation is very good and I think this is absolutely crucial to the success of an enterprise like this. They are fully integrated in the community, headquartered there, and have earned a great deal of respect from the community for the work they have been doing. The collaboration

Turn to P26 🕨



with them and the links to these other programmes is so important in order for PITCH\_Kenya to be at its most effective. The link with the Laikipia Unity League means that the principles embodied and demonstrated in PITCH\_Kenya, the knowledge about rainwater harvesting, about water filtration, about conservationist agricultural techniques and all of the other community integrated dimensions of the project become part of a larger programme that can be communicated throughout the region, through football, through the league and the cup.

This means that PITCH\_Kenya can serve both the immediate community and participate in a powerful mechanism through which knowledge and training can be shared throughout the region.

Q: But the essence of it, from my understanding of what I've read from your material: Number One, sports as a unifier and a peace-builder and Two, collecting water so that you have a reservoir of water available to a community in areas which have water shortages at some point. It rains of course, but it rains very heavily for a

26

# short period, then there is no rain for the rest of the year.

A: The issue in those communities is there is very little water storage, so it rains a lot but a lot of the water just evaporates or runs off. In a typical year with rainfall of about 600mm, PITCH\_Kenya is actually going to be able to harvest and store 2 million litres of water; in a drought year (300mm), 1 million litres and in a high rainfall year (900mm), 3 million liters.

# Q: Just to put it into perspective, that's enough water for how many people to use for how long if they are using how much water?

A: The actual strategy that we are developing in Laikipia is not only to be able to provide water for the student population generally, but include an additional supply that will be available to the girls because there is a real issue with enrollment in that region. And so part of the strategy with the project is to provide the resources that the girls would otherwise have to be going off and collecting, so that there is enough water where they can, in essence, come to school to collect the water. So that's a particularly significant dimension to it, because, for girls, the time-consuming role of water-gathering Above: David Turnbull with Uasonyiro Headmaster in classroom Below:

PITCH\_Africa Cistern and low tech irrigation system and chores is the beginning of a very slippery slope.

# Q: So, how many people can get water per year and for how long?

A: We are doing the fine-grain calculations now, but 2 million litres roughly means 5 litres per day, year-round, for more than 1,000 children. We have found an elegant way to extend the storage capacity of the central 1 million litre tank that collects rainwater directly, to include subsidiary tanks for surface water runoff.

So, if you are working on a basis of five litres per person per day, which is enough for both a child's drinking water, domestic consumption and basic nutritional requirements through lowwater agriculture, the total amount of water available in a typical year would be enough for more than 1,000 students. But we are going to play with those numbers because what we want to do is to be able to provide an additional amount that can be allocated to address the issue of the girls who assume the responsibility for watergathering (and other chores) at an early age. In the pastoralist communities in Laikipia, the impact of this is particularly high. These obligations interfere with the girls' ability to study and school attendance for girls drops dramatically in secondary school, where I understand that there may be as few as two girls enrolled for every 10 boys in this region.





These are the big concepts; but if you have a mechanism via sport and football for navigating peace and unity issues, for bringing the community together in areas where much of the violence is directed at girls and women, in that region it is being caused by the lack of water and the girls and the women are the ones who really feel it – because the violence ends up being directed to them.

So, those two are the big themes and then, second to that, we have the Zeitz Foundation as well as ourselves that work on lots of other dimensions in terms of fuel-efficient uses, solar lanterns, a lot of that kind of secondary technology, all of which will be part of the role of the regional environmental centre there. And then, of course, in the protected circle around the pitch, you are using conservationist agriculture to cultivate vegetables and vitamins for the children.

# Q: So, have you done a calculation for what's the cost per child?

**A:** You mean if the building costs are linked to impact?

## Q: Yes.

A: Well, it's not such a simple calculation because it's a scalar project, so at the level of the LUL and LUC, that at the moment is a community of about 20,000 people that are being impacted at the regional level across Laikipia, which will expand to 40,000 when the LUL is launched. If you just took the cost of the building in relation to the children who get the water and forget everything else, nominal maintenance costs, programme costs and so on, it's \$375 per child. But this, of course, is a one-off cost, and the water will keep coming each year, so the investment per child over 5 years drops to \$75.

