DFID's support to the CABI Partnership Facility

An evaluation of development impact

2002-2007

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CABI Memberships and Partnerships
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Executive Summary

The Value of the Partnership Facility

CABI is a UN Treaty-level intergovernmental organization. Owned by over 40 governments, we work to deliver our expertise in information, science and communication to meet the needs of developing countries. CABI is decentralized and operates through Centres and Offices in each region of the world.

Operating on an unique business model with 3% core funding, our Member Countries expect our publishing operations to be of a quality and value that will be self-sustained by the open market for scientific information, and our international science to add value to activities of national programmes, partnering organizations of all kinds who share common goals in meeting development needs.

CABI is a not-for-profit organization: membership contributions and any surplus obtained from our publishing activities are returned directly into our activities supporting international development. CABI has worked successfully in this way for 20 years now; through this we are cost-effective, fully accountable, business-efficient and directly relevant to real needs in our Member Countries and the global scientific community in agriculture and the environment.

Financial support through the CABI Partnership Facility provides the essential direct programme support enabling us to use our resources and skills to support development processes and meet the needs of the poor in our Member Countries. The fund is supported through CABI's direct income and by a consortium of development agencies, in particular from our OECD Member Countries: DFID, SDC and ACIAR.

The Facility enables CABI to initiate and deliver programmes that:

- Address key global issues relevant to our areas of expertise
- Add value to existing regional or national initiatives of our Members
- Respond rapidly to emergency situations
- Develop knowledge and skills among the rural poor and the local institutions that serve them
- Make knowledge from science available to those in greatest need
- Support critical research for agricultural sustainability, towards the Millennium Development Goals

In this review of activities funded through the Facility, our impact on international development has been established at different scales, from global policy through to the poorest farmers.

CABI's international development activities are focused on three themes. These were identified through extensive consultation with our Member Countries and from 2002 our work has been aligned with the Millennium Development Goals and relevant international Conventions and programmes. Our operational focus has since been refined as:

- Knowledge for Development, strengthening the knowledge and innovation systems supporting agricultural development;
- Invasive Species, the management of invasive species damaging agriculture, trade and environments and
- Commodities, improvement of the livelihoods of smallholder producers of commodity crops. Here, we describe the impact of Partnership Facility funding in the context of these themes.

The evaluation examined all projects supported through the Facility over the last five years. It combined thorough self-evaluation (to a standard method) by those directly involved in these projects, with feedback received and requested from our partners and external evaluation of individual programmes or of the wider rural development programmes they have generated.

Development returns on Partnership Facility programmes are striking. For a relatively small external investment, coupled with direct investment by CABI and by our partners in the countries concerned, the Partnership Facility has enabled pilot activities that have achieved specific impacts across a wide range of countries. These have in turn leveraged much greater support for large-scale initiatives led by CABI's developing Member Countries, addressing rural development needs across the regions concerned.

In financial terms, a total external investment via the Facility of £2.9 million over the 5 years of the study (£3.9 million since 1997) has directly catalysed rural development and agricultural research programmes to a value of at least £17.6 million. External evaluations have repeatedly shown that the benefits from our resources and activities greatly exceed their costs.

The Partnership Facility has enabled CABI to contribute extensively both to global thinking and policy, and to regional and national initiatives, in our areas of expertise. Key impacts of PF funding within each of the CABI themes include:

Knowledge for Development:
(50% of PF funding)

- Development of consortia, including developing country institutions, to leverage funding for development and dissemination of encyclopaedic compendia.
- Making CABI's information available to developing countries through involvement in pre-funded networks
- Participation in the shaping of global agricultural research policy, linking science and society.
- Development of novel farmer-centred approaches to sustainable seed systems.

Invasive Species:
(25% of PF funding)

- Input to the Global Invasive Species Programme (GISP), supporting the implementation of CBD commitments on invasives.
- Through GISP, development of new regional strategies and policies on invasive species.
- Improving sanitary and phytosanitary (SPS) skills in Africa and Southeast Asia, helping countries to overcome trade barriers and access lucrative export markets.
- Enabling rapid response to specific pest outbreaks around the world.

Commodities:
(25% of PF funding)

- Input to the Sustainable Agriculture Initiative of the major international food companies, and production of the global reference work *Cocoa Futures*, directly influencing global commodity policies.
- Facilitating a regional coffee research network in Africa (CORNET) under ASARECA
- Initiating a major regional initiative to control coffee wilt disease, following an initial PF-funded survey in Uganda.
- Addressing the future sustainability of perennial crop systems

This evaluation has also highlighted issues that CABI needs to address to further improve development impacts from these programmes. These are discussed throughout the report. In particular, we are planning a series of regional consultations in 2007 to ensure high level identification of needs by senior NARES figures, so that our programmes become more directly responsive to regional priorities and our work is explicitly integrated with relevant policies and programmes from the outset. We are also broadening our involvement with private sector partners, such as the chocolate and coffee industries, to bring more direct engagement with markets and income opportunities for smallholder farmers.

The Partnership Facility is an innovative and exciting funding mechanism that brings our funders both reduced transaction costs and clear accountability for expenditure. Through it, we directly address key development needs in each region, with our Member Countries themselves shaping and committing to the programmes addressed. Demand for this way of

working is increasing as Members come to realize the value of the approach. Various non-member OECD countries and some emerging economies are now actively considering direct funding of work with CABI via this mechanism. Increased direct programme funding via the Facility would bring further benefits of synergy and scale.

This funding is essential to CABI's ability to deliver development results. Raising awareness and helping countries to develop programmes relevant to their needs is a process that frequently takes years, even before practical actions begin. Without this support, CABI would not be able to maintain input to and connection with these programmes as they are shaped to best meet the needs of the poor. With it, we can help to empower the poor with the knowledge they need to achieve sustainable change and escape the constraints that keep them in poverty.

Report Synthesis

Report synthesis

Direct programmatic funds from development assistance agencies (presently DFID, SDC and ACIAR) are managed, together with CABI's own direct income, as the CABI Partnership Facility. This is separately managed and accounted as a consortial fund, enabling CABI to initiate and take forward programmes in our areas of focus. Our projects respond to Member Country priorities and are aligned with development objectives of the donors and partners concerned.

CABI adds value to the development work of our national partners by developing local skills and knowledge, by bringing new external ideas into national systems and by championing the needs of developing countries into international policy. Our strong partnerships with national institutions, civil society organizations and private companies, help the poor and under-privileged to benefit from the value of scientific knowledge in agriculture and the environment.

We are very grateful to DFID for their active support to CABI's role in international development via this mechanism. This support, totalling **£1.5 million** over the 5 year period under review, has been used to catalyse and take forward specific initiatives in our key areas of operation. It has brought specific benefits in poverty alleviation, food security and environmental sustainability around the world, with a dramatic multiplication of their effect through subsequent larger programmes supported by development assistance agencies.

The impacts of particular projects are explored in more detail in the subsequent sections, but this report itself represents only a summary of some relevant findings. Detailed evaluation reports are available on request for each project/project cluster supported by the Partnership Facility.

Our rural development activities focus on three themes: Knowledge for Development, Invasive Species and Commodities for smallholders. The key impacts of Partnership Facility supported programmes are summarized here for each area:

Knowledge for Development

Around half of our Partnership Facility expenditure over the last five years has been devoted to this area, in which CABI is widely known and valued. CABI's market-maintained information products themselves bring direct and tangible benefits to agricultural researchers and extensionists around the world and underpin our development work around this theme.

CABI's Abstracts database has been independently quantified by ACIAR as bringing time savings equivalent to:

- 3-5 working days per year for each researcher,
- a 1-2% increase in staff budgets for research institutions.
- a median value of at least AU$470K-$790K p.a. across Australian users of this information,

Partnership Facility support enables us to make our information resources accessible free of charge to users in developing countries, through our participation in **international information networks such as AGORA, TEEAL and HINARI.**

- These benefit nearly 1000 institutions, with over 250,000 documents downloaded by users through AGORA alone.
- Electronic compilation of archive data on human health has captured the knowledge in 800,000 scientific papers for future generations.

Development of concepts and content of the CABI Compendia has been strongly supported through the Facility. This has provided key catalytic funding, ensuring that developing country institutions are directly and actively involved as key stakeholders in their formulation and development:

- **70 different partner organizations** are now in the Compendia consortia, including government agencies, private sector institutions and CGIAR Centres.
- Following start-up funding from the Partnership Facility, this consortium has now provided around **£5.8 million** in external funding for development of the Compendia over the last 13 years.
- Through these efforts, the Compendia are now widely distributed and used in at least **20,000 sites**. Many copies have been made available free of charge to developing countries.
- The **Tanzanian Government** is aiming to establish the Compendia into every extension office in Tanzania.
- A recent survey has shown that 70% of **African users** rated the Compendia as a very successful tool for extension and training.
- The value of these resources to agricultural production, environmental protection and national security has also been recognized by the **US government**, which has centrally purchased licences for free use in all 121 Land Grant Universities and has supplied 250 free copies to developing country users.

ACIAR recently externally evaluated these encyclopaedic Compendia and found:

- Australian specialists using the Compendia for statutory functions such as quarantine inspection in trade, each saved a median of 37-54 days work per person per year,
- This could be considered equivalent to an extra 25% operational staff time, by accessing verified and objective evidence both quickly and efficiently.
- This is a unique resource: users considered that searching relevant literature without CABI Compendia would be much slower and would yield only 75% of the results.

Through Partnership Facility support, **CABI has also played a central role in global agricultural research policy:**

We have been involved from the outset in the International Assessment of the role of Agricultural Knowledge, Science and Technology in Development (IAASTD) and are one of only 6 scientific organizations on the Governing Bureau of the Assessment. Following this, we now also administer the involvement of UK authors, in a process actively supported by both **DFID and DEFRA**.

The Facility has enabled CABI to play a central role in development of innovation systems thinking under the **Global Forum for Agricultural Research** (GFAR). This has attracted much interest and support from heads of African NARES and the sub-regional organisation **CORAF** and has helped shape policy among donor agencies. An innovation systems focus has recently been adopted as the **central pillar of GFAR's programme** for the next 3 years.

Novel farmer-centred approaches to sustainable seed systems, developed initially through earlier Partnership Facility and DFID bilateral support in Bangladesh, offer low cost means of improving yields and incomes through the production of good quality seed:

- Effective use of participatory videos enabled women farmers to directly and quickly spread innovative local practices to others, receiving an **International Visual Communications Award**.
- This work, broadcast regularly on national television in **Bangladesh**, has enabled **millions** of poor farmers in Asia to benefit from cheap, effective technologies.
- Through the PF, these approaches have been transferred to **East Africa**, linking with a wide range of partners and initiating **a further £270K project, supported by SDC**

and a **£38K** cross-cutting project on seed issues related to **DFID Crop Protection and Post-Harvest Research Projects.**

- CABI is now helping **East African** farmers to improve their kale seed production, enabling them to directly benefit from marketing locally-selected varieties to others via links with national seed companies.
- WARDA has taken the video work to **West African** rice farmers and has translated and made these available in 4 African languages.

Specific regional programmes have brought agricultural knowledge alive to support local development:

- Technical underpinning to development of **FARA**'s information and learning systems is enabling agricultural information to be shared across Africa.
- Input to the **ASARECA-RAIN** Steering Committee and the ASARECA Communication and Knowledge strategy has given these initiatives much valued technical support in practical networking of knowledge across 10 countries.
- India and African countries are now aware of the value in microbial resources and are now managing and making use of these, e.g. via the **Indian National** Bureau of **Agriculturally-Important Microorganisms**
- Engagement with the System-wide initiative on HIV/AIDS informed the **CGIAR** and partners on links between nutrition, health and community understanding of the disease.
- Innovative programmes in **E Africa** have linked farmer groups to markets by making use of affordable information & communication technologies.
- In **Sri Lanka**, work with a local NGO has developed a pilot agricultural knowledge system now reaching 1500 farmers.
- New low cost knowledge-transfer methods promoting direct interaction between extensionists, scientists and rural communities have supported post-conflict institutional development in **Sierra Leone**.
- Farmer field schools developed in the **Caribbean** have led to a self-sustaining regional IPM group with 85 members.

Invasive species affecting trade, food security and environments

Invasive species have enormous economic impact on agriculture and environments, running to billions of dollars per year, but are often neglected as a development concern. CABI has invested around one quarter of Partnership Facility funds in raising awareness of the significance of invasive species and helping developing countries to formulate appropriate programmes for their management.

The Partnership Facility has directly underpinned the **Global Invasive Species Programme** (GISP) which links CABI with major NGOs such as **IUCN** and **The Nature Conservancy**, to raise awareness of these issues and support implementation of the **Convention on Biological Diversity** (CBD). We have done much to help make sense of the proliferation of terms and concepts being used in legislation and activities around this rapidly evolving field, a contribution recognized by the CBD Secretariat. This high-profile partnership has led to CABI being requested to implement major **UNEP/GEF regional weed management programmes** across Africa. One such programme, approved in 2005, has a budget of **£6 million**.

CABI is a recognized *'appropriate international organization'* under the **International Plant Protection Convention** (IPPC) and has used Partnership funding to help meet the Convention's aims by training national staff in the **COMESA and ASEAN** trading blocs in

management of risks to human and plant health that would otherwise be barriers to trade and growth. This has included:

- Regional training programmes supported by **IDRC, FAO, African Development Bank** and others.
- Endorsement by **ASEAN** of the Asian Plant Health Cooperation Network promoted by CABI, with CABI being identified as a preferred training partner by APEC and others
- Production of a draft Good Agricultural Practice protocol for **Vietnam** (based on EurepGAP protocols for fresh fruit and vegetables).
- Joint proposal between CABI and IPPC to the **WTO-STDF** to provide technical assistance to developing countries.
- **GISP** has produced and updated two global training manuals on Marine and Coastal invasive species and an introduction to the management of Invasive Alien Species.

At national level, the PF has enabled CABI to **respond rapidly to specific requests for assistance** from Member Countries faced with new outbreaks of pests such as:

- The cattle tick spreading heartwater disease among **Caribbean** livestock.
- The coconut hispine beetle decimating coconut in **SE Asia**.
- The cocoa pod borer outbreak in **Papua New Guinea – ACIAR has now identified a further project commitment of £300K** to take forward management of the outbreak.

The quantifiable value of such work depends on the scale of the economy concerned. Programmes elsewhere in which our international activities supported biological control programmes for two invasive weeds in Australia are estimated by the **Australian Government** to have given an overall net return of AU$232mn and $20mn respectively; giving benefit: cost ratios of **108:1** and **18:1**.

Through the Facility, CABI has helped **China** to develop a strategy for managing invasive species that cause annual losses of US$7 billion. This has now led to a direct request from China for a joint laboratory and national summit to develop national capabilities in this area.

CABI's recognized unique capabilities in this area have also led to **direct funding via the Partnership Facility of £204K from SDC** for CABI to support an existing Indo-Swiss project developing biopesticides for poor farmers in India. PF start-up funding leveraged the essential engagement and discussion with our Indian and Swiss partners prior to this programme becoming established.

Support to smallholder commodity farmers

Smallholder farmers need technical knowledge to stay competitive in global markets and in some cases just to access these markets in the first place. We spent around one quarter of Partnership Facility funds in the last five years supporting small producers and promoting measures to enhance the sustainability of such production.

