Chapter 15

Capacity Building

Developing capacity is about facilitating and encouraging a process of transformation or change by which individuals, organizations and societies develop their abilities, both individually and collectively, to perform functions, solve problems, and set and achieve their own goals (Hough, 2006).

Aim of the chapter

The success of a project or initiative on CWR *in situ* conservation depends, to a large extent, on the capacity of the individuals and organizations involved. This chapter provides guidance on how the capacity of individuals, and to some extent organizations, can be strengthened to better undertake key activities for CWR *in situ* conservation as described in detail elsewhere in this manual – planning, team building, prioritizing, data collection and analysis, developing plans and strategies, monitoring, communicating and raising awareness, and so forth. While issues related to organizational and societal transformation are beyond the scope of this manual, the chapter does stress that all CWR *in situ* conservation activities take place in particular institutional and societal contexts that will have significant influence on how both individuals and organizations perform and, ultimately, on how successful conservation initiatives are.

We suggest that capacity building should be an integrated element of CWR initiatives, as formal qualifications in this area tend to be weak among key stakeholders. The primary audience for this chapter is a project manager of a CWR *in situ* conservation project or intervention. The chapter may also be of interest to institutional leaders and policy-makers who have a stake in such projects. Tertiary education institutions might also find the chapter useful as a reference in their curriculum review processes.

The aim is to raise awareness of the role of capacity building in a CWR initiative and to support capacity development processes linked to such initiatives. The chapter provides a quick guide on how to analyse capacity needs and how to plan,

implement and evaluate capacity building – principally, capacity building of individuals. The text focuses mainly on the process of education and training, with a particular emphasis on participatory methodologies. A reference section at the end of the chapter offers suggestions on further reading and internet resources.

Capacity for CWR *in situ* conservation

Regions with the richest biodiversity, including genetic diversity of CWR, also tend to have the lowest levels of skilled specialists and the most fragile institutions. Hence, capacity building must be a major component of the process of CWR *in situ* conservation.

Capacity building is the process of developing competencies in individuals, groups or organizations, which will contribute to their sustained improved performance. It is much more than training of individuals; it is about equipping individuals *and* organizations with abilities, resources and opportunities to solve problems and with the confidence to influence others. The capacity of the individual is thus important, but the ability of the individual to apply the knowledge and influence the institution depends on his or her institutional context: the institution's programme and strategies, facilities and resources, leadership and the external environment such as access to networks. A broader view of capacity development relates to theories on systems thinking, societal change and complexity. Although such processes are also relevant to CWR *in situ* conservation, they involve quite different actors and fall outside the scope of this brief chapter. Approaches to develop capacity thus need to be situated in wider efforts to support the strengthening of capacity at other levels, as Figure 15.1 illustrates.

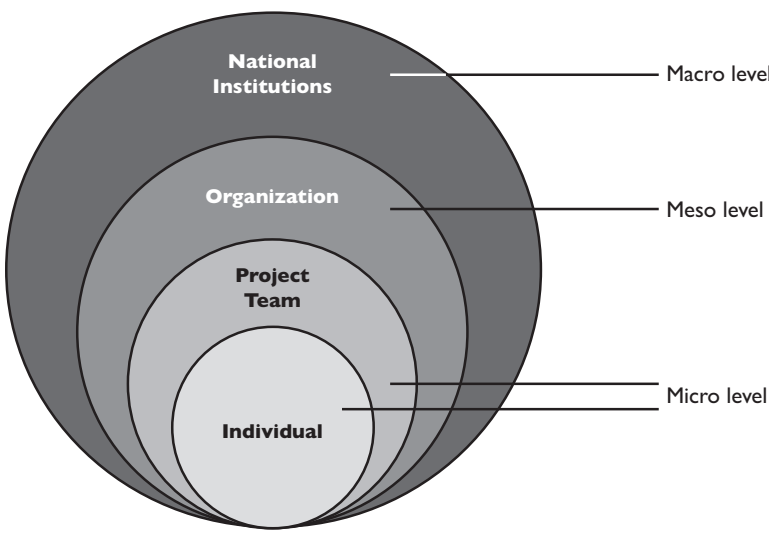

Figure 15.1 *Capacity development needs to be considered at different levels*

Source: Horton et al, 2003

Chapter 1, as well as later chapters of this manual, highlight the complexity and multidisciplinary nature of CWR *in situ* conservation. This creates many challenges. It is a process that addresses actions covering planning, data gathering, information management and analysis which lead to on-the-ground conservation actions and which touch upon a range of technical, political and institutional issues. Capacity building is a cross-cutting issue central to the success of this process. This manual has already highlighted some capacity building-related issues that individuals and organizations will face when undertaking CWR *in situ* conservation including:

- limited understanding and awareness of the importance of CWR at all levels of society;
- poor enabling environments created by inappropriate or lack of policy and legislation;
- national strategies and programmes that give no, or only token, consideration to CWR *in situ* conservation;
- no allocated funds in national annual budgets to sustain or initiate new activities commenced under donor-funded CWR projects;
- lack of cross-sectoral approaches – agricultural, forestry and environmental agencies that lack a tradition of collaboration;
- no generally agreed procedures or protocols to follow;
- limited understanding of conservation components or the sequence in which they need to be carried out and what *in situ* conservation of target species actually entails;
- limited practical experience of CWR *in situ* conservation both inside and outside of protected areas, especially the development and implementation of management plans and monitoring;
- limited capacity for data collection and information management;
- little understanding of the benefits of involving stakeholders, especially local and indigenous communities, in conservation approaches and how to facilitate their participation; and
- complexity of national political, institutional and administrative structures, making it difficult to implement a common strategy.

