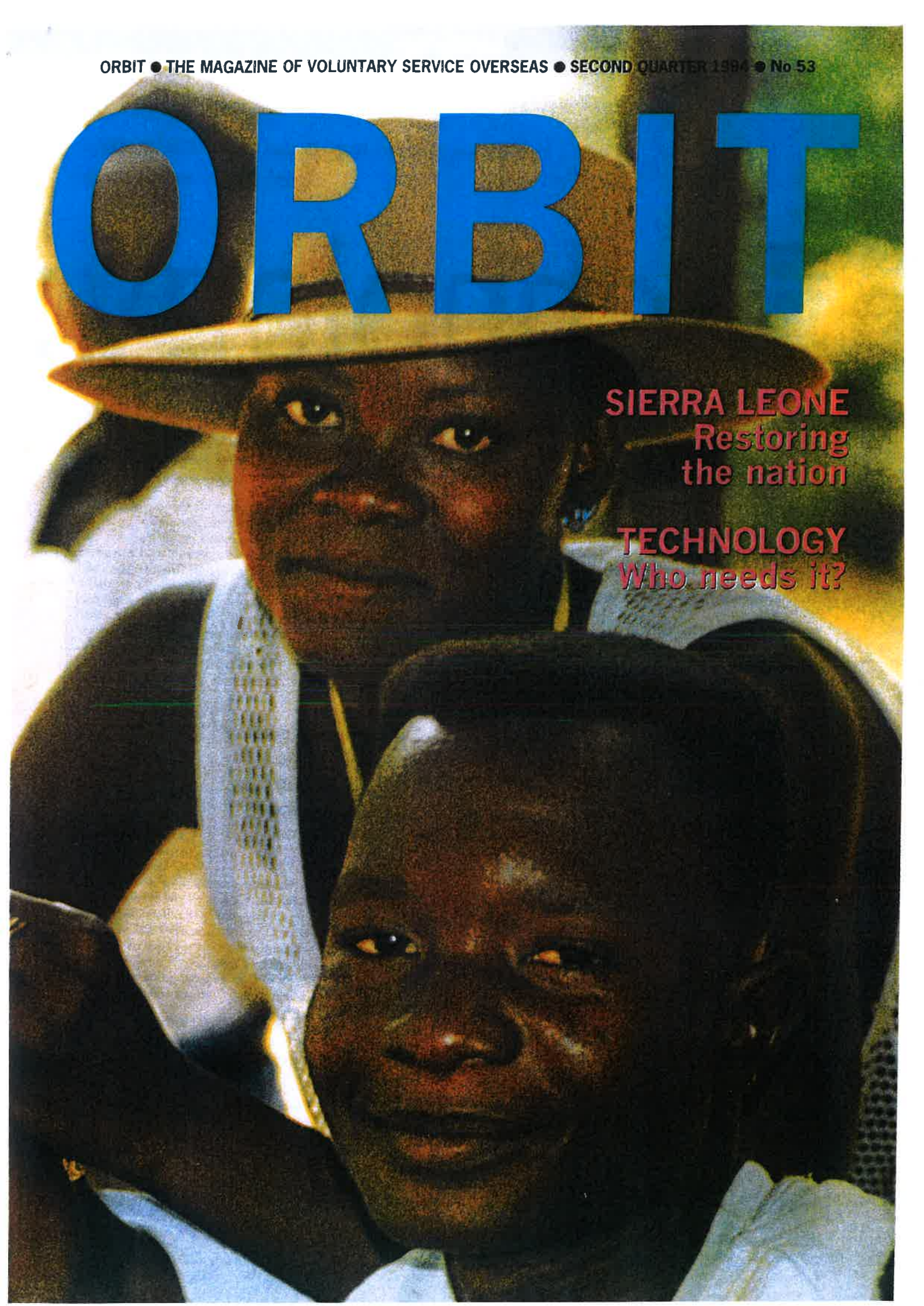


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ORBIT



SIERRA LEONE
Restoring
the nation

TECHNOLOGY
Who needs it?

Technology solves problems. It can also create as many problems as it solves. **Andy Bevan** asks what technology is appropriate – and for whom.

Technology:

Technology: 'Broadly, the body of knowledge available to a civilisation that is of use in fashioning implements, practising manual arts and skills, and extracting or collecting materials.'
(Readers Digest Illustrated Dictionary)

Every human society uses technology. Sometimes people will use their own, traditional, gradually evolved technology; sometimes they will use a range of imported technologies; sometimes both, in a more or less complicated mix.

Down through the ages peoples have 'borrowed' and adapted from other technologies which they have come into contact with, through trade or conquest. For example, mediaeval Europe learnt fine paper-making and the use of gunpowder from the East. And more productive technologies can also swamp indigenous ones, causing them to wither and die by economic pressure (cheapness, quality) or by force (colonial regulations, force of arms) – or both.