Cocoa producers face a wide range of threats to sustainability of the industry, from declining soil fertility to child labour concerns. Our support to cocoa smallholders has included production of a comprehensive volume **'Cocoa Futures'**, reviewing these issues, which has quickly become regarded as a key source of knowledge for cocoa producers and chocolate manufacturers alike.

Through the Facility's funding, we directly supported small farmers by developing participatory learning materials and catalysing the use of farmer field schools for cocoa by the USAID/chocolate industry-supported, Sustainable Tree Crops Programme across W Africa. The field school programme was:

- **Externally assessed as the most successful programme under the STCP**, this has become the 'flagship' programme of the STCP.

- This training programme also enabled uptake by farmers of outputs **from four DFID RNRRS-funded research projects**, addressing pests considered the most significant cocoa yield constraints across seven W African countries.

The trust and value placed in CABI by our Member Countries has also been seen in direct requests from the **Chief Executive of the Ghana Cocoa Board** (Cocobod) for CABI to help conceptualize policies on cocoa sustainability and pesticide minimization, which we have delivered through Facility support**. We have also worked with Cadbury Schweppes plc to produce a newspaper on cocoa production that has reached 70,000 farmers.**

African coffee farmers face particularly difficult times, through a combination of low prices, relatively high production costs and invasive diseases. Using funds from the Facility to support a variety of activities at both policy and farmer levels, CABI has been at the forefront of efforts to revive this important industry across the region, improving the quality of coffee produced to attract higher prices. This has now brought **over £1mn** in support from the **Common Fund for Commodities (CFC) and private sector partners**. Such processes enable realistic and informed investment decisions, introduction of new technologies and, by connecting directly to the market, help to avoid the boom and bust cycles that have bedevilled the industry. Together these measures have increased coffee quality by 60% and farm-gate **earnings by around 30%** in pilot areas.

Coffee production has been hard hit by coffee wilt disease that has recently spread through **East Africa,** after becoming established in plantings abandoned through conflict in the Democratic Republic of Congo. The disease is still causing losses of £15million p.a. in Uganda alone. From an initial Partnership Facility investment of £25,000:

- CABI first diagnosed the problem and helped to establish a regional action plan for its management.
- Developed this process on with regional partners for a further 3 years, supported through our own income
- This has led to direct research and extension commitments to the region totalling **£4mn from the Common Fund for Commodities, the EC and DFID-CPP**.

The CFC coffee wilt disease project has itself been **externally assessed**, with findings that:

- The disease has had considerable impact on production and incomes among small scale farmers and their families.
- Increased awareness of disease management was helping to slow the rate of disease spread.
- The return from R&D spending on this project is **£13 for every £1 spent.**
- Inhabitants of disease-affected areas were saving an average of **£11 per head** through the project activities.

CABI has also done much to support the sustainable development of other smallholder crops such as cooking banana, peri-urban vegetables and tropical fruits.

Lessons learned

How we have changed

In the last five years, CABI and our partner organisations have changed dramatically. CABI, as a Member Country organisation, is directly accountable to over 40 national partners, 90% of whom are developing countries. We have worked closely with our Members to define the areas in which we can play a most useful part and in 2002 adopted an organizational framework that reflects our key roles in international development. We have made considerable efforts to increase our responsiveness to national and regional priority needs and to remain at the forefront of development thinking in our areas of focus.

We are an organization expected by our Members to be cost-efficient, openly accountable and sustained through market demand and our international value. The Facility has provided essential resources enabling us to engage with global development processes, link with regional initiatives and add new dimensions to national programmes, all of which would otherwise have been impossible to sustain. The growth in this funding has reflected increasing awareness and use of this mechanism among our partners.

We have also invested heavily in our development work through our own resources. The use of Member Country contributions to underpin our development activity is now made explicit in our financial structure and any surplus funds generated from our market-sustained publishing activity are used in the same way.

What worked best?

Most projects supported through the Facility have been small-scale, catalysing wider engagement through further partnerships. Analysis has shown little direct correlation between the scale of an initial project funded through the Facility and subsequent take up by others. More important was that our inputs were:

- Timely,
- Appropriate to needs recognized by others,
- Directly supported by senior policy makers in the countries or regions concerned
- Well-buffered against changes in the operating environment and
- Learned from the successes and failures of previous approaches

This analysis has also shown that consistent commitment over years is required to catalyse wider programmes and build the understanding required for effective partnership.

By our international nature, most of our impacts have been at the national or regional level, but we have also done much to develop capabilities among our national partners, so that they can take such work forward themselves: it is through their work that the poorest farmers will receive most direct benefit from these programmes.

In a number of cases (e.g. Putting Knowledge to Work, Global Invasive Species Programme and Coffee sustainability), we have brought important issues and agendas to the attention of decision makers which have had a profound influence on international development. This policy-level work may have the greatest development impact of all in the long term, but is difficult to capture as indirect effects.

Conversely, where projects have been developed scientist-to-scientist, they have often had immediate value via the quality of the work and specific outputs produced, but have then faded away without higher level support. To increase coherence and impacts from PF investment we are also tightening the direction of work in each area through global directors responsible for each theme.

What of the future?

New mechanisms by which aid programmes are delivered, as identified in the 2005 *Paris Declaration on Aid Effectiveness*, are rapidly changing the operational basis for many organizations. By our structure, we should be ideally placed to work in close partnership with both OECD and developing countries, through programmes managed by developing countries themselves and made possible through direct budgetary support.

This is an exciting new path, by which our work can be aligned with poverty reduction plans and directly commissioned by those determining uptake themselves. The Partnership Facility establishes our first steps towards this, enabling CABI to deliver work in tandem with associated resource commitments from our partners.

Nonetheless, many interactions are required to build the understanding and trust required among both developing countries and donors for CABI to become directly commissioned in this way. This has begun to be recognized through specific programmes, but will take time to develop. The regional consultations with our Member Countries proposed for 2007 will be an important step in this direction.

Context & methodology

Introduction to CABI

The use of knowledge to make informed choices lies at the heart of sustainable development and the management, access and use of scientific knowledge for rural innovation and development is central to the role of CABI.

We maintain the world's largest knowledge bank in agricultural science information (CAB Abstracts) and play key roles in the generation and application of knowledge in our specialist areas. Generically, there is a robust positive relationship between spending on R&D and the return on investment in agricultural research and development[1].

Our capabilities provide a valuable international resource for our Member Countries, developing capacities, addressing national and regional priority issues and fostering international efforts towards achievement of the Millennium Development Goals.

CABI was established in 1910 and works under a UN Treaty-level Agreement between countries. We are a not-for-profit, international organisation, governed by and responding to the needs of our 45 Member Countries (90% of which are developing countries).

Our role in international development

In 2002, we undertook a review of Member Country agricultural and environmental development needs[2], to better focus our activities in response to these needs. This process aligned our activities with the Millennium Development Goals and the international treaties and obligations to which countries have subscribed in agriculture and the environment (Convention on Biological Diversity, World Trade Organization etc). Since then, we have worked further to align our work with national poverty reduction strategies and new aid principles as seen in the 2005 Paris Declaration on Aid Effectiveness.

In 2006, these have been further refined into key operational areas, in which CABI aims to:

- **Mobilize knowledge for development, to empower the rural poor and strengthen institutional, national and regional agricultural and environmental systems**
- **Foster global efforts to reduce the spread and impact of invasive species in agriculture, trade and the environment**
- **Enable smallholder commodity growers in developing countries to produce crops by sustainable practices and compete in global markets**

How we work

CABI operates on a cost recovery model, directly funded by the users of its services and so driven by real and tangible needs. In addition our Member Countries contribute 3% of our turnover. The remaining income for our development activities is self-generated through the sale of information in OECD countries, programmatic funding and competitive grants, a uniquely self-sustaining business model among intergovernmental organizations.

Our institutional survival and business growth clearly demonstrate our direct relevance to national needs and the cost-effective nature of our delivery. CABI has become a very relevant and valuable organization, fitting well with DFID's aspirations for a new, more cost-effective and responsive model for international organizations.

1 DFID (2004) Review of DFID activities in the enabling environment, Final report, Investment, Competition and Enabling Environment Team.

[2] CABI (2002) Knowledge for Development, the role of CAB International. 30pp

The CABI Partnership Facility

In 1990, at the request of our Member Countries, we set up the Partnership Facility funding mechanism between donors, CABI and developing countries, enabling us to respond directly to the needs of the poor and deliver our expertise in information, science and communication in support of sustainable agricultural development. The Facility is presently sponsored by DFID, CABI, SDC and ACIAR.

Donor support is used and reported as a pooled fund to enable CABI to initiate and take forward programmes in our areas of unique competence, our projects responding to priorities expressed by our Member Countries and in line with the development objectives of those providing the funds. Where requested, in some cases this is used to directly add further value to existing programmes supported by the donors concerned. Other Partnership project inputs are supported from CABI's self-generated income and from contributions from other funding agencies.

How it is used

Managed and audited separately from the rest of CABI's activities, Partnership Facility funding is leveraged and often co-financed through commitments from institutions in our Member Countries, thereby creating active partnerships to deliver our joint goals.

The funds are used for activities that:

- add value to existing national and regional initiatives
- support critical research programmes for agricultural sustainability
- improve access to information and scientific services for capacity building
- facilitate the introduction of new technology
- enable rapid responses to emergency situations

Our Partnership Facility donors find the benefits of this funding mechanism are:

- Transforming short-term grants into self-sustaining programmes and products
- Minimising the transaction costs often associated with individual projects
- Maximising the impact of their contributions to multi-donor projects
- Addressing themes and countries of direct relevance to their policies

Continued and enhanced funding of the Facility is essential to CABI, to enable us to deliver real benefits to our Member Countries and directly contribute to achievement of the Millennium Development Goals. Through the Facility, CABI delivers results in line with the 2005 Paris Declaration on Aid Effectiveness and with relevant regional processes such as the Comprehensive Africa Agricultural Development Programme and national poverty reduction strategy plans.

Demand from Developing Member Countries

The importance of this fund and the value of CABI in development, was recognized by Dr William Medrano, then Head of the Philippines Bureau of Agricultural Research and Chair of CABI's Executive Council of Member Countries, in a letter to DFID in 2004:

> *"All involved in (the CABI Review Conference in Beijing) considered it very successful which highlighted CABI's unique role and value in supporting international efforts to address major development agenda such as agricultural sustainability, biosecurity and trade, connecting scientific knowledge with farmers etc"*
>
> *"…we also seek further support from CABI in areas of policy, strategic thinking and specific technical support in relevant areas. In such cases we are actively seeking to change our outlook, operation or way of working and would wish to use CABI's services and ideas as a direct partner to help shape our internal processes and build the capacities we need."*
>
> *"I am aware that CABI is requesting a further contribution from DFID to enable such development inputs to be made. On behalf of the many developing countries that own CABI I would request your urgent consideration of this request that could do much to*

truly support international activities towards achievement of the Millennium Development Goals."

Recognizing this demand, DFID increased their programmatic support via the Partnership Facility from 2004, increasing step-wise from a figure of £200,000 p.a. in 2003/4 to £400,000 in 2006/7. The grant is allocated to activities agreed at the beginning of each year, and allocated so that the total amount allocated per project does not exceed 50% of the total cost.

Our Role and Impacts

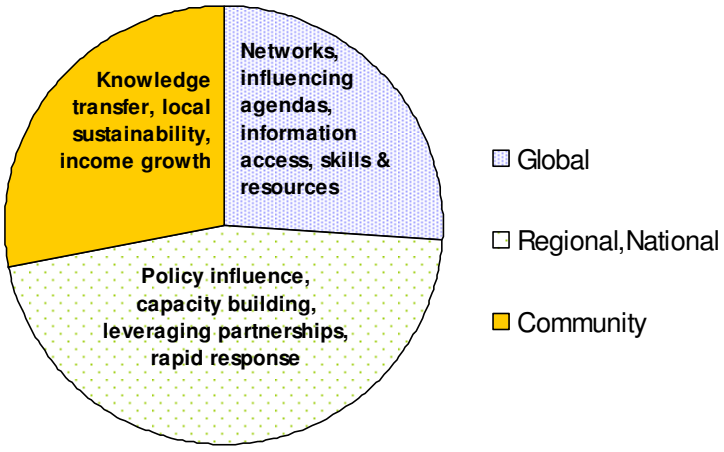
In this review of the Partnership Facility, CABI's impact on international development has been established at different scales, from global policy through to the poorest farmers. As an intergovernmental organization, CABI's function is to support, not replace, local institutions and we place particular emphasis on ways in which we have added value to national institutions, by developing capacities and knowledge resources, by bringing new ideas into national systems and by championing the needs of developing countries into international policy. Most of our impacts on poverty are thus indirect, achieved through strong partnership with national institutions, civil society organizations and private companies and by helping those worse-off to benefit from the value of scientific knowledge in agriculture and the environment.

Methodology for Evaluation of the Partnership Facility

The time scale available for this assessment has not yet enabled detailed survey of end users, but this process is planned for key programmes in 2007-8. The evaluation thus comprised auto-evaluation by project leaders or those associated with the work, against a standard template, to describe development impacts at different scales (Global, regional/national or community).

Within each of the 60 or so separate analyses undertaken, specific domains of impact were identified and the project evaluated against those relevant to the activity. Impact was identified from project reports, published outputs, communications with project partners and from evidence generated from subsequent projects initiated through support from the Facility.

Scale, Level & Domain of Influence



By nature of these projects, some have addressed common themes but have individually been of small scale and have taken place over successive years in the development of a particular initiative. We have clustered and evaluated these according to a combined geographic & thematic focus.

These assessed:

- Achievements of a project, programme or strategy under the PF (tangible outputs)
- The direct and indirect effects of the programme, e.g. regarding sustainability and poverty alleviation (development impacts)
- How development progress was realized, i.e. what success factors and obstacles/risks were responsible for any resulting effects (lessons learned)

Evaluation considered two time scales:

1. Where the project took place recently (last 5 years), immediate impacts would be in the most part at policy & institutional level, rather than reaching through to communities. Evaluation here highlighted operational issues, policy influence and institutional capacity building. In most cases, this was undertaken by direct consultation between project leaders and their partners (primarily as desk studies) on impacts and lessons learned from the processes. These will be followed in the next year by follow-up survey with the intended beneficiaries.
2. Longer term impacts – some case studies were compiled for specific Facility-funded involvement up to 10 years ago, where that has since led into larger programmes that have resulted from the initial investment. Desk study evaluation was here combined with quantifiable impacts on poverty & beneficiaries using data obtained from these projects.

Summary of External Contributions made through Partnership Facility by UK F/Y (£ Sterling)

Source	2001/02	2002/03	2003/04	2004/05	2005/06	2006/07	Grand total per source
Department for International Development (DfID)	100,000	150,000	200,000	300,000	350,000	400,000	**1,500,000**
Swiss Agency for Development and Cooperation (SDC)				115,000	155,000	155,000	**425,000**
SDC Specific programme funds (India)						105,000	**105,000**
AUS (ACIAR)	68,000	100,000	120,000	120,000	100,000	100,000	**608,000**
Canada (CIDA)	45,000	45,000	40,000	40,000			**170,000**
Private: Syngenta, Kraft			3,000	50,000	50,000		**103,000**
GRAND TOTAL	**213,000**	**295,000**	**363,000**	**625,000**	**655,000**	**760,000**	**2,911,000**

Partnership funding averaged *ca.* £200,000 p.a. over the period 1997-2001 and the recent growth of financial support is an encouraging reflection of donor confidence in CABI's development value. Projects supported have typically ranged in scale from £10,000 to £50,000 p.a. and in some cases have taken place over successive years. Unfortunately, CIDA had to temporarily withdraw from 2005 due to budget cutbacks.