These all present major challenges for CWR conservation and highlight the role of capacity building at all levels in helping to overcome them. An individual's (or organization's) ability to solve a particular problem will not depend on his or her skills and training alone. It will also depend on the support, resources and equipment at their disposal within their own organization and that of their partners and networks. Ideally, developing capacity must focus on the entire conservation chain and facilitate the necessary process of transformation in individuals, organizations and society (see Figure 15.1) to enhance CWR *in situ* conservation.

Successful implementation of the many steps identified in the process of CWR *in situ* conservation will require that attention is given to capacity building at the outset. This cross-cutting issue is all too often neglected in the early stages

of implementation, whether at the project or national level. As a result, training is often undertaken on an *arranged* basis or not given the consideration it requires until implementation is well underway. Failure to address capacity development needs might result in delays or reduced efficiency and impact.

As pointed out in Chapter 6, very few countries have ever developed national CWR strategies or action plans. Chapter 4 highlights that the majority of CWR initiatives that have been implemented to date have been sponsored by grants from agencies such as the Global Environment Facility (GEF). It follows that most capacity building to support CWR conservation takes place in a context that is largely project-driven and time-bound. General longer-term CWR capacity building efforts or commitments at the national level are rare. While the two are obviously related, there are significant differences regarding the scale, time and approaches to address these issues. There are also important implications regarding the sustainability and impact of capacity building initiatives that take place in a project-driven context as compared to a capacity building programme which might be part of a national programme or strategy. This chapter primarily seeks to explore options for capacity building for CWR *in situ* conservation at the project level.

It is beyond the scope of this book to focus on capacity development at the macro or societal level, as illustrated in Figure 15.1. However, that is not to imply that the need for such capacity development or targeted efforts is not necessary or possible. These are certainly needed, and it is important to keep in mind that much of the focus of national communication strategies is about making these connections and creating awareness among the wider societal actors. For example, Chapter 16 briefly describes the need for communication and advocacy strategies and activities that specifically target groups such as senior policy-makers who can make changes at this level. In fact, this could be a main thrust of an awareness campaign with limited resources as highlighted in that chapter.

Conservation managers or practitioners, despite having the skills and the best of intentions, must operate in an environment that is largely outside of their control. Such an environment is often characterized by competing and conflicting organizations working within defined legal and regulatory frameworks and national committees and decision-making processes within a broader policy environment moulded by local, national and international contexts. Ultimately, we must look beyond individual skills to the ability of organizations as a whole to achieve the goal of CWR *in situ* conservation so that capacity building also contributes to institutional building and learning which brings about the needed organizational transformation in structures, cultures and procedures that help facilitate much more conducive environments for professionals as well as collaborations between relevant agencies and organizations. Daunting as this may seem, there is much that practitioners can do to bring about change in attitudes and behaviours of actors at this higher level, including targeted awareness and education campaigns as well as high-level lobbying and negotiation.

Source: adapted from Hough (2006)

Developing a capacity building strategy

A capacity building strategy for supporting CWR *in situ* conservation at the macro and meso levels (see Figure 15.1) would require broad and long-term efforts that involve many stakeholders, their institutions and the policy environment they operate in, as Chapter 6 discusses. A capacity building strategy for the micro level – the focus of this chapter – would aim more specifically on developing competent project teams that are able to work effectively and efficiently with key stakeholders and in participation with local communities.

The first step in developing a capacity building strategy is to determine the competencies required for a successful intervention. Next, one will need to establish the current capacity of the stakeholders of the project. A training needs assessment will give a sense of the gaps in knowledge, skills or attitudes – competencies – that need to be addressed. One can then plan and implement the capacity building actions. Finally, monitoring and evaluation will give you valuable feedback for continuous improvement. As illustrated in Figure 15.2, this process involves:

1 reviewing the tasks involved in CWR *in situ* conservation;
2 a stakeholder analysis including assessment of stakeholders' roles in relation to the project;
3 establishing the competencies required in stakeholders to carry out or facilitate the tasks involved;
4 assessing training needs and conducting a situation analysis;
5 developing a capacity building plan;
6 monitoring and evaluation.

Step 1: Reviewing the tasks involved in CWR *in situ* conservation

A quick glance at the different chapters of this manual will give an idea of the types of activities that will be required if CWR *in situ* conservation is to be successful. The scheme presented in Chapter 1 as Table 1.3, 'The process of *in situ* conservation of CWR' provides a more detailed and clear picture of the steps and actions involved.

