

PROGRAMME BRIEFING

Prioritizing marginalized producers: Practical Action's approach to food and livelihood security

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In 2008 the number of hungry in the world was estimated at 1 billion and the number who are undernourished reached 2 billion – equivalent to almost one in three of world population.¹ In half of the regions of the world the Millennium Development Goal to reduce hunger by half by 2015 is not expected to be achieved.² Yet, world food production has increased by 17 per cent over the past 40 years, growing faster than population.³ Increasing overall food supply is clearly not sufficient to eliminate hunger.

The majority of those who do not have enough food to eat are small-scale producers – farmers, livestock keepers, fisherfolk, forest dwellers – often living in fragile or remote, rural areas. Their food production and incomes are insufficient to meet household needs; they may suffer hungry months when they are not getting enough to eat; and they are often unable to meet other basic needs such as health care and schooling. Their livelihoods tend to be undermined by events, such as extreme weather or commodity price fluctuations, and by longer-term trends, such as population growth, climate change and ongoing conflicts.

Practical Action's approach to addressing the food and livelihood insecurity of such marginalized small-scale producers is to work with the people there to build their capabilities for innovation and adaptation; improve their access to a wide range of technologies and skills; and enable them to find sustainable solutions for the future. Based on 40 years of experience we have shown that with the right investment, there is potential to change lives and to enable people in fragile areas to be drivers of change, not victims of circumstance.

In this paper we describe the practical approaches used to achieve this vision, through direct work in communities, and through influencing institutions and policies from local to international levels. We consider this in the context of the challenges faced by small-scale producers living in fragile, rural areas, including the constraints to improving their productivity, as well as policies that often fail to recognize and support fragile rural areas.

Context and challenges

Two billion rural dwellers live on small-scale farms, including half the world's undernourished people and the majority of those living in absolute poverty. The largest concentrations of rural poor are in South Asia (400 million) and sub-Saharan Africa (230 million). Although some predict – or perhaps hope – that small farms will gradually disappear as the poor migrate to urban areas, the number of rural households for whom small-scale farming is the main source of livelihood is actually growing.⁴

Improving the livelihoods of small-scale, marginal producers therefore has the potential to make a huge impact on poverty reduction and achieving the MDGs. Studies have shown that small-scale farming can be highly efficient in developing countries – even more



Maize harvest on isolated char, Jamalpur district, Bangladesh

What is food and livelihood security?

Food and livelihood security is achieved when:

- Households, and all members within them, are able to produce, purchase or obtain sufficient, nutritious and culturally appropriate food at all times of the year.
- Households are able to pursue a choice of safe and secure livelihood options that allow them to fulfil all their personal, social and economic needs.

This can be achieved through:

- **Technologies for improved production** of food and for related livelihoods.
- **Empowering communities** to plan and manage resources for all aspects of their development, and to collaborate with others.
- **Sustainable, equitable access to and control of natural resources** for production.
- **Secure access to markets** for food and other livelihoods needs.
- **Reducing vulnerability** to hazards, including the impacts of climate change, which could compromise food and livelihood security.

Achieving food and livelihood security requires action at multiple levels: bringing about practical changes in people lives, supported by structural changes from local to global.

so than larger farms – because they make more intensive use of local labour. Small-scale farming also provides knock-on benefits within the local rural economy, where households tend to purchase locally produced goods and services.

For small-scale farmers, agriculture is not just a matter of yield or productivity, or a means to improve material well-being. It is integral to the society and culture of billions of rural people, an element of their personal and community identity, as well as a means to manage and conserve natural resources.



Community animal health specialist (Kamayoq) administers drench to cow, Sicuani, Peru

Local-level constraints to small-scale producers

In order to thrive, rural producers need access to and control over adequate natural resources – whether land, water, pasture, seed, livestock or fish. Conflict and insecure tenure often jeopardize long-term investment in the management of inherently fragile natural resources. In Nepal, for example, farmers who are only able to rent land on a short-term basis are less inclined to manage soils for long-term sustainability compared to those who own their land. Natural resources are also frequently contested between different social groups, compounded by inappropriate policy decisions, as in the Maasai Mara in Kenya where rights have been given to settled farmers over pastoralists who traditionally used the same land as grazing corridors for their livestock.

Access to a diversity of resources is important to permit farmers to spread risk and provide more options for adapting to changing circumstances. The 1.6 billion people who still use on-farm saved seed – mainly rural farmers in developing countries – are playing a vital role in ensuring that genetic diversity will continue to be available to us into the future. However, more than 90 per cent of crop varieties have been lost globally in the past century and animal breeds are disappearing at a rate of 5 per cent per year. This is principally due to the corporate concentration such that the top ten companies now control more than 60 per cent of seed sales and four companies

own the genetics of all commercial poultry production.⁵ The challenge is to re-orient policies and resource allocation processes, from the local level upwards, to be supportive of secure and diversified resource access by the poor. This will in turn encourage more sustainable resource management for future generations and enable farmers to adapt to changing environmental conditions brought about by climate change.

Due to their remoteness and poor communications, marginal producers struggle to access relevant information about potential **technologies for improved production**.