# Q: That's very cost effective.

A: We've done a lot of work this year to really work out how to get the cost down. We are probably at a place where it needs to be for the first project, right now

Q: Now, this is in many ways a very exciting time for development work in Kenya because our structure Above: Ceramic Water Filter Below: Talking about Rainwater harvesting with the students at Uasonyiro of government is due to change. For the last 49 years that we've been independent, everything has revolved around central government and central government tends to think in terms highways, water supply where pipes run for hundreds of miles and so on. But now, as a matter of the new constitution re-arrangements, we'll have 47 counties and each county will be headed by a governor.

So, I've met many people who are running for governor and the more thoughtful of them, the more serious of them, the ones who to some extent are already front runners, are already thinking in terms of there is only so much money and I need to be able to show in five years that this thing works so that it can make a difference. And they are looking for ideas and ways in which they can tangibly demonstrate to the voters that yes, there is something happening here which was not happening before. So one of the fundamental challenges would be infrastructure development because people will want to see better schools, people will want to see water supply, people will want electricity, people will want some form of sewerage systems.

The point is, is your project replicable and would it not lead to a situation where after you build it,

Turn to **P28** 





all that would happen is that people would say, 'ok, now raise some more money and come and build it here. We also want one.' What often is the tragedy of development projects is that where there could be a definite multiplier effect where people see what's happened there, see that it's working and start their own, people instead say, 'that's really wonderful, when can we have one?'

Then as I talk to politicians, I realize that there are so many people who are looking for new ideas for how they can re-invent development and take it to the county level. If I wanted to ensure a better supply of water here, the nearest dam might be 100 miles away in another county, what could I do? Do I and the other three governors go and make a joint presentation to the Ministry of Water?

And then it struck me that given this concept, given the idea of a school as a location for harvesting rain water which is then available to both the school and the community on a large scale, this is something which if it

28

works as advertised, it would be a big eye-opener which virtually every governor in every semi-arid place, will see a potential solution to so many problems in one step and it reminds me of something else. When you hear that there is a group coming to do research on a new model of slum toilet, you wince and say, well, who hasn't done that? There have been so many. But then, there is a group from M.I.T. The more I looked into it, the more I realized that whether this particular effort succeeds or not, for a slum area, a new model of sanitation is called for. You can't hope to have pipes carrying sewage into a central treatment plant. You need something completely different.

**A:** You need decentralized infrastructure, which is exactly what Pitch Africa in a larger sense is about.

# Q: Yes, exactly. That's what struck me. Now, rainwater harvesting is a major infrastructural advancement.

A: It's a radical conceptual shift in what infrastructure is. What is particularly strong in the way PITCH\_Kenya is developing is that coupling this decentralized Above: HWC meeting with Cup-founder Mel Young and guests

**Below:** Jane with Builder and Headmaster at at Uasonyiro School



infrastructure with the League and LUC we have built into this programme the tools and mechanisms to ensure that communication and therefore scaleability will be rapid and practices more widely adopted.

Q: If you can prove it works. A: Yes, exactly. What we've been







Sports integrated rainwater harvesting is developing smaller scale buildings and systems that harvest substantial amounts of rain and can be readily adapted for use as schools, clinics, latrines, commercial space and so on that incorporate many of the same principles. These fall under the umbrella of what we call Waterbanks. The Zeitz Foundation have been doing crucial work in the region assisting communities



in building schools and developing environmental programs. They asked us earlier in the year to what extent could the principles of PITCH be integrated into a school that would cost the same as a traditional four classroom rural school. The Waterbank School is our answer. With funding and support provided by the Zeitz Foundation and Guernsey Overseas Aid Committee we are building a Waterbank school right now in the same area. If this works, and there is lot to say that it will, this could be a highly replicable typology, offering a way for key sustainable principles to be integrated at a smaller scale and lower cost.. And so that's been very exciting, it's under construction and should be completed in three or four months. And we are all hoping it works, works for the headmaster, the teachers, the children, the parents, the community and the builder.