In developing countries choices about technology are made within a power relationship where the representatives of the firms, banks and development institutions based in the developed economies hold the main cards. Even within a developing country power relationships at the village level (eg between men and women) fundamentally affect technology choice, as Alice Simonds's case study overleaf makes very clear.

Unpredictable developments

So technology choice is a social and economic question, not a purely 'technical' one. Just because something is technically feasible in the USA doesn't make it economically viable, socially desirable or sustainable in Tanzania. In the West, for decades, engineers and designers have been looking for capital-intensive technological 'solutions' because in our economic and social context labour is relatively expensive and mechanisation/computerisation is relatively cheap.

In most developing countries, however, the reverse is true: labour is plentiful and relatively cheap. Population growth and mass underemployment are among

the major challenges to be faced. At the same time, imported capital-intensive technologies are relatively expensive, if not ruinous in gobbling up precious foreign exchange.

In particular, capital-intensive, 'high-tech' interventions can have a huge but often unpredictable impact on the lives of thousands of people. The construction of a major new road, for example, may bring heavy plant, labour gangs and a large influx of cash wages, in the short term, to an area which previously relied on subsistence agriculture. In the longer term improved transport may mean that local farmers start to produce crops for cash, or may lead to rural depopulation.

All of this may form part of somebody's idea of progress, but many of these developments will be unpredictable or unstable – and most of them will take place without the involvement of local people in the planning process.

For these reasons there is an interest in most developing countries in technical approaches which minimise the use of imported materials and techniques and which maximise the use of locally available materials, skills and labour (even if design and production 'improvements' of an intermediate kind are required).

What's appropriate?

These are some of the factors which underlie the idea of 'appropriate' or 'intermediate' technology. But who should determine what's appropriate? The development experts? The technologists, appropriate or otherwise? Or the users, the local community?

Again, it's easy to say 'the users'. In practice, it may be more difficult to find the means (through village elders, new or established committees, women's groups etc) to consult 'the local community'. Yet the consensus represented by the articles in these pages is that an honest attempt should be made.

Just because something is technically feasible in the USA doesn't make it desirable in Tanzania

who needs it?