This Evaluation has reviewed all projects funded over the period 2002-2007. The following report describes those of particular interest, either through their own particular impact or where they showed how CABI has learned lessons on ways to improve such projects to achieve greater development value. A full set of the completed evaluation proformas is available separately.

Impact Evaluation by Themes

Knowledge for Development

"A little knowledge that acts is worth infinitely more than much knowledge that is idle." Kahlil Gibran

CABI's Knowledge for Development (KFD) activities aim to support effective decision-making through access to knowledge. KFD is about the way that people acquire, understand, interpret, and use knowledge.

Through Partnership Facility support, we have mobilized our experience and expertise in farmer participatory training and research, rural knowledge systems, national innovation systems, and global and institutional information systems, to deliver impact across a broad range of activities. These diverse skills are integrated with those of our partners to meet the needs of the rural poor, developing understanding of knowledge flows in rural environments and of communication processes for knowledge sharing. The emergence, rapid development and infrastructure investment in information and communication technologies (ICTs) provides new tools for knowledge sharing in rural systems that are opening up entire new ways of enhancing knowledge flow into and from communities.

We link access to information gathered from science with processes of both local and scientific innovation, helping farmers to make informed choices through understanding both the technology and their particular circumstances, and themselves selecting and evaluating interventions appropriate to their key needs.

Global Initiatives

Our project work fostering the use of scientific knowledge for development is underpinned by the information database we maintain on behalf of our Members: the *'Common Wealth of Knowledge'* described by our far-sighted founders. This data is made available for development purposes through a wide variety of means supported through the Facility and is of directly quantifiable value to its users:

CABI's development programmes are directly supported by The Australian Centre for International Agricultural Research (ACIAR) via the Partnership Facility. ACIAR recently undertook and published an external review of the value to Australia of CABI's Abstracts database and the CABI Compendia[3] (ACIAR's programmes are designed to achieve more productive and sustainable agricultural systems, for the benefit of both developing countries and Australia).

> "CABI is interesting as an international organization in that many of its activities are in publishing, abstracting and dissemination of scientific information. These services play an important role in all of the research activities funded by ACIAR and in other research around the world".
> *Peter Core, Director, ACIAR*

The study measured the benefits from CABI's activities in terms of the resulting savings in transaction costs for Australian users of CABI's services. An external survey of users enabled quantification of the scale of usage and time saved as a result of being able to readily access such information and thus the productivity improvements achieved. The results were overwhelmingly positive. Based on this survey, use of CAB Abstracts by researchers resulted in:

- median time savings of 3-5 working days per researcher per year
- time savings valued at AU$ 470-790,000 p.a. across all researchers.

[3] Pearce, D. & Monck, M., (2006) Benefits to Australia of selected CABI products. *Impact Assessment Series report No 42, Australian Centre for International Agricultural Research, Canberra, Australia.* October 2006, 36pp

The overall benefit to Australian users from the CAB Abstracts database and the CABI Compendia (described below) amounted to between $1.4 million and $2.2 million p.a. The authors considered this a conservative estimate of benefit as these returns release resources that themselves enable further new research activities. While this is a developed country context, it demonstrates the generic value of CABI's market- maintained information resources, which themselves underpin much of our development work in this area and are made accessible free of charge through the Global Partnerships described below.

CABI's Member Countries have determined that our information resources should be maintained by their value in the open market. However, as an unsubsidised resource, direct purchase is out of reach of the poorest users. To ensure that the poor can access these resources, CABI plays an active role in pre-funded networks that make information available free-of-charge to developing countries. The Partnership Facility is invaluable here, meeting the costs of CABI's participation in processes of network development and management under the '*Global Partnerships'* programme.

Global Partnerships for Information and Communication for Development (ICD)

As an intergovernmental organization, CABI pioneers and contributes to global initiatives that use agricultural information to benefit developing countries. Here the Partnership Facility has enabled us to combine our information resources with those of others, providing the essential information tools for decision-making by policy-makers and those developing practical ways to manage problems within regional and national systems.

The FAO-managed AGORA programme is a major initiative, bringing together the scholarly journals in agricultural and related sciences of the world's major publishers and delivering them, mostly for free, to developing country institutions. The resource now includes 959 journals delivered to 777 institutions in 64 countries - very predominantly where GDP per head is less than $1000 per annum.

CABI's involvement in AGORA has been significant on three fronts, as:

- a provider of journal content;
- provider of a subset of the CAB Abstracts database, that also delivers a highly structured search interface, and
- a combined publisher & development organization, bringing a unique perspective to the programme derived from long experience in both arenas.

Impact and infrastructure studies of AGORA and its sister health project HINARI were commissioned in 2006. Usage of AGORA is still becoming established, but this collection of knowledge is clearly valued by both researchers and policymakers: in the 12 months to July 2006, over 0.25 million documents were downloaded from the service. The transformation of this information into local impacts will require more time to address and evaluate. The partners have now agreed that the AGORA and HINARI platforms will be developed forward to 2015 and it is intended that CABI's involvement will continue, assuming Partnership Facility funding is maintained.

As part of the *Global Partnerships* programme, CABI also participates in the FAO-led 'Coherence in Agricultural Information' and AGRISContent initiatives, and with a range of partners in 'The Essential English Agricultural Library' (TEEAL). TEEAL delivers over 100 agriculture journals to 98 institutions in 49 countries. These programmes and projects, each involving international networks of information providers, are working to achieve equity in access to agricultural information in a world of rapidly-emerging new ICTs, which enable the open availability of digital information on a scale hitherto unachievable, but yet which are also fast bringing in a 'digital divide' in access between rich and poor.

Digitization of the Global Health Archive (the *Heritage Project*), co-financed through the Facility, was a major effort to ensure the accessibility and future value of a substantial archive of CABI's literature on tropical and communicable diseases, nutrition, parasitology and medical entomology and mycology – a history of 20th century work in these fields, totalling *ca.* 800,000 records. Without this project, much of the captured information would have become

increasingly invisible to the world. Access to this information in libraries of the developing world is of great importance and has been directly requested by CABI's Members through the CABI Executive Council. The Archive is now supplied to 20 institutions in 6 countries and further distribution routes are being addressed to make the data available free-of-charge through pre-funded supply, including via WHO's HINARI platform.

It is difficult to formulate evidence for specific local impacts of global initiatives of the types described above on the lives of the rural poor, as these impacts occur via the actions of third parties. Nonetheless, without access to the knowledge management and strategic knowledge that have enabled developed world agricultural/rural economies to develop effectively, it is unlikely that sustainable long-term change can be effected for the economically-challenged developing world.

Compendium Development

Support through the Partnership Facility has played an essential role in making CABI's Compendium Programme a story of substantial success. The Partnership Facility has supported initial development meetings and has ensured that developing countries have had a central voice in the content and purpose of these multimedia, encyclopaedic reference resources. Indeed, the first compendium was focused exclusively on the needs of the countries of SE Asia.

Over a period of ten years, international consortia comprising 70 organizations, from academic bodies to funding agencies to private corporations, have further invested in the development of a whole series of Compendia: the Crop Protection Compendium (CPC), Animal Health and Production Compendium (AHPC), Forestry Compendium (FC) and Aquaculture Compendium (AC). Through their compilation, definitive reference materials are now available into many developing countries, either for free or at very low prices.

This broad dissemination has resulted from two key and innovative factors. Firstly, the willingness of the consortia to fund and work together in the development of the Compendia. Secondly, while the Compendia are themselves maintained and updated through market demand, the consortial partners involved have ensured that these resources are made widely available free of charge to developing country users, because they recognize the great inherent value of the knowledge they contain to those supporting the development of sustainable agriculture and the growth of agricultural trade..

Although these are global resources, they are highly relevant and usable in local situations where specific problems or decisions with particular species, pests or environments require sound authoritative knowledge in accessible forms. They are authoritative and truly global in scope, making them relevant to policy-makers, researchers, extensionists and farmers across all regions. The verified evidence they contain can be readily derived into other forms and applications for a wide range of purposes in support of poverty reduction, food security and rural development. The Compendia were developed in response to demand from the stakeholders who benefit most from their existence. DFID's follow-on support to the development of both the AC and the CPC (including training and dissemination in Africa) has been an important element in the success of the resources and the consortia that support them.

Over 20,000 copies of the Compendia are now in use around the world. Their value to researchers has been externally reviewed by ACIAR (Ref. as before), who found them to be of direct and tangible benefit to users as a ready source of knowledge adding real value to their work. ACIAR's Impact Assessment of the CABI Compendia showed that their use by Australian researchers and officials involved in biosecurity resulted in median time savings of:

- 37-54 days per user per year
- across all users this was valued at AU$ 940,000 to AU$1,380,000 per year

Individual users and benefiting institutions speak very highly of their value. As ICT infrastructure improves in most regions, we anticipate a significant scaling up from present usage of Compendia and their content, reaching those who can make best use of them in a wide range of development contexts.

Users speak for the Compendia:

> "The compendium has been very useful in the daily running in our organization. We normally use it on a daily basis and do not know how we could have been able to cope without it. The compendium has been very useful on quarantine issues."
> *E Kimani, P Njoroge, R Onamu, I Macharia, E Lang'at, AC Koech, EM Mavogo, Plant Inspectors, Kenya Plant Health Inspectorate Service, Nairobi.*

> "…we were often faced with pests which no-one had seen before or others which could not be identified or only the local name was known. The photos helped enormously in identification, particularly for the local project staff and farmers. We were able to narrow down possible infestations from the descriptions and life cycles then looked at the photos to positively identify the pests.."
> *Philippines - Palawan Tropical Forestry Protection Programme.*

> "It's among the best reference materials I have come across in the agricultural sector. This is really a big and a good lead towards revitalizing the sector which had been neglected for a long period of time. It's also good to find that ICT is being incorporated in extension as well as solution development for the agriculturalists."
> *Kenya - ICT and Extension Specialist.*

> "Villagers in Tanzania are finding out how to protect their crops thanks to a multimedia CD-Rom project. The disc provides quick and easy access to much needed information on pests, diseases and weeds that can decimate crops. What is good about the compendium is that it has a lot of pictures. We can also produce printouts of a pest or a disease and give them out to farmers. We can show them pictures and add information in local languages. We have distributed the compendium to many research and development groups involved with agriculture."
> *BBC World Service interview with Theophilus Mlaki of Tanzania's Commission for Science and Technology*

The Government of Tanzania intends to equip every extension office with the Crop Protection Compendium, greatly improving the quality of supporting materials available to extension officers. However, at the moment we do not have enough good information about the types of subsequent impact engendered at the local level. This is an area of analysis and understanding that needs further attention.

Knowledge Influencing Development Agendas

International Assessment of the role of Agricultural Knowledge, Science and Technology in Development (IAASTD)

The IAASTD is a major international process, supported among others by the UK Government, through both DFID and DEFRA. The assessment provides a unique opportunity to inform policy on future (medium-long term) agricultural needs and the role that agricultural research should play in addressing anticipated challenges. This process has brought together governments, scientific organizations, NGOs and private sector companies in an unprecedented manner, objectively addressing issues such as GMOs that are otherwise deeply politicized.

Funds provided through the Partnership Facility have enabled CABI to be actively engaged in this process, from the pre-assessment evaluation onwards, ensuring that CABI's knowledge base and ideas were represented into the planning of the Assessment. A series of consultations in different countries established the value and purpose of the assessment and the process by which it would be undertaken. CABI's recognition and perceived value in international science and development have been considerably enhanced through this

process. CABI is a Member of the Governing Bureau of the Assessment, representing scientific institutions along with representation from the CGIAR, IUCN and other key organizations.

The Assessment should have a profound influence on policy in funding science for development across a wide range of institutions. It seeks to provide the evidence base to inform policy choices across a range of key agricultural issues, including climate change, urbanization and diet change, natural resource depletion, and biotechnology, as well as the impacts of societal inequalities and the significance of agriculture for economic growth.

Connecting Science & Society

Knowledge derived from science generates many of the goods and services of agricultural development, and access to external knowledge is fundamental to the empowerment of the poor. However, many developing country institutions were founded on models that are now proving unsustainable or are disconnected from the societies they serve. Research-extension linkages are failing in many countries due to a lack of resources and motivation, along with a 'top-down' view of promotion of agricultural technologies and inadequate connection to the real issues and challenges facing communities. New models are required, whereby systems of innovation can better combine local knowledge with that from science, recognizing the value of each and work to achieve changes that are driven by communities themselves.

Through support from the Partnership Facility in 2003, CABI established a dialogue under the Global Forum for Agricultural Research (GFAR) umbrella, with IFAD, the CGIAR and key NGOs (ETC and ENDA) active in innovation systems. This created the intellectual framework for GFAR to consider programmes around agricultural innovation and learning systems. The resultant Putting Knowledge to Work (PKW) framework was put forward at the GFAR Conference in Dakar, Senegal, and attracted widespread interest from participants. These principles have since been taken up in a number of contexts, discussed below.

The ideas developed were presented at the CABI Review Conference in Beijing, 2004, receiving strong support from senior NARES figures present, including the DDG of KARI, Kenya, and the DDG of ARC, South Africa. The Director General of the Council for Scientific and Industrial Research, Ghana, has expressed a strong desire to incorporate these principles into a complete overhaul of the Ghanaian Agricultural research system and is actively seeking external support to do so.

Our ideas around innovation systems were also subsequently presented in invited seminars at SDC, Bern: IFAD, Rome; and at the World Bank, Washington DC. They also formed the basis for an invited paper examining EC development policy needs in relation to the Lisbon Strategy, presented at the EC Science & Society Forum meeting in 2005. The theme was also elaborated in an invited paper at the European Forum for Agricultural Development, Zurich, 2005, attracting much interest.

> "Further, I would like to express our gratitude for the very pertinent input of Mark (Holderness) along the issues of knowledge flow and the interface between science and poverty-relevant development. We have appreciated this most valuable contribution to enrich SDC's own discussions, and we're interested to identify up-coming opportunities for a further exchange in a real-life context in one or a cluster of partner countries where small and marginal farmers remain thirsty and cut-off from valuable knowledge."
>
> *Martin Sommer, Head of Natural Resources & Environment, Swiss Agency for Development and Cooperation (SDC) (2004)*

A presentation to postgraduate students under the Commonwealth Scholarship scheme in 2006 was very enthusiastically received and led to a specific request from the Commonwealth Scholarship Commission for a training programme for mid-career scientists addressing this area, and this is now under development.

Funding to allow larger scale development with NARES has not yet been forthcoming, but the processes involved take time to develop. Through our relationships with the NARES of our Member Countries, CABI is in a strong position to take forward concepts into scaled-up implementation, but the funding mechanisms for this are often complex. These ideas have also been taken up by the sub-regional agricultural research coordination body CORAF, with a view to developing a parallel initiative across a number of West African states.