Government extension services, which may have once provided advice and services to farmers, have contracted over past decades and now rarely reach remote communities. Private sector provision to marginal areas is not cost effective due to the distributed nature of communities and low purchasing power, and hence such populations tend to be left without adequate services.

The development of technologies through research is more often directed towards universal 'silver bullets' than localized solutions. These tend to be associated with high-input cash-cropping rather than the low-risk agro-ecological approaches that are more suited to marginal areas. As agricultural research and development is increasingly financed by seed and fertilizer corporations in pursuit of their own interests, investment in low-cost, non-proprietary approaches becomes ever more scarce.

Communities all too often lack **organizational capacity and resources** for analysing the causes of food and livelihood insecurity that they experience, and for planning and implementing actions to address them. In the rainforest of north-eastern Peru, traditional hunter-gatherer communities are being pressured to lease their land for low rates to incoming settled farmers. These indigenous groups lack the skills to negotiate effectively with these incomers for decisions which will benefit them in the long term, and they do not have sufficient voice to call on state institutions to defend their interests when they come under threat.

With appropriate skills and organizational capacity, communities can be empowered to take control over their own development and plan for their collective future. Through building their confidence and strengthening

links with government and non-government institutions, they can access available resources to fulfil their plans and also act together to resist unfavourable forms of development.

Their physical remoteness also means that poor producers face constraints in **accessing markets** for inputs, credit and other services, for labour, as well as for selling produce for a good price. Lacking access to information on market demand, quality, prices, etc., means they are unable to take advantage of new market opportunities. Furthermore, local market prices are often undermined by imported food from countries where production has been subsidized. Thriving local markets are needed to strengthen resilience and protect small-scale producers from fluctuations in international markets.

Poor people tend to experience greater **exposure to hazards and stresses**, such as flood, drought, landslides, conflict, malaria and HIV/AIDS. Their vulnerability to disasters is a consequence of poverty: lacking alternative options to avoid exposure or information and skills to prepare or protect themselves, these hazards can push already marginal households deeper into poverty.

Climate change is predicted to result in more frequent and severe weather events which will exacerbate existing livelihood stresses in already vulnerable areas. According to the Intergovernmental Panel on Climate Change, a further 40 to 170 million are likely to become undernourished as a result of the impacts of the changing global climate. Food production in developing countries lying between the tropics will be the worst affected. The exact nature and rapidity of change is hard to predict and therefore enhancing the adaptability of food production and livelihood systems is the key mechanism for dealing with this challenge. Adaptive capacity in turn requires maintenance of biodiversity and indigenous knowledge and skills, as well as exploring new opportunities suited to changing environments.

Decline in funding to agriculture

Over the past 20 years there has been a dramatic fall in the proportion of foreign aid that goes to agriculture – from 17 per cent in 1980 to 3 per cent in 2006.⁶ What spending there has been was directed

towards agriculture for international markets rather than small-scale production for local markets. A detailed analysis by Practical Action of EC funding to agriculture showed that the most prominent areas of support have been to privatization of agricultural and veterinary extension services, and support to food and non-food cash crops. This approach only benefits 10–15 per cent of small-scale producers.⁷ Support to marginal areas – often viewed as unviable⁸ – increasingly takes the form of asset transfers and social protection schemes, rather than comprehensive strengthening of self-reliant production.

Developing country government spending on agriculture has followed a similar decline, which is only gradually beginning to reverse. In Africa, governments spend on average only 4.5 per cent of their budgets on agriculture in spite of commitments in 2003 to raise their spending on agriculture and rural areas to 10 per cent by 2008. Again, what spending there is tends to be diverted towards larger farmers and export-oriented production in more favourable areas, and those in fragile areas receive little support.⁹

The recent food crisis has led to renewed investment in agriculture and food crops, and a realization of the importance of support to public sector research. However, if this funding is to have a direct impact on food insecure populations, there needs to be a shift of budgets towards appropriate support to small-scale producers in fragile, rural areas. If this is to be achieved, alternatives to profit-oriented agricultural research and support services must be sought to ensure they are accessible to small-scale producers and they contribute to long-term sustainability.

Globalization

Small producers in developing countries are vulnerable to the negative impacts of globalization, including the failure of liberalization policies and the instability of food prices.

Despite over a decade of promotion of a liberalization agenda, developed countries have consistently failed to cut subsidies to their own farmers which undermine opportunities for local markets in the South. Developed countries account for 80 per cent of global farm subsidies, totalling \$360 billion annually, which is the equivalent to roughly six times

what these countries provide to the developing world in aid.¹⁰ This leads to an overproduction of crops which are then effectively ‘dumped’ onto developing country markets, at such low prices that local farmers cannot compete.

The recent food crisis further illustrated how rural producers and consumers are increasingly vulnerable to economic and policy trends at a global level. The shift in the US and other countries towards using grain crops as biofuels and increasing commodity speculation around food markets were contributors towards significant food price hikes during 2007 and 2008.

The challenge is to build local markets that are more resilient to these types of international trend. This can be achieved through strengthening local and regional trade over reliance on national and international linkages.