Step 2: Capacity building for whom? – Stakeholder analysis

The next step or question to ask is 'Capacity building for whom?'. Earlier chapters of this manual will give some idea of the answer to this. Chapter 4, which focuses on planning for CWR conservation and partnership building, provides guidance on identifying the main stakeholders and, therefore, who might need to be considered for capacity building. Chapter 5 focuses on participatory approaches and guides one in working with stakeholders and communities. There is now considerable evidence of the benefits of including indigenous and local communities in biodiversity management. Therefore, developing community-

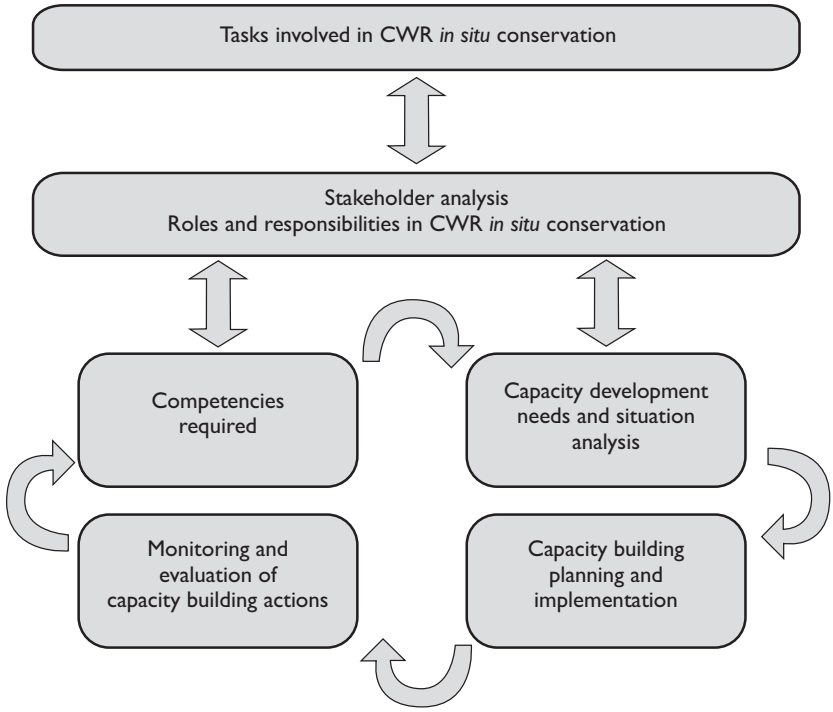

Figure 15.2 *Steps involved in developing a capacity building strategy*

based capacity is important for enhancing CWR *in situ* conservation. Special skills are required to facilitate this but, more often than not, such skills are lacking in those individuals and organizations involved in CWR conservation. More specifically, Table 9.2 and the 'stakeholders' subsection of Chapter 10 provide information on stakeholders involved in developing and implementing management plans.

The clear message is that there are a diverse range of individuals, groups and organizations that might require some level of capacity building if they are to make a successful contribution to CWR conservation. A list of stakeholders might include:

- political leaders and senior policy-makers;
- senior biodiversity, environment and agriculture decision-makers;
- heads of relevant organizations and institutes;
- national and local planners;
- scientists and researchers;
- protected area managers;
- project management staff;
- field technicians;
- university lecturers and postgraduate students;

	Low influence	High influence
High importance	Community groups	Protected area managers
Low importance	General public	Policy-makers

Figure 15.3 *An example of a stakeholder matrix*

Source: Rudebjer et al, 2001

- communications and public awareness specialists;
- extension and outreach specialists;
- information analysts and managers; and
- community leaders and groups.

Since time and funding for capacity building will always be limited you will need to set priorities and determine where and how to focus efforts. A simple method to aid priority setting is to group the stakeholders as 'insiders' and 'outsiders'. Insiders will be directly involved in the project team. They would need to be able to play their role in the various tasks involved in CWR *in situ* conservation. Outsiders, on the other hand, may provide an enabling environment that is critical for success and impact. For example, senior policy-makers might need to be sensitized to pave the way for the work at community level.

A 'stakeholder matrix' describing stakeholders' importance and influence in relation to the project can further deepen the analysis. Positioning each stakeholder in the grid (Figure 15.3) can aid in priority setting and might reveal important power relations or conflicts of interest that may be critical to your intervention's success.

Step 3: What capacity building is needed? – Establishing the competencies required

A variety of competencies are required covering technical aspects of CWR conservation, as well as process-oriented competencies – 'soft skills' – such as facilitation or leadership skills. A brief analysis of the UNEP/GEF CWR Project highlights that the following list of competencies were required for enhanced CWR *in situ* conservation:

Process-oriented competencies
- partnership building;
- facilitation;
- stakeholder analysis;
- leadership;
- team building;
- participatory approaches and community development;
- conflict, negotiation and advocacy skills.

Project management competencies
- project development and management;
- project monitoring and evaluation;
- budget preparation and financial management;
- resource mobilization;
- communications, public awareness and outreach.

Technical competencies
- Red Listing;
- ecogeographical surveying;
- conservation status and threat assessment;
- geographic information systems (GIS);
- preparing national CWR action plans and strategies;
- preparing species management and monitoring plans;
- monitoring and surveillance;
- data gathering, analysis and management;
- report and proposal writing;
- scientific and technical writing and communicating;
- educational and capacity strengthening strategies and methods; and
- training of trainers.