These ideas have thus been extremely influential and have just become the central pillar of GFAR's plan for the next three years: "An innovation systems approach for ARD focused on poor, small holder producers central to future GFAR actions":

> In the Communiqué[4] released by GFAR following its Retreat to develop its Business Plan for the next three years, an innovation systems approach for a pro-poor and pro-small-holder producer ARD play a central to future GFAR actions. The next three years will see GFAR advocating and supporting efforts aimed at enabling innovation in order for ARD to better respond to societal needs.
>
> Indeed, while discussions back in 2003 did not result to the launching of a Global Partnership Programme on Rural Knowledge Systems, the very same principles espoused by the small group of organizations involved in the brainstorming session found its way in the mainstream global ARD agenda.
>
> *Oliver Oliveros, Global Forum for Agricultural Research, April 2007*

Regional, National and Institutional Initiatives

CABI's skills and resources in agricultural and environmental science often support the development of national policies, enabling leverage of impact on a large scale. **The Good Seed Initiative** (GSI) workshop took the outputs from previous DFID-funded work in Bangladesh, where women farmers were themselves developing and disseminating good practices in farm-saved seed, to a policy-impacting environment in Africa, influencing thinking and processes at a regional level. This workshop, co-funded by the Partnership Facility and DANIDA Tanzania, led directly to further support for the GSI from a network of funding partners and to a three-year programme taking forward the work, directly funded by SDC.

The programme places strong emphasis on seed production as a valuable yet neglected role (and associated income opportunity). The programme has brought together indigenous technologies with knowledge from science and has enabled women farmers to themselves become the agents of change, spreading knowledge of good practices through the use of participatory video. It is estimated that **at least 1 million farmers in Bangladesh have now been exposed to the good seed practices developed under the GSI** as a result of the participatory videos being shown on Bangladesh national television and in local cinemas, and early indications are that take-up is strong.

> "Our scaling up strategy with Bangladesh TV is doing very well. BTV is showing our films regularly 5 times in a week. Can you imagine what may be the coverage? It is very very B I G, I tell you. In reply to our letter regarding Mati o Manush Coverage, the BTV authority in a letter informed us that BTV covers 80% of the total TV viewers of the country which means almost half of the population of the country. During a field visit last week I enquired about the fact randomly in a remote village and found out of 20 women, 4 watched our video on threshing, and 3 could not because of power crisis in the evening and rest do not have access to TV."
>
> *Md Zakaria, Rural Development Academy, Bangladesh*

[4] *Communiqué* issued by the GFAR Secretariat following the GFAR Retreat 30 March-01 April 2007 in Bibliotheca Alexandrina in Alexandria (Egypt).

Farmers inspecting a rice seed crop in a demonstration trial at Iganga District, Uganda (D Karanja)

The East Africa workshop, supported through the Partnership Facility and co-financed by Danida, established the context to multiply this impact substantially into other regions. The videos have now been adapted for use in India and West Africa, and are currently being evaluated in Uganda. The workshop raised the profile of local seed production and issues around informal seed trading in East Africa, where this sector had not been fully taken account of by seed legislation in regard to its scale and importance. It also led directly to a programme funded by the DFID Crop Protection Research programme that brought together the numerous project outcomes related to seed, itself an impact recognized and valued by the authorities in the region. WARDA has now disseminated the videos to African rice farmers and has translated them into four African languages.

> "The GSI Morogoro meeting greatly emphasized the problem and the lack of capacity to handle the seed health issue effectively. The harnessing of CPP outcomes enhances the national and international efforts in dealing with seed health that currently is challenging our already declining productions. Kenya is bound to benefit both in the formal and informal seed systems on any activities that enhances capacity to identify, analyse and provide management options in seed health. The economic gain in addressing seed health e.g. bacterial wilt, black rot etc. are enormous and would alleviate poverty and increase rural household incomes."
>
> *KEPHIS, Kenya on support for the subsequent CPP project that linked CPP outputs to the Good Seed Initiative workshop*

The Hidden Resource: Microbial biodiversity

Microbes are potentially most profitable natural resources owned by developing countries yet without the institutional capacities required to understand and make use of this biodiversity it can never be capitalized for pharmaceutical, environmental or agricultural benefit. CABI has been at the forefront of efforts to help developing countries to derive value from these untapped resources. At present global knowledge is deficient, with <5% of species even described, a deficit that is far worse for developing countries where 95% of such diversity is found.

Partnership Facility support of £28K has catalysed funding from UNESCO and local financing from the countries concerned totalling £134K. This has enabled a series of training programmes over the period and given impetus to the development of a global biological resource centre network. Capacity building for the Indian National Bureau for Agriculturally Important Microorganisms has been strongly welcomed: this is a key agenda of ICAR which has contributed funds directly to this programme.

In Africa there is a pressing knowledge need: at present there are only 10 microbial collections in the Continent despite strong interest in the area. However, the political separation of countries has made for difficult balances between regional needs and countries each wanting their own infrastructure. Further funding for this 'orphan' area has been difficult as it does not readily fit existing funding streams in the region, but CABI is now working with an initiative of the OECD to address these needs and the value of microbial resources is directly highlighted in the EC Framework Programme 7, which will bring them centre stage for many countries.

Linking health and agriculture

HIV/AIDS has often been regarded as solely a health issue, yet the disease has a devastating impact on rural livelihoods. The foodstuffs grown by small farmers can themselves help to ameliorate these effects, both as a source of income and by providing the essential nutrition required for anti-retroviral drugs to be effective. At the request of WARDA and the CGIAR system-wide initiative on HIV/AIDS, CABI used Partnership Facility funds to organize a workshop in West Africa that disseminated the CABI-derived manual *How to Live Positively*, a farmer training manual aimed at both helping the rural poor to understand the nature of the disease and reduce the stigma for those affected, and to reduce its effects through nutrition derived from common household crops.

This approach has now been taken up by various NGOs working with AIDS-affected communities (see Box) and into thinking within the international agricultural research system. However, while this need has been recognized by a number of funding agencies, including DFID, the issue has often fallen between health and agriculture budgets, constraining its wider uptake.

"Reasons to support this project:
It is grassroot-orientated.
The project is practicable.
The project has potentials of yielding good results.
There is available and willing manpower to implement the project effectively.
The project is highly necessary for improvement of food security.
The project is youth friendly."
Abayol Udoo, Youth Excell Organisation Nigeria.

Capacity building and strengthening

An elegant example of the value of Partnership Facility funds in enabling CABI to help support the shaping of national agendas is shown in our work with national **Agricultural Research Information Systems** (ARIS) and their regional integration. In China, CABI was invited by the Chinese Academy of Agricultural Sciences (CAAS) to take part in its strategy formulation, alongside other valued agencies. This original input has now evolved into an implementation phase, taken forward and carried out by CAAS itself. The information management requirements of a modern R&D sector are now very high on the Chinese science agenda, a situation directly contributed to by CABI's involvement.

> "The implementation of ARIS Strategy is helping facilitate the transition of the Chinese agricultural research information system from the traditional model to a modern management model. It aids in information resource-sharing within the agricultural sector and plays an important role in offering comprehensive, timely and accurate information services to agricultural management for decision-making as well as research and development."
>
> *Dr Pan Shuchun (2006), a key CAAS member for the ARIS Strategy development*

CABI's Africa Centre in Nairobi, and its work across Sub-Saharan Africa (SSA), is an important focus for CABI's work in knowledge systems and innovation. This region contains a rich network of organizations and partners targeting knowledge management as a vital route to the growth of capacity in the region and to the alleviation of poverty. Partnership Facility funding has enabled a level of involvement and activity by CABI staff which would not otherwise have been possible.

CABI holds a unique position in the networks into which it is invited, such as FARA-RAILS (reaching all of the African sub regional organizations and 45 FARA Member Countries) and ASARECA-RAIN. CABI is respected both as a facilitator of processes and as a provider of information. Through the Facility, we bring advanced information management skills and expertise in farmer-participatory innovation processes, along with the outlook of an organization that works in commercial markets and understands the value of information to both producer and user. This combination is viewed as real added-value by CABI's partners, through the insights we provide into ways to make such systems sustainable beyond a particular project.

Networks such as these can bring real and lasting benefits to the agricultural sectors of SSA nations, particularly where knowledge on production is linked to other information such as market prices. Impact on farmers from information/knowledge management systems and networks is not always easy to identify, but can be seen in sub-projects:

The Kiinyuni Horticultural Growers Group became an agricultural knowledge club in 2004, when CABI and the Kenya Agricultural Commodity Exchange (KACE) established the Machakos Agricultural Knowledge Centre. This initiative gave growers access to information about markets via mobile phones and through the Centre's 'trading floor', a mechanism linking buyers and sellers. Through these groups, farmers improved their production and marketing and are diversifying their farming activities. They now sell horticultural commodities (French beans, butternut, kales, and tomatoes) as well as maize and beans and are also involved in poultry and beekeeping.

> *Group leader Victoria Mutuku testified:*
> "Through my group's association with the Machakos Agricultural Knowledge Centre, we get good markets for our produce and are able to sell all or most of the produce at good prices. We no longer use middle-men who had been exploiting us. For example, in December 2006, we had a bumper harvest of tomatoes which we sold at Ksh 900-1000 (US$ 13-14) for a crate of 40kg as compared to the previous price of Ksh 500-600 (US$ 7- 8.5). In addition we did not throw away any produce. Normally when we have a bumper harvest, nearly 50% of the produce is lost /thrown away due to lack of markets".

The group is growing in membership and Victoria was invited to share her experiences at the IAALD *Africa* Conference in 2006. Her group has now networked with many farmers groups within and outside Kenya and has hosted visits from farmers groups from Zimbabwe and Mozambique

Direct impact is also seen in the pioneering **Mobile Solutions to Accessing Research Information**, which uses mobile telephones and other ICTs to deliver external knowledge into local contexts. The pilot project initiated through the Facility has already enrolled 30 stakeholders, reaching researchers, information officers, extension workers, and coffee and livestock partners in Kenya, Uganda and Tanzania. CABI's regional partners, RAIN and CORNET, have directly committed funds to this pilot. Experience so far indicates that good impact can be achieved by these networks provided systems are sustainably embedded in local cultures.

The Knowledge for Development Fellowship Scheme provides an individually-focused approach to training and capacity building. Through PF support, training in information management has been provided by CABI for individuals from research institutions, universities, publishers and government agencies. This has involved a network of partners including INASP and the Oxford Forestry Institute. Just one indication of success is that one Scheme beneficiary from CAAS is now Director General of the Agricultural Information Institute of CAAS in Beijing.

Community Change and Poverty Reduction

Impacts on rural poverty and impoverished livelihoods are most immediate where interventions are directly at the level of the farmer and the local community. CABI's combination of knowledge management skills and information resources make it highly effective here, directly partnering local organizations engaged in rural development assistance programmes. Examples of how the Facility has supported capacity-building in communities are presented below:

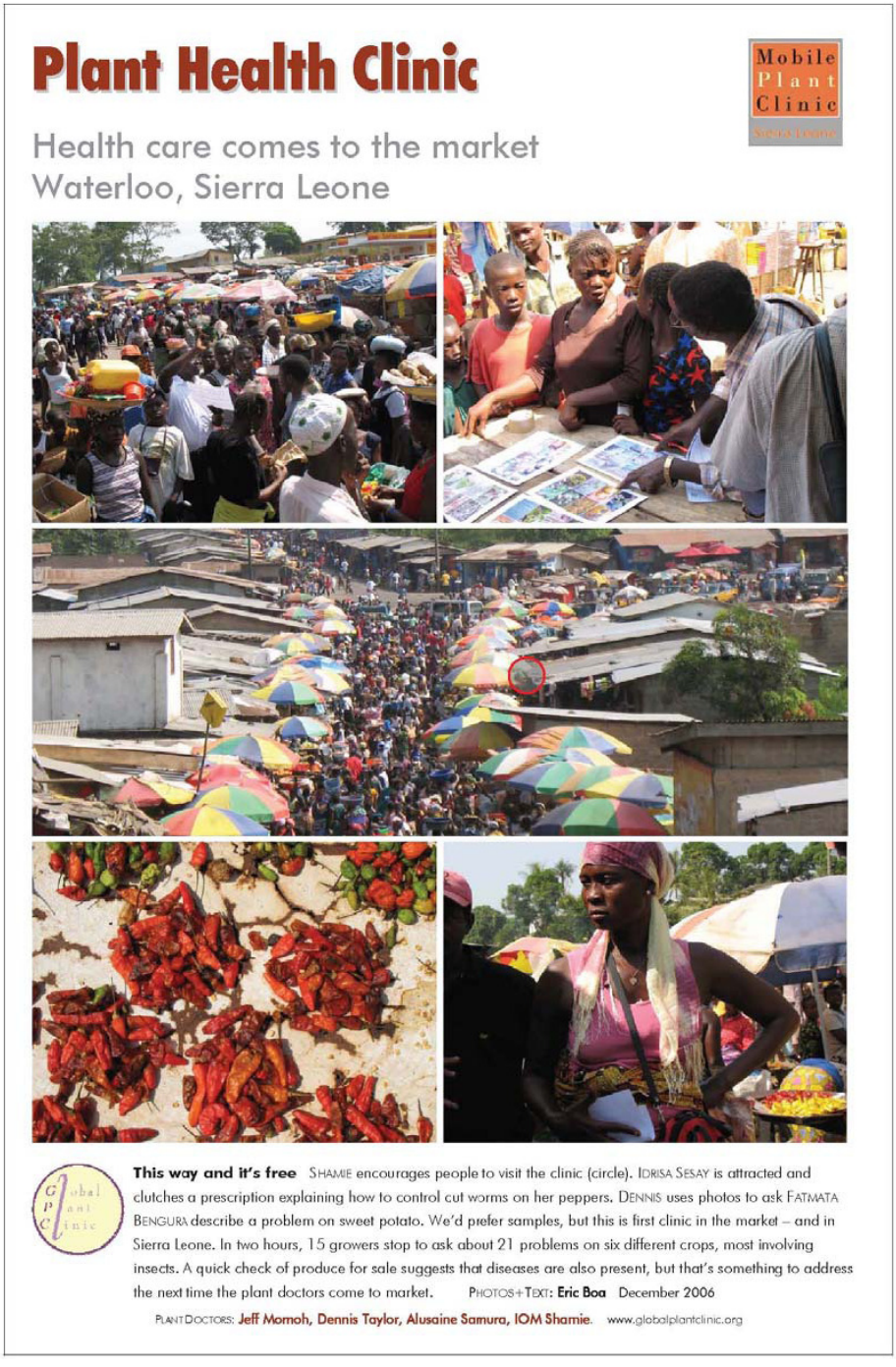
The **Development of ICT-based Agriclinics for Rural Farmer Empowerment in Sri Lanka** project has benefited from a combination of local factors (a highly respected local NGO with social networks already established; a relatively advanced state of ICT development; increasing involvement of the relevant Government department) which together provide a promising local platform of demand. Already, as a direct result of CABI's PF-funded involvement, local stakeholders have worked together to develop a pilot agricultural knowledge system impacting on some 1500 farming families. The availability of further resources can lead immediately to a substantial scaling up of this penetration. There has already been a very positive and proactive reaction from the rural communities concerned and an eagerness to work with new knowledge to enhance their own.