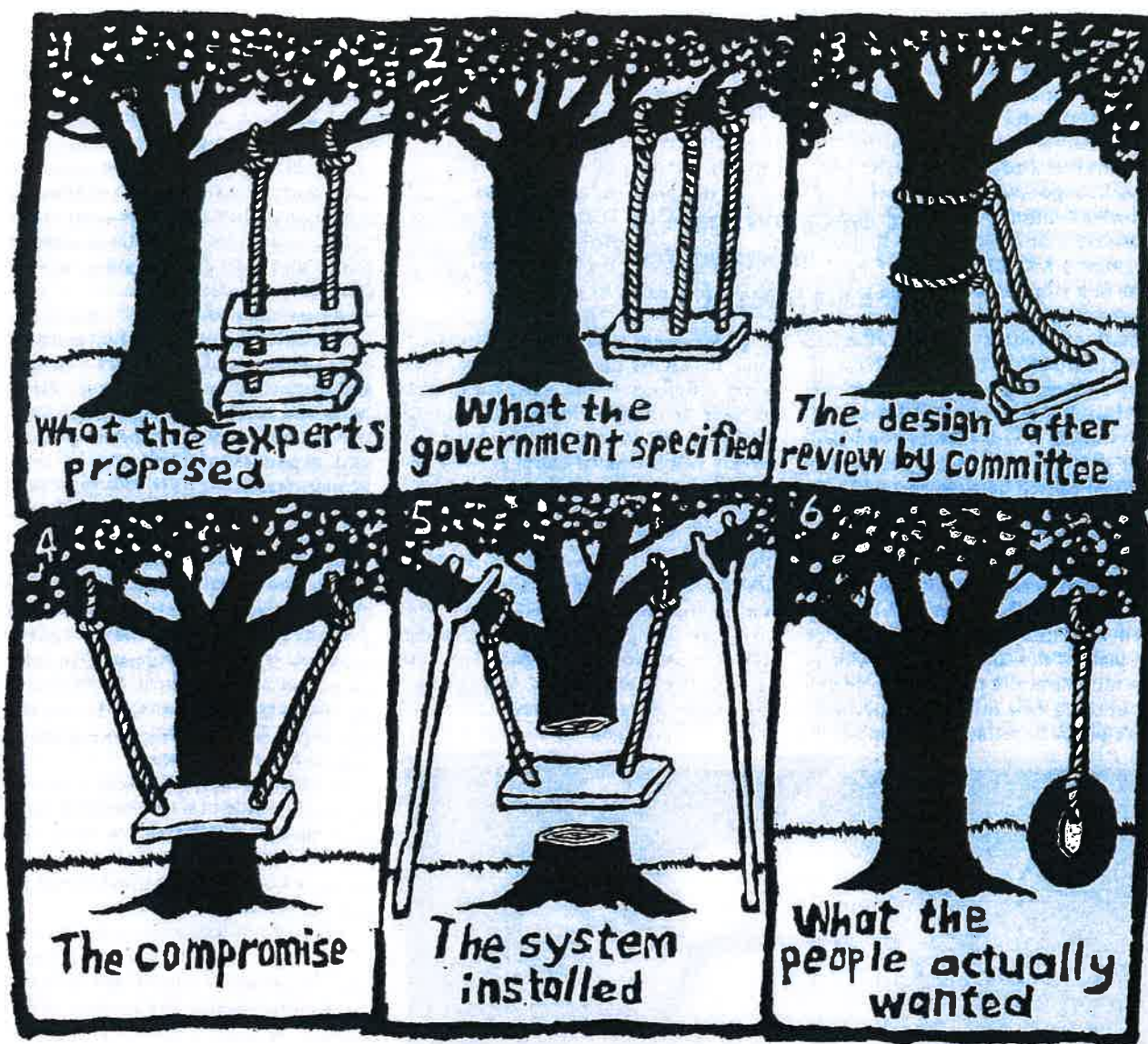


Illustration • Jane Sandoe/IT

There are other considerations, though. In reality, every developing country has a 'modern' sector too. Most governments would see the modern sector as the leading edge of their country's development strategy. It is a sector which builds high-rise office blocks, reinforced concrete bridges and dams, highways and telecom networks. The modern sector takes the lion's share of international

development 'aid' funds – most of it recycled to 'First World' companies.

Even so, every developing country wants bridges, dams and telephones. This produces a very real demand for high-tech skills alongside the 'appropriate' technologies which VSO is currently more likely to be working with. Where VSO volunteers are involved in big, externally-funded projects, surely they

can do something to ensure that local communities' real needs are respected?

Perhaps so. What is certain is that there is no shortage of dilemmas and conflicting demands. This issue of *Orbit* explores some of these issues further. Read on... □

Andy Bevan is a technical postings officer for VSO

Harvesting the rain

VSO volunteer **Alice Simonds** profiles one water project where the women took over to provide their own technological solution.

Small, young and female – my new employers tried hard to cover their initial horror, but I was definitely not the water engineer they had dreamed of. I had been posted by VSO as technical adviser to a water project in Karagwe, a remote district of north-west Tanzania, and the employers in question were the local development association, KARADEA.

The first visit they took me on was to meet the district officials, and then to the male-dominated village councils. There I heard of the terrible problem of water, due, among other things, to the unfavourable geology and a state of deforestation. These factors combined meant that any water that was needed had to be carried up from the deep valleys to the villages on the ridge-tops.

I listened to what they wanted. Pumps, pipes, boreholes and standpipes – like the systems seen elsewhere, only theirs needed to be bigger and better. I asked what they proposed to finance such plans with – and I was met with an expectant silence. I took a deep breath and spent a few minutes explaining VSO's policy of technical as opposed to

financial assistance. They were clearly disappointed.

The women's view

I then began to visit the women's groups. I listened to them talking about the problem of water: disease, time, energy, etc. Suddenly, as it started to rain, the group disappeared: they were putting buckets and saucepans under their eaves to collect the rainwater.

As the weeks passed the women and I came to discuss the advantages of rainwater collection. Clean, safe, cheap and on their doorsteps – literally! Then one week a group invited themselves to the weekly village council meeting. After the usual banter about water pumps, pipes, diesel and repair costs one brave woman stood up, faced the men and suggested they consider rainwater collection instead. After all, Karagwe was one of the rainiest districts.

There was an insulted silence under the tree. A look of indignation came across the men's faces. Rainwater? Individual tanks? What, no pumps? No pipes? No prestige?

Seeing is believing

That brave woman and I persuaded a group of about 20 to visit a rainwater harvesting project about 150 kilometres to the east. Seeing was believing, and they returned with new attitudes and enthusiasm. They set about distributing questionnaires for me, gathering information and spreading the good news of affordable rainwater harvesting as they went from door to door.

I soon had quite a set of information on water demand, roof sizes and type and potential income (goats, coffee, beans and beer) from each house. Using this in a feasibility study the design, scale and expenses of the water project became clearer.