Food aid

Food aid is an important and appropriate form of support when alternative sources of food are not available. However, the delivery of food aid can undermine longer term food security. Often excess food is brought in from outside a region or country with the effect of deflating local prices, meaning that those who have been able to harvest cannot get a good price for their produce. Sometimes food aid is given without finances for delivery. This was the case for World Food Programme support to people living with HIV/AIDS in Central Province of Zambia in 2007/8, which put the district health budget into deficit in paying for the distribution¹¹. Long-term delivery of relief can also lead to dependence. Food aid must be a short-term strategy that is accompanied by intensive support for stimulating enhanced production of diversified food and improving market systems for foodstuffs.

The costs of not investing

Ignoring marginal producers is not without costs and dangers. The cost of social protection programmes – whether in the form of food aid, cash transfers, or other welfare systems – places a heavy and ever-increasing burden on governments and the international community. Historically, countries with large marginalized populations tend to experience long-term political tensions and outbreaks of conflict which have their human and economic

cost, e.g. Sudan. Migration to cities as a consequence of rural poverty can exacerbate the demand for cheap food in urban markets, and leave rural social structures highly skewed, as men migrate, leaving the very young, elderly and female population more impoverished.

Importantly, ignoring marginal populations results in a failure to use the potential of human and natural resources to best effect. Rural producers, given the right support, can contribute to national productivity, preserve biodiversity and sustainably manage the natural environment. Those living in drought-prone or disaster-prone areas have knowledge and experience of coping in harsh environments, which will increasingly be needed to address the impact of climate change. Strengthening production by small-scale farmers enables potential migrants to have a choice and, if they choose, the capability to migrate more successfully to urban areas. Failure to provide the necessary support means that the rural poor continue to be a burden on, rather than contributors to, society.

Principles for a secure future

Technology is not developed and used independently of its social, economic, cultural and political context. For technology to be used effectively to challenge poverty and improve the food and livelihood security of small-scale producers, some key principles and values need to be reflected in society:

Equity

The reason that 1 billion people in the world go hungry is not that there is not enough food in the world. Most of the hungry are small-scale agricultural producers and what is required is not more production, but more equitable access to financial resources, skills and technologies, and other productive assets. This in turn requires democratic, accountable decision-making, effective regulation, and the empowerment of small-scale farmers to be able to articulate and voice their aspirations for the future through representative institutions and accountable governments.

Self reliance

People in fragile areas should be the agents of their own change, not passive recipients of aid, and they should not be expected to survive on

food handouts. People should have the means and freedoms to achieve their rights to an adequate standard of living, health, education and food. This includes being able to choose which technologies they use. Through building people's skills and capacities, helping them to be aware of their choices, and giving them the confidence to exercise their rights, whole communities can develop their own vision for the future and take their own actions to realize that vision.

Resilience

Small farmers will always face shocks and stresses, whether extreme weather events (flood, drought), price fluctuations, HIV/AIDs or other personal setbacks. Practical Action believes that, with a better understanding of the risks they face, and a range of skills and assets to draw on, communities are able to plan for such eventualities and prepare themselves to be able to cope in times of need. Building resilience is even more important in the light of the unpredictable impacts of a changing global climate.

Capacity to adapt

Climate change is bringing about unpredictable changes in the natural environment. Through building people's confidence to experiment and innovate, Practical Action also strengthens their capacity to adapt to longer term changes, particularly those resulting from climate change. Capacity to access information and services helps people to make informed choices; while biological diversity and a diversity of approach and method helps people to adapt to change.



Selection of millet seed, North Darfur

Food sovereignty

The policy framework known as ‘food sovereignty,’ which is advocated by a number of organizations of farmers, pastoralists, fisherfolk and others, to realize the ‘right of peoples to define their own food, agriculture, livestock and fisheries systems’, reflects these principles.

1. **Focuses on food for people.** Food sovereignty puts the right to sufficient, healthy and culturally appropriate food for all, at the centre of food, agriculture, livestock and fisheries policies; and rejects the proposition that food is just another commodity or component for international agri-business.
2. **Values food providers.** Food sovereignty values and supports the contributions, and respects the rights, of women and men, peasants and small scale family farmers, pastoralists, artisanal fisherfolk, forest dwellers, indigenous peoples and agricultural and fisheries workers, including migrants, who cultivate, grow, harvest and process food.
3. **Localizes food systems.** Food sovereignty puts providers and consumers at the centre of decision-making on food issues; protects food providers from the dumping of food and food aid in local markets; protects consumers from poor-quality and unhealthy food, inappropriate food aid and food tainted with genetically modified organisms.
4. **Puts control locally.** Food sovereignty places control over territory, land, grazing, water, seeds, livestock and fish populations on local food providers and respects their rights. They can use and share them in socially and environmentally sustainable ways which conserve diversity.
5. **Builds knowledge and skills.** Food sovereignty builds on the skills and local knowledge of food providers and their local organizations that conserve, develop and manage localized food production and harvesting systems, developing appropriate research systems to support this and passing on this wisdom to future generations.
6. **Works with nature.** Food sovereignty uses the contributions of nature in diverse, low external-input agro-ecological production and harvesting methods that maximize the contribution of ecosystems and improve resilience and adaptation, especially in the face of climate change.