As this list indicates, professionals and organizations involved in CWR conservation require a balance of both technical and 'soft' skills. They also need to be able to apply those skills in a multidisciplinary environment, using participatory approaches. With a history of little collaboration between relevant agencies or organizations and minimal efforts to involve indigenous and local communities in CWR conservation, this poses a particular challenge that needs to be addressed in a capacity building strategy. Obviously, what will be required in terms of capacity building will depend on the local context and a range of other factors and must be defined on a specific case-by-case basis. For example, it is worth doing an inventory of related projects that require similar multidisciplinary approaches, such as community-based forest management, agroforestry or buffer-zone management projects. These may have relevant tools, capacity and expertise that the CWR projects could draw upon.

Step 4: Assessing capacity building needs and conducting a situation analysis

When starting a CWR *in situ* conservation programme it can be assumed that there will be a considerable gap between current capacity and skills, and the level that is actually required or desired. Assessing this gap between 'what is' and 'what should be' is known as a capacity building needs assessment; this will help define the type of training required and who it is required for. *A needs assessment should be done at the outset of a programme or project.*

There is a wide range of methods and tools that can be used to carry out a needs assessment. The tools highlighted in Chapter 5 (participatory approaches) can be used both to facilitate stakeholder participation and data collection on training history, strengths, gaps and future needs. A needs assessment may use a combination of individual questionnaires or more qualitative approaches like brainstorming, focus group discussions or other tools (see Table 15.1).

A broader situation analysis would complement the direct needs assessment. The situation analysis may cover new research results, relevant policies and processes, and other external factors that may trigger or influence capacity needs. If resources are available, specific studies can be commissioned to map out such aspects. The information and feedback from these consultations and studies can be presented in a workshop involving all stakeholders for review, priority setting and participatory planning. Needs must be prioritized in consultation and in an open and transparent manner.

The situational analysis also involves reviewing the resources available for capacity building. Limited resources should be allocated so as to make the most impact, and investing in capacity development early can pay off later. Allocating funds for capacity building is especially important in a project context where other components and activities will have a strong demand on resources and funds. It is the job of the project manager or the focal point for CWR conservation to balance these varying demands in light of available resources and diverse needs. This balancing act will be considered in the development of the capacity building plan, the next step of the process.

For those CWR initiatives which fall within a project context, it is advisable that a comprehensive inception workshop is held at a very early stage. A very clear message that emerged from the UNEP/GEF CWR Project was that it is essential to ensure from the outset that there is a clear understanding of the aims and purpose of the project, the different project components and the sequence of steps and activities necessary to achieve such aims and purposes. Such a workshop can help ensure that all those involved start with a common and basic understanding of the project and its various technical components and activities. It provides an opportunity for participants to seek clarification on issues, identify and fill in gaps in knowledge and understanding of the sequence and scheduling of implementation of activities. It also provides an early point in the project that participants can use to identify training needs from which the capacity building plan will be developed.

Table 15.1 *Tools for assessing capacity needs and related capacity levels*

Tools	*Societal levels*	*Organizational levels*	*Individual levels*
Brainstorming	X	X	
Case study analysis	X	X	X
Concept mapping	X	X	
Consensus-building discussions	X	X	
Delphi process	X		
Direct observation	X		
Document reviews	X	X	X
Expert panels	X	X	
Focus groups	X		
Force field analysis	X	X	
Gap analysis	X	X	X
Informant interviews	X	X	X
Job analysis	X	X	
Logical framework analysis	X	X	
Nominal group techniques	X	X	X
Organizational audits	X		
Participatory appraisals	X	X	
Prioritization matrix	X	X	X
Problem tree/root cause analysis	X	X	
Questionnaires and surveys	X	X	
Site visits	X	X	
Stakeholder analysis	X	X	
Staff audits	X		
SWOT (strengths, weaknesses, opportunities and threats) analysis	X	X	
Systems analysis	X	X	
Terms of reference	X	X	
Testing	X	X	X
Work plans	X	X	
Workshops/working groups	X	X	

Source: Lockwood et al, 2006

Probably the most serious failing of the UNEP/GEF CWR Project was the failure to appreciate, until rather late, the importance of the conservation components or the sequence in which they needed to be carried out and what *in situ* conservation of target species (as opposed to area conservation) entailed. As a result, Red Listing, extensive ecogeographic surveys and data management were, in some cases, carried out almost as an end in itself rather than as a means to establish the necessary background information for undertaking species conservation.[1] Had a capacity building plan been in place to link the training needs to the overall aims, learning objectives and outcomes, there might have been a different outcome. This is an easy trap to fall into, and this research-implementation gap is commonly found in conservation projects.

Step 5: Developing a capacity building plan

Building on the results of the stakeholder analysis and capacity needs assessment, and considering broader project/programme objectives and resource availability, a capacity building plan can then be developed. Such a plan can be part of a broader national CWR strategy and action plan (see Chapter 6).

The capacity building plan may take rather different formats depending on the level of intervention (local, project, national, etc.) but would generally include:

- aims – the broad purpose of the capacity building actions;
- learning objectives or outcomes; the acronym 'SMART' can help in formulating effective objectives:
  - specific;
  - measurable;
  - achievable;
  - relevant;
  - time-bound;
- contents – topics to be covered to address the competence gaps identified;
- implementation plan, including: selection of tools and methods for capacity building; time allocation; identification of trainers, facilitators, mentors, etc., including external resource persons (also consider using a training of trainers approach, for more impact); resources required; logistic considerations, etc.;
- monitoring and evaluation of training.

