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The Big Interview with *the ETH Zurich and University of Seychelles research team*

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Continued on page 3



Participants from ETH Zurich and UniSey.

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Who took the major decisions in this case study?

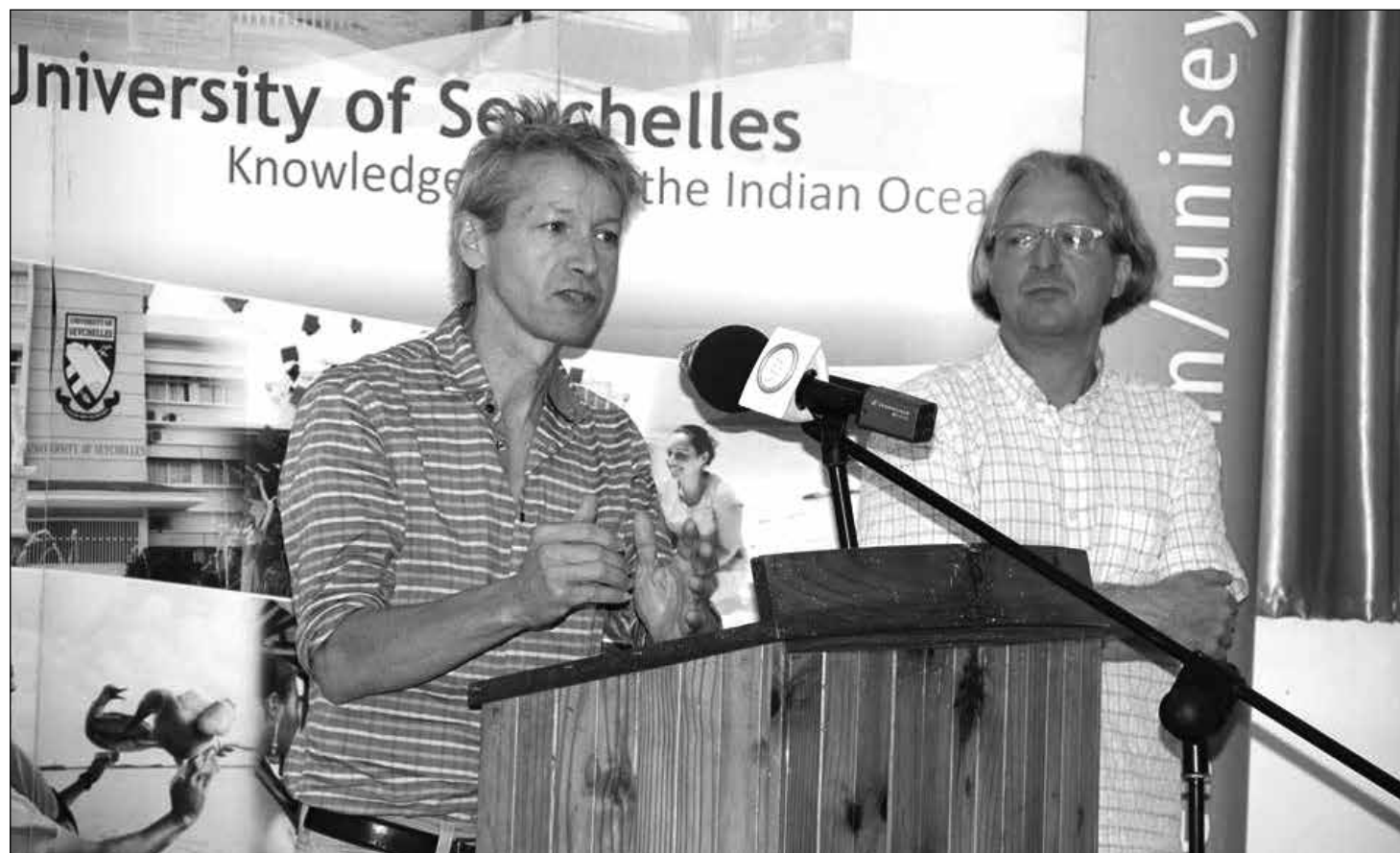
Dr. Pius Krütli: I came here for ten days in February, talking to at least 30 people from different ministries, with different stakeholders to decide what we should look at. It's really a joint problem framing we went through. And finally we wanted to go with agriculture – that was our first idea. But it turned out that waste is perceived as a much more pressing problem. Finally the minister himself and I agreed on working on waste. That was really a joint decision. We have to listen to people here, they think this is most urgent and that's our understanding.