The Waterbank school provides four full size classrooms plus a substantial water supply for the kids. The school can harvest almost 350,000 liters in a typical year and store 150,000 liters at any given time. Addtionally, we are also providing with in the school, a community theatre where environmentally-based theatre productions can be performed, by and for

### Above: PITCH\_Africa water filtration demonstration Left: PITCH\_Africa Studio USA

the community and we are also providing a large communal space that can be used in any number of ways from workshops and so on. It was quite a challenge because we are building a substantially bigger structure for the money. The principles of the Waterbank School are quite simple; invest more in the size of the roof, design it to help collect, rather than deflect rainwater, and detach the traditional building enclosure, usually stone or concrete, from the school itself to form a perimeter enclosure creating a more protective world within the bounds of the school. These strategies allow us to address some of the considerable problems in the region presented by black cotton soil and they allow the school to be more open to the outside, so vegetable gardens are protected and can be an extension of the classroom. The Waterbank school literally embodies key sustainable principles pertaining to water and and conservation agriculture that should help make teaching of environmentally sustainable principles easier. So it's not just a teacher telling you, but you see it yourself: the water filtration systems incorporated and so on.

This is a real experiment because it's quite a challenge to see if we can do

Turn to P30 🕨



something within some quite considerable constraints, but if we can, then we could have something replicable and this could be very good.

Q: Yes. And I can tell you ten years ago, there would have been interests yes, but there were no legal structures in place let alone a budgetary allocation going out to the counties which would have allowed leaders to think of this stuff. Increasingly now, anyone who wants to be a governor has to think in terms of the total amount of money they are getting. But if you bear in mind how many people there are in each county then you realize that unless you find radical and decentralized solutions to infrastructure needs, you are simply not going to be able to do very much even with all that money. So, to me that was the strongest aspect of this and I'll tell you something else: anything which works in Kenya, works in East Africa. Where Kenya goes, East Africa goes.

A: Yes, now I realize. I think this is why we have invested so much time, energy and passion in getting this work. The problems that we are having to solve in Laikipia, the soil and even the logistics, it's an excellent

30

opportunity to really test the strength of the idea.

Q: So, supposing I was to tell you I'd like to organize at some point a visit by some people I know who have all discussed with me how to create infrastructure in a decentralized context, how soon would you have something you can show them on the ground?

A: Well, there is a big hole right now. The central water storage tank is almost complete, the building should be complete to ground level in a week and up to roof level in the next month, then it is finishing the inside.

# Q: Are you filming this? It's very important to document this.

A: Yes. We are running a flickr stream throughout the process and also compiling video footage. We are using a builder who has worked with the Zeitz Foundation before to build schools in the area. We are using all the methods he is familiar with. Because again, if you start doing everything in a different way it has a significant impact on replicability... We are interested in lowtech things and processes and in innovating at this level because of course together, many such things in fact can behave in very sophisticated ways.

It was nerve wracking watching the

Above: Waterbank School Construction Harambee **Below:** Waterbank School classroom garden builders dig the hole, looking for some stable soil. In the rainy season, black cotton becomes an almost viscous liquid. Coupled with this, in this region the winds are very strong which is one of the reasons buildings tend to be barrack-like, solid, enclosed. By having a tall, strong perimeter wall defining the school precinct, it allows us to do several things: we can block the wind and



produce a good micro-climate in the school itself, conducive to the equator, and below ground, create a filter in order to better manage the soil conditions within the enclosure. So we are doing the most we can at the moment to try and address this.

I mentioned earlier, that at PITCH\_ Africa we have also been looking at some alternative ways of thinking about domestic rainwater within communities themselves. We have developed something that we call a Rainchute. I brought a demonstration with me which consists of a decommissioned 1966 ex-Vietnam parachute mounted upside down on poles.

# Q: It's not air-worthy but it's waterproof?

A: Yes. Parachutes are typically made from rip-stop nylon so are both strong and water-resistant. Many of the rooves of people's homes are just not suitable for water capture or are too small to deliver the quantities of water needed. This provides a way to capture water in a clean way and direct it to a storage tank.