In developing the capacity building plan, a wide range of tools, methods and approaches will need to be considered, often in combination, to achieve the learning objectives. Further in this chapter a list of options for capacity building through education and training with a focus on individual training is provided and the lessons arising from capacity building under the UNEP/GEF CWR Project are described.

In addition, many of the examples and case studies on raising awareness and understanding of CWR provided in Chapter 16 could contribute to developing capacity in certain stakeholders. A good example is to sensitize policy- and decision-makers who play such an important role in determining the enabling environment for CWR conservation.

Step 6: Monitoring and evaluation of the capacity building plan

Monitoring and evaluation should be part of the capacity building plan as it will provide important feedback for continuous improvement. Well-planned and carefully implemented monitoring and evaluation will reveal if the capacity building plan is on track and highlight where it may need to be adjusted. It will show if learning objectives are achieved and if resources are well spent – which is of high interest to those investing in CWR conservation.

Monitoring could provide an 'early warning', which might help adjust an ongoing course or other capacity development activity to better meet the aims and objectives. Or, it could involve post-course feedback, which will help improve the capacity building activity the next time around.

The methods, criteria and indicators for evaluation need to be formulated early in the process. Decisions should be taken on what information should be collected and analysed throughout the capacity building activity and by whom. Evaluation assesses the achievement of learning objectives of the capacity building, that is, the knowledge, skills and attitudes acquired by the learner, the relevance of the content of capacity building and effectiveness of the learning processes. Both internal evaluation (by those involved in the intervention) and external evaluation (undertaken by independent evaluators) should be planned for – they provide different types of feedback for different purposes. Evaluation data – for example baseline data on existing capacity – can also be valuable inputs to future impact assessments.

Participatory approaches to evaluation of capacity building are useful to consider for CWR conservation, particularly when multiple stakeholders have been involved in the design of the capacity development plan. If stakeholders are involved in ongoing participatory evaluation and subsequent improvements to the capacity building plan, the project outcomes are likely to be more useful.

Further reading is suggested at the end of the chapter on carrying out monitoring and evaluation of capacity building.

Tools, methods and approaches for education and training

A subset of capacity building, *education and training*, is central to developing individual capacity within a CWR initiative. There are many ways and approaches available and it is important to pick the most appropriate approach, or combination of approaches, for addressing the identified capacity development needs. Capacity can be developed formally through training courses and other activities that are planned and implemented for that purpose. Informal learning that occurs without the presence of a curriculum, for example mentoring, collaborative research, networking or learning-by-doing, can also be important. The most common education and training approaches that may be considered are briefly presented here, each having its advantages and disadvantages:

- formal education;
- short courses;
- training workshops;
- internships, mentoring and study exchanges;
- fellowships;
- para-professional training.

Box 15.1 Capacity building and mainstreaming CWR information and knowledge into formal university courses

There are many reasons for considering partnerships with universities when it comes to CWR conservation. Universities and their teaching staff will be important custodians of knowledge on specific CWR species and on processes for their conservation. They provide opportunities for young graduates to pursue supervised postgraduate programmes in CWR conservation. Collaboration with universities within a project also influences curricula review and can strengthen course content in relation to CWR conservation and use. During the course of the UNEP/GEF CWR Project, participating countries were able to support students to undertake Masters and PhD programmes, which also resulted in important research and data outputs for the project. For example, in Madagascar, research was undertaken in ethnobotanical, biological and ecogeographical studies of wild *Dioscorea* spp. and wild species of *Coffea*. Many university courses in agriculture and conservation in participating countries lacked sufficient and up-to-date information on CWR. During project implementation, partners worked closely with relevant universities and staff to ensure that information generated from the project was mainstreamed into relevant university-level courses and programmes. In Armenia, one of the achievements of the partnership with the Armenian State Agrarian University was the establishment of a special course on agrobiodiversity, which addresses CWR conservation and utilization. The course was included in the Bachelors' and Masters' programme curricula of agronomy, crop selection and genetics of the university's Agrarian Department.

The question of how individual capacity developed through such approaches translates into institutional capacity lies beyond the scope of this chapter. For guidance on institutional and societal capacity, the reader is referred to the section on further reading. In addition, Chapter 16 adds information on awareness raising approaches and tools, which is an important complement as it generates support for interventions from responsible policy- or decision-makers.

Formal education

Tertiary education is society's fundamental approach to capacity development of individuals, leading to formal qualifications in subjects of relevant specialization at technical, undergraduate and postgraduate levels. However, agrobiodiversity in general, not to mention CWR conservation, is rarely a stand-alone course or full programme. Consequently, project staff and partners in a CWR initiative would rarely have a formal qualification in the subject.