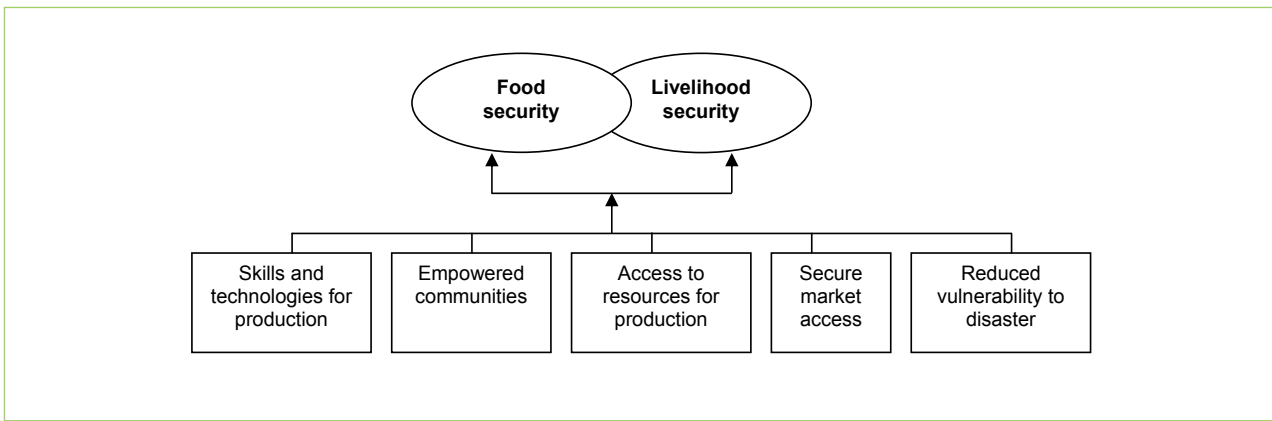
Source: *Synthesis Report, Nyéléni 2007 – Forum for Food Sovereignty*, Sélingué, Mali, 23– 27 February 2007, www.nyeleni2007.org

Sustainability

Practical Action takes the long-term view. Short-term responses such as food aid and asset transfers will not solve the long-term causes of poverty and hunger, and approaches focused on maximizing agricultural production in the short-term do not ensure ecological sustainability. Practical Action aims to ensure that relevant technologies, skills and resources, and the capacities to manage them, will be locally accessible to current and future generations, and that they do not degrade natural resources. This type of approach implies changing institutional practices and policy frameworks so that good practice is replicated over time and over ever wider areas, well beyond our direct reach.

Practical approaches to strengthening marginal producers

Practical Action’s work demonstrates that small investments in technology training and capacity building can have immediate and direct impact on food insecure communities. We have found that most households, no matter how constrained they might initially appear, have the potential to improve their agricultural production or means of earning a living, and thereby find a pathway out of poverty. Practical Action takes into account that in fragile areas women constitute the majority of producers, and has placed the agency of women at centre stage in the process of improving household nutrition. A vast body of continuous field experience has provided us with sufficient experience to offer



The components of food and livelihood security

a distinct approach to share with partners and policy makers at all levels.

Based on 40 years of experience we highlight five key areas of action to address food and livelihood security:

1. Access to technologies for sustainable production
2. Empowering communities and representative institutions
3. Natural resource access, control and management
4. Improving access to food and labour markets
5. Reducing vulnerability to disaster and conflict

Technology, including skills and knowledge, which is at the core of all our work, has proven to be an effective area of intervention in terms of impacting on food security. Building social and institutional capital to support and sustain technological change is critical for long-term self-reliance; while natural resource management, improving market access and reducing disaster risk are important to different degrees in different contexts.

Practical Action does not have a 'one size fits all' approach. Working with communities, we carry out a thorough diagnosis of the local challenges and opportunities, as well as the wider social, economic, environmental and governance context. Together, we can then identify the most appropriate entry points for long-term and sustainable change, both at the community level, and in the wider institutional and policy environment.

Access to technologies for sustainable production

Ensuring appropriate technologies for sustainable agricultural production are accessible to marginal producers is at the heart of Practical Action's approach to food and livelihood security. We define technologies as skills and knowledge, physical hardware such as tools or water points, and the way they are organized or combined.

Appropriate technologies can help farmers and other producers to overcome the physical and environmental constraints of fragile areas, improve productivity and incomes, and adapt to changes in the climate. Appropriate technologies are those which are cost effective for small-scale producers, which can be managed and maintained by them over the long term, and which integrate environmental, economic and social sustainability. Whether modern or traditional, local or introduced, we have seen that with access to a wider choice of technology options producers are able to innovate and improve their practices.

Farmers, fishermen and livestock keepers living in remote areas often do not have access to information about different technology options which are suited to their economic and environmental needs. Though Practical Action considers as an option any technology that can benefit the poor in a sustainable way, we find that the range of technologies that reach communities is frequently biased by the direction of investment in research and the ways in which new findings or products are disseminated. We are also concerned that valuable local technologies may even be threatened by new technologies where communities do not have the capacity to

assess them and make an informed decision about adoption or rejection.