What does this case study consist of?

Dr. Michael Stauffacher: I just want to stress one essential point before we get to that. There was a long preparation phase, so there was a whole semester at ETH, starting in February up to June, we worked together with the students. So the students were exposed to literature, reports, and were reading and preparing ideas for potential research, preparing research designs, and so on. We also had two people from Seychelles visiting us for a whole weekend, discussing the ideas, streamlining the project, getting feedback so that there was an exchange and so that the concrete research was really fitting. So there was a lot of preparation that went into it and then the field work could kick off on the first day.

ETHZ student: At the first stage we went through a problem defining phase. It's not always very obvious what the problem is, and what is perceived as a problem. In this problem defining phase we found out that together with an increase of income and population growth, together with an increase in purchase power, more waste was generated in Seychelles. Landfills are filling up very quickly. So we want to find out where this waste is coming from, where it is going to, and what possibilities we have to deal with the waste management – to deal with that problem and to use opportunities to deal with waste in a different way.

For that we look at the whole system, from the very beginning at the generation of waste – so at the very beginning there is the customer buying a product, the shop that is selling the product, or there are companies producing and manufacturing products – all these processes are coming with waste. Then this waste is being collected; mainly most of the waste is going to the landfill, but some of it goes to recycling as well, there is a bit of sorting, and we want to find out what potential there is to enhance this system. If we look at the composition of waste, what possibilities do we have to actually reduce the amount of waste going into the landfill, from a very economic perspective as well. It must be economically feasible. There are a lot of aspects that we try to look at and for that reason we have built different groups, and in these groups we have about seven members and are concentrating on one part of the system. For example my group was looking at the social aspect, so at the very beginning of the waste cycle. Others for example looked at the bio-waste and what possibilities there were to deal with that; what products can



(L - R) Pius Krütli and Michael Stauffacher

be made from that. Another group tried to understand where all the materials go to, such as glass, aluminum, plastics, etc.

There seemed to be a lot of elements to this project. How many people were involved in total?

ETHZ student: We were a team of 18 students from the university in Zurich and everyone had a Seychellois partner from the University of Seychelles. The groups were of different sizes as well. It could go anywhere from four to eight members and each student chose their group based on their interests in this project. Some parts of the project also needed more man or woman power as opposed to other less stressful aspects of the project. One group worked on the development of the dumping sites, and how many additional dumping sites would be needed to continue to sustain the community for another 25 years. These were the kind of results we hope to come up with at the end of this study.

Dr. Stauffacher: We should give you a short background on why we run those kinds of courses. We have three different master programs and our 18 students here major in environmental sciences, agricultural science, there are also environmental engineers and planners. So we have quite a variety of expertise in the background. But what I want to say is this is an elective course for this master program. The principle idea is they do not have a clear professional profile when they finish their studies. So they should learn how to tackle real life problems. We run this kind of studies every year, but changing the topics each time. This time it's waste, and previously we have only done it in Switzerland. Until now it had only been urban development and how to deal with nuclear waste or topics like this. We thought it would be a good idea to join with the university and bring some new methodologies to the university.

Is it too early to comment on your observations so far?

ETHZ student: This is a very

fruitful corporation between the students. There is a lot of intercultural exchange; we bring in some new methodologies, or just another way of thinking really. Combining that with the Seychellois way of working, it's a very fruitful collaboration. It's a very big learning process of how things can be tackled in a different way.

One very small insight into our research shows that up to 40 random people we spoke to in the streets perceived waste as a problem here in Seychelles. Like we said the streets are clean, the beaches are clean, so one may assume that if we don't see waste it can't be as big of a problem, but this is not the case. People are well informed and the majority, nearly 90 percent, does perceive waste as a problem and they have a pretty good imagination of what actually is a problem in their country.

How grave is the situation at the moment for Seychelles' waste management?