> *Some farmer's stories from the Sri Lankan Telecentres*:
>
> "I came to the Agri-clinic with some branches of my infected orange. I was not very sure whether it was disease, nutrient deficiency or pest attack. The officers in Agri-clinic took a photo of my infected leaves and sent it to Department of Agriculture, and in very short time they came back to me with the solutions"
>
> "This is the first time I've got a chance to touch and operate such valuable equipment in my whole life…I feel proud …Thanks to Agri-clinic Officer. He showed us some photos of cabbage cultivation from another part of the world and the field just looks like mine…I was surprised"

This direct interaction of external experience and knowledge of best practice with the immediate concerns of poor farmers can also be seen in **Going Public**. First explored under the DFID-funded Global Plant Clinic, *Going Public* has impressively demonstrated a low-cost, low-technology extension method that takes extension workers outside their normal working environment and helps them appreciate the value of their own knowledge. By directly interacting with communities in places where people naturally gather, it can rapidly reach large numbers of poor farmers and provide answers to serious problems, where these are known. *Going Public* has been successfully used in Uganda, Bolivia, Kenya, Bangladesh and Vietnam, to get simple and relevant messages directly to farmers:
Partnership Facility support enabled its use in Uganda in response to the devastating spread of banana bacterial wilt disease. In one month in Uganda, 17 Going Public outings reached over 1000 smallholder farmers with an effective, low-cost means of preventing disease

spread. The concept has been widely disseminated in published work and at international conferences.

CABI's involvement in **Sierra Leone** has been directly requested by the head of the National Agricultural Research Coordinating Council (NACC), to address the post-conflict reconstruction and development of the national agricultural research and extension system. CABI has helped to develop NACC's thinking on new models for community-driven approaches to agricultural innovation. Some of the tools required for linking scientific knowledge and communities practice were piloted in the field through the Partnership Facility-funded project *Engaging Ideas*, focusing particularly on plant health and the rejuvenation of extension systems. There is much more to be done, but the results of this short project indicate how extension and research systems can be rehabilitated in a more relevant and farmer-centred, rather than technology-centred, context:



A further example of the application of CABI's skills at the farmer interface, using farmer participatory research approaches and Farmer Field Schools (FFS), was seen in **Caribbean Farmer Participatory Training and Research**. This project aimed to mitigate the effects of chemical abuse in high value crops across 6 countries and to encourage the development of sustainable methods of crop production and protection. The engagement of regional networks here was essential to scaling-up of activity by translation into other countries in the region. The project resulted in the formation of a regional FFS Network which continues to strengthen, and a Caribbean IPM Network with 85 members has been active since 2001. With this mix of personal drive and consistent, proactive backing by supportive Ministries of Agriculture, there is a strong chance that initiatives will take root in local communities in a sustainable way. The projects in this section show the value of bringing together external best practice with local knowledge to help to bring about local change. Through this approach the chances of creating sustainable outcomes are enhanced greatly.

> "This is another advantage of The FFS, it empowers individuals (farmers and Extension officers) that they can carry on without Master trainers, hence making it a sustainable project."
>
> *K. Stephenson, Master Trainer, Dominica – Carib-Agri-List, October 2006.*

ECO VIBE

Amina Akinbumi, a farmer and active member of the Caura Valley women's group and Dr. Shango Alamu (Community leader, farmer, crop physiologist and calypsonian) performing the ECO-VIBE calypso he composed acknowledging the support by CABI, at the FFS evaluation workshop, Trinidad, 2003

We adopting appropriate strategy
Right here in the Caribbean
This approach, it is called IPM
We using it to resolve all we pest problems
Is EU that fund this project you see
Facilitated by all of we Ministries
Nuff Respect to CIPMNET and CABI
For promoting this different philosophy

Well, this approach is participatory
All inclusive respecting everybody
We don't care a thing about formality
So everything nice, everything Irie
We now pioneers in the Caribbean
And we loving it, it is no big scene
Only hope that this methodology
Become standard practice in every country

Caribbean farmers care about quality
Particularly what they feeding the people you see
We want to export to other countries
Most finest world standards definitely
So now we must know about toxicity
Chemical residues and food safety
So when the food gone off on the world scene
We don't have to worry about quarantine

So we go use we botanicals
And we go use biologicals
We go introduce we natural enemies
Plant we trap crops and protect we honey bees
We want to produce all we food safely
We even want to plant it chemical free
We ain't on gimmicks we ain't out for fame
We want to protect we Caribbean name

We environment we got to preserve
We soil and water we got to conserve
Ah mean ah ain't went university
But I know about Biodiversity
On all of these things our life depends
So we got to treat them as we best friends
And I go tell you this and it ain't no hype
If we ain't do this crapaud smoke we pipe

When we take we local technology
And intermix it with outer road strategy
This interactivity
Go bring the best mix definitely
We glad you respect all our offerings
We appreciate everything you bring
Under these circumstances everybody win
I think this is a beautiful thing

To our forerunners those who paved the way
Farmer Field School have come a long way
It is now a global experience
Simply because the thing is common sense
From the early days over in India
To South America down in Africa
Tremendous work was done in the Philippines
FFS has arrived in the Caribbean

So we come out to participate
So we want you to facilitate
This opportunity must never slip
Let we build upon this relationship
Let us move on in Ajajah name
To bring about this cultural change
Ah mean as farmers we dealing in dirt
But is it too late to save Mother Earth?

Managing risks from Invasive Species to food security, trade and environments

The complex dimensions of the invasive species problem

Until recently, Invasive Species were often pigeon-holed as an environmental issue or niche problem. As a consequence, many countries failed to appreciate the enormous threat posed by invasive species, which in turn did not receive due recognition by policy-makers. Yet invasive species are now recognised as one of the greatest biological threats to our planet's environmental and economic well being, threatening food security, livelihoods, trade, transport, health and economic development as well as posing great threats to biodiversity worldwide.

Globally, the cost of damage caused by invasive species is estimated to run to hundreds of billions of dollars per year[5]. In developing countries, where agriculture, forestry and fishing account for a high proportion of GDP, the negative impact of invasive species is particularly acute. Globalisation and economic development through increasing trade, tourism, travel and transport also increase the numbers of intentionally or accidentally introduced species. It is widely predicted that climate change will further increase these threats, favouring species migration and causing ecosystems to become more vulnerable to invasion.

CABI has worked on invasive species for nearly 100 years. Our reputation was built primarily in the management of agricultural pests and their taxonomy, biology and biological control. CABI's international operation enables countries to directly address problems that would be impossible to resolve within national resources alone. For example, CABI has played a vital role alongside Australian partners in the international identification, selection, screening and introduction of biological control agents for the management of invasive weeds. The Australian Government's Cooperative Research Centre for Australian Weed Management has calculated that programmes to manage the rubber vine, involving CABI in this way, returned a net present value of AU$232mn to date on an overall investment of $3.6mn (a benefit:cost ratio of 108:1, while the recent management of giant sensitive plant has already given a net value of $20.2mn on an investment of $1.7mn (a benefit cost:ratio of 18.1). CABI's programmes with developing countries on the management of invasive species are expected to yield comparable benefits, albeit with smaller-scale economies.

International policy and Invasives

Through support from the Partnership Facility, CABI plays an increasingly important role in influencing global policy on invasive species. Numerous international instruments have been developed to deal with certain aspects of invasive species. The most comprehensive is the 1993 Convention on Biological Diversity (CBD) which calls on parties to 'Prevent the introduction of, control or eradicate those alien species which threaten ecosystems, habitats or species' (Article 8h). An older instrument is the 1952 International Plant Protection Convention (IPPC), which aims to prevent the introduction of plant pests while enabling trade. CABI has established Memoranda of Understanding with Secretariats of both Conventions, assisting the development of practical guidelines and providing technical support in key areas. Our contribution is underpinned by research, by building partnerships in key aspects of invasive species e.g. information delivery, by assisting countries in implementing national strategies and by helping to build national capacities in pest management and biocontrol.

[5] Pimental, D., McNair, S., Janecka, J., Wightman, J., Simmonds, C., O'Connell, C., Wong, E., Russel, L., Zern, J., Aquino, T. & Tsomondo, T. (2001) Economic and environmental threats of alien plant, animal and microbe invasions. *Agiculture, Ecosystems and Environment* **84:1-20.**

Recognizing the importance of this issue, the **Global Invasive Species Programme (GISP)** was established between a group of concerned organizations in 1997 to address the global threats caused by invasive species and to provide support to the implementation of Article 8h of the CBD. CABI is one of the four 'founding partners' of GISP, together with the World Conservation Union (IUCN), The Nature Conservancy and the South African National Botanical Institute. CABI's involvement in GISP has been directly supported through the Partnership Facility from the outset. GISP's mission is to conserve biodiversity and sustain human livelihoods by minimizing the spread and impact of invasive alien species

GISP's main focus is to build partnerships and link stakeholders. An outstanding partnership has been established with the Secretariat of the Convention on Biological Diversity (CBD), demonstrated by GISP being entrusted to develop the Joint Programme of Work on Invasive Species under the CBD. GISP has successfully mainstreamed invasive species in international and national policy agendas and as a result has shaped the development agendas of the Global Environment Facility and World Bank. This in turn has led to financial support for regional projects on invasive plants in Africa and on marine, freshwater and terrestrial invasive species in the Caribbean.

Since its creation, GISP has produced many awareness and information documents and associated training materials for policy makers, resource managers etc and these cover a broad range of topics, e.g.: strategy, results of regional consultative assessments, popular news items and technical bulletins. The development of "A toolkit for best prevention and management practices" has proved invaluable at many regional and national workshops for assessing gaps and developing action plans. Technical documents and strategies are all distributed among the 190 CBD country parties. The GISP is providing a well frequented website and was also the main driver for the establishment of the Global Invasive Species Information Network (GISIN), the portal by which information on invasive species can be accessed from participating databases. GISP has produced and updated two global training manuals: *Training course of the Management of Marine and Coastal invasive species* and *An introduction to the management of Invasive Alien Species*.

Using Partnership Facility funds, CABI delivers training programmes within the GISP programme at both regional and national levels, such as a workshop in West Africa led by CABI in 2004. Regional workshops have shown that a major problem for tackling the threat of invasive species is the lack of capacity at a national level – a problem that GISP will feed back in the in-depth review of the CBD Joint Programme of Work in 2008. National workshops held in India (2002) and China (2004) by CABI and GISP led to those countries developing strategy and policy on invasive species.

The GISP partnership is an excellent example of how CABI was able to address an issue of global concern for humans and the environment and bring it to the international agenda by using funds from the Partnership Facility to support an ongoing process of engagement among a network of significant NGO partners.

GISP commissioned a study on the effects of invasive species on the livelihoods of poor, rural communities - a poorly studied subject so far:

"…although some invasive species may be considered 'useful' by particular groups of rural stakeholders, their presence is likely to have negative consequences for others, creating the potential for conflict… Clearly, gaining insight into the impact of invasive species on rural livelihoods requires an understanding of the causes, consequences and economic forces that drive invasions. It also requires an understanding of the role played by ecological services in the livelihood strategies of affected communities, and the impact of invasive species on these services, both in the short and long term."

"Invasive species are clearly compromising our ability to meet these goals, both directly by imposing constraints on various economic activities at commercial and subsistence levels, and indirectly in as much as the costs being incurred by national governments to prevent, control and counteract the impacts of invasive species are reducing the funding available to meet these goals."

Invasive Species and Poverty: Exploring the Links. Global Invasive Species Programme, 2006.

The partnership itself provides a significant development impact. By bringing together a group of unrelated organizations that share a common goal it has enabled efficient and synergistic use of resources among the partners and strengthened the international system, building collective action towards a common development purpose. Through the GISP, CABI has helped to facilitate the implementation of the CBD throughout the world. This attracted funding from main donors such as World Bank, UNEP, Bank Netherlands Partnership Programme and International Maritime Organisation for GISP itself and national and regional projects described in the following chapter.

Speaking the same language

The invasives agenda is developing rapidly and in diverse contexts. The GISP stakeholders requested CABI to develop the *Invasive Alien Species Concepts, Terms and Contexts* **(IAS-CTC)** initiative, which seeks to bring common understanding across the numerous terms and definitions used by policymakers, legislators and practitioners dealing with invasive species. In 2005 the IAS-CTC database at www.cabi.org/ias.asp was developed through Partnership support. IAS-CTC is a searchable database of 225 IAS terms together with their synonyms, definitions, original notes and document citations (297 unique records), and has links to 34 original source documents. The database includes definitions from agreements, conventions and standards from the Secretariat of the Convention on Biological Diversity (CBD), Secretariat of the International Plant Protection Convention (IPPC), World Conservation Union (IUCN), World Organisation for Animal Health (OIE) and the World Trade Organization (WTO). The IAS-CTC database is an excellent communication tool that, by acknowledging the importance of clarified meanings and semantics, facilitates the work of those international regulatory bodies.

"A nice piece of work. … a valuable resource … extremely timely"

Ryan Hill, Secretariat of the Convention on Biological Diversity

"A database of terms based on a more comprehensive variety of sources is being compiled by CAB International and is available at http://www.cabi.org/ias. "

Website of the Convention on Biological Diversity

Invasive plants in Africa

A good example of the cross-sectoral impacts of invasive species can be found in water hyacinth (*Eichhornia crassipes*), an aquatic plant which forms dense mats in lakes and waterways. The plant invaded Africa's Lake Victoria in 1989 and spread rapidly, suppressing the growth of natural aquatic flora. This disrupted the food chain, causing a significant loss of biodiversity, including many indigenous fish. The plants blocked waterways and ports so that fishermen and tradesmen found it difficult to navigate the lake, impacting negatively on income generation. Irrigation channels and hydroelectric dams became clogged, reducing the free-flowing water available for irrigating crops and causing widespread power cuts and increased maintenance costs. Dense mats of water hyacinth reduced the light penetration into water, the rotting vegetation creating favourable conditions for mosquitoes and bilharzia-carrying snails which pose health risks to people living around the Lake. Then there are the economic costs associated with removal of the water hyacinth by herbicides, mechanical harvesters and manual removal as well as biological control. At the height of the invasion, annual losses due to water hyacinth (to fisheries, health, water supply, power generation and transport) in Uganda alone were estimated to be US$112 million.

Through the Partnership Facility, in the years prior to this report period CABI produced resource manuals for the management of water hyacinth, analysed invasive species risks in Africa and produced a 'toolkit' manual for invasive species that brings together best practices from around the world. Through involvement in various meetings including Conferences of the Parties and workshops organised by GISP, awareness of invasive species in Africa was raised, and at the GISP meeting in 2000 in South Africa, a number of CABI Member Countries expressed interest in working with CABI to address the issue more directly. This work laid the foundations for regional invasive weed management programmes under UNEP-GEF.