# Q: They've got what? Grass roofs?

**A:** They've got grass and mud roofs for the Samburu and Maasai. So we are testing





it in a quiet way at the moment. We are working with some of the women's groups

# Q: How much water can that harvest?

**A:** This can keep several families going for a year.

# Q: And how many litres is that?

**A:** A 7.5m diameter Rainchute harvests on average 70 litres a day

# Q: 70 litres is what it would harvest or 70 is what's available from it every day?

A: The Rainchute can harvest over 25,000 liters in a typical year so if you can store the water you harvest and regulate its use, you would have 70 litres every day all year.

## Q: In one parachute?

A: Yes. It's 7.5 metres across and it would cost under \$100 (USD). So, we've been looking at the cheapest instance in order that we cover a broad spectrum of rainwater harvesting needs and not just focus on the institutional proposition. We wanted to have systems that could also address needs in domestic situations. The common practice is to put gutters on houses, but that's one of those things that may work well in many situations but certainly not all. Again there **Above:** Waterbank School

is a lot of focus on gutter-based rainwater harvesting systems, so we felt our efforts were based placed looking at the issue from a different point of view. In fact, we just took to the Rainchute to the school and the boys set it up as a demonstration. We are now working with the girls' volleyball and netball team's to see if the girls can get involved as Rainchute ambassadors in the community.

# Q: And are there hundreds of those parachutes available?

A: Yes. There are a lot and if it proves viable, I'd like to start negotiating with some of the world's armies to see if we can get some form of sponsorship and drive the cost down further. I particularly like the directness of this proposition, turning military equipment on its head to create a peace building initiative. Access to water is a cornerstone in building peace.

## Q: What do you use to hold it up?

A: When we had set it up in the States, we were using bamboo poles because they were the cheapest, lightest and strongest pole we could find, but bamboo poles don't make sense, certainly not at this point in time because they are actually quite expensive so we were looking into using

### Turn to P32 🕨

# Cover **Story** | PITCH

# PITCH\_Africa



### **From P31**

these other poles that are used traditionally by the Maasai to build the manyattas which I understand can be harvested sustainably and the cost is negligible. What is rather nice about a parachute of course is that it comes complete with ribbing so you get a lot if the structural properties that you want in order to deal with the weight of water. you've got a hole in the middle and you've got all your strings as readymade tension so it helps to save the cost because you do not have to adapt something. You can erect the Rainchute in 20 minutes and take it down as easily.

# Q: And where would the water get out of this?

A: You would need to build a water storage tank and position the Rainchute over it. The water flows directly to the hole in the centre that has a funnel attachment

32

to give you more control over directing the water. The easy portability means a they can be moved to different locations and shared among a community. In some regions where you have relatively shallow wells that have dried up, this might be an effective way to help recharge wells.

# Q: And now once you have the water, how do you make sure it's hygienic, how do you make sure it's potable?

A: The filter we are using was originally developed by potters in Nicaragua in the 1980's. The filter is based on ancient principles and like many things we work with, it is not a new concept. These potters who formed an organization called Potters for Peace, started making pots as water filters working with a simple principle. You begin with clay adding carefully graded sawdust into the mix; you press and fire the pot and you produce a porosity within the thickness of the clay as the sawdust burns



off. You then dip the pot in colloidal silver which acts as an anti-bacterial agent. The capacity of a single pot about is 10 litres and you can filter somewhere between two and three times its volume every day. So each pot cleans about 20 to 30 litres of clean water. This filter literally removes 99.9% of the bacteria and pathogens. Each pot lasts about 2-3 years.

# **Q**: And it costs approximately how much to manufacture?

**A:** The cost per pot is under \$20 dollars, though we hope to get it as close to \$10 as possible.

# Q: That's all it takes to create a filter that is that effective? I must be missing something. I thought it would cost a lot?

A: No. At the moment we are able to get them to Laikipia for \$20. There are quite a few organizations around the world and in Africa working with these or similar filters. Now what we became interested in is whether you could adapt this principle to filter water on a larger scale because back then we were looking for a filtration system that could cope with the quantities of water stored in PITCH and Waterbank school. The filters cannot at the moment be enlarged due to the demands of balancing water pressure with clay strength, We developed the principle of banking individual filters together, like a battery, and combining this with a header tank, receiving tank and distribution system. This is another really exciting thing.