The Masters of Research in Conservation and Use of Plant Genetic Resources offered by the University of Birmingham is one of the few programmes available that covers a range of topics pertinent to the process of CWR conservation and utilization. Although few other universities offer formal courses or programmes on CWR, many do provide opportunities to undertake such thesis

Box 15.2 Development of certificate-level modules targeting policy-makers, researchers and NGO staff – Sri Lanka

Addressing a major gap in capacity in Sri Lanka, staff at the Faculty of Agriculture at the University of Peradeniya, in collaboration with other organizations, developed three course modules on wild relatives of crops and their conservation. These short courses are aimed at policy-makers, researchers and NGO staff, but are also offered to graduate students. The Agriculture Education Unit of the university worked closely with national partners involved in the UNEP/GEF CWR Project to develop the curricula and the educational materials. The general content of the courses was reviewed and relevant stakeholders, who collaborated in curriculum development, were identified. One aspect of the review involved identifying earlier weaknesses of undergraduate and postgraduate courses in relation to wild relatives of crops. A stakeholder workshop took place in 2008 to finalize the curricula, brochures and other teaching materials. The courses commenced in September 2008.

research at the Masters and PhD level. Thesis research students could be a great resource for a CWR initiative, and it is worth considering budgeting for this at the onset of a project. During the course of the UNEP/GEF CWR Project, countries took advantage of such opportunities to build capacity, facilitate data collection and analysis, and implement conservation actions by enrolling staff and students in postgraduate programmes. At the same time, these experiences resulted in knowledge flowing back to the universities and contributed to mainstreaming the knowledge of CWR conservation and utilization into existing or new courses (see Box 15.1). In another instance, Sri Lanka addressed identified gaps in capacity by developing certificate courses targeting specific stakeholder groups during the UNEP/GEF CWR Project (see Box 15.2). These are good examples of how locating energy and commitment to educational change can be very useful beyond the project itself.

Short courses

A great many of the competencies outlined earlier are suited to short training courses. Short courses (one to a few weeks) can quickly develop new knowledge and skills, while ensuring that individuals are not away from their workplace for too long. There has been considerable growth in short-term training providers in recent years and it is possible to find some sort of training in most areas relevant to CWR conservation. For example, staff of the Royal Botanic Gardens, Kew, regularly offer short courses in topics such as conservation assessment techniques, organized with counterparts in herbaria and museums in many countries and regions of the world. Short-term courses, both face-to-face courses and online self-learning courses, can also be found for most of the process and project management competencies noted in Step 3 above.

Training workshops within the project

Training workshops are one of the most common ways of providing short-term training and capacity building for staff and partners of a CWR conservation project. Designed and implemented within the context of the project, they can target project goals with precision. In addition to developing technical and process-oriented knowledge and skills, they also help in building the project team. This approach was often used at the country level in the UNEP/GEF CWR Project and included training in the application and interpretation of IUCN Red Listing categories and criteria, basic GIS tools and information management.

Suitable resource persons can often be found in-country. On certain occasions expertise will have to be sought from outside. The UNEP/GEF CWR Project was able to source expertise and resource persons from its international partners such as the IUCN (Red Listing), BGCI (public awareness and outreach), WCMC (biodiversity monitoring) and FAO (legislation and policy review) for capacity building. This is an important role for international partners involved in such projects.

The advantage of organizing project training workshops is that the content is very focused and context sensitive. Training workshops use relevant examples from real life and allow the participants to share and learn from each others' experiences. They are also suited to developing skills in using participatory approaches. Depending on the situation, participants can sometimes bring their data to work on or to receive feedback from expert resource persons or from other participants. Box 15.3 illustrates how Bolivia effectively used regionally available expertise to address a major capacity gap and which eventually led to the implementation of extensive Red Listing and the publication of the first Red Book of CWR Plants in the region.

Internships, mentoring and study exchanges

Internships, mentoring and study exchanges can be put in place to develop capacity in project staff. Alternatively, the project can host interns and receive study visits, which aids in knowledge exchange and contributes to building capacity outside of the project.

Junior staff can undergo extended placements of work with more senior and experienced professionals. Placements can occur within the individual's organization or at another organization. Occasionally, there are opportunities for internships in international organizations such as CGIAR centres, botanic gardens, conservation organizations, and so forth; these opportunities are well worth exploring. Box 15.4 describes a study exchange that took place between Bioversity International's Regional Americas Office and a national Bolivian partner organization of the UNEP-GEF CWR Project to strengthen understanding of conservation assessment.

Box 15.3 Seeing red: Building national capacity to assess threat status

At the beginning of the UNEP/GEF CWR Project there were few experts in Bolivia with knowledge and experience in implementing the IUCN Red List categories and criteria. Fortunately, IUCN, as an international partner in the project, was well placed to help address this capacity gap. Bolivia made a direct request to the IUCN Regional Office in Ecuador to assist with the identification of an expert to train Bolivian researchers in the process of assessing the status of threatened species. The Bolivian partners identified Dr Gloria Galeano (from the National University of Colombia) because of her involvement in the development of Colombian Flora Red Books and also as a way of facilitating South-to-South cooperation. Dr Galeano, together with Arturo Mora from IUCN, trained Bolivian researchers through two workshops. The first workshop, aimed to familiarize researchers with the terminology, methodology and concepts of IUCN Red Listing and the application of the criteria and categories of IUCN Red List for species assessments, was held in La Paz in February 2006. Sixty-five researchers from national partner institutions and herbaria were trained during this workshop. The second workshop consisted of training on the technical review of CWR that were threatened according to IUCN categories and was held in La Paz in October 2007. Twenty-five researchers who attended the first workshop reviewed the categories given to the assessed species and the contents of technical sheets, under the supervision and guidance of Dr Gloria Galeano. Fourteen of the researchers who participated in the second workshop then applied the criteria and categories of IUCN as authors of the technical sheets contained in the Red Book of CWR Plants, the first of its kind in Bolivia.