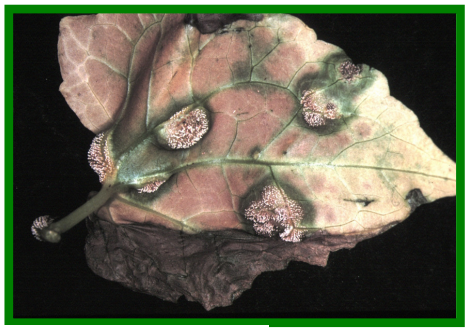
Water hyacinth (R. Day)

There followed a process of direct engagement with Ethiopia, Ghana, Uganda and Zambia, leading to a full UNEP/Global Environment facility (GEF) project in 2005 leveraging **a total of $US 12million for the project**: '**Removing barriers to invasive plant management in Africa**'. The project has four major components: strengthening the national policy environment; provision, exchange and utilisation of information amongst key stakeholders; implementing control and prevention programmes; and building capacity for sustainable invasive species management.

Funds from the Facility have clearly enabled CABI to have a substantial influence on policy with regard to invasive species in Africa. Through various workshops and conferences in the different parts of the continent, national policy makers in a large number of countries have been exposed to and made aware of the invasive species issue. By regularly interacting with development agencies, primarily with UNEP and GEF, the importance of invasive species has been impressed upon these organisations, together with strategies for addressing the issue. This process is still continuing, particularly since the entire GEF project pipeline is presently suspended and under review. There has been less success at influencing other development agencies, and in some cases the agenda has not yet been made specific within environmental or agricultural funding.

Addressing invasive species in China

China is CABI's largest developing member country and a very strong emerging economy. CABI has worked to help build Chinese capacities in agricultural and related institutions and to improve information access and technology transfer since 1995. China is presently reviewing its future needs in relation to CABI and a central element identified is prevention and management of invasive species. This is driven by real concern: the economy and environment of China are now facing serious and increasing threats from invasive species. An economic loss of more than US$ 7 billion annually has been assessed for 11 out of more than 400 invasive species in China.



Mikania *rust (C. Ellison)*

In 2004 the Facility supported CABI's inputs into a national workshop to build a strategy for national, regional and international actions, forming the basis for a national strategy action plan. This workshop, co-financed by China, brought together six sectors affected by IAS: agriculture; forestry; plant health and trade; environment and biodiversity; marine and freshwater fisheries. This was the first ever cross-sectoral meeting in China to debate issues resulting from the impact and threat of invasive species. Through these processes, in 2006, the invasive species problem has for the first time been included in China's Long-term National Plan for the Development of Science and Technology (2006-2020) and the Chinese 11th Five-Year Plan (2006-2010). The latter states that *ca*. 0.2 billion USD are to be invested by the Chinese Central Government on national research and development.

This strategic alliance between China and CABI has also strengthened China's ability to link with global invasive species initiatives such as GISP and increased relevant donor (e.g. CIDA and ACIAR) awareness of invasive species in China.

Managing risks to food security and safety

Invasive species in the form of agricultural pests have the biggest impact on economic development and trade affecting livelihoods around the world. CABI has a long track record in plant protection and information management and is working closely with organisations that provide international food safety and animal and plant health standards such as the WTO and its Agreement on the Application of Sanitary and Phytosanitary (SPS) Measures and the International Plant Protection Convention (IPPC). Compliance with SPS standards is an important mechanism enabling developing countries to access markets like the EU and thus pave the way for increased trade, economic growth and poverty reduction.

IPPC aims to "prevent the spread and introduction of pests of plant products, and to promote appropriate measures for the control" (Article 1) and invites international organisations to facilitate the implementation of the convention. The IPPC Secretariat is a coordinating body with limited funds, so relies on partnership with implementing agencies for its operation. CABI

is recognized under Article *XX* of the IPPC as an appropriate international organization to provide training in these areas. The Facility has enabled CABI to fulfil this role and assist a global body to foster trade capacities in developing countries. At the same time, the partnership has benefited CABI, building better awareness of our expertise, and enabling us to contribute at the global level. Through involvement in the GISP, CABI has also become an important portal for information flow between two international conventions (IPPC and CBD), linking environmental risks to those associated with trade and agriculture.

Strengthening regional capacities

IPPC and CABI work particularly closely in national capacity-building. Through Partnership Facility funds, a series of workshops have been supported in Nairobi on phytosanitary capacity evaluation, pest risk analysis and international standards for phytosanitary measures. These workshops in turn developed the capacity of African plant health experts to advise other countries within the continent. Building on from these, a proposal has been prepared with IPPC for creating a Phytosanitary Centre of Excellence in Kenya, linked with KEPHIS and the University of Nairobi. This has been submitted to the WTO Standards and Trade Development Facility which agreed to provide funding for further project development.

Through Partnership Facility support, CABI has underpinned the technical needs of the Common Market for Eastern and Southern Africa (COMESA), an organisation promoting regional economic integration through trade and investment. CABI has recently delivered training courses for national 'focal points' and laboratory specialists in each of the three SPS areas: plant health, animal health, food safety. The courses trained around 80 trainers, who are expected in turn to train staff in their home countries. COMESA is still developing as an organisation and building its own capacity; the cooperation between COMESA and CABI has been a lengthy process, taking around 6 years to develop. Sustaining this process would have been impossible without direct funding from the Facility. Now, however, COMESA is keen to continue such training and has identified CABI as the appropriate technical agency. Whether COMESA will be able to access the necessary funds remains to be seen.

Through a range of inter-related activities supported by the Partnership Facility, CABI's regional centre in Southeast Asia has developed a strong partnership with the Association of Southeast Asian Nations (ASEAN). The cooperation ranged from assessing preparedness of the ASEAN countries for compliance with SPS requirements, to the building of a Plant Health Cooperation Network endorsed by ASEAN and projects enhancing national and regional capacity in biosecurity and pest surveillance. Although technical skills enhancement has been directed primarily at government officials, improving national capacities to enable market access under WTO SPS rules translates directly to better income generation and economic well-being and in turn to improvement in peoples' lives. This is particularly evident in the less developed countries of the region, such as Cambodia and Lao PDR, which have just begun to export some of their agricultural commodities for greater revenue generation. The PF-funded activities raised awareness of CABI's role here and led to a preferred contractor status with potential partners in the region such as the Governments of Malaysia and Vietnam and AusAID. CABI with Vietnamese institutions has produced a draft Good Agricultural Practice protocol for Vietnam (based on the EurepGAP protocol for fresh fruit and vegetables).

> "We value the knowledge and expertise CABI brings to the table and would like to collaborate with CABI to develop more activities on IPM and food safety for Vietnam agriculture."
>
> *Vietnam National Institute of Plant Protection*

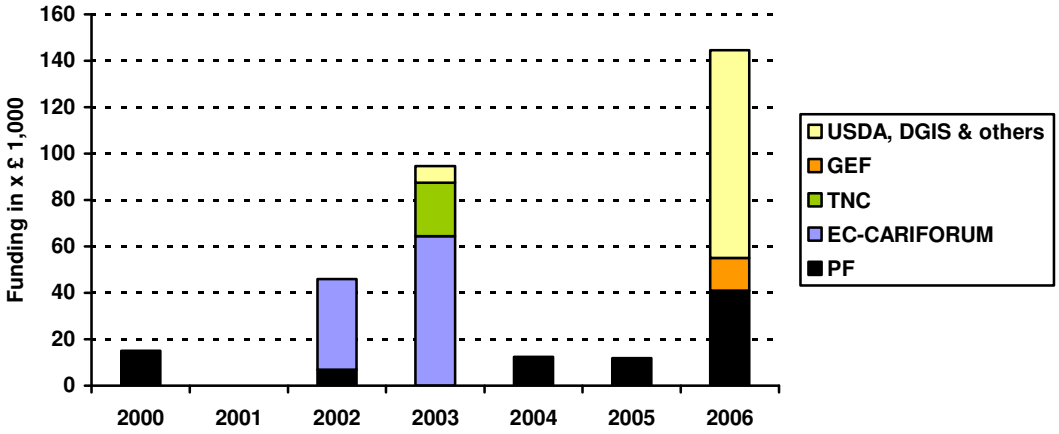
Providing pest management advice in the Caribbean

Since 1910, CABI has carried out research on pests harmful to humans, crops and animals to develop different control mechanisms. This knowledge makes CABI a favoured partner in capacity-building activities. One area of expertise which is gaining importance in the light of environmentally sound pest control is the development of biopesticides using natural occurring fungi, bacteria, viruses and nematodes.

From 1999 to 2003 CABI was involved in a regional programme to control the invasive tick *Amblyomma variegatum* in the Caribbean, affecting several hundred livestock farmers. In the first seven years of its occurrence in St. Kitts, ruminant livestock populations were reduced by up to 90 % through heartwater disease vectored by the tick. PF funding enabled CABI to develop local capacities in biological pesticide development and expertise in invasive species management. This groundbreaking study was the first to establish that micro environmental factors of the animal's surface such as its body temperature, skin humidity, hair density or skin microflora influenced the performance of fungi applied to control the ticks. Although the work attracted funding by IFAD and FAO, it was limited by lack of facilities, animals to conduct large field trials and limited resource mobilization by governments for research.

In Trinidad & Tobago the government was very interested in continuation of this work, providing in-kind support but was not able to provide financial resources (research in this area has nevertheless continued as part of a Ph.D. programme by one of the key researchers in Trinidad on a part time basis). As a result of this interest, subsequent intensive stakeholder consultation and a literature review on current and potential management strategies for selected pests enabled CABI to help the Ministry of Agriculture, Land and Marine Resources of Trinidad and Tobago to prioritize opportunities for arthropod control with biological pesticides. As a result, these were included into the National Research & Development Agenda for Trinidad & Tobago from 2004-5.

With relatively modest support from Partnership Facility, CABI in the Caribbean has maintained a strong linkage with key stakeholders in invasive species management and this engagement is beginning to attract wider financial support:



Funds leveraged by PF funding invested in Invasive Alien Species (IAS) in the Wider Caribbean

This also illustrates well the challenges of fostering a regional programme and the long-term commitments and partnerships required for success. Direct programmatic support via the Partnership Facility is essential to our being able to engage with such processes over a number of years.

Sustainable pest management for coconut smallholders in Cambodia, Laos PDR and Vietnam

Coconut is an important crop commodity on which huge numbers of resource-poor smallholders depend for their livelihoods. Coconut palms provide basic products ranging from fresh drink, food, oil, fiber, oleochemicals and household utensils to timber and building materials and attract tourism income also.

Coconuts in continental Southeast Asia are facing attack from a very recent invasive pest, the coconut hispine beetle (*Brontispa longissima*), new to the region and therefore having nearly no natural enemies. In all affected countries governments are deeply concerned about the problem. A study commissioned by FAO stated that an uncontrolled beetle invasion would cause more than US$1 billion in damage in Vietnam alone, seriously threatening the survival of the coconut industry there[6].

In response to requests for assistance, FAO supported a classical biocontrol programme that introduced the larval parasitoid *Asecodes hispinarum* from Western Samoa. The parasitoid has been successful in some areas but in others the beetle continues to spread as climatic conditions have reduced the parasitoid's effectiveness. Exploring additional control measures to enhance the current classical biocontrol strategy is therefore crucial.

In 2006, CABI undertook a consultative mission evaluating the invasion problems faced by Cambodia, Lao PDR and Vietnam and exploring measures to improve the current strategy. The use of biopesticides, different techniques and the introduction of other biological control agents were considered. Key agencies and potential donors in the countries were engaged to initiate follow-up project activities concerning the coconut hispine beetle. All the countries concerned have expressed a strong desire for CABI and other partners to develop an externally funded regional project to address the problem.

Looking forwards

CABI, supported by the Partnership Facility, has been successful in bringing invasive species onto the political agenda, but there is still a long way to go to full awareness among relevant decision makers and donor agencies. The link between invasive species and climate change and the need for adaptation strategies to, for example, combat the spread of agricultural pests will be of particular concern in the near future. CABI is very well positioned to remain a leader in the area of invasive species management – we have highly accredited expertise working on the interface of agriculture and environment and, as an international organisation with regional centres in direct connection with Member Countries, we fully embrace the "think global, act local" attitude.

[6] FAO Newsroom, 12th April 2005

Support to smallholder commodity farmers

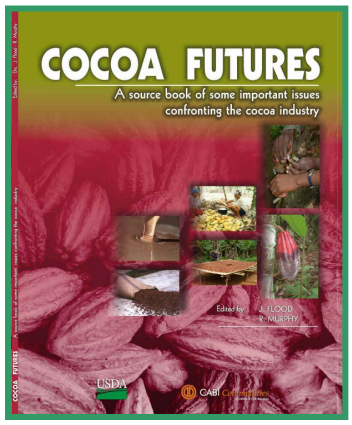
Commodity crops provide thousands of farmers with long-term financial security and create the essential underpinning for many local and national economies. However, these industries also face the vagaries of global markets and cycles of 'boom and bust' prices, as well as long term production challenges such as climate change. The CABI Commodities portfolio of projects and activities aims to protect the interests of farmers in developing countries, especially smallholders. This goal can be achieved in several ways – by reducing the costs and risks of production, by adding value to what is produced, or by supplying knowledge to farmers and those institutes and associations that look after the interests of farmers so they can make more informed decisions.

Global influence

With Member Countries in both 'north' and 'south', CABI is uniquely placed to bridge gaps in understanding and use objective knowledge to influence decision-makers in traditional producer and consumer countries on the needs of poor producers. CABI aims to pursue the best interests of all its Member Countries. Through the Facility, we have actively supported the work of the Sustainable Agriculture Initiative of the major international food companies, providing the keynote context-setting address on agricultural sustainability to their first assembly. We have also worked closely with the sustainability programmes of major cocoa and coffee companies as highlighted below and have sought to provide proactive support to prevent key threats to system sustainability.

Cocoa producers face a range of future challenges and opportunities. CABI has played a significant role in raising industry-wide awareness of these through production of the **Cocoa Futures** book. Partnership Facility funding of this project, alongside that from the USDA, enabled commissioning and editing of a series of chapters written by experts in various fields from the cocoa sector, which were amalgamated into an informative and user-friendly book. The chapters deal with the major issues facing the cocoa sector, from the threat to production from pests and diseases to more general questions of sustainability; from the impact of privatisation on cocoa producers to Fair Trade; from labour and land issues to opportunities and threats for increasing cocoa consumption. Several chocolate companies have purchased copies for their own use and distribution. Over 450 copies have now been distributed worldwide.

The complete guide to cocoa



"This book is the second in the series from CABI Commodities, following Coffee Futures (2001). Edited by CABI researchers, it provides an excellent and well-illustrated anthology written by fellow scientists and stakeholders from private sector, NGO and national associations in the cocoa supply chain. It draws heavily on the field research and extension experience of CABI and its research partners in Asia, Africa and Latin America, with detailed case material from projects in Ghana, Cameroon, Indonesia, Costa Rica and Brazil. Chapters cover production and consumption trends, germplasm and breeding, including new genetic techniques, cocoa cropping systems, labour and land issues, diversification and the search for sustainability. The chapter on the negative impacts of privatisation of West African cocoa chains is complemented by a more positive chapter on the growth of fair trade cocoa as an alternative for smallholder farmers, who make up the bulk of cocoa growers worldwide."

From: http://www.pan-uk.org/pestnews/Issue/pn69/pn69p22a.htm

It is too soon to evaluate the full usefulness of the book to its readers. Indeed objectively assessing an increase in stakeholder awareness is not an easy matter. Despite a shortage of

metrics, CABI is confident of its impact. Feedback from the chocolate industry has been very positive (see Box) and awareness of key issues has been successfully raised with very senior officials including the Executive Director of the ICCO and the Head of the Cocoa Producers Alliance. Previously, the accepted wisdom was that the current distribution of pests and diseases would remain essentially unchanged into the future and CABI sees a change in perception about this. As a result, the Common Fund for Commodities has now committed to fund CABI to facilitate a workshop in Abidjan in July 2007 for industry stakeholders, where the threat of new invasive pests and ways to manage these will be discussed.