Research investment tends to be channelled towards technologies which can be commercialized to individual farmers, such as proprietary seeds, fertilizers and pesticides. These types of technologies can sometimes benefit farmers, for example in North Darfur even small producers have found that hybrid tomato and watermelon seeds are significantly more productive and the fruit more market-worthy than local varieties. However, requirements for up-front cash investment, access to input markets and credit, and higher levels of education, often make seed, fertilizer and pesticide packages less accessible to the poor. Over-reliance on these external inputs, which can fluctuate in price and availability, also increases the vulnerability of small farmers, including their risk of indebtedness

A simple low-cost technology based on natural ingredients and effectively managed by a community committee in Kathekani, Kenya, succeeded in reducing tsetse fly infestation sufficiently to allow for flourishing livestock production. Local agents of the Ministry of Agriculture tried to introduce more expensive chemical tsetse controls which required regular supplies of insecticide products at a high cost to the community. The community assessed the options and decided to continue with their existing technology. (Field report, Coupe/Berger 2005)



Community committee member undertaking tsetse fly trap maintenance, Kathekani, Kenya

and the long-term degradation of the environment on which they depend.

Alongside these high-input technologies, low-input, integrated agro-ecological approaches have been shown to be more suited to farming systems with high labour availability, and have proven to be more productive in fragile natural environments. In Zimbabwe, mulching, intercropping and agro-forestry are successful and sustainable approaches to soil and pest management. In Kenya a low-cost approach to tsetse fly control was favoured over high-input, chemical techniques. Support to enhance or promote low-cost, integrated approaches is limited as government agricultural extension services, after decades of underinvestment, no longer have the capacity to provide direct support to communities; and for private agro-dealers there is no profit incentive.

Practical Action enables small-scale producers to access appropriate technologies by:

- Building on local knowledge to strengthen existing technologies, and helping farmers to assess and adapt introduced technologies which will provide integrated social, economic and environmental benefits, through a process of Participatory Technology Development;
- Training of community based extensionists, together with linkages to government agencies, researchers and other relevant sources of knowledge, to ensure sustainable long term access to technologies and advice; and,
- Promoting debate around technology choice.

Participatory technology development

This is an approach which encourages farmer-driven technology innovation through building their skills in experimentation and adaptation to allow them to make better choices about available technologies. In some cases this involves making improvements to existing technologies, in other cases this could be testing of introduced technologies.

The key characteristics of participatory technology development are:

- Understanding and building on existing knowledge and technologies.

- Using field-based learning situations rather than being classroom based.
- Building confidence and skills to experiment, analyse and assess technologies.
- Enhancing exposure to and dissemination of new ideas.
- Strengthening links with local research stations and other sources of new technologies.
- Ensuring capacity to manage and maintain technologies in the present and to pass this on to future generations.

In Sudan, Practical Action worked closely with farmers and blacksmiths over a period of around five years to adapt an existing camel plough to better suit the needs of the poor, who tend only to own donkeys, and to produce the technology at a cost affordable to these farmers. In Zimbabwe, farmer-to-farmer visits facilitate learning about different existing soil and water conservation approaches, which are then adapted or improved to suit local contexts. In Bangladesh, floating gardens were introduced – where landless or flood-prone households build rafts of bamboo, water hyacinth and compost, on which they grow vegetables and rice seedlings during the flood season. This technology came from another part of the country and was tested in project communities.

Community-based extension

Technology diffusion and continuing innovation and development does not necessarily happen automatically. This is normally the role of extension services. However, as noted, state-run extension services are being run down in favour of private sector providers, which tend not to reach dispersed farmers in remote areas, and are often oriented towards advice relating to sale of inputs rather than low external-input technologies which may be more appropriate to resource-poor farmers.

Practical Action overcomes this gap through working with government extension services to facilitate the training of community-based extensionists with skills in agriculture, horticulture, animal health and fisheries. Living in rural communities these extensionists are able to provide prompt and cost effective advice and support to their fellow farmers. Established links with government, researchers

Fozlur Rahman is a Horticultural Extensionist in Faridpur, Bangladesh

'In one month at least 20 people might come to me for advice, for seeds or for seedlings. This number can be more in peak season. I give advice on transplanting seedlings, appropriate spacing, how to prevent pest infestations and how to apply fertilizer correctly.

I can get a better price if I grow seedlings rather than just selling seed. I sell 100 seedlings for 30 taka. In the market 100 seedlings are available for 5 taka but people will come to me and pay a higher price because the good quality of my seedlings means they might get double the yield.'



Katherine Pasteur/Practical Action

and other service providers allows them to access and disseminate available technology options. The sustainability of community extensionists is critical for continuing services and they are therefore encouraged to seek ways to cover the costs of their advisory work by selling relevant inputs or services. For example horticultural extension workers replicate and sell quality seeds and seedlings, animal health workers provide vaccination services, and fisheries extensionists sell fish fry or provide netting services. A review of this work in four countries in 2008 showed that over 50 per cent of community-based extensionists remained active at least five years after their initial training.