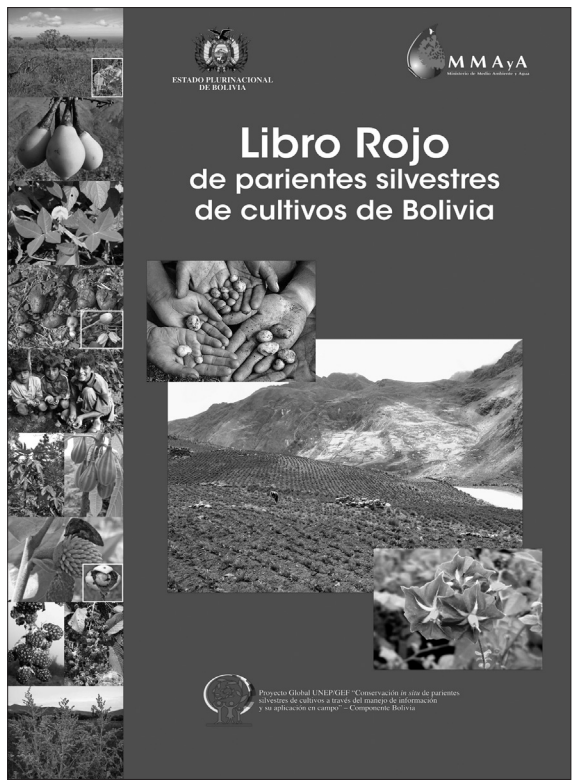

Figure 15.4 *The Red Book of CWR Plants – Bolivia*

Source: Beatriz Zapata Ferrufino, UNEP/GEF CWR Project National Coordinator, Bolivia

Box 15.4 Providing mentoring in conservation assessment tools

The close collaboration between Bolivia and the Regional Office for the Americas of Bioversity International in Cali, Colombia, led to the short-term placement of a young researcher from one of the national partner institutions of the Bolivian CWR Project. During a month-long, hands-on internship, the Bioversity Regional Office provided training and mentoring in the use of conservation assessment tools (CATs), including ArcView for developing area of occupancy (AOO) and extent of occurrence (EOO), as a basis for analysing the degree of threat, based on the IUCN criteria. Upon return to Bolivia, the researcher was able to replicate the training to other authors of the technical sheets of the planned CWR Red Book. The tool was used to standardize the calculation of AOO and EOO and to apply the IUCN criteria and determine the category of threat to the species included in the Red Book of CWR in Bolivia.

Fellowships

Some organizations and funding agencies may offer scholarship or fellowship opportunities for individuals to undertake thesis or postdoctoral research in an area of importance to CWR conservation. The Vavilov-Frankel Fellowship (see Box 15.5) administered by Bioversity International is a good example. It has allowed individuals from developing countries to conduct research on plant genetic resources, including CWR, at advanced research institutes. Organizations providing research grants, such as the International Foundation for Science (IFS), can also be a source for funding CWR research projects for scientists at the beginning of their career. Many universities with conservation-related graduate programmes offer scholarships and fellowships in conjunction with their study programmes. There are many directories and websites that list such research fellowship and scholarship opportunities.

Para-professional training

Para-professional training can be used to build capacity in key individuals in local communities involved with a CWR conservation programme. The approach can develop their conservation skills through participation in workshops, training courses and seminars, or attachments to a conservation project or national programme. This can expose these key individuals to a range of skills and provide local communities with an enhanced capacity to implement, monitor and evaluate conservation actions. A good example is the training and deployment of para-taxonomists by the Instituto Nacional de Biodiversidad (INBio), Costa Rica – the first programme of this type (Basset et al, 2004). We are not aware of any such training approach being used in the area of CWR conservation, but there seems no reason why such approaches should not be used.

Box 15.5 The Vavilov-Frankel Fellowship

Dr Nicolai I. Vavilov was one of the first scientists to appreciate the importance of CWR. In his honour, and that of another important scientist, Sir Otto Frankel, Bioversity International set up a fellowship fund to encourage the conservation and utilization of plant genetic resources by enabling outstanding young scientists to carry out innovative research internationally. To date, fellowships have been awarded to 33 scientists from 22 countries. Topics relevant to CWR conservation have included work on: morphological and systematic characterization of diversity of the wild potato *Solanum brevicaule* complex; simple sequence repeat (SSR) evaluation of population genetic structure of common wild rice *Oryza rufipogon* for developing *in situ* conservation in China; analysis of genetic diversity and classification of wild and cultivated Iranian pistachio (*Pistacia* L.) using molecular markers; genetic structure and gene flow between wild and domesticated populations of *Polaskia chichipe* (Cactaceae) in the Tehuacán Valley, Mexico; structural and functional genomics of drought resistance in the progenitors of wheat and barley for crop improvement; and analysis of the gene genealogies and population structure in *Citrullus lanatus* L. and its wild relative, *Citrullus colocynthis* L. (Cucurbitacease) and the implications for genetic resources conservation.