> "At Mars we use the Cocoa Futures book in several ways. We give a copy to new starters in the R&D and Commercial divisions who will be involved in cocoa. As there are no up to date text books on the cocoa crop, Cocoa Futures is the closest thing we have. Our External Affairs department also use it to answer consumer queries about cocoa, and we occasionally use it as a kind of gift to people or organisations who we think could do with some up to date information on the crop (generally individuals and groups working with us already or about to partner with us on cocoa projects). Finally, I use Cocoa Futures as a reference book, to check whether something is true or not and to read a bit more behind some of the current issues in cocoa. While I may not agree with the opinions in the book, I find it useful to have these diverse opinions to hand."
>
> *Martin Gilmour, Cocoa Research Manager, Mars Inc.*

Additionally, a working group (Safe Movement and Quarantine Working Group) within CACAONET has been formed by key cocoa stakeholders to examine the safe movement of germplasm and plant quarantine issues and to produce revised guidelines on this movement of materials.

Another example of CABI's perceived value and evidence-based objectivity is **Kraft Foods'** support, via the Partnership Facility, for development of **Indicators of sustainability for coffee farmers** to see for themselves the impact of measures that they consider as sustainable. Different countries have different pressures and priorities and the project brings these together to inform common codes of good practice for coffee production. This project is still operating.

A further case in point is CABI's activities to promote awareness of climate change in the coffee industry. Our presentations at major conferences, invited by the International Coffee organization and Specialty Coffee Association of America and supported through the Facility, highlight the issue and have emphasized our global role in leading thinking on such issues. Here, we seek to raise awareness of this issue and link this to the sustainability schemes currently interesting the coffee processors. CABI believes that these schemes are not adequately taking into account climate change and so are vulnerable to external shocks, calling into question whether they are truly sustainable into the medium and long term. As an example, climate change projections suggest that coffee production will cease to be feasible over much of Uganda, having a long term impact on that nation's economy and the livelihoods of thousands of small farmers.

Regional and national impact

CABI has played a fundamental role in helping to bring together coffee research in East and Central Africa. The Partnership Facility enabled CABI to support development of a **regional coffee research network** (**CORNET**) under the auspices of ASARECA. On the basis of our recognized expertise in coffee, CABI was then contracted by ASARECA to host the CORNET regional coordinator. The CORNET system has since enabled participatory identification and prioritization of regional needs in coffee research and development, themselves guiding regional investment.

The Partnership Facility supported project that **surveyed the presence of Coffee wilt disease in Uganda** produced vital information about the distribution of the disease in the country – it turned out that Ugandan robusta coffee was suffering an upsurge of tracheomycosis, a disease first reported some 60 years earlier which had spread again from its origins somewhere in central Congo (DRC), thriving on untended coffee plantings abandoned due to conflict. From an **initial PF investment of £25,000, the findings catalysed the development of a major programme funded by EU, DFID-CPP and CFC to a total exceeding $8 million** to find ways to control the disease.

CABI provided a quick response and accurate diagnosis of a devastating coffee disease – but what followed was frustrating. A considerable amount of CABI's self-funded time and effort was subsequently invested in developing and securing funding for the subsequent regional programme. The PF project was conducted in 1997, yet the main project did not start until 2000. One lesson is that the emergency response field activity is, in situations such as this, only the beginning. It provides the essential data, but putting together a regional programme and developing the required partnerships, including those between donors, takes much more time. The reasons for this time requirement are complex, but a reality in dealing with under-resourced African research and extension systems (see Box below) and in setting in place a multi-donor, multi-country project to reach the scale required to manage the disease. However, with these partnerships in place, subsequent initiatives are easier to organize.

CABI relies absolutely on the Partnership Facility as the means to devote funds quickly to expedite 'nip-in-the-bud' measures. As mentioned above (Cocoa Futures and its companion Coffee Futures) are part of CABI's mission to influence opinions and perceptions of decision makers so that adequate funds and activities are devoted to prevention of such outbreaks, rather than the much larger amounts required to manage established outbreaks. Despite these delays the programme is now very much underway and is bringing direct benefits to poor farmers.

The CFC commissioned an external evaluation of these in 2005[7], which found:

- Due to a combination of CWD and fluctuating coffee prices, small scale farmers have been severely hit. As most labour is family-oriented, the **impact on personal incomes** is considerable, directly affecting farmers as well as their entire families.
- CWD spread is slowly being reversed due to a **lessened rate of wilt spread and increasing awareness** on how to manage the disease.
- The spending on Agricultural R&D that the CWD project represents provides a **return of 13 dollars per dollar spent** in the areas that have benefited form the CFC funds.
- Each inhabitant in the areas afflicted by coffee wilt which have been targeted by the project will **save $22 in coffee wilt related losses** through the project's activities.
- Although the disease is gradually receding, the number of living trees in Uganda is smaller than in the early nineties when the last tree census was taken. The **Government lacks sufficient funds to invest in replanting coffee trees.**
- The **impact on the market** has been a culminating effect of CWD, coffee mould and a decline in prices, with the most pronounced impact from CWD.

> "If all scientists took some time off their laboratories to come and spend time with farmers the way these CABI and Kituza (CORI) people are doing, problems like the 'slim' of coffee (coffee wilt disease) will soon be a thing of the past. The district administration will ensure that the results that come out of this work will be spread to all coffee growing areas of Uganda".
>
> *Resident District Commissioner, Masaka District, reported in **Daily Monitor** national newspaper, April 2006*

[7] *The Evaluation Partnership Limited (August 2005) Impact evaluation of four CFC funded projects in Uganda.* Final Report Executive Summary, pp11

In the case of wilt, some ten years later the work is continuing. Resistant material has been developed by the Ugandan Coffee Research Institute, but this takes time and resources to develop and disseminate, as the accompanying Article attests:

Sh108 Billion Lost to Coffee, Banana Wilt

UGANDA loses coffee worth $30 Million (about sh54b) annually due to coffee wilt disease, a commissioner for crop protection in the Agriculture Ministry, has revealed. Komayombi Bulegeya told MPs on the agriculture committee on Monday that the country also loses banana crops worth $30m per year due to the wilt disease.
"Our biggest challenge is controlling the coffee and banana wilt disease that has hit most districts in the country. We need your help," Bulegeya requested the MPs.

Bulegeya and other agriculture officials led by Minister Hillary Onek were briefing the MPs on the ministry's half-year budget performance report. Bulegeya requested MPs to intervene and increase the ministry's ceiling on research and disease control. The Minister explained that out of about sh2b disease control budget, the Ministry gets less than sh200m. He said the Ministry needs sh700m for disease research. The report said the coffee wilt disease is estimated to have resulted in the loss of 136m Robusta coffee bushes since 1993.

"Had these still been in production, additional foreign exchange earnings in excess of $170m would be being realised each year," stated the report. It said the disease has had a detrimental impact on the livelihoods of the rural populations that depend on the two crops.

New Vision *(Kampala) Feb 27, 2007 Mary Karugaba, Kampala*

The coffee wilt problem is but part of a wider malaise that afflicts African coffee. 25 years ago, Africa's share of world production was about 30%, now it barely reaches 10%. Many feel that a root cause is a decline in services (e.g. research, extension) to in-country production. Some producer countries look to value-added opportunities to counteract falls in production:

Much has been made recently of the *coffee paradox*: a gourmet retail coffee boom in developed countries, coexisting with a chronic price crisis in producing countries. This has not gone unnoticed in the producing countries of East Africa. In 2005 CABI was approached by OCIR Café, the Rwandan official coffee institute, to carry out a study on value-added opportunities for Rwandan coffee. Through initial discussions, it became clear that there was keen interest at the highest levels of the Government in Rwanda, to exploit possibilities to roast, grind and package coffee in the country, or to construct an instant coffee factory.

However, our Partnership Facility-funded study (**Adding Value to Rwandan Coffee, 2006**) found that many of the required conditions for establishing a value-added coffee industry in Rwanda were not present. The lower grade coffees required for instant coffee manufacture were not available in sufficient quantity, fluctuations in supply from year to year were too volatile and the costs of energy and abundant water were too high. More significantly, the supposed high margins in fact did not exist. Most profitable instant coffee enterprises depend on obtaining the cheapest coffees available, causing problems now even for Brazilian manufacturers and explaining the rise in recent years of companies in Singapore and India that can source abundant very cheap Vietnam robustas.

Even for the roast & ground quality coffee sector, we found that the production, transport, marketing and placement costs of roast and ground coffee were very high. A crucial problem is that a single origin coffee finds it very difficult to provide the range of tastes and styles that attracts and maintains a loyal customer base. There is also fierce competition between brands, not least those of the supermarkets themselves.

Hands–on coffee drying learning session using improved sun drying raised beds. (M. Kimani)

The report concluded that producer countries will find it very difficult to add value – and most importantly, profit – to a significant quantity of their coffees by developing in-country processing industries. This is especially so for small, poor, landlocked countries such as Rwanda. Press reports of big profits from this business are illusory and the costs of financial inducements to attract foreign companies could well be high. Countries would be more advised to invest funds in improving the quality of the coffee in the field, the consistency of supply from year to year and only expect to see a very slow growth of value-added products through a growing tourist trade. The report was confidential; we are not aware of how Rwanda's value added strategy will be affected by it; no announcements on instant coffee factory construction have been made so far. Subsequently, if no major in-country investments in coffee roasting and further processing are made, we believe that CABI's work will have helped Rwanda avoid a costly mistake.

CABI is now strongly committed to a major initiative to rebuild African coffee. If it is to recover and not slide further, the whole gamut of operations, from nursery through field to harvest and processing needs to be rethought and retooled to become competitive in a globalized market. To this end, an ongoing PF project is developing an **African coffee strategy and road map** to achieve this, in collaboration with regional stakeholders such as ASARECA's CORNET, African Coffee Research Network (ACRN) and CaféAfrica.

Coffee support programmes have also been leveraged through the Partnership Facility's donors. The Australian Centre for International Agricultural Centre (ACIAR) has a strong focus on supporting Australia's neighbouring countries. Coffee is the prime export crop for Papua New Guinea, but is attacked by a range of serious pests, reducing income returns to the thousands of smallholder farmers involved. ACIAR sought CABI's expertise in coffee, to enable them to respond to a national request for technical expertise which was not available in Australia itself. Following initial needs assessment supported through the PF, CABI is now commissioned to help PNG's coffee researchers to manage the pest complex involved. This programme is directly funded by ACIAR and CABI's inputs are co-financed via the Australian contribution to the Partnership Facility.

Decision makers are often slow to react to new circumstances, either through lack of information or lack of understanding of its significance. A recent example of this has been CABI's efforts, with countries of the region, to find funds to raise awareness and preparedness against the risk of invasion by the **Cocoa pod borer** to PNG. Unfortunately, funding was not forthcoming and the borer was discovered in PNG in 2006:

Surveying for the cocoa pod borer in Papua New Guinea (WH Loke)

Nonetheless, the Partnership Facility enabled CABI to then deliver a rapid support service to the Papua New Guinea authorities, first assisting with identification of the pest through our international networks of specialist partners and then through field survey and training by a team experienced in the pest from Malaysia. This rapid action helped the National Disaster Committee and scientific institutions of the PNG Government to use all resources to bring the initial outbreak under control and initiated a wider survey and awareness programme in PNG in search of further outbreaks. As a result, ACIAR is now commissioning CABI to support the government authorities in a wider programme to manage the threat from the pest in PNG.

Community level

African Quality Coffee: Since unit production costs in Africa are high (compared to agribusinesses in Brazil), smallholders must secure a price premium from quality coffee. Without necessarily realizing it, farmers are being forced to develop a more knowledge intensive way of farming. A project was thus developed to respond to the urgent need to enhance coffee quality at source and hence boost incomes of coffee-dependent smallholder farmers in Ethiopia and Rwanda where inherently high quality can be produced.

Partnership Facility funding enabled the project development phase which subsequently attracted over US$2 million funding through the Common Fund for Commodities (CFC) and Illycafé s.p.a. The funds leveraged through CFC and Illycafé addressed:

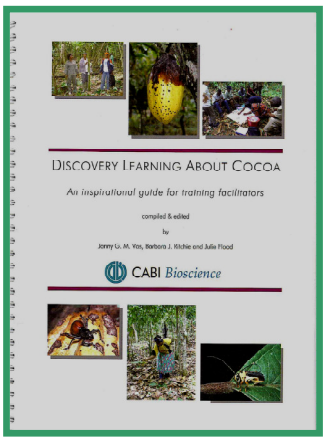
- improving the quality of coffee from Ethiopia and Rwanda thereby enabling farmers to attract premium prices which translate into improved household incomes
- introducing coffee processing practices that would not have negative impacts on the environment.

The project has appreciably improved coffee quality in Ethiopia and Rwanda, with farm-gate earnings up by over 30% in pilot areas. Our partners in Ethiopia and Rwanda recognise that the project has contributed substantially by training field workers and development agents in good coffee-processing and farmer-training skills. The field workers became more efficient in imparting good coffee processing practices to the farmers, resulting in improved coffee quality.

Farmers demonstrate coffee pulping using the handheld pulping machine. (M. Kimani)

Farmer training on the correct use of SSCWS – coffee pulping. (M. Kimani)

The project also provided a platform for private-public partnership with coffee importers (Illycafé) investing in development needs in producer countries. As a result farmers in the project area have changed their coffee production and processing habits, including the production of semi-washed coffee, a "pulped for espresso" method of depulping and drying through rapid turning to produce a high quality coffee with body that is a desirable component of espresso blends. To be truly successful, the project now needs to expand to provide the quantity of reliable coffee quality that a major roaster such as Illy feels confident enough to include in their blend. As a result of these impressive results, an up-scaling phase of the project is under consideration.



CABI's activities reaching direct to Cocoa farmers can also be readily determined. Work made possible by funding from the Partnership Facility has brought dramatic benefits for both farmers and international partners:

A **Cocoa participatory learning** manual was prepared through support from the Partnership Facility and co-financed by Masterfoods plc and the BCCCA. This contained crop management information, pest datasheets and farmer participatory exercises to bring the information alive in ways farmers could see for themselves. This manual then became the benchmark for training activities of the Sustainable Tree Crops Programme (STCP) managed by IITA in West Africa, where use of the manual version became widespread and derivative material was prepared into tailored outputs for different aspects of their programme. In subsequent years Masterfoods (Mars) helped raise awareness of the manual that they co-financed. The manual is now available also in French and Vietnamese and became the basis for farmer capacity building in W Africa and Vietnam; the boxes below tell the story:

This programme has been externally reviewed and was considered a resounding success. The reviewers considered that: "STCP's Farmer Field Schools (FFS), a participatory training approach that STCP adapted to cocoa systems in West Africa, have succeeded beyond expectations to become the flagship activity for the program".[8]

> "Janny Vos of CABI Bioscience played an invaluable role in the initial design of the FFS program."
>
> *Soniia David et al., (2006) A guide for conducting farmer field schools on cocoa integrated crop and pest management. International Institute of Tropical Agriculture. Accra, Ghana.*

While it is disappointing that the STCP programme's central partners have not themselves directly funded CABI's further inputs after Janny Vos' valuable catalytic role, our links have nonetheless continued, using the STCP as a regional platform for take-up of research into use by farmers in West Africa. The DFID-CPP programme used this participatory training connection to link a range of research programmes, most involving CABI, to wider uptake through the STCP field schools. This included work to develop participatory videos, based on the Bangladesh model (see Good Seed Initiative in the section on Knowledge for Development), which have themselves been taken forward more widely under the STCP.