Dr. Stauffacher: It depends on perspective. On one hand, one has to recognize that certain elements of the waste system works well, especially all that is visible. So cleaning up, collecting – if you look on the road, that's impressive! I think the main road here in Seychelles is cleaner than in Switzerland so it's cleaned up very well and with a lot

of effort. That costs money too. Now is it necessary that you need to clean up so much or shouldn't we rather tackle the other issues so that not so much is produced and then thrown away, so that we won't have to invest so much money on cleaning.

The other perspective is really at the landfill. A landfill I would argue has different elements one should look at. Do we have serious environmental impacts in the surroundings, in the ground water, in the sea, etc.? The other thing certainly is land – you are losing valuable land just to pile up waste and because the amount is increasing so fast, the landfill is filling up faster than expected and it's foreseeable that you will have to build another landfill on very scarce and expensive land. That makes it a very serious issue.

A third element of the seriousness of this is missed opportunity maybe. If you put everything in the landfill, you miss the potential as well of the resources, because you are putting things in there that could be used for recycling. They could be reused for different purposes. Having said that, missed opportunities are not so easy to be tackled – one of the group focused on that. If a certain fraction is recycled, you need to do something with it. For example you need to sell it, be it in Seychelles or abroad and in order to do that you have to export. Transport costs, demand is low, market prices are low – so you run into many of those effects

that are really very difficult to understand and that's what makes it so attractive for a case study for learning, because there are no simple or easy solutions, or any straightforward answers. That is one of the key elements that one has to always remember – there are no straightforward answers. So for the landfill example, in that environment, to a certain extent it is so optimal and we have to and can improve it. We must ensure that we don't just end up with another landfill. It is a slippery slope and it's fast. You have to act fast, because the development is fast and purchase power is going up and product quality is going down. More trends like fashion comes in – these are global trends. In Switzerland we are producing more waste and have at the same time expensive and well-functioning recycling machinery which helps us so the problem is not so visible.

Would it be possible to create a sustainable system where people can start recycling from their homes and have system carry out all the way to the landfills, or is it somewhat of a challenge?

Dr. Stauffacher: There are a lot of challenges! We've mentioned some and we could add more to the list. Sorting on a household level, which of course is the best, requires a couple of separate bins at every house – that doesn't exist yet. You have to have separate plastic bags, or separate containers that each household then carries to other outdoor bins. But then you need further cars because at the moment there is just one truck collecting all the waste. Then you need four or five different trucks carrying different fractions of waste. Already what sounds pertinent and what everybody would fully agree on – yes we need to separate waste at a household level- that has a number of additional costs and requirements. It brings us back to infrastructure, and services. We have not talked yet about what we do then with the separate fractions. Can we actually sustain it so things don't end up all mixed together once at the landfill? That would be counterproductive. Even if you keep things separate, like the PET bottles in one section-

that works perfectly well. They are compressed and then exported. But if we now have other fractions, it might not work; there might not be a demand.

The collection is an issue, but also the awareness of the residents here. Would they do this separation process? We heard that they had that kind of collecting system at least with regards to bio-waste but I don't know when and why it stopped. To reintroduce and to educate people in that sense, that's another issue. We do not know whether this works.

UniSey student: When we did the interviews with most of the people, they mentioned that recycling is an option. They are willing to pay if an NGO or any organization is willing to carry this out; they are willing to pay money to get this working. A majority of people are willing to pay, but only for a system that is guaranteed to work.

What is the aim of this entire project? It is so extensive and obviously long term. Is it to reduce waste, or help with waste management alone? Or is it to make recommendations?

Dr. Stauffacher: I would argue that education is maybe a core element and not just because this is a teaching project. Beyond that, this newspaper published articles on our case study which increases the visibility of that problem and issue. We need to bring waste management up in the priority list so it becomes more visible. Waste management normally tries to hide cleaning up and hiding. That's not just Seychelles; it's the same in all countries. You burn it, you put it away, and in order to tackle it you need to bring it to the forefront. With our collaboration with UniSey, we are building their capacity of people who know about waste, which is novel and just a side remark – imagine ending up working in this field of waste. Six out of 18 of these students said yes they can imagine themselves working in this field later. That's already quite a success because it's about having expertise, to know a lot before successfully running a waste management system. It's highly complex and a high level of expertise. In the field work, we might have talked with over 200 people. Again that's of course part of a whole mechanism – talk more about waste to bring it to the front and to seriously consider different options and willing to pay for it or not – those are some elements that need to be discussed.