Promoting debate around technology choice

Practical Action encourages and engages in debate around technology choice, technology development and access at various levels. In Zimbabwe, Practical Action facilitated a Farmers' Jury on technology options for the future of small-scale farming in that country, including mechanization, biotechnology, and intellectual property rights. Fifty leaders of small-scale farming communities attended an event where different visions were presented by representatives of public, private, and non-governmental organizations. A jury of 12 farmers then assessed the evidence and gave their feedback. This process allowed farmers to understand the complexity of some of the issues surrounding the choices that may become open to them and make more informed choices for the future.¹²

We aim to influence donors and governments with the message that investment in a limited range of high-cost, and often high-risk agricultural technologies distracts attention from the underlying causes of hunger and distorts resources away from more accessible technology approaches that help people take control of their future.

Empowering communities and representative institutions

Social change needs to go hand in hand with technological change. Participatory technology development helps farmers to assess and select appropriate pathways for improving productivity. However, communities must be empowered to take control over all aspects of their development, as well as to resist unfavourable forms of development.

Practical Action builds community capacity to understand the causes of their situation and to plan, organize and access resources to address those issues. Leaving communities with the skills and motivation to take control of their own development is central to ensuring sustainable long-term development. In Sudan community organizations are working together under two networks to access financial resources to address identified needs in health, education, income generation and agriculture.

Alongside local planning and action, communities often need to understand better and influence decisions and policies that affect their lives and to demand fulfilment of their rights.



Mohammed Sallih/Practical Action

Training participants in Goat Health Workshop, North Darfur

In Kenya, communities working on production constraints along the border of Tsavo East National Park were facilitated to engage in discussions with four different government departments with overlapping jurisdictions, leading to the granting of land titles to the Kathekani community. In Peru community extensionists have been supported in the formation of the Kamayoq Association which now organizes training, work contract opportunities and participation in vaccination campaigns on behalf of its members.

Natural resource access, control and management

Access to and effective management of natural resources, including land, water, seeds, forests, livestock and fish, are essential for sustainable food production. Rural producers often play an important role maintaining vital ecosystem functions and resources that provide global benefit. However, unequal or insecure access to these key resources often limits marginal farmers' ability to manage them well and sustain a livelihood.

Practical Action works with communities to help them to access resources, resolve conflicts and ensure that resources are managed in such a way that they are not degraded for future generations. In Kenya, tribal conflict over access to grazing areas for their livestock has been reduced by creating dialogue around practical activities to improve resources such as livestock watering points. A consensus-building approach used in Jamalpur, Bangladesh has ensured equal access by rich and poor to communal fishing resources. A Water Body Management Committee was established to

Impacts of technology and community capacity building in Sudan

North Darfur lies on the southern edge of the Sahara desert. The district of North Darfur where Practical Action works has 8–9 arid months. Rainfall is low (between 75 and 400 mm/year) and highly variable from year to year. The area is characterized by extreme remoteness, poor communications, poor infrastructure, poor public services and ongoing conflict. 70 per cent of the population lives in poverty and the rural population is constantly threatened by food insecurity.

Until recently, all international agencies working in Darfur have focused on providing humanitarian support. Little attention is being given to addressing the long-term causes of food and livelihood insecurity. However, greater food and livelihood security can be achieved in this region. Practical Action has shown that with simple technologies and skills rural producers can overcome some of the principal constraints to agriculture.

- **Access to information for production.** The conflict means that government extension services to rural communities are non-existent. So, Practical Action has trained over 120 agricultural extension agents and 50 paravets to disseminate appropriate technologies for agricultural and livestock production and provide follow up support and services. These extensionists are trained by government staff and maintain strong links with them over time. They earn an income through providing services or inputs alongside their advice.
- **Technologies for improved productivity.** Reliable availability of sufficient labour, seeds and water are limitations to productivity. Practical Action has worked with local people to develop and improve a complementary range of technologies for improved productivity. Dams constitute a relatively large-scale investment, but their impact is great. Effectively catching the run-off after rains in otherwise dry river beds, these dams allow huge areas of fertile land to capture moisture. However, the soils are heavy and with hand tools alone farmers cannot prepare the land. Practical Action has developed a locally produced donkey-drawn plough affordable to poor farmers, establishing animal and plough loan schemes for the poorest. Where dams are not built, improved terrace construction is an alternative technology for improving soil moisture on a smaller scale. In addition to these technologies, seed storage, pest management, and the production of improved cash crops (such as watermelons) contribute to reduced crop losses (before and after harvest) and enhanced income potential. As a result of the combined technology inputs there has been an average increase of area under cultivation of 16.5 per cent and a 19 per cent increase in harvest, rising to a 50 per cent increase in the area under cultivation and a 53 per cent increase in harvest where dams are also built.
- **Planning and resources for wider community development.** Lack of appropriate skills and linkages limits opportunities for self-reliant development in North Darfur. Community empowerment is essential to ensure long-term community-based planning and access to resources beyond Practical Action's support. Village Development Committees and/or Women's Development Associations are formed wherever we work to manage the above activities. These committees are also empowered to plan for their future development. VDCs (50 to date) and WDAs have been brought together under two umbrella Networks who are developing the skills to apply to funds from other NGO and humanitarian agencies for a range of activities. Between the two networks 17 projects have been secured, ranging from US\$5,000 to US\$300,000, addressing training in fuel-efficient stoves, computer training and goat restocking, and further replication of the plough technology. This constitutes a major transformation of civil society capacity.