Ghana's Farmer Field Schools Success
http://www.worldcocoafoundation.org/difference/africaffsghana.asp

Kwabena Antwi-Boasiako is a 56 year old cocoa farmer. He lives in Amanchia village in the Atwima Nwabiagya District in Ashanti Region of Ghana. He is married with 9 children. He established a 2 hectare hybrid variety cocoa farm in 1985/1986. Cocoa accounts for 80% of his household income. Prior to attending the Farmer Field School (FFS), implemented through the Sustainable Tree Crops Program (STCP) in 2004 with industry funding support, Mr. Antwi-Boasiako had never pruned his cocoa... Through the FFS discovery-based learning exercise, he came to appreciate that correct spacing of cocoa trees (8-10ft x 8-10ft.) and regular removal of chupons resulted in increased pod formation and size, while reducing pest and diseases. Mr. Antwi-Boasiako has since put into practice all that he learned. He has witnessed increases in yields and income of over 60% within one year after FFS as evidenced from his cocoa sales pass book.... He attributes the increase to what he has learned in the FFS which has empowered him to make the right decisions on his farm.

[8] STCP External Review Synopsis, April 2005

An Evaluation of Farmer Field School Training on the Livelihoods of Cocoa Farmers in Atwima District, Ashanti Region, Ghana

May 2006 STCP Working Paper Series Issue 1 by Jim Gockowski, Chris Asamoah, Sonia David, Guy Blaise Nkamleu, Isaac Gyamfi, Sylvanus Agordorku, Mary Adu Kuti

IITA and CABI organized and conducted the first FFS training and curriculum development workshop for master trainers in March 2003.

Major findings include:

Children, education and cocoa farming

- Significant reductions in the hazardous employment of children as a result of FFS sensitization methods.
- Based on the above, scaling up FFS to 50,000 producers in the Ashanti region would result in the voluntary removal of 10,500 children from all hazardous labor tasks with a predicted 3,000 fewer children employed in pesticide application, 9,700 fewer children in heavy load transport and 7,900 fewer children in clearing fields with machetes.
- School enrollment rates were in excess of 90 percent for 6 to 14 year old children.
- Among FFS-trained farmers the level of education was positively associated with production output.

Willingness to pay and knowledge diffusion

- A large majority of control group farmers were willing to pay to attend FFS training.
- The tuition fee that farmers were willing to pay for attending a 15-session FFS training was negatively affected by producer age and positively affected by years of schooling.
- Nearly 9 in 10 trained farmers had shared information with on average 2 other persons.
- Knowledge on cocoa pruning, shade management and phyto-sanitary harvesting was the most commonly shared.

Tree stock endowments

- The average productivity of FFS farmers' tree stock was more than double that of the control group.
- As a result of FFS interventions, notable increases were registered in the number of producers planting hand pollinated hybrid cocoa seedlings and the area planted to hybrids.
- Farmers acquiring their cocoa farms through share-crop labor exchanges (30% of sample) had substantially lower production.
- Two-thirds of all cocoa farms were established within the last 10 years.
- Low average yields of 112 kg ha-1 reflect in part the youthful nature of tree stocks.

Crop management and production differences

- Increased application of various crop husbandry practices among FFS-trained farmers relative to control group farmers was noted.
- The application of pesticides showed a response 8 times greater than that of the control group.

In sum, FFS training and subsequent changes in management practices are estimated to have resulted in a net production increase of 14% among the 2003 participants. To achieve this, producers mainly increased their own labor input but also hired more casual laborers.

The STCP provides a regional linkage but countries also have specific needs where they may not wish to share information with competing producer countries. Recognizing CABI's capabilities and Ghana's direct say in our programmes, the Chief Executive of the Ghana Cocoa Board (COCOBOD) approached us seeking our assistance in examining the current situation and **Future needs for sustainable production in Ghana**. This is essential knowledge, informing Ghana's policy decisions on market prediction and future plans for

sustaining production against a background of declining soil fertility, land pressure, increasing pests and an ageing farmer population. With low yields obtained from existing lands, valuable native forest is also being progressively cleared for new cocoa and available fertile land is fast disappearing.

At the request of COCOBOD, we used Partnership Facility support to prepare a concept note for an analysis and action plan to reverse these trends, linking in various partners with complementary expertise in areas such as geographic information systems and establishing connection with DFID's bilateral programme in Accra. This was greatly appreciated, but progress was delayed by the retirement of the Chief Executive. With a new CEO now in place, the link has been rekindled. Ghana is still keen to build from this concept but faces a more pressing threat: markets in Europe and Japan rejecting cocoa due to new maximum residue limits being imposed for pesticides. COCOBOD again requested CABI's assistance in preparing a 'needs assessment' for establishing residue analysis laboratories at all Ghana's ports and for a product traceability system that will satisfy export markets. Through PF support this was compiled in 2006 and is now being taken up by the COCOBOD through commitment of their own funds and by approaches to other funding agencies.

Also in Ghana, co-funding by Cadbury Schweppes plc and the Partnership Facility has enabled development of a bi-annual **cocoa newspaper** that aims to inform farmers of good practices and new developments in cocoa production. The newspaper is produced through the Cocoa Research Institute of Ghana and distributed via licenced cocoa buyers. Begun in 2006, the impact of this approach is too recent to evaluate as yet, but the paper is known to have already reached 70,000 farmers.

"I had seen first hand the problems of getting relevant and invaluable information from the Ghana Cocoa Research Institute out to cocoa farmers and so the Ghana cocoa newspaper was an ideal vehicle to facilitate this. However, it was fundamental to ensure the newspapers style was appropriate for the targeted reader. By engaging CABI as a partner it meant we had the necessary knowledge and skills in order to achieve this task."

David Preece, Group Cocoa Technical manager, Cadbury Schweppes plc

"I like the paper very much. A copy is now my very important property. The paper has come to fill a gap created by inadequate training of farmers to upgrade their knowledge. I wish to suggest that the next issue talks about spraying of cocoa."

Farmer Isaac Baidoo, Badoa No.1 Dunkwa-on-offin, Ghana

Objective and relevant information is also required for poor farmers to derive maximum returns from horticultural crops. **A Tropical Fruit Information System** was developed in response to an identified need for a 'one-stop-shop' in Malaysia where stakeholders in the tropical fruit industry would find useful, accurate and current information. Prior to the PF project, information on tropical fruits was hard to find, scattered in different places and often inaccessible.

The project responded to a request in 2001 from the International Tropical Fruits Network (TFNet), to conduct a Global Information Needs Assessment Survey towards a fruits information system. A survey was duly carried out, that concluded:

- Respondents preferred information to be delivered via the internet
- Sources of current tropical fruit information on the internet were poor/inadequate

Based on these findings, TFNet proposed a global information system for tropical fruits, making use of CABI's multimedia compendium technology. CABI and TFNet successfully submitted a proposal to the Malaysian Government's Demonstrator Application Grant Scheme, which funds the use of information and communication technologies to benefit communities and develop a knowledge-based society. This follow-on project produced a bilingual (English and Bahasa Malaysia) tropical fruit information portal (**http://myfruits.mardi.my/main.php**) with database, a community forum, glossary, soil, agroclimatic and crop maps, videos, lists of suppliers/distributors, local and international standards on fruits, fruit export guidelines, food act and safety documents. It contains 1000 datasheets on all aspects of fruit production, processing and marketing.

After completion, the project was officially handed over to MARDI who hosts the portal on their main website. MARDI, now the owner of the project, is responsible for promoting and marketing the fruit information system to the target communities and beyond. It is a little early to evaluate the effectiveness of the site (started in 2006). Present usage is low but seems to be picking up, at about 500 'hits' per week. However, the site is apparently not being actively updated and this is probably reducing its appeal. It may also be that the information is not sufficiently immediate enough to be consulted by many practitioners on a daily basis. These could be improved, e.g. by including a source of current prices, but this will require detailed ex-*post* evaluation with users of the site and commitment from those now maintaining the site.

Development of Organic Cabbage in China: cabbage production in China faces mounting problems because of damage from agricultural insect pests, particularly diamondback moth and the small white butterfly; these problems have increased of late due to the rapid development of chemical insecticide resistance in diamondback moth. Encouragingly, local governments in China, such as the Government of Ningbo City (the project base), are now considering health and environmental problems and local research institutions are very keen on implementing environmental-friendly methods with the aim to produce high-profit organic agricultural products for local or export markets.

Project work initiated through the Partnership Facility took a new IPM approach with four major components:

- Control of the lepidopterous pests: e.g. diamondback moth (*Plutella xylostella*)
- Implementation of a pest monitoring/damage threshold model;
- Enhancement of the conservation of natural enemies through bio-pesticide applications
- Augmentation release of indigenous natural enemies, i.e. *Oomyzus sokolowskii*

To trial these methods, a pilot IPM Cabbage Plot and insect-parasitoid rearing facility were established at Ningbo Academy of Agricultural Science (NAAS) and a local agricultural company was approached to help develop a field implementation of the IPM strategy;

CABI and NAAS plan to scale up the developed IPM technologies and concentrate on knowledge dissemination via a farmer participatory approach, using our Cabbage Farmer Manual on IPM (itself developed with PF support). Capacity building of the NAAS IPM Focus Group will be crucial. The activities of the project have also attracted the attention of Nanjing Agricultural University in neighbouring Jiangsu Province, who have also sought CABI's assistance.

Farmer Field School. Feng Zhang

Although the work is at an early stage, demand is obvious and the feeling is that business potential is high, with strong commercial demand. The question for CABI is how best to build upon this initiative, perhaps extending it to other crops to make a bigger impact on the acknowledged severe problems of environmental contamination in rural China.

The project was reviewed by a Technical Experts Evaluation Group with China's National Bureau of Science & Technology (NBST) as "Very successful and technologically advanced". However, so far it has not received further finance from NBST.

Scale-up with national bodies can be difficult where activities were initiated at a local level, even though local demand may be very strong. In 2007, CABI is taking steps through a series of high level regional consultation to ensure that the PF programme and priorities are agreed at senior national level and the wider uptake context established from the start.

Glossary of acronyms

ACIAR	Australian Center for International Agricultural Research
AGORA	Access to Global Online Research in Agriculture programme
AHPC	Animal Health & Production Compendium
AC	Aquaculture Compendium
ARC	Agricultural Research Council (South Africa)
ARD	Agricultural Research & Development
ARIS	Agricultural Research Information System
ASARECA-RAIN	Association for Strengthening Agricultural Research in Eastern and Central Africa – Rural Agricultural Information Network
ASEAN	Association of South-East Asian Nations
BCCCA	Biscuit Cake Chocolate & Confectionery Alliance (UK)
CAAS	Chinese Academy of Agricultural Sciences
CBD	Convention on Biological Diversity
CFC	Common Fund for Commodities
CGIAR	Consultative group on International Agricultural Research
COMESA	The Common Market for Eastern and Southern Africa
CORAF	West & Central African Council for Agricultural Research and Development
CORI	Uganda Coffee Research Institute
CORNET	Coffee Research Network (ASARECA)
CPC	Crop Protection Compendium
CPP	DFID Crop Protection research Programme
CWD	Coffee Wilt Disease
DANIDA	Danish International Development Agency
DEFRA	UK Department for Environment, Food and Rural Affairs
DFID	UK Department for International Development
EC	European Commission/Community
ENDA	Environmental Development Action in the Third World
FAO	Food and Agriculture Organization of the United Nations
FARA	Forum for Agricultural Research in Africa
FARA-RAILS	FARA Regional Agricultural Information and Learning System
FC	Forestry Compendium
FFS	Farmer Field Schools
GDP	Gross Domestic Product
GEF	Global Environment Facility
GFAR	Global Forum for Agricultural Research
GISP	Global Invasive Species Programme
GMO	Genetically Modified Organism
GSI	Good Seed Initiative
HINARI	Health InterNetwork Access to Research Initiative
IAASTD	International Assessment of the role of Agricultural Knowledge, Science & Technology in Development
IAS-CTC	Invasive Alien Species – Concepts, Terms and Contexts
ICAR	Indian Council for Agricultural Research
ICCO	International Cocoa Organization
ICT	Information and Communication Technologies
IDRC	International Development Research Center
IFAD	International Fund for Agricultural Development
IITA	International Institute of Tropical Agriculture
INASP	International Network for the Availability of Scientific Publications
IPPC	International Plant Protection Convention
IUCN	World Conservation Union
KACE	Kenya Agricultural Commodity Exchange
KARI	Kenya Agricultural Research Institute
KEPHIS	Kenya Plant Health Inspection Service
KFD	Knowledge For Development
NAAS	Ningbo Academy of Agricultural Science (China)
NACC	Sierra Leone National Agricultural Research Coordinating Council
NARES	National agricultural research and extension services
NBST	National Bureau of Science & Technology (China)
OECD	Organization for Economic Cooperation & Development

OIE	**World organization for Animal Health**
PF	**CABI Partnership Facility**
PKW	**Putting Knowledge to Work programme**
RNRRS	**DFID Renewable Natural Resources Research Strategy**
SDC	**Swiss Agency for Development and Cooperation**
SPS	**Sanitary & Phytosanitary measures**
SSA	**Sub-Saharan Africa**
STCP	**Sustainable Tree Crops Programme (managed by International Institute of Tropical Agriculture)**
TEEAL	**The Essential Electronic Agricultural Library**
TFNet	**International Tropical Fruits Network**
TNC	**The Nature Conservancy**
UNESCO	**United Nations Educational, Scientific & Cultural Organization**
UNEP	**United Nations Environmental Programme**
WHO	**World Health Organization**
WARDA	**West African Rice Research and Development Association**
WTO-STDF	**World Trade Organization Standards & Trade Development Facility**

Acknowledgements

We are very grateful for the various comments and quotes received from our partners over the years concerned and reproduced here, their support and endorsement is always valued. The continuing commitment of our Member Countries to the organization is gratefully recognized, their needs are central to our purpose.

CABI is particularly grateful to the funding bodies that have directly supported our work through this Facility over recent years. DFID, SDC and ACIAR have made up the bulk of this, together with CIDA. A number of other organizations have also co-financed specific Partnership activities, including DANIDA, USDA, Masterfoods plc, Syngenta Foundation, Altria/Kraft Foods and Cadbury Schweppes plc

This report represents the summation of a great deal of work by many CABI staff, the leaders of every project supported over the last five years have played a direct role in assessment of their impact.

The Directors of our global themes: Sarah Simons, Peter Baker and Elizabeth Dodsworth, analysed each theme, together with Philip Edge, Melanie Bilz and Dannie Romney. Inputs from Janet Stewart, Ken Becker, Tamsin Davis and Eric Boa were much appreciated.