

University Report

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GWYNETH HENDERSON:

In this week's 'University Report' news from Sierra Leone of research that aims to provide air conditioning without using precious and expensive electricity, and from Kenya an interdisciplinary department for development. Now I bet from that a lot of people will assume I'm talking about a department of agriculture - well I'm not, I'm talking about the Department of Land Development at the University of Nairobi - a department which is producing the sort of people whose importance has I think very often been overlooked - people who are trained in the economics of building and the economics of land development. Well why are they so important? This was the question Ahmed Salim first put to Mr. Saad Yahya a lecturer in the Department of Land Development in Nairobi - why is his department important?

MR. SAAD YAHYA:

Well its importance lies mainly in producing graduates and also in particular new materials on the economics of development. Now for example, before anybody builds he must work out a certain feasibility study and it is here that you will call in a valuer or a county surveyor, at the same time you do not know the cost of building or how much a project will cost - it is the county surveyor who works out these things. Housing, for example, although we build a lot of houses, the management of the housing project who is in touch with the management of housing estates, hasn't received as much attention as it should and that is why we have many problems as far as management is concerned. This is because we haven't got sufficiently qualified people who are housing managers and we are producing these people. Another example is the question of the transfer of agricultural land and from the former European settlers to the African settlers - the Kenyans. Now this project has to some extent been delayed by the lack of qualified valuers, and we are trying to produce these valuers who are competent and qualified to carry out this work.

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GWYNETH HENDERSON:

Well basically as Mr. Yahya says the professional skills of valuers, quantity surveyors, building managers and so on are essential if development is to go forward at a good pace - and if large amounts of money and energy are not to be lost as well. Well the Nairobi Department has a long history going back to the mid 50's when it was firmly tied to British ways - but it has, of course, changed now. Its two degrees B.A. Land Economics and B.A. Building economics, are now orientated to East Africa's needs and include things like traditional methods of housing, traditional methods of construction and training the students for advising on community self-help projects as Mr. Yahya explained to Ahmed Salim.

MR. SAAD YAHYA:

The students are instructed in methods of advising on certain projects, and quite often these projects lack technical skills and, therefore, they may go to one of our graduates who is supposed to be able to advise them on say methods of construction, supervising a project, and the economics of the project.

AHMED SALIM:

At what stage can one of your students be able to help in that way?

MR. SAAD YAHYA:

Generally during the third year and afterwards, because the first two years are mainly involved in introducing the students to the basics of say economics, building and law. There is quite a lot of law in this profession, and other basic academic fields, you know accounting, book-keeping and so on. It is in the third year that a lot of the application of this theory is carried out.

AHMED SALIM:

How do you go about sending students to various projects? Are there people who ask you to send them to these projects, or do you seek permission to get your students to work on specific projects?

MR. SAAD YAHYA:

Well there is a lot of co-operation between our department and government departments, for example, there is the Department of the Ministry of Lands, the Ministry of Works and other government departments, there is the City Council and various municipal councils, and getting a long vacation these students are placed in the various departments in order to get practical experience. Our main emphasis is that the students should be able to apply his theory in pratise, you know we teach them to be people who think about development faster, and their degrees afterwards.

AHMED SALIM:

How much overlapping, if at all, is there between you and say the Department of Architecture, or is there just co-operation?

MR. SAAF YAHYA:

There is co-operation, and at the same time there is participation in various projects, in research and also in teaching. The whole Faculty of Architecture design and development is based on the thesis that there should be as much common teaching as possible between the three degrees for example - degrees in architecture, in building economics, in land economics and also in the fine arts and designing. So they take a lot of common courses especially in the first year, and you find that even in the second and third year there are common courses between the architects and the land economists and building economists. I myself take a course in Town and County Planning for both students in architecture and students in land economics, and then there are my colleagues who take lectures in building construction, estimating and so on and so forth. This is a good thing, it has worked quite well. To start with it was more or less experimental with the co-operation of the different departments, but now we found it to be very successful and it is still going on.

GWYNETH HENDERSON:

Well it was stressed at the beginning how important it is to produce the land and building economics professionals and yet you know the Nairobi department is one of only three of its kind in black independent Africa - so I suppose it must go without saying almost that there is still an immense shortage of graduates - Ahmed Salim asked Mr. Yahya what the out-put of his department is.

MR. SAAD YAHYA:

Well the rate of output is quite good and it has grown quite a lot since then. When we started in the mid-fifties there was only a handful of students, maybe only three or four coming out as graduates but at the moment we are producing about forty graduates per annum, and the enrolment in the department is about 120 to 130, so the department has grown quite a lot. Again we are not producing enough, we have students from all over East Africa, from Kenya, from Tanzania, from Uganda and therefore not all the graduates remain in Kenya, some of them go to Uganda others go to Tanzania.

AHMED SALIM:

Are there any plans for the development of the department by way of extension of facilities for more students to join.