Conclusion

CWR *in situ* conservation is rarely well-covered in educational programmes. As a result, formal qualifications in this area tend to be lacking among project staff and key partners of such initiatives. Hence, this chapter argues that capacity building should be an integrated element of CWR initiatives to ensure a project's success. With a focus on education and training of individuals, the chapter provides a quick guide on how to determine capacity building needs, planning for capacity building actions and evaluating the results. However, the ability of those individuals to apply their new competencies also depends on the institutional and societal context in which they operate. Ultimately, such organizational capacity will come down to issues of power, leadership, culture and belief systems, and control of resources and decision-making processes, as much as specific competencies on CWR *in situ* conservation.

Further reading

Baser, H. and Morgan, P. (2008) *Capacity, Change and Performance,* Study report, Discussion Paper No 59B, European Centre for Development Policy Management; www.ecdpm.org/capacitystudy.

Bioversity International has a list of fellowship and scholarship opportunities that can be accessed on their website: www.bioversityinternational.org.

Capacity.org is a web-based magazine and portal for practitioners and policy-makers who work in or on capacity development in international cooperation in the South. It includes a quarterly journal and sections on tools and methods, and practice reports. See: www.capacity.org.

The Centre for Forests and People (formerly Regional Community Forestry Training Center, RECOFTC) website maintains an excellent range of modules and training guides. There are three downloadable modules covering capacity building and training needs assessment. See: www.recoftc.org/site/index.php?id=432.

Horton et al (2003) *Evaluating Capacity Development: Experiences from Research and Development Organizations Around the World*, ISNAR/CTA/IDRC, www.idrc.ca/en/ev-31556-201-1-DO_TOPIC.html#begining.

The Institutional Learning and Change Initiative has a range of resources and tools focusing on areas relevant to capacity development and communications and knowledge sharing. See: www.cgiar-ilac.org.

Lockwood, M., Worboys, G.L. and Kothari, A. (2006) *Managing Protected Areas: A Global Guide*, Earthscan, London, UK. Chapter 7 has useful information on capacity development and training in the context of protected area management.

Rudebjer, P., Taylor, P. and Del Castillo, R.A. (eds) (2001) *A Guide to Learning Agroforestry – A Framework for Developing Agroforestry Curricula in Southeast Asia*, Training and Education Report No 51, ICRAF, Bogor, Indonesia, www.worldagroforestry.org/Sea/networks/Seanafe/Books/GLearnAF-Part1.pdf.

Taylor, P. (2003) *How to Design a Training Course*. A guide to participatory curriculum, which integrates the philosophy and orientation of a training programme, expected learning outcomes, key content, methodology and evaluation for the teaching and learning process. London: VSO/Continuum.

Taylor, P. and Clarke, P. (2008) *Capacity for a Change*. A document based on outcomes of the 'Capacity Collective' workshop, Dunford House, 25–27 September, 2007, Institute for Developing Studies, Sussex, www.ids.ac.uk/go/idsproject/capacity-collective.

United Nations Development Programme (UNDP) publishes a selection of publications relating to capacity development, which can be found on its website: www.undp.org/capacity/recommended_reading.shtml.

The World Agroforestry Centre has developed 'Training in Agroforestry', a toolkit for trainers to facilitate the planning, organization and implementation of training and education activities. It focuses on the design of a training progamme using a participatory approach. See: www.worldagroforestry.org/downloads/publications/PDFS/b12460.pdf.

Note

1. As stated in the Technical Advisory Committee Report (2009). Report of the Sixth Meeting of the International Steering Committee for the UNEP/GEF supported project "*In situ* conservation of crop wild relatives through enhanced information management and field application'. Bioversity International, Rome, Italy. pp. 55.

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Horton, D., Alexaki, A., Bennett-Lartey, S., Brice, K.N., Campilan, D., Carden, F., de Souza Silva, J., Duong, L.T., Khadar, I., Maestrey Boza, A., Kayes Muniruzzaman, I., Perez, J., Somarriba Chang, M., Vernooy, R. and Watts, J. (2003) 'Evaluating capacity development: Experiences from research and development organizations around the world', The Netherlands: International Service for National Agricultural Research (ISNAR); Canada: International Development Research Centre (IDRC), The Netherlands: ACP-EU Technical Centre for Agricultural and Rural Cooperation (CTA), www.idrc.ca/en/ev-31556-201-1-DO_TOPIC.html#begining.

Hough, J. (2006) 'Developing capacity', in M. Lockwood, G. Worboys and A. Kothari (eds) *Managing Protected Areas: A Global Guide,* Chapter 7, pp164–192, Earthscan, London, UK

Lockwood, M., Worboys, G.L. and Kothari, A. (eds) (2006) *Managing Protected Areas: A Global Guide*, Earthscan, UK

Rudebjer, P., Taylor, P. and Del Castillo R.A. (eds) (2001) *A Guide to Learning Agroforestry – A Framework for Developing Agroforestry Curricula in Southeast Asia,* Training and Education Report, no 51, World Agroforestry Centre (ICRAF), Bogor, Indonesia www.worldagroforestry.org/Sea/networks/Seanafe/Books/GLearnAF-Part1.pdf