The questionnaires revealed that many households had five or six goats – others more than ten. Many women had quite a good regular source of income in their monthly beer brewing. And they all harvested beans, maize and coffee twice a season from the fertile soil. We calculated that a large cement water jar with the capacity of approximately 100 buckets (1,400 litres) would cost the equivalent of two sacks of beans, three goats or four monthly brews of beer.

In the shade of a tree beside a stream we began to build small, affordable 'rain jars'. These were installed at each customer's house after they had put up guttering, which they had also started to make in the village.

When I left three years later over 15 per cent of the village had their own clean water supply for at least six months during the erratic rainy season. It was a small step, but it changed the lives of the women, who could give more time and energy to increasing their harvests. And the queues at the health centre started to shorten. It had taken a long time but the project had been designed by the villagers themselves. And they were very proud of that. □

Alice Simonds was a VSO volunteer in Karagwe between 1991 and 1994



Spenciosa Kahendaguzi, the first rain jar customer with VSO visitor Caroline Shepherd

Give us the tools...

...and at least we'll have a job to finish. **Glyn Roberts** argues that mass unemployment in the developing world demands technologies that will bring work.

Any volunteer overseas must have seen the young people there, desperate for jobs. Millions of school leavers in Africa, Asia and Latin America face the prospect of a lifetime without any regular work. Structural adjustment policies mean fewer government posts. Industry can occupy only a small minority. Agriculture needs fewer hands. So what are these youngsters to do with their lives? Drift into the cities? Into trouble? As the Prime Minister of Tanzania put it: 'Youth unemployment is Africa's time bomb.'

This is one of today's development contradictions. Aid rhetoric is pro-environment, it favours sustainable development, it claims that 'the people must be involved in their own development'. Yet the technology adopted by key decision-makers, those with the big budgets, is generally not sustainable. It's costly, sophisticated, energy-hungry, even damaging. And almost invariably it requires fewer and fewer staff to run it.

Tools for the people

Is there a way forward? Perhaps one. As the big projects fail – as so many of them have failed – artisan work and small enterprises will come into their own. They may not do much for exports but they will provide goods, services and jobs where the people are. And that's what matters. Hundreds of thousands of such small enterprises exist already in every town and village. Versatile, spontaneous, even anarchic, they don't fit neatly into national development plans, but neither do they depend on costly foreign machinery or imported fuel.

They will not provide a total 'solution' to the problem of youth unemployment, of course. But if any such solution exists I am sure that the informal sector will be part of it. And if we presume tens of millions of people in the informal, artisan sector we are talking hundreds of millions of tools for them to work with. Where are these tools to come from?

Tools for Self-Reliance, a voluntary agency based in Britain, has now collected and refurbished over 400,000 basic

hand tools and sewing machines for groups of artisans, mostly in Africa. The potential is vast – there are some 50 million useful old tools at present rusting away in the UK! But refurbishing tools, however valuable, is not a long-term answer: for this we must look to local tool-making initiatives in the developing countries themselves.

Tools for Self-Reliance also cooperates with local tool-making initiatives in Tanzania, Zimbabwe, Uganda, Ghana and Sierra Leone. We provide equipment, some transport and training – and we were particularly glad to help VSO volunteers Dave Kilroy and Charlie Batho with their projects on the Isle of Pemba, David Pinder in Sierra Leone and Christian Notley in Uganda. We were also very pleased that VSO technical volunteers have stressed the importance of local tool production, promoting self-reliant attitudes rather than simply buying (expensive) imported tools. So far recorded tool production for the various schemes has already topped 300,000.

The new challenge

But even this isn't enough. The combined effort of all these initiatives can never match up to the scale of the need. Somehow we have to catch the attention of governments and the major aid pro-

grammes such as the specialised agencies of the UN, and urge them to rethink their approach.

It won't be easy. I was recently at a South/North conference and tried to get the 'tools' message across in the working

groups. One group from the North laughed out loud at the very idea of equipping people with tools, and I was disappointed that the participants from the South kept quiet. Yet later, in

the corridors, various Southern delegates came up to me – separately, almost embarrassed – saying, 'I was quite interested by what you had to say. Actually, my organisation has a problem getting basic tools. How do we get in touch?'

My response was that we would like to help, but that trying to meet individual requests will never really solve matters. The only answer is to move 'tools' from being a private problem to a public issue.

That is our new challenge – and one that VSO volunteers can help with: urging decision-makers at all levels to speak out in favour of truly sustainable technologies, tools (in both the wider and narrower senses of the word) that stimulate production, do minimal damage to the environment, and provide jobs. □

Glyn Roberts is coordinator for Tools for Self-Reliance

There are some 50 million useful old tools at present rusting away in the UK



Blacksmiths making butchers' knives in Carigara, the Philippines

Photo • VSO/Nancy Durrell McKenna