I don't believe in top down decisions. Even if you decide to separate waste, in the end, everybody living here and working here needs to comply and buy in. The easiest way to get that is to involve everybody in the setting up because people need to understand how it works. This will be an essential contribution – that we increase transparency of the system. What our students are doing is sharing information through interviews, preview of existing reports – all this is already available but they are putting it together in one report. They are presenting it in a way that is accessible and maybe that will be unique the first time that there is a comprehensive picture of waste. This can help shed light on what the different laws and regulations are and to find out who pays for what. You really need support from the population.

Continued on page 9



Collaboration between ETH Zurich and UniSey.

The Big Interview *with the ETH Zurich and University of Seychelles research team (Continued)*

CONTINUED FROM PAGE 3

Will you be making your research and consequent results available to the public?

Dr. Krütli: We have to; it is our duty as researchers. We are funded by our government and this is a primary idea that new knowledge has to be published. Of course a few things will be developed; you have the research report, the scientific part of it. Not many people will be interested in reading that one but we will release and bring the results to a broader audience.

Is it fair to compare Switzerland to the Seychelles in terms of their waste management processes?

Dr. Stauffacher: No, you should never do it and for various reasons. One is because Switzerland is so rich and we have highly efficient but highly expensive management systems, and the second reason is it was built in a different time. For Switzerland it would not be possible to develop infrastructure as we were able to do in the 70's when there was a boom phase. Everything was going up and we had a lot of money. But there are just some things that are historically unique.

Now we are struggling with the high costs of this infrastructure because we have to rebuild and renovate certain aspects of it. That is so costly.

ETHZ student: In a way yes there is development in both countries. I can quite well remember when I was a child, we had dumping sites everywhere. Any municipality had a dumping site so we went through this stage as well. But then we realized we need to solve this problem and our first solution was incineration. We also burnt our waste, and then we introduced recycling. For example you can bring your electronic devices, plastic, and bio-waste and it is separated and collected.

We did it step by step. I wanted to make it clear. It's not that you cannot evolve, you will evolve here in Seychelles and maybe that is the only comparison I can make between both countries. The conditions are completely different, the scale of economies are completely different.

Will the changes necessary in order to have sustainable waste management have to come from government first?

Dr. Stauffacher: Certainly, they set the standards. But it needs support from everybody because in the end, we are all buying. Yes people buy what the shop supplies and that can be regulated but we control how often we buy. Even in Switzerland we are buying good standard products that fashion ask us to throw away after a year or less. Even the best standards don't really secure the reduction of waste production. If I get rid of my shirt just because I don't like it anymore then it's waste. But you might think it's still nice, and for you it's not waste. One's waste and another's waste is not always the same.

We spoke to many different key players and they all have a different rationale. So we need to understand that an authority and a ministry may have completely different interests than for example a redeem center or a mental scrap collective. There is this perception that all the responsibility lies within the government itself. The people we have questioned, for example, it's not that they are not willing to take on responsibility; it's that at the moment a very nice solution has been presented to them. They don't have to do anything, they just have to

bring the waste on the dumping site and the rest of it is taken care of.

How did this entire collaboration begin in the first place?

Dr. Krütli: The collaboration between ETH Zurich and the ministry of Environment started in the early 50s but primarily on conservation biology - so that lasted for almost 20 years. Then last year I came here for a research sabbatical with the University of Seychelles for six months and there the idea developed slowly on how we could continue this long lasting collaboration with the university and also with the ministries but - with an open scope. I am not a conservationist. I'd rather work at interface of nature and social science on one hand and between science and society and that's why we are here with these students.

That was the starting point, the six month sabbatical I spent here. In early January we signed a memorandum of understanding (MOU) on an agreement of collaboration, of research, and in teaching as well. We see it as a long term project for us so we really want to build up something and continue this kind of collaboration.