This was presented at a conference last year attended by many representatives of African water municipalities and they got really interested in this, I just love it when these low-tech propositions enters into that world where high tech solutions tend to be given precedence, The reason for their

## Turn to **P34**

interest was that the cost of chemicals for water purification is very high and what these filter banks can do take out a chunk of that expenditure.

And the other thing which is really interesting about this and it's one of the things that we are going to be doing when we set pitch up, is that these filters can be produced anywhere and so we think for about \$10,000 or \$15,000, we can start up a small business in Laikipia to start producing them.

# Q: Remarkable. I always thought pottery required special soils?

**A:** Well, we are going to have source the clay.

Q: Where will you get the clay in Laikipia?

A: There are areas of clay that look promising along the Tana River, but we don't know if the materials are suitable or available yet.

# Q: But it's potentially a business in itself especially if you have all the parachutes. That actually is so insightful.

A: Yes. I think one of the crucial points about PITCH is that it has been developed with a view to encouraging local enterprise intiatives as much as possible. Should someone in the community be motivated to take up an opportunity such as the water filtration, it would be a great asset.

The filter and the scaling of the filters in filter-banks are a great example of how a small and quite simple component could have a massive impact across a region. This is just one example, but PITCH contains the seeds for many such social enterprises.



# About PITCH\_Africa

**PITCH\_Africa** is a US-based social enterprise organization and subsidiary of ATOPIA Research, a US-based 501c3 non-profit Research and Development organization that brings architectural, engineering and planning expertise to bear on some of the most intractable environmental issues facing populations in the 21st Century.

PITCH\_Africa focuses on promoting high-yield community-integrated rainwater harvesting initiatives using sport as a catalyst. The design for which the organization is best known is a Rainwater Harvesting Street Football Stadium that sits above a school and community education centre. The organization is focusing on the African continent, where the need to address water access is fundamental though their projects are attracting attention globally.



### JANE HARRISON is a

British-American architect, founder of The ATOPIA Project and Founding Director of PITCH\_Africa. She was educated in the United Kingdom, Switzerland and the United

States, attending college at Rice University in Houston, Texas, and completing her graduate work at the Architectural Association in London. She has been in Architectural and Strategic Practice with David Turnbull since 1988. Her focus on practice runs in parallel with a continuing commitment to academic research. She has taught Architecture and Design Innovation globally since 1990, including at the Architectural Association in London, The Vienna University of Technology, Yale University, Harvard University, Columbia University and has been on the Princeton faculty since 2002.

PITCH\_Africa and the other not-for-profit initiatives of ATOPIA Research began in 2005. UK-born DAVID TURNBULL

is a Director of ATOPIA design <> communication <> urbanism (LLC), a founder of ATOPIA\_ RESEARCH (Inc) and Design Director for PITCH\_Africa. He has worked extensively in the UK, Japan, SE Asia, China, the Middle East, Europe and the USA. His academic career started



in 1989 at The Architectural Association in London. His more recent academic appointments include the Eero Saarinen Visiting Professorship in Architecture at Yale University, USA, and Visiting Professorships at the University of Toronto (sponsored by CITY-TV), Canada, and Columbia University in New York, USA. He was Professor of Architecture at the University of Bath in the UK from 2000-2005. He is currently a Professor of Architecture at The Irwin S. Chanin School of Architecture at the Cooper Union, where he held the Ellen and Sidney Feltman Chair in 2008 and 2009, and Visiting Professor of Design & Innovation at The African University of Science & Technology in Abuja, Nigeria. He is a Fellow of the Royal Society for the Arts in the UK.

# **PITCH\_AFRICA IN PICTURES:**

Promoting high-yield community-integrated rainwater harvesting initiatives using sport as a catalyst



Above: Children at the LA launch Below left: Ewaso Nyiro students Below right: Cistern Corner Bay











1: Through the net at the LA launch, 2010
2: Waterbank School classroom Interior 3: Homeless World Cup opening ceremony
4: Ewaso Nyiro Girls' Netball Team Water Ambassadors 5: Waterbank School foreman Wilson measuring 6: Waterbank School Reservoir Construction 7: Waterbank School under construction.