Patrick Mulwany/Practical Action

Seed fair, Tharaka District, Kenya

oversee appropriate management (restocking and limited harvesting) and to distribute profits equally. Taking active responsibility for the water body has meant that it is not over-exploited by the members.

Agricultural biodiversity is a critical condition for resilient and adaptive production systems. Growing a diversity of crops or crop varieties reduces risk from failure of one particular crop due to pests or drought. Farmers in Tharaka, Kenya have traditionally grown a wide variety of grains for their different benefits: fast maturing, good taste, or high market price. However, after a number of severe droughts many of these varieties were lost. Farmers then planted the varieties which had been given to them as drought relief but which were not suited to the local soils and climate. Practical Action helped farmers to revive many of their lost varieties through organizing seed fairs at which farmers display and exchange their seed – not only grains (millet, sorghum and maize), but also vegetables and legumes (such as pumpkin and mung bean). These fairs have continued to take place since the project ended eight years ago and farmers now say that they are once again growing a diversity of crops and that harvests are more secure as a result.

Improving access to markets

Few rural producers are truly self sufficient. In order to be able to buy household necessities and to pay for health care, schooling and other services, most need to produce excess to sell, or have non-farm livelihoods. For farmers to earn a good income for their produce they need to be able to store it, and sell at opportune moments (especially in the case of grain crops which often have a very low price at harvest time), or they need to produce crops which have a high local market value, such as quality vegetables and fruit.

Practical Action works to create appropriate conditions for farmers to engage effectively in markets which have the potential to improve their livelihoods, through improved access to affordable and good-quality inputs and services e.g. improved grain storage, growing higher-value crops, and through small-scale processing of food crops), more stable and transparent business relationships, and enhanced influence on the institutions and factors that shape markets. Using a participatory and systemic approach, Practical Action helps market actors (including policy-makers) to identify and address key constraints and opportunities; for instance, farmers and buyers agreeing on new quality standards, the introduction of an affordable tool to increase harvesting efficiency, and co-ordination to influence a government institution. Improving farmers' understanding of the market, including what is in demand, the roles of different market actors and quality requirements helps them to engage more effectively and secure favourable prices.

Non-farm livelihoods are important not only for landless households, but also for farming households to diversify and reduce risk. In Nepal, training landless labourers with new skills, for example as electricians, has meant that they can find local work and no longer need to migrate to India for work for several months of the year. Enhancing the skills of blacksmiths in Nepal and Sudan to produce a range of goods in local demand has increased both their income and status within the community. Increasing local skills and local production contributes towards strengthening the local economy, enhancing wealth and growth within the region.

Reducing vulnerability to disaster

Marginal producers tend to live in areas that are exposed to hazards such as flood, drought, earthquakes and HIV/AIDs. Even when they are doing well, if they are unable to cope and recover when hazards occur, they can slip back into poverty. Practical Action strengthens people's ability to plan and prepare for such events, through awareness raising, establishing early warning systems or developing contingency plans. In Peru, raising awareness amongst school children of hazards such as earthquakes, floods and landslides, and how to respond when they occur, is a strategy for reaching all members of the household as those children carry messages home. Analysis of the causes of hazards has led to community-wide action to reduce their frequency, e.g. reforestation of landslide-prone hillsides.

Through diversification of food and income sources, as well as improved crop processing and storage, households are more likely to have something to fall back on if one aspect of their livelihood is disrupted. Support to communities in Faridpur, Bangladesh between 1998 and 2003 led to raising of houses and animal shelters above the flood level, increased income or savings from improved production, and crop diversification. After five years, 81 per cent of beneficiaries said that since the project they had been better able to protect their assets during flooding and recover more quickly afterwards.

Climate change is a further threat to food and livelihood security as it is bringing about greater frequency of sudden onset hazards (e.g. floods and storms) as well as stresses

on existing production systems due to more gradual temperature and precipitation changes. The additional challenge of climate change is to help communities to access information about weather predictions so that they can take the necessary steps to protect themselves from more extreme impacts (e.g. higher flood levels) or adapt their livelihoods to climate changes. In Piura, Peru, we have helped communities to collect and analyse their own information about changing temperature and rainfall patterns and exchange information with relevant researchers. We have also supported them in adapting to change, e.g. treating new pests which have become prevalent with rising temperatures, or learning how to grow new crops now possible with a warmer climate.

Achieving impact at scale

Practical Action has demonstrated that investing in small producers can improve agricultural productivity, food consumption and incomes, and reduce vulnerability to disaster in marginal areas. However, the impact we can achieve through our own work is quite limited when compared to the scale of the task internationally. In 2007/08, 340,000 people in 11 countries benefited directly from our efforts. Much larger numbers can be reached indirectly.

Practical Action aims to achieve impact at scale and change policies and regulations to those that favour the food insecure. We achieve this through five areas of focus:

- Testing ideas and achieving sustainability
- Building the capacity of partners



Construction of gabion to protect irrigation canal from flooding, Chitwan, Nepal

- Generating knowledge and communicating for influence and scale
- Changing the practice of others
- Changing policy and regulations

Testing ideas and achieving sustainability

Our projects on the ground give us the opportunity to prove that our approaches and technologies really do work and that they achieve sustainable improvements in food and livelihood security for the poorest. We strive to continually innovate and improve rather than replicate proven successes.