- MR. SAAD YAHYA: Yes. You may have heard that the Faculty of Architecture is going to get a new building and this is being put up now. It is on the other side of the campus. Now we are moving to our new buildings and this will give us more facilities in terms of homes, equipment, offices and so-on, and literally we will be able to take in more students - at the moment we have an accommodation problem.
- AHMED SALIM: I take it therefore that there is a need for extension and expansion?
- MR. SAAD YAHYA: Yes there is a need for extension and expansion.
- AHMED SALIM: The demand is great than the supply of places?
- MR. SAAD YAHYA: Yes exactly - not only at the under-graduate level but also at post graduate level. We are getting applications from all over Africa actually for people to come here and do their post-graduate work in land economics and building economics.
- GWYNETH HENDERSON: And on research Mr. Saad Yahya himself is in fact working on a housing project - to be specific he is studying the traditional housing of the Swahili people who live along the coast of Kenya and Tanzania to see what contribution this type of housing can make now - and he'll be talking to Ahmed Salim about his project in next weeks 'University Report'. But now are you hot? Are you wishing you had air conditioning - or if you've got it do you worry about your electricity bills? No, I'm not doing a commercial its just that in Sierra Leone a member of staff of the Department of Engineering at Fourah Bay College, Mr. M.D.C. Doyle, has just begun a research project to see if the thing thats makes you to hot - i.e. the sun - could be used for air conditioning. In Freetown Roland Buck asked Mr. Doyle to explain what it's all about.
- MR. M.D.C. DOYLE: The research project is at present in an embryo stage, but what we are trying to do is to use the solar energy as a sole source of power to run an air-conditioning or regrigeration unti. This would avoid the use of electricity. The advantages are of course that it is in effect something for nothing. You're not using electric power. If your sun is in evidence and shining brightly then you can forget about your running costs. Of course there are disadvantages, and they arise mainly because the thing will tend to be bulky compared with the current air conditioning. You'll need a fairly large panel to collect your solar energy in, this may be a nuisance, but you would hope I thing that this would be incorporated in the architecture of a building, without too unpleasing an effect.

ROLAND BUCK:

You say the research project is in an embryonic stage. Does this mean that you were engaged in other research projects before this?

MR. M.D.C. DOYLE:

Yes, I started off trying to use solar energy for the purpose of water heating, and we found in fact that this method of water heating wasn't at its best during the time of year when we felt we needed more hot water - that is the coldest part of the year when the sunshine hours are generally reduced. Consequently it seemed logical to switch to a project where we were using the sunshine when the sunshine was creating the most problems for you. Namely when you were getting excessive heat you could get air conditioning and when you weren't getting such excessive heat then you wouldn't get quite such good air-conditioning.

ROLAND BUCK:

Now why did you undertake this particular research project in Sierra Leone?

MR. M.D.C. DOYLE:

Well when I came to Sierra Leone it was the first time I was in a country with a large amount of sunshine, and it seemed to me that in view of the dwindling natural resources of the world, solar energy would have to be used if possible. It may not be possible to use it in this way, but I feel at least we should try and see if it is an economic proposition.

ROLAND BUCK:

Are you having adequate facilities in terms of materials and equipment to successfully undertake this project. If not, what are your alternatives?

MR. M.D.C. DOYLE:

Well we haven't really enough money or facilities for a project of this nature if we intend to push it through. At the moment we are trying to manage on bits and pieces and odd pieces of equipment that has been abandoned by other workers - things like sections of piping that are spare and this sort of thing, and we're doing a, what we call, string and sealing wax approach at the moment. I think the problem is going to be really fine quality welding. Fine quality welding to stand high pressures on very thin metal sheets, is going to be required, and this most people know I think, is a very tricky problem. It's very easy to burn straight through the metal sheet instead of welding it, and this is something that our local technicians will have to master to make this a proposition in this country, I think. Also pipe work would have to be welded as well and this would be another problem - high quality welding would be required here.

ROLAND BUCK:

How are you trying to overcome this difficulty?

MR. M.D.C. DOYLE: Well we have two welders in our department at the moment who are showing promise, and we are trying to get them as much training as we can outside. We've got contacts with some good class welders outside the country who occasionally have spent a little of their time instructing our people.

ROLAND BUCK: Although you say that the project is in its embryonic stage, how far would you say it has gone and what are the results you've achieved so far?

MR. M.D.C. DOYLE: Well so far we've been examining the levels of solar energy at various times of the year. We are finding the level of solar energy is good in the dry season, but it can be in fact very poor in the rainy season, and it was this work that convinced me that solar water-heating, which was the original project, was not such a good idea. We are still continuing with solar water-heating, or should I say this has been taken over by another member of the staff up there, but we're getting somewhere about half the amount of energy during the rains over the day that you would get during the height of the dry season.

ROLAND BUCK: Now would you say that according to your observations and notes there is enough solar energy here to be able to facilitate the kind of thing you are doing?

MR. M.D.C. DOYLE: Yes I think in the dry season there's a fairly good chance that we've got enough to use for a project of this nature. But in the rainy season we probably haven't got enough in general - in an average rainy season.

ROLAND BUCK: Is this project being undertaken by you alone or in conjunction with other bodies or organisations?

MR. M.D.C. DOYLE: No at present this project is something I'm doing alone. In studying the literature on this subject, and there is quite a bit of literature in the form of conference proceedings on the uses of solar energy and this sort of thing, it seems that there has not been very much done on air conditioning in the sense that we use air conditioning in tropical countries. There is quite a bit of work being done on temperate climate air conditioning, which usually means house heating; but the problem of house cooling using solar energy has been rather neglected, and this is why I feel it might be worth looking into

GWYNETH HENDERSON:

Well for me the point Mr. Boyle made to Roland Buck earlier that the world's natural resources are dwindling all too rapidly would make his project of trying to utilise a new source of power worth doing anyway - in spite of his obvious misgivings in these early stages. We will, of course, keep you posted on the projects progress.