- We have tested and proven the sustainability of two important food security technologies in Bangladesh: floating gardens (described earlier) and pit cultivation (in which manure is placed into pits in otherwise unused sandy soils exposed when flood waters subside and a valuable crop of pumpkins can be grown).
- In Sri Lanka, communities are experiencing increased salinity in their paddy fields after the tsunami. We have worked with farmers to revive traditional rice varieties and select those which have the optimum balance of salinity resistance and yield.

Building the capacity of partners

Replication of our work can be achieved by actively building the capacity of our partners during project implementation. These organizations are empowered with a basket of proven technologies and skills which they can then use in the other communities where they are working.

- In Sudan, the capacity of the Blacksmith Association in North Darfur was built to be able to replicate the improved plough technology which was developed with our support during the late 1980s and early 1990s. With a current membership of around 400, the association is now being contracted by development and humanitarian agencies including the FAO to produce thousands more ploughs for distribution throughout the districts.

Communicating for influence and scale

Many other organizations, well beyond the countries where Practical Action is working, are interested in our technologies

and approaches. We therefore invest in documenting and communicating these in a wide variety of traditional and innovative ways to reach a range of different audiences.

- In Nepal, a programme was made and shown on national television, raising awareness about climate change and sharing the technologies and approaches used in our climate change adaptation work.
- Case studies of our successful disaster risk reduction technologies have been published in UNISDR (United Nations International Strategy for Disaster Reduction) best practice guidelines.
- One of our Kenyan staff spoke at the Live Earth concert in July 2008 to highlight the impacts of climate change on pastoralists.

Changing the practice of others

There are many other organizations – local and national governments, other NGOs, and international agencies – which have a far bigger impact than Practical Action can hope to achieve on its own. Through changing the practice of others – whether by influence or example – we can hope to see good ideas multiply.

- We are working in many countries to influence the adoption of the community-based extensionist approach by other NGOs and by government. In Bangladesh, for example, we have been successful in influencing ActionAid to implement poultry vaccinator training in a project three times the size of ours.
- In Peru, we have helped to ensure that a national policy for participatory budgeting has been put into practice by district government, through supporting communities to produce integrated livelihoods and disaster management plans and working with government staff help them to understand how funding these plans can bring wider benefits to their district.
- In Chitwan District, Nepal, we facilitated the publication of the District Disaster Management Action Plan which will ensure the integration of livelihoods as an important aspect of disaster risk reduction.

Changing policy and regulations

When improved practices become institutionalized in policies and regulations, whether at regional, national or international level, this greatly increases the likelihood of widespread adoption. Whilst we can rarely claim to be directly responsible for changes in policies and regulations, we contribute to important debates.

- Practical Action has been successful in influencing regional and national level integration of disaster and development planning processes in Sri Lanka and Nepal in line with the UNISDR Hyogo framework.
- Practical Action country office staff have attended the past three climate change COPs (Conference of the Parties) in Kenya, Bali and Poland to ensure that the perspectives of small producers in fragile areas, whose food security is being threatened by climate change, are taken into account in the negotiations, and that funding for community adaptation in developing countries is prioritized.
- Practical Action supports other social movements in their promotion of a food sovereignty agenda, which is synonymous with aspects of our own approach to food and livelihood security. In fora such as the IAASTD (International Assessment on Agricultural Science and Technology Development) and FAO (Food and Agriculture Organisation) high-level meetings we use our experience and

influence to support a shift towards policies which support small-scale producers.

- Practical Action closely followed the negotiation process for an International Seed Treaty at FAO, over a period of ten years. With partners, we successfully lobbied successive conferences of the Convention on Biological Diversity to call for a fair, equitable and comprehensive outcome to the Treaty, to safeguard livelihoods, improve food production, and to reward farmers for the essential on-farm conservation of agricultural biodiversity.

Conclusion

One recent review concluded that ‘The case for smallholder development as one of the main ways to reduce poverty remains compelling’ (Hazell et al., 2006). If we are to achieve the Millennium Development Goals to reduce hunger, we must directly address the situation of those who are food insecure, to strengthen their productivity and ensure they are able to pursue a range of livelihood options to meet their household needs.

There is huge undeveloped potential in fragile rural areas. In this paper we have described some practical approaches to working with small-scale producers in these areas, to increase their productivity, self-reliance, resilience and ability to cope with an uncertain future. We recognize that tackling the causes of hunger and poverty requires much more than just technology promotion, asset transfer or market access. Structural



Sharon Loormetta, Practical Action Eastern Africa, speaking at Stop Climate Chaos in Trafalgar Square

changes are required in policies and processes from local up to international levels to support pro-poor access and control of technologies, resources and decision-making. By focusing on people and their capacity to innovate, adapt and take control of their development, we have found that there are many opportunities to enable them to improve their lives now, and in ways which build a more secure future.

Endnotes

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Practical Action is an international development agency working with poor communities to help them choose and use technology to improve their lives for today and generations to come. Our work in Africa, Asia and Latin America is in partnership with poor people and their communities, using technology to challenge poverty. We work with poor people to build their capabilities, improve their access to technical options and knowledge and help them to influence the social, economic and institutional systems for the use of technology